Are Soft Skills Enough? Experimental Evidence on Skill Complementary for College Graduates

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Abstract

We study how complementarities in skill affect the returns to vocational training using a randomized controlled trial in Cairo, Egypt. Participants, who were college-educated, were either given a 4-week training in soft skills (e.g., grooming, time management), technical skills (e.g., Microsoft programs, English language), or a mix of the two (half of each). All treatments significantly boosted the probability of finding a job quickly, but the differences between treatments are large. The technical and mixed treatments do best in the short term, raising first-job income by about 15%. In the longer term, the mixed-skill treatment outperforms the other two. The high returns for this group seem to come from climbing the job ladder to access jobs that require speaking English, which may be at higher-quality employers. Overall, the results suggest that curriculum details play an important role in the outcomes of vocational training programs and that levering skill complementarity can yield tangible benefits.

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1 Introduction

Youth unemployment is a major challenge, especially in developing countries where jobseekers may lack a strong formal education. Training programs are seen as an important step to gainful employment. However, these programs often have only modest returns (Card et al., 2010, 2018). Some have suggested that this may be due to their focus on narrow sets of skills (Hanushek et al., 2017; Krueger and Kumar, 2004). In response, recent work has studied whether teaching "soft" skills, rather than just technical skills, can improve outcomes in training programs (Acevedo et al., 2020; Adhvaryu et al., 2021; Barrera-Osorio et al., 2021; Groh et al., 2016). These soft skills are often cited by businesses as being important and difficult to find in jobseekers, and evidence shows that their importance for workers is growing (Deming, 2017).

In this paper, we use a randomized controlled trial (RCT) in Cairo, Egypt, to study how complementarities in skills affect the returns to vocational training. Specifically, we compare the effectiveness of 4-week (120-hour) training programs in mostly "soft" skills (e.g., grooming, time management, and listening skills), mostly "technical" skills (e.g., Microsoft programs, technical English language), and a mix of the two (about half of each). The mixed treatment is inspired by the idea that soft and technical skills may be complementary (Cunha et al., 2006; Weinberger, 2014). We test these ideas in a setting where soft skills, rather than technical skills, are likely to be the binding constraint; unusually for a training intervention, the participants in our study were well-educated, having all graduated from college.

We find that the types of skills taught in vocational training programs matter, and the results show the importance of skill complementary. While all three treatments raise the probability of employment in the short term (3 months after the training) by 33%, it is the technical and mixed-skill treatments that boost short-term income by roughly 15%, with no impact for the soft skills group. These differences are primarily coming from an increase in working hours. There is no difference between treatments in the types of occupations trainees are engaged in, but the technical skills group is most likely to be in jobs that require speaking English, suggesting important differences in types of job within an occupation. This is consistent with the emphasis on English-language skills in the technical skills training.

In the longer term (18 months after the training), the complementarities between soft and technical skills training become more evident. The mixed-skills treatment significantly outperforms both the soft skills and technical skills treatments. The mixed group's income is 27% higher than the soft skills group and 20% higher than the technical skills group. Their jobs are more likely to require English and score highest on an index of job conditions. These differences seem to come through this group's ability to better climb the job ladder; they have had more distinct jobs since the training. While there are clear differences in outcomes *between* the treatment groups, the average impact of the training (relative to the control group) is modest and often statistically indistinguishable from zero. This is likely because about half of the control group received training from other providers. Nonetheless, the differences between groups show the importance of training curricula and skill complementarity.

English skills play an important role in the labor market in Egypt, as in many developing countries (Azam et al., 2013). English is more likely to be required of workers by firms that serve higher-income or international customers. In the short term, it is the technical skills group – which got the most hours of English-language training – that is most likely (52%) to be in jobs that require English. In the longer term, this proportion is unchanged, but the mixed-skills group becomes the most likely to be in these jobs (58%). Interestingly, there is no difference between treatment groups in the probability of being in a high-skilled (i.e., white-collar) occupation. It seems that the positive effects for the mixed-skills group are coming through access to better firms within the same occupation, particularly those that require their workers to know English. This highlights the important role of English-language training in vocational training in developing countries. This training is important, but it is most effective long-term when combined with soft skills.

We find no evidence that the training changed participants' health or longer-term expectations, but there is some evidence that participants are delaying their marriage plans. Participants in training are 27% less likely to say they plan to get married within one year, but not less likely to say they plan to marry within three years, relative to the control group. This, combined with increased job search activity, suggests that the training could have labor market impacts over a longer time horizon than we measure here.

Our paper makes four main contributions. First, our experiment includes a mixed treatment of soft and technical skills, allowing us to look at complementarities between the two types of skills. Recent studies on soft skills compare a soft skills treatment either to a control group (e.g., Adhvaryu et al. (2021), Groh et al. (2016)) or to a control group and a technical skills treatment (e.g., Barrera-Osorio et al. (2021)). Barrera-Osorio et al. (2021), studying vocational training in Colombia, find that technical training does best in the short term, while soft skills training catches up in the longer term. There is no mixed treatment in their setup. Acevedo et al. (2020) include a mixed technical-soft treatment like ours in their vocational training study. However, they have only a soft skills arm and no technical skills arm for comparison, making it difficult to explicitly tests for skill complementarity. Both of their treatments also include an internship, so isolating the impact of the skills training itself is not possible. Here, we include soft, technical, and mixed-skill treatments to specifically study the complementarities of skill.[1] Overall, we show that the content of the training matters. While training programs often have modest impacts, there may be scope to improve outcomes through optimizing the content of these programs.

Second, our sample is made up of four-year college graduates. This is unusual for a vocational training program, because well-educated individuals are typically in less need of training to find employment. In theory, this group should already have high levels of technical skills, making it more likely that soft skills training would have the highest returns. Instead, the soft skills training is outperformed by the other two treatments. However, soft skills continue to be an important part of success for our sample when combined with technical skills for the mixed-skill treatment group. We expect that finding ways to combine the right set of technical and soft skills will be important for designing effective training programs for job-seekers of different skill levels (i.e. those with less than a college education).

Third, we contribute to the literature related to the benefits of English language skills in developing countries. Previous work has suggested that knowing English has benefits in these settings. Chakraborty and Bakshi (2016) use the removal of English instruction in primary schools in India to show that wages fall through a change in

[1] Alfonsi et al. (2020) takes a different approach, comparing vocational training to employer-provided on-the-job training. They do not look at the impacts of different training curricula.

occupations. Azam et al. (2013) and Di Paolo and Tansel (2015) estimate the returns to English in India and Turkey, respectively. Both use observational data and find that knowing English is positively correlated with wages, controlling for various other factors. To our knowledge, we are the first study to randomize English instruction. Our results suggest that access to jobs that require English can be an important part of the return to vocational training. However, while the treatment that includes the most English-language training is effective in the short term, it is the one that combines English with soft skills that performs best in the longer term.

Fourth, we measure the impact of training on attitudes, expectations, and behaviors. Consistent with Acevedo et al. (2020), we find some evidence that training can alter people's expectations and behavior even if the labor market effects of the program are small. These findings encourage more longer-term study of the impacts of training.

The paper proceeds as follows. Section 2 lays out the study context and experimental design. Section 3 reports our main results, while Section 4 concludes.

2 Study Context, Experimental Design, and Sample Characteristics

Our study takes place in the greater Cairo area of Egypt, a middle-income country with a PPP-adjusted GDP per-capita of about $12,000. Cairo's population is well-educated, with about a third of individuals aged between 21-35 having at least college degree (Assaad and Krafft, 2013), at least partially due to the fact that public universities are free (Elbadawy, 2015). Despite this, in 2016, the year our first cohort was trained, Egypt faced a 33.4% youth unemployment rate, among the highest of any country (ILO, 2016).

There is reason to believe that training in both soft and technical skills could have positive labor market impacts in Egypt. As reported in Osman et al. (2021), in a survey of about 1,000 establishments, 40% of employers believe that there are not enough entry level job applicants with the right skills. When asked which kinds of skills are hardest to find, there is an almost even split, with 46% of firms saying that soft skills are the hardest to find and 54% saying technical skills are harder to find.

We worked with an NGO called Education for Employment Egypt (EFE-Egypt, or EFE). EFE-Egypt was founded in 2007 and has been running training programs in the country since that time. Prior to working with us, they already had extensive experience in both soft and technical skill training. Their focus is on producing high quality "demand-driven" trainings to unemployed and underemployed young adults, working closely with employers to design curricula that match the needs of the market., focusing exclusively on high-quality formal job opportunities for college graduates.

Experimental Design

We worked with EFE to design and test the relative effectiveness of training programs with different curricula. Each of the three treatment arms was a 4-week, 120-hour training program made up of a combination of different training modules that were regularly offered by EFE in their programs. Some of these modules focused on "technical skills", including Microsoft programs (i.e., Word, Excel, and PowerPoint) as well as English vocabulary, grammar, and pronunciation. Other modules focused on "soft skills", including business skills (i.e., grooming, time management, and interpersonal skills), customer service, email etiquette, and body language.

While EFE insisted on including some soft and some technical training in every treatment arm, we constructed three different treatments with very different mixes of the two types of skills, as outlined in Appendix Table 1. The soft skills treatment consisted of 120 hours of training, 84% of which were from the soft skills modules. The technical skills treatment drew 93% of its 120 hours from technical modules. The mixed treatment, also 120 total hours, was 55% technical and 45% soft. Because the three treatment arms were the same total number of hours, we can isolate the effects of different mixes of skills in our analysis.

Classifying the various EFE modules as soft or technical was straightforward. Soft skills, sometimes called social skills, are skills related to time management, interpersonal interactions, teamwork, and conflict resolution. They are often mentioned as being important, particularly in the contexts of business and customer service (Dixon et al., 2010; Schulz, 2008), and their importance for workers has grown over time (Dem-

ing, 2017).[2] Technical skills, on the other hand, refer to knowledge and abilities needed to perform specific tasks. These are more likely to be taught in formal education, such as math, writing, and computer skills.

The English language curriculum was split into "business English" and "pronunciation". Business English focused on business-specific vocabulary, the various tenses of English, grammar rules, and how to construct correct sentences and questions that might be useful in a business or customer service context. The pronunciation module focused on the sounds of certain letters and letter combinations in English. As this is a foreign language, these modules are clearly "technical". Similarly, the lessons on Microsoft programs are technical. They are distinct from lessons about grooming, socializing, and how to work in teams, which are counted as soft skills.

To recruit the trainees, EFE advertised through various channels and through their alumni network about training opportunities. Interested individuals would come to their office to apply and fill out an intake form. EFE would screen out individuals who had not completed a university degree, and those that were perceived to be "well-off" (i.e. those that went to private universities, or showcased other forms of wealth such as having their own private car). After EFE recruited enough applicants to fill up three distinct training classes (and a control group), they would send the research team a list of all the eligible trainees and we would randomly split them into four groups: soft skills training, technical skills training, mixed training, or control (no training). The first cohort was trained in November 2016, while the final cohort was trained in October 2018.[3]

Data Collection and Sample Characteristics

We utilize two primary sources of data - a baseline survey and a follow-up survey. The baseline survey was implemented when the individuals visited EFE for the first time to

[2]While some use the terms "soft" and "social" skills interchangeably, Deming (2017) notes that social skills are really a subset of soft skills. There are soft skills that do not involve how to work with others, such as punctuality and proper grooming. Economists have also used the term "noncognitive" to refer to soft skills (Cunha et al., 2010).

[3]Osman and Speer (2020) reports on an experiment that focused on how to most effectively recruit individuals to job training programs. None of the participants in the program we study in this paper were part of the sample from the other experiment.

apply for the program. We built it into EFE's normal intake form and collected additional data about the trainees' education, family background, and employment history. The follow-up survey was implemented about 18 months after the randomization. In the follow-up survey, we collected information about their current job as well as the first job they took after the training. For each job, we asked about the dates they started (and if they left the job, the date in which they did so), as well as information about the nature of the job.

Table 1 reports baseline summary statistics about those that entered the randomized sample. The total sample is 985 individuals. On average, trainees in the control group are 24 years old, 73% are women, they graduated from college about 2 years prior to the training, and 96% were married. Two-thirds had a father with post-secondary education and about half had a mother with post-secondary education. Only 16% were working at the time of the baseline, and about a third of the sample has taken job training before. There are no significant differences between the randomized groups, with a joint test of significance reported in the penultimate row of Panel A.[4]

We were able to locate and interview 82% of the sample for the follow-up survey. Appendix Table 2 shows that there is no differential attrition by treatment status. We also regress an indicator for attrition on our baseline characteristics and an interaction of those characteristics with treatment and find that a joint test of significance shows no evidence of differential attrition by baseline characteristics.

3 Analysis & Results

Thanks to the randomization, our econometric analysis is relatively straightforward. We utilize three main specifications. First, to assess the average impacts of the training on outcomes relative to control, we utilize the following equation:

$$Y_{it} = \beta_1 T_{ANYi} + \beta_0 Y_{0i_{DPL}} + \delta_C + \varepsilon_i \quad (1)$$

[4]Some individuals were included in the randomization but did not fill out a baseline survey. For those individuals we recover time-invariant variables from our follow-up surveys (e.g., age), and for other variables we drop the observations from the regression where that variable is an outcome (e.g., balance on education), but for regressions where they are used as an independent variable (e.g., for the test of joint significance), we include an indicator for the missing observations.

where Y_i is the outcome of interest (e.g. income), T is an indicator if the individual was in *any* of the three treatment groups, and $Y_{0_{DPL}}$ represents the set of baseline controls chosen using the double post-lasso procedure outlined in Belloni et al. (2014).[5] The δ_C are randomization cohort fixed effects. We use Huber-White robust standard errors. By combining all treatments together, we are able to maximize statistical power in assessing the impacts of training relative to control.

Our second specification considers the differential impacts of the three treatment arms. We separately compare the technical skills and mixed treatment arms to the soft skills treatment arm. The specification is as follows:

$$Y_{it} = \beta_1 T_{TECH_i} + \beta_2 T_{MIX_i} + \beta_0 Y_{0i_{DPL}} + \delta_C + \varepsilon_i \tag{2}$$

where again Y_i is the outcome of interest, but now T_{TECH_i} is an indicator for those in the technical skills group, and T_{MIX_i} is an indicator for those in the mixed-skills group. The reference group in this regression is the soft skills training group, since the intent of the specification is to allow us to more directly compare the relative impacts of the different trainings. The control group is not included in these regressions.[6]

In looking at the mixed treatment, we are considering whether soft and technical skills training are complementary. To illustrate what we mean, consider this simple example: recall that all three treatments are the same number of total hours of training, so the mixed treatment is roughly half of the technical and half of the soft (not the two treatments combined). Suppose the return to the soft skills training, relative to control, is found to be r_s, and suppose the return to the technical training is r_t. With no complementarities between the two, the return to the mixed group should be the average of these, $\frac{1}{2}(r_s + r_t)$. If, instead, soft and technical skills training are complementary, then the mixed treatment will have a return that exceeds this average.

In our final specification, we include a direct test of complementarity utilizing the following equation:

[5]We include all of our baseline data as options for the lasso, it often doesn't "choose" any controls but when it does the two main controls are gender baseline English speaking ability.

[6]In the appendix, we report the results from a specification where we simply compare each of the treatment groups to the control group. The results are mechanically equivalent, but with a different reference group. We choose to showcase the specifications in the main tables because it allows us to more clearly assess how the treatment groups compare to each other and whether or not those differences are statistically significant.

$$Y_{it} = \beta_1 T_{SOFT_i} + \beta_2 T_{TECH_i} + \beta_3 T_{MIX_i} + \beta_0 Y_{0i_{DPL}} + \delta_C + \varepsilon_i \quad (3)$$

where we set T_{SOFT_i} and T_{TECH_i} equal to 1 for those respective treatment groups but we adjust these values for the mixed group. In one scenario we assign the mixed group a value of 0.5 for T_{SOFT_i} and T_{TECH_i} in addition to having T_{MIX_i} equal to 1. In this specification, the coefficient β_3 explicitly tests whether the outcome for the mixed group is larger than the average of the other two treatment groups. In the second scenario, we assign the mixed group a value of 1 for T_{SOFT_i} and T_{TECH_i} in addition to having T_{MIX_i} equal to 1. This tests whether the outcome for the mixed group is larger than the *sum* of the other two treatments, which would demonstrate an even higher degree of complementarity.

In our analysis, we consider our primary outcomes to be employment and income. We also consider how details of the job differ in an effort to better understand the mechanisms through which any differences in the primary outcomes may occur. This includes indices for job conditions and job satisfaction as well as an indicator for the occupation being "high-skill". Breakdowns of the components of the conditions and satisfaction indices can be found in Appendix Table 3. To create the index, we standardize each component, add them together, and then standardize the sum (Kling et al., 2007). We define "high-skill" occupations by categorizing the list of jobs. A list of all job categories and their designation can be found in Appendix Table 4. Finally, we analyze data on beliefs and plans as additional outcomes of interest.

First Stage

Panel B of Table 1 reports on training attendance, the experiment's "first-stage". Column 1 reports the control group mean, and Column 2 shows the average difference between the control group and being in any of the treatment groups (i.e., β_1 from equation 1 above). On average, 90% of the treatment groups report attending the EFE training, compared with 14% of the control group, giving a strong first stage.[7]

[7]As part of the experiment, we told the control group at the time of randomization that we could not provide them training now but if they wanted to get trained in a year they would have an opportunity to do so. This was because the training organization did not want to deny service

Looking at attendance rates across the different treatment arms (equation 2 above), we find that 91% of those randomized into the soft skills group attended the training, compared with 89% of the technical group and 84% of the mixed group.

Interestingly, 45% of the control group report attending another training program during the time between randomization and the follow up survey. Those in the treatment groups also report attending other training courses. In the third row, we see that 51% of the control group participated in *some* training since the randomization, including the training from EFE, compared with 94% of the treatment groups. So while we still have a strong first stage on attending any training, it is clear that the control group is also actively working to improve their skills in the meantime.

We were unable to collect explicit skills data that would allow us to directly assess the quality of the EFE training (and measuring soft skills is non-trivial (Devedzic et al., 2018)). However, during the follow-up survey, we asked the participants if they thought the training was worthwhile and if in retrospect they would have taken it and paid 250EGP for it. About 90% of those in all three groups report that they thought the training was worthwhile, a high level of satisfaction.

3.1 Short-Term Outcomes

We surveyed those from the control group and all three treatment arms about 18 months after the randomization to ask them about their labor market experiences. Panel A in Table 2 reports results on our primary outcomes in the short term. Column 1 again reports the control group mean, and the average impact of being in any of the treatment groups, relative to control, is in column 2 (i.e., β_1 from equation 1 above). While 39% of the control group had gotten a job within 3 months of the randomization, this is 13 percentage points (or 33%) higher for those that were randomized into one of the treatments. One year after the randomization, 67% of the control has worked in a job, while 78% of the treatment group has, an 11 percentage point (or 16%) increase.

Next we consider if there are any differences in the effectiveness of the different treatment arms (equation 2). This tests the recently popular notion that soft skills

indefinitely to those who wanted it. Data on training attendance are self-reports from the follow-up survey we conducted. We do not have administrative data on training attendance due to turnover at the training organization.

training may be the answer to increasing the returns to vocational training (Acevedo et al., 2020; Adhvaryu et al., 2021; Barrera-Osorio et al., 2021; Groh et al., 2016). Column 3 shows the mean of those in the soft skills group: 48% had a job within 3 months. The share is a bit higher for the other two groups, but not significantly so. The result is similar for working within 12 months of the randomization. In terms of finding employment, there is no difference between treatment groups.[8]

Looking at our second primary outcome, monthly income in the first job, the soft skills group performs the worst of the three treatments. The technical and mixed-skill treatments boost first-job income by roughly 15% relative to the soft skills group. So while the soft skills group does benefit by finding employment more quickly than the control group, the other two treatments lead to higher incomes.

In Panel B, we consider the details of the jobs to try to better understand the differences in income. We find that the primary way income is increasing is through an increase in weekly hours worked, while hourly wages conditional on working are unaffected.[9] We see no differences across treatments in whether the occupation was high-skill. However, there are significant differences in the proportion of jobs that require English. In the soft skills group, 43% of participants had a first job that required English, compared with 52% for the technical skills group. This is in line with the fact that the technical skills group received the most English-language training of the three groups. We also see evidence that the technical skills group is most satisfied with their jobs.

Hence, we find three main results on short-term employment. First, the training program was effective in improving people's employment chances. Second, there are large and important differences *between* treatments. The soft skills training seems to have been the least effective of the three treatments, leading to jobs that look similar (or possibly even worse) than those the control group found. Third, both the

[8]In Appendix Tables 4 and 5, we compare each of the treatment arms to control separately. While the differences relative to control are rarely statistically significant, potentially due to the fact that most of the control also got training somewhere, we can nonetheless use this as an opportunity to learn about differences *between* treatments.

[9]We estimate impacts on the conditional wage, i.e., the wage paid for those that are working. For this to be a valid comparison, we must assume that the selection of "who" is working is similar. Since we find similar employment rates across the treatment groups we think this is a reasonable assumption.

technical and mixed groups saw positive effects on first-job income, and at least some of this seems related to accessing jobs that require English, which may be at higher-quality establishments (though there is no difference in occupation type). Since these groups received English-language training, and the technical group received the most, it seems the training programs successfully taught the technical skills they were designed to teach. Requiring knowledge of English may be an important and understudied dimension of high-quality jobs in developing countries (Azam et al., 2013).

3.2 Longer-Term Outcomes

Next we consider the jobs held by the sample at the time of our follow-up survey (about 18 months after the randomization). We ask about all the jobs they had since randomization as well as more detailed information about their current job including income, hours, and job conditions. The results are presented in Table 3.

In Panel A, we again consider our two primary outcomes, employment and income. The short-term employment benefits of training fade in the longer term, with 90% of both the control and treatment groups have worked since randomization. The probability of working in the past month shows a similar pattern. Consistent with them finding jobs more quickly (as seen in Table 2), those in the treatments seem to have had more jobs than the control group, and this is especially true for the mixed-skill group, who have had 0.17 more jobs than the soft skills group (and 0.20 more jobs than control).

When we look at monthly income, we see no average benefit of training, but we do see a large difference between treatments. Those in the mixed treatment group increase their income by 573EGP per month relative to the soft skills group, a significant 27% increase. The soft skills group has the lowest income of any group, including control, although the differences are not always significant. The dynamics for the soft and technical groups – technical does better than soft in the short term, but they are similar in the longer term – are similar to the findings in Barrera-Osorio et al. (2021).

This difference in income between the soft skills group and the mixed training group is striking, and we explore the potential mechanisms behind this difference in Panel B. The mixed group works 3.5 (12%) more hours per week than the soft skills

group, and their wages are 4% higher. The mixed group is working more and getting paid a higher wage than the soft skills group. While these individual differences are not statistically significant, they add up to the significant difference in income.

Looking at the occupations that people hold, we find that about half of the jobs are high-skilled jobs. There is no significant advantage here for those who were trained and no differences between the treatment groups. The training is not helping people get into occupations that are considered higher-skilled. On the other hand, those in the mixed group are in jobs that are more likely to require English skills and have better job conditions. The mixed group is obtaining better jobs *within* occupation – perhaps at higher-quality employers. They are doing jobs that require more language skills. This is important since the returns to English in this context are seen as high, as in many developing country contexts (Azam et al., 2013).

Interestingly, those in the technical group end up being the most likely to own their own businesses. One interpretation of this is that they learned the skills they needed to succeed in the market, but did not learn the skills needed to succeed in settings where they need to interact with co-workers and managers, many of the skills included in the soft-skills modules.

Combining the results from Panels A and B, it appears that the mixed-skill group has obtained higher-quality jobs by climbing the job ladder more since randomization. While the technical skills group was most likely to be in jobs that require English in the short term – consistent with receiving the most English-language training – the mixed group has overtaken them in the longer term. This suggests that soft and technical skills may be complementary, which we explore in more detail in the next section.

Complementarity

We now explicitly test for skill complementarity using the specification outlined in equation 3 in section 3. We consider two different tests for complementarity. The first is whether the impact of the mixed group is more than the *average* of the impact of the soft and technical groups. We do this by setting the value of the soft and technical treatments to 0.5 for the mixed group. We report the results of this test for our main outcomes in Panel A of Table 4. The primary focus of this table is the coefficients in column 4. We find evidence of skill complementarity for the number of distinct jobs

since randomization and for current income. In these cases, the mixed group outcome is more than the "sum of its parts", since it is a half part of soft skills and a half part of technical skills.

In Panel B, we consider whether the mixed group did better than the *combined* impact of the soft and technical groups. This is a stronger test of complementarity and assumes that an individual can get the full effect of each treatment in about half the time. In this case, we find strong evidence of complementary in income. That is, there is no benefit to the content of each individual training, but when they are mixed, the training can yield much better results.

3.3 Impacts on Additional Outcomes

In Table 5, we consider data we collected on behaviors, attitudes, and expectations for the future. Most of these effects are insignificant, but we do find some evidence that the training changed people's short-term plans and expectations. Those in the training groups are 10 percentage points (27%) less likely to report that they plan to get married in the next year, relative to control. However, they are not less likely to plan to get married within three years, and their target number of children is also similar to control. This suggests that the program has delayed, but not fundamentally changed, the trainees' expectations about family and marriage.

Given the paucity of significant effects on these additional outcomes, we do not want to make too much of the marriage result. But it is possible that a delay in seeking marriage, combined with the increased probability of searching for work (as seen in Table 3), could have longer-term benefits than we measure here. We see no overall effects on reported physical or mental health, or attitudes towards marriage and gender roles in society. The components of these indices are found in Appendix Table 9.

4 Discussion and Conclusion

Using an RCT in Egypt to provide training to unemployed and underemployed college graduates, we show compelling evidence that soft and technical skills training are

complementary, particularly in the longer term. The mixed skills group achieved higher incomes and more working hours than the other groups. These results are driven by more climbing of the job ladder, not to better occupations but to jobs that require English and have better overall conditions. All three treatment groups are more likely to be actively looking for work relative to the control group, but it is those in the mixed group who are successful in turning that effort into better outcomes.

The complementarities between soft and technical skills training have important policy implications. While vocational training often has only modest returns (Card et al., 2010), some have suggested that teaching soft skills is the key to improving these programs (Acevedo et al., 2020; Adhvaryu et al., 2021; Barrera-Osorio et al., 2021; Groh et al., 2016). Our results tell a more nuanced story. In our setting, soft skills training on its own seems to have no lasting benefit. However, when combined with technical skills, it can lead to long-term success. Though our results come only from the Egyptian context, they suggest that vocational training programs should teach a mix of soft skills and technical skills and that English language training should be included in cases where there is a potential market premium for it.

Our results also show the need for more research on this topic. The soft vs. technical skills debate is incomplete without a full accounting of the ways in which they are complementary. Our study, with college graduates as our subjects, is in a context where soft skills are likely to be the binding constraint. A similar study with a less-educated sample would be insightful. We find some evidence that the complementarities allow people to climb the job ladder more quickly. Tracing the careers of trainees in more detail is also necessary to understand exactly how and why soft and technical skills work together.

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Tables

Table 1: Baseline Balance and First Stage

	Control Mean	*Combined treatment*	Soft Skills Mean	*Technical Skills Treatment*	*Soft & Technical Treatment*	N
Panel A: Sample Balance	(1)	(2)	(3)	(4)	(5)	
Age	24.30	-0.16	24.29	0.14	-0.18	920
	{2.44}	(0.19)	(2.29)	(0.20)	(0.20)	
Female	0.73	-0.05	0.66	-0.03	0.04	985
	{0.44}	(0.04)	(0.47)	(0.04)	(0.04)	
Years since graduation	2.25	-0.30	1.97	0.13	-0.04	793
	{2.45}	(0.21)	(2.03)	(0.20)	(0.20)	
Marital status: single	0.96	-0.01	0.94	0.02	0.02	793
	{0.20}	(0.02)	(0.23)	(0.02)	(0.02)	
Father post secondary edu	0.69	0.00	0.68	-0.04	0.05	921
	{0.46}	(0.04)	(0.47)	(0.04)	(0.04)	
Mother post secondary edu	0.54	0.00	0.59	-0.08*	-0.03	921
	{0.50}	(0.04)	(0.49)	(0.04)	(0.05)	
Working	0.16	0.03	0.15	0.06	-0.01	784
	{0.37}	(0.04)	(0.36)	(0.04)	(0.04)	
Current income	160	121	287	-69	-63	726
	{622}	(77)	(1534)	(121)	(134)	
Took training before	0.34	0.00	0.35	-0.01	0.01	793
	{0.48}	(0.04)	(0.48)	(0.04)	(0.05)	
Number of previous training days	10.4	-1.35	8.69	1.13	1.28	791
	{23.4}	(2.22)	(19.05)	(2.52)	(2.12)	
p-value for joint test		0.837		0.439	0.516	
Number of People Per Group	210	775	277	276	222	
Panel B: First Stage						
Participated in EFE Training	0.14	0.76***	0.91	0.02	-0.07**	803
	{0.35}	(0.03)	{0.29}	(0.03)	(0.03)	
Participated other Training	0.45	-0.04	0.37	0.04	0.01	803
	{0.50}	(0.04)	{0.48}	(0.05)	(0.05)	
Participated in any Training	0.51	0.43***	0.94	0.03	-0.05*	803
	{0.50}	(0.04)	{0.23}	(0.02)	(0.03)	
Thought the training was worthwhile in retrospect			0.90	-0.03	0.00	803
			{0.30}	(0.03)	(0.03)	

Notes: Table reports baseline values of characteristics for individuals in the sample and the differences between groups. Column 1 reports the control group mean for the variable listed in each row, with standard deviations reported in brackets below. Column 2 reports the intent to treat estimate of a binary treatment variable that is equal to one if the individual was assigned to any of the three training arms. Column 3 reports the mean value for those assigned to the "Soft Skills" training arm, with standard deviations in brackets. Columns 4 & 5 report the intent to treat esimtates of assignment to the "techinical" training arm or the "techincal & soft" training arm compared to the soft skills training arm respectively. Robust standard errors reported in parentheses. Regressions include cohort fixed effects. The pen-ultimate row in Panel A reports the p-value for a test of joint significance of all the baseline characteristics relative to the comparison group. Statistical Significance *<0.1, **<.05, ***<.01

Table 2: Short Term Labor Market Outcomes

	Control Mean (1)	Randomized to any of the Trainings (2)	**Soft Skills Treatment Mean** (3)	Technical Skills Difference (4)	Technical & Soft Skills Difference (5)	**N**
Panel A: Primary Outcomes						
First job within 3 months from randomization	0.39	0.13***	0.48	0.04	0.03	803
	{0.49}	(0.04)	{0.50}	(0.05)	(0.05)	
First job within 12 months from randomization	0.67	0.11***	0.77	0.03	0.02	803
	{0.47}	(0.04)	{0.42}	(0.04)	(0.04)	
Monthly income in first job after training	2090	140	2070	291*	313**	767
	{1682}	(140)	{1514}	(150)	(150)	
Panel B: Job Details						
Weekly working hours in first job after training	40.7	-1.73	37.07	5.03***	3.27*	801
	{17.3}	(1.42)	{17.71}	(1.53)	(1.68)	
Hourly wage in first job after training	13.1	1.42	14.31	0.02	0.18	663
	{13.5}	(1.23)	{9.67}	(1.06)	(1.08)	
First job was high skilled	0.43	-0.01	0.41	0.02	0.00	803
	{0.50}	(0.04)	{0.49}	(0.05)	(0.05)	
First job required English	0.44	0.04	0.43	0.09**	0.04	803
	{0.50}	(0.04)	{0.50}	(0.05)	(0.05)	
First job conditions index	-0.10	0.13	-0.06	0.11	0.14	803
	{1.00}	(0.09)	{0.98}	(0.09)	(0.10)	
First job satisfaction index	-0.02	-0.02	-0.10	0.21**	0.12	803
	{1.00}	(0.09)	{1.02}	(0.09)	(0.10)	
Duration they stayed in first job (Months)	7.78	-0.61	6.66	1.28**	0.95	749
	{7.29}	(0.61)	{6.81}	(0.63)	(0.68)	

Notes: Column 1 reports the control group mean for the variable listed in each row, with standard deviations reported in brackets below. Column 2 reports the intent to treat estimate of a binary treatment variable that is equal to one if the individual was assigned to any of the three training arms. Column 3 reports the mean value for those assigned to the "Soft Skills" training arm, with standard deviations in brackets. Columns 4 & 5 report the intent to treat esimtates of assignment to the "techinical" training arm or the "techincal & soft" training arm compared to the soft skills training arm respectively. Regressions in columns 2, 4 & 5 include cohort fixed effects as well as baseline variables chosen using the post-double selection method outlined in Belloni (2014). Robust standard errors reported in parentheses. Statistical Significance *0.10 **0.05 ***0.01.

Table 3: Long Term Labor Market Outcomes

	Control Mean (1)	Randomized to any of the Trainings (2)	**Soft Skills Treatment Mean** (3)	Technical Skills Difference (4)	Technical & Soft Skills Difference (5)	**N**
Panel A: Primary Outcomes						
Worked in the past month	0.71	0.01	0.70	0.02	0.05	803
	{0.45}	(0.04)	{0.46}	(0.04)	(0.04)	
Any job since randomization	0.90	0.00	0.87	0.06**	0.03	803
	{0.30}	(0.03)	{0.33}	(0.03)	(0.03)	
Jobs per year since randomization	1.04	0.09	1.07	0.04	0.17**	803
	{0.71}	(0.06)	{0.79}	(0.07)	(0.08)	
Current monthly income	2420	-111	2120	129	573**	748
	{2880}	(232)	{2140}	(227)	(285)	
Panel B: Job Details						
Current weekly working hours	34.9	-2.05	30.7	3.14	3.54	791
	{25.1}	(2.06)	{23.3}	(2.17)	(2.20)	
Current hourly wage (if working=1)	16.8	2.50	18.6	-1.15	0.82	513
	{13.8}	(1.61)	{18.5}	(1.97)	(2.44)	
Current job is high skilled	0.44	0.05	0.49	-0.01	0.02	803
	{0.50}	(0.04)	{0.50}	(0.05)	(0.05)	
Current job requires English	0.42	0.01	0.48	0.05	0.10*	792
	{0.50}	(0.04)	{0.50}	(0.05)	(0.05)	
Current job conditions index	0.01	-0.02	-0.12	0.16*	0.20*	789
	{1.02}	(0.09)	{0.96}	(0.09)	(0.10)	
Current job satisfaction index	-0.06	0.08	-0.05	0.11	0.10	789
	{0.99}	(0.09)	{1.03}	(0.10)	(0.10)	
Owns a business	0.04	0.03	0.05	0.05**	0.01	801
	{0.19}	(0.02)	{0.22}	(0.03)	(0.02)	
Actively searching for a job	0.33	0.14***	0.48	0.02	-0.04	803
	{0.47}	(0.04)	{0.50}	(0.05)	(0.05)	

Notes: Column 1 reports the control group mean for the variable listed in each row, with standard deviations reported in brackets below. Column 2 reports the intent to treat estimate of a binary treatment variable that is equal to one if the individual was assigned to any of the three training arms. Column 3 reports the mean value for those assigned to the "Soft Skills" training arm, with standard deviations in brackets. Columns 4 & 5 report the intent to treat esimtates of assignment to the "techinical" training arm or the "techincal & soft" training arm compared to the soft skills training arm respectively. Regressions in columns 2, 4 & 5 include cohort fixed effects as well as baseline variables chosen using the post-double selection method outlined in Belloni (2014). Robust standard errors reported in parentheses. Statistical Significance *0.10 **0.05 ***0.01.

Table 4: Complementarity

	Control Mean	Soft Skills	Technical Skills	Complementarity	
	(1)	(2)	(3)	(4)	**N**
Panel A: Is the outcome of the mixed group larger than the average of Soft and Technical groups? (Soft and Technical Treatments set to 0.5 for Mixed Group)					
Currently Working	0.71	-0.01	0.01	0.04	803
	{0.45}	(0.05)	(0.05)	(0.04)	
Jobs per year since randomization	1.04	0.04	0.07	0.15**	803
	{0.71}	(0.07)	(0.07)	(0.07)	
Current Income	2420	-320	-194	539**	748
	{2880}	(252)	(261)	(264)	
Current Wage	16.8	2.52	1.50	1.37	513
	{13.8}	(2.14)	(1.64)	(1.98)	
Panel B: Is the outcome of the mixed group larger than the sum of Soft and Technical groups? (Soft and Technical Treatments set to 1 for Mixed Group)					
Currently Working	0.71	-0.01	0.01	0.04	803
	{0.45}	(0.05)	(0.05)	(0.06)	
Jobs per year since randomization	1.04	0.04	0.07	0.10	803
	{0.71}	(0.07)	(0.07)	(0.10)	
Current Income	2420	-320	-194	796**	748
	{2880}	(252)	(261)	(373)	
Current Wage	16.8	2.52	1.50	-0.64	513
	{13.8}	(2.14)	(1.64)	(2.86)	

Notes: Column 1 reports the control group mean for the variable listed in each row, with standard deviations reported in brackets below. In Panel A Column 2 reports the coefficient for a treatment variable that is equal to one if the individual was assigned to soft skills arm, and is equal to 0.5 for those who are assigned to the mixed skills group. Column 3 reports the coefficient for a treatment variable that is equal to one if the individual was assigned to technical skills arm, and is equal to 0.5 for those who are assigned to the mixed skills group. Column 4 is equal to 1 for those in the mix treatment group. Panel 2 is similar but the variables reported in columns 2 & 3 are set equal to 1 if in the mixed group (instead of 0.5). In essence Panel A checks if the mixed group outcome is greater than the average of the two other treatment groups, while Panel B checks if the mixed group outcome is greater than the sum of the two other treatment groups. Regressions include cohort fixed effects as well as baseline variables chosen using the post-double selection method outlined in Belloni (2014). Robust standard errors reported in parentheses. Statistical Significance *0.10 **0.05 ***0.01.

Table 5: Additional Outcomes

	Control Mean (1)	Randomized to any of the Trainings (2)	**Soft Skills Treatment Mean** (3)	Technical Skills Difference (4)	Technical & Soft Skills Difference (5)	**N**
Planning to get married within one year	0.37	-0.10**	0.26	0.02	0.06	803
	{0.48}	(0.04)	{0.44}	(0.04)	(0.04)	
Planning to get married within three years	0.63	0.00	0.59	0.05	0.10**	803
	{0.48}	(0.04)	{0.49}	(0.04)	(0.05)	
Target number of children	2.32	0.03	2.31	0.00	0.16	744
	{0.92}	(0.08)	{0.91}	(0.09)	(0.10)	
Plans to return to school to study for another degre	0.42	0.06	0.45	0.04	0.00	803
	{0.49}	(0.04)	{0.50}	(0.05)	(0.05)	
Self-Reported Physical Health (1=excellent 5=poor)	2.28	0.05	2.31	-0.02	0.00	798
	{0.98}	(0.09)	{1.07}	(0.09)	(0.10)	
Mental Health index	0.03	-0.01	0.08	-0.14	-0.14	795
	{0.96}	(0.09)	{1.01}	(0.10)	(0.10)	
Attitudes towards work and marriage index	-0.07	0.11	-0.01	0.01	0.02	803
	{1.07}	(0.09)	{0.98}	(0.10)	(0.09)	
Attitudes towards gender roles index	0.00	0.04	0.04	-0.09	-0.04	788
	{1.07}	(0.09)	{0.93}	(0.09)	(0.10)	

Notes: Column 1 reports the control group mean for the variable listed in each row, with standard deviations reported in brackets below. Column 2 reports the intent to treat estimate of a binary treatment variable that is equal to one if the individual was assigned to any of the three training arms. Column 3 reports the mean value for those assigned to the "Soft Skills" training arm, with standard deviations in brackets. Columns 4 & 5 report the intent to treat esimtates of assignment to the "techinical" training arm or the "techincal & soft" training arm compared to the soft skills training arm respectively. Regressions in columns 2, 4 & 5 include cohort fixed effects as well as baseline variables chosen using the post-double selection method outlined in Belloni (2014). Robust standard errors reported in parentheses. Statistical Significance *0.10 **0.05 ***0.01.

5 Appendix Tables

Appendix Table 1: Skill Composition of Trainings

		Hours of Instruction		
Module Name	Skill Type	Soft Skills Treatment	Technical Skills Treatment	Mixed Skills Treatment
Business skills	Soft	45	0	31
Career directions	Soft	20	9	20
Labor law	Soft	3	0	3
Customer service	Soft	33	0	0
Retail technical	Tech	0	54	20
Business English	Tech	0	35	27
English pronunciation	Tech	10	10	10
Microsoft programs	Tech	9	12	9
Total Hours		120	120	120
% hrs technical		15.8%	92.5%	55.0%

Appendix Table 2: Attrition

	Dep. Var: Attrition				
		control vs any treatment	*control vs soft*	*control vs tech*	*control vs mix*
	(1)	(2)	(3)	(4)	(5)
Soft skills treatment	-0.02		1.41		
	(0.04)		(0.98)		
Technical skills treatment	-0.01			1.39	
	(0.04)			(1.10)	
Combined treatment	-0.04				0.30
	(0.04)				(1.07)
Any treatment		1.16			
		(0.92)			
Baseline Values interacted with treatment					
Age		-0.05	-0.06	-0.05	-0.01
		(0.04)	(0.04)	(0.05)	(0.05)
Gender		0.00	-0.08	0.05	0.04
		(0.07)	(0.09)	(0.09)	(0.09)
Years since graduation		0.05	0.07	0.04	0.03
		(0.04)	(0.04)	(0.04)	(0.05)
Marital status: single		-0.03	0.00	-0.14	-0.02
		(0.08)	(0.15)	(0.12)	(0.15)
Marital status: married		0.09	0.14	0.01	0.09
		(0.10)	(0.17)	(0.15)	(0.16)
Father education: post secondary		0.02	0.13	-0.02	-0.07
		(0.08)	(0.10)	(0.11)	(0.11)
Mother education: post secondary		-0.16**	-0.17*	-0.13	-0.17*
		(0.08)	(0.10)	(0.11)	(0.10)
Working		0.12	0.00	0.30*	0.05
		(0.09)	(0.11)	(0.16)	(0.17)
Current income (standardized)		0.03	0.03	-0.01	0.03
		(0.04)	(0.04)	(0.07)	(0.07)
Took training before		0.01	0.01	0.01	0.01
		(0.10)	(0.11)	(0.12)	(0.11)
Number of days in previous trainings (standardized)		0.00	0.00	0.01	-0.05
		(0.06)	(0.07)	(0.06)	(0.06)
p-value of joint test of all interactions	0.66	0.22	0.73	0.32	0.31
Controlling for non-interacted baseline values		Yes	Yes	Yes	Yes
Observations	985	724	332	348	314

Notes: Table reports how attrition differs based on treatment status and on baseline values of individuals in the sample. Column 1 considers how treatment status alone predicts attrition. Columns 2-5 run a regression of attrition on treatment status as well as on all baseline covariates and the interaction of treatment status and baseline covariates. The table reports the coefficients on those interactions and the p-value of the joint test of signficance for all the interactions. Robust standard errors reported in parentheses. Regressions include cohort fixed effects. Significance *<0.1, **<.05, ***<.01

Appendix Table 3: Employment Index Components

	Control Mean	Randomized to any of the Trainings	**Soft Skills Treatment Mean**	Technical Skills	Technical & Soft Skills	
	(1)	(2)	(3)	(4)	(5)	**N**
Current job conditions index	0.01	-0.02	-0.12	0.16*	0.20*	789
	{1.02}	(0.09)	{0.96}	(0.09)	(0.10)	
Includes Social Security	0.38	-0.01	0.33	0.05	0.09*	792
	{0.49}	(0.04)	{0.47}	(0.05)	(0.05)	
Includes Health Insurance	0.38	-0.03	0.31	0.07	0.08*	792
	{0.49}	(0.04)	{0.46}	(0.04)	(0.05)	
Includes Formal Contract	0.45	-0.02	0.40	0.040	0.08	792
	{0.50}	(0.04)	{0.49}	(0.05)	(0.05)	
(Negative) Length of Commute	-35.80	1.41	-34.90	3.01	-0.57	789
	{37.77}	(3.34)	{43.57}	(3.68)	(3.90)	
Current job satisfaction index	-0.06	0.08	-0.05	0.11	0.10	789
	{0.99}	(0.09)	{1.03}	(0.10)	(0.10)	
Pay	4.82	0.20	4.92	0.16	0.28	791
	{3.13}	(0.27)	{3.15}	(0.30)	(0.32)	
Employment Enviornment	5.44	0.12	5.52	0.18	-0.03	790
	{3.33}	(0.29)	{3.50}	(0.33)	(0.34)	
Job Schedule	5.22	0.32	5.31	0.44	0.25	791
	{3.37}	(0.29)	{3.52}	(0.33)	(0.35)	
Job Security	4.97	0.30	5.03	0.21	0.44	790
	{3.27}	(0.28)	{3.32}	(0.32)	(0.33)	
Commute	5.27	0.17	5.10	0.53	0.53	790
	{3.38}	(0.30)	{3.57}	(0.34)	(0.36)	

Notes: This table reports impacts on two indices and the variables that are included in each index. To make the index we standardize each variable, take the sum, and standardize again (Kling et al 2007). Column 1 reports the control group mean for the variable listed in each row, with standard deviations reported in brackets below. Column 2 reports the intent to treat estimate of a binary treatment variable that is equal to one if the individual was assigned to any of the three training arms. Column 3 reports the mean value for those assigned to the "Soft Skills" training arm, with standard deviations in brackets. Columns 4 & 5 report the intent to treat esimtates of assignment to the "techinical" training arm or the "techincal & soft" training arm compared to the soft skills training arm respectively. Regressions in columns 2, 4 & 5 include cohort fixed effects as well as baseline variables chosen using the post-double selection method outlined in Belloni (2014). Robust standard errors reported in parentheses. Statistical Significance *0.10 **0.05 ***0.01.

Appendix Table 4: Classification of Occupations

High Skill Occupations	Non-High Skill Occupations
Accountant	Administrative Assistant
Desinger	Agriculture
Engineer	Call Center/ Data Ent
Human Resources	Clerical Support
Information Technology	Laborer
Laweyer	Receptionist
Manager/Supervisor	Retail/Sales/Cashier
Professional (White Collar)	Surveyors
Public Relations	Waiter/Waitress/Cook
Teachers	
Technical support	
Technical Support	

Appendix Table 5: Baseline Balance

Training Experiment Balance Table	**Control Mean**	Soft Skills	Technical Skills	Technical & Soft Skills	
Panel A: Sample Balance	(1)	(2)	(3)	(4)	**N**
Age	24.30	-0.15	-0.01	-0.33	920
	{2.44}	(0.22)	(0.22)	(0.22)	
Female	0.73	-0.06	-0.09**	-0.01	985
	{0.44}	(0.04)	(0.04)	(0.04)	
Years since graduation	2.25	-0.33	-0.21	-0.37	793
	{2.45}	(0.24)	(0.24)	(0.24)	
Marital status: single	0.96	-0.02	0.00	0.00	793
	{0.20}	(0.02)	(0.02)	(0.02)	
Father education: post secondary	0.69	0.00	-0.04	0.04	921
	{0.46}	(0.05)	(0.05)	(0.05)	
Mother education: post secondary	0.54	0.04	-0.04	0.01	921
	{0.50}	(0.05)	(0.05)	(0.05)	
Working	0.16	0.01	0.07*	0.01	784
	{0.37}	(0.04)	(0.04)	(0.04)	
Current income	160	165	97	104	726
	{622}	(136)	(78)	(76)	
Took training before	0.34	0.00	-0.02	0.01	793
	{0.48}	(0.05)	(0.05)	(0.05)	
Number of days in previous trainings	10.4	-2.18	-1.06	-0.86	791
	{23.4}	(2.31)	(3.01)	(2.55)	
p-value for joint test		0.431	0.493	0.935	
Number of People Per Group	210	277	276	222	
Panel B: First Stage					
Participated in EFE Training	0.14	0.77***	0.79***	0.70***	
	{0.35}	(0.03)	(0.03)	(0.04)	
Participated other Training	0.45	-0.06	-0.02	-0.04	
	{0.50}	(0.05)	(0.05)	(0.05)	
Participated in any Training	0.51	0.44***	0.46***	0.39***	
	{0.50}	(0.04)	(0.04)	(0.04)	

Notes: Table reports baseline values of characteristics for individuals in the control group and the differences between the control and each treatment group. Standard deviations reported in brackets. Robust standard errors reported in parentheses. Regressions include cohort fixed effects. The pen-ultimate row in Panel A reports the p-value for a test of joint significance of all the baseline characteristics relative to the comparison group.

Appendix Table 6: Short Term Labor Market Outcomes

	Control Mean	Soft Skills	Technical Skills	Technical & Soft Skills	
	(1)	(2)	(3)	(4)	**N**
Panel A: Primary Outcomes					
First job within 3 months from randomization	0.39	0.10**	0.14***	0.14**	803
	{0.49}	(0.05)	(0.05)	(0.05)	
First job within 12 months from randomization	0.67	0.10**	0.12***	0.12**	803
	{0.47}	(0.05)	(0.05)	(0.05)	
Monthly income in first job after training	2090	-55.20	235.00	261.00	767
	{1682}	(155)	(174)	(170)	
Panel B: Job Details					
Weekly working hours in first job after training	40.7	-4.46**	0.57	-1.16	801
	{17.3}	(1.73)	(1.64)	(1.71)	
Hourly wage in first job after training	13.1	1.34	1.38	1.54	663
	{13.5}	(1.40)	(1.39)	(1.37)	
First job was high skilled	0.43	-0.01	0.01	-0.01	803
	{0.50}	(0.05)	(0.05)	(0.05)	
First job required English	0.44	0.00	0.09*	0.04	803
	{0.50}	(0.05)	(0.05)	(0.05)	
First job conditions index	-0.10	0.05	0.16	0.19*	803
	{1.00}	(0.10)	(0.10)	(0.11)	
First job satisfaction index	-0.02	-0.12	0.08	-0.01	803
	{1.00}	{0.10}	{0.10}	{0.11}	
Duration they stayed in first job (Months)	7.78	-1.30*	-0.08	-0.36	749
	{7.29}	(0.71)	(0.71)	(0.75)	

Notes: Column 1 reports the control group mean for the variable listed in each row, with standard deviations reported in brackets below. Column 2 reports the intent to treat estimate of a binary treatment variable that is equal to one if the individual was assigned to any of the three training arms. Column 3 reports the mean value for those assigned to the "Soft Skills" training arm, with standard deviations in brackets. Columns 4 & 5 report the intent to treat esimtates of assignment to the "techinical" training arm or the "techincal & soft" training arm compared to the soft skills training arm respectively. Regressions in columns 2, 4 & 5 include cohort fixed effects as well as baseline variables chosen using the post-double selection method outlined in Belloni (2014). Robust standard errors reported in parentheses. Statistical Significance *0.10 **0.05 ***0.01.

Appendix Table 7: Long Term Labor Market Outcomes

	Control Mean	Soft Skills	Technical Skills	Technical & Soft Skills	
	(1)	(2)	(3)	(4)	**N**
Panel A: Primary Outcomes					
Worked in the past month	0.71	-0.01	0.01	0.04	803
	{0.45}	(0.05)	(0.05)	(0.05)	
Any job since randomization	0.90	-0.03	0.03	0.00	803
	{0.30}	(0.03)	(0.03)	(0.03)	
Jobs per year since randomization	1.04	0.03	0.07	0.19**	803
	{0.71}	(0.07)	(0.07)	(0.08)	
Current monthly income	2420	-344	-214	240	748
	{2880}	(250)	(258)	(322)	
Panel B: Job Details					
Current weekly working hours	34.9	-4.23*	-1.16	-0.65	791
	{25.1}	(2.40)	(2.46)	(2.42)	
Current hourly wage	16.8	2.52	1.50	3.38	513
	{13.8}	(2.14)	(1.64)	(2.23)	
Current job is high skilled	0.44	0.05	0.04	0.060	803
	{0.50}	(0.05)	(0.05)	(0.05)	
Current job requires English	0.42	-0.04	0.01	0.05	792
	{0.50}	(0.05)	(0.05)	(0.05)	
Current job conditions index	0.01	-0.14	0.00	0.05	803
	{1.01}	(0.10)	(0.10)	(0.11)	
Current job satisfaction index	-0.06	0.01	0.07	0.12	803
	{0.98}	(0.10)	(0.10)	(0.10)	
Owns a business	0.04	0.01	0.06**	0.01	801
	{0.19}	(0.02)	(0.03)	(0.02)	
Actively searching for a job	0.33	0.15***	0.17***	0.11**	803
	{0.47}	(0.05)	(0.05)	(0.05)	

Notes: Column 1 reports the control group mean for the variable listed in each row, with standard deviations reported in brackets below. Column 2 reports the intent to treat estimate of a binary treatment variable that is equal to one if the individual was assigned to any of the three training arms. Column 3 reports the mean value for those assigned to the "Soft Skills" training arm, with standard deviations in brackets. Columns 4 & 5 report the intent to treat esimtates of assignment to the "techinical" training arm or the "techincal & soft" training arm compared to the soft skills training arm respectively. Regressions in columns 2, 4 & 5 include cohort fixed effects as well as baseline variables chosen using the post-double selection method outlined in Belloni (2014). Robust standard errors reported in parentheses. Statistical Significance *0.10 **0.05 ***0.01.

Appendix Table 8: Additional Outcomes

	Control Mean	Soft Skills	Technical Skills	Technical & Soft Skills	
	(1)	(2)	(3)	(4)	**N**
Planning to get married within one year	0.37	-0.13***	-0.11**	-0.07	803
	{0.48}	(0.05)	(0.05)	(0.05)	
Planning to get married within three years	0.63	-0.05	0.00	0.05	803
	{0.48}	(0.05)	(0.05)	(0.05)	
Target number of children	2.32	-0.03	-0.03	0.13	744
	{0.92}	(0.10)	(0.09)	(0.11)	
Plans to return to school to study for another degree	0.42	0.04	0.09	0.05	803
	{0.49}	(0.05)	(0.05)	(0.05)	
Self-Reported Physical Health (1=excellent 5=poor)	2.28	0.06	0.04	0.06	798
	{0.98}	(0.10)	(0.10)	(0.10)	
Mental Health index	0.03	0.08	-0.06	-0.07	803
	{0.96}	(0.10)	(0.10)	(0.10)	
Attitudes towards work and marriage index	-0.07	0.10	0.11	0.13	803
	{1.07}	(0.11)	(0.11)	(0.10)	
Attitudes towards gender roles index	0.00	0.07	0.05	-0.01	803
	{1.07}	(0.09)	(0.09)	(0.09)	

Notes: Column 1 reports the control group mean for the variable listed in each row, with standard deviations reported in brackets below. Column 2 reports the intent to treat estimate of a binary treatment variable that is equal to one if the individual was assigned to any of the three training arms. Column 3 reports the mean value for those assigned to the "Soft Skills" training arm, with standard deviations in brackets. Columns 4 & 5 report the intent to treat esimtates of assignment to the "techinical" training arm or the "techincal & soft" training arm compared to the soft skills training arm respectively. Regressions in columns 2, 4 & 5 include cohort fixed effects as well as baseline variables chosen using the post-double selection method outlined in Belloni (2014). Robust standard errors reported in parentheses. Statistical Significance *0.10 **0.05 ***0.01.

Appendix Table 9: Health and Attitude Indices

	Control Mean	Randomized to any of the Trainings	**Soft Skills Treatment Mean**	Technical Skills	Technical & Soft Skills	
	(1)	(2)	(3)	(4)	(5)	**N**
Mental Health Index	0.03	-0.01	0.08	-0.14	-0.14	795
	{0.96}	(0.09)	{1.01}	(0.10)	(0.10)	
Over the past month how often did you feel: (Never=1; Very Often=5)						
Unable to stay on top of things	2.24	-0.02	2.30	-0.15*	-0.21**	799
	{1.03}	(0.09)	{0.95}	(0.09)	(0.09)	
Depressed	2.60	-0.06	2.58	-0.19*	-0.09	796
	{1.06}	(0.10)	{1.22}	(0.11)	(0.12)	
Mostly worried	3.07	0.03	3.15	-0.060	-0.090	799
	{0.93}	(0.08)	{0.98}	(0.09)	(0.10)	
Had trouble keeping your mind on what you were doing	2.54	0.01	2.54	-0.03	-0.050	800
	{1.07}	(0.09)	{1.09}	(0.10)	(0.11)	
Attitudes towards work and marriage index	-0.07	0.11	-0.01	0.01	0.020	803
	{1.07}	(0.09)	{0.98}	(0.10)	(0.09)	
How will work affect marriage prospects?	0.32	-0.01	0.29	0.07	-0.02	621
(Reduce=-1; No Effect=0; Improve=1)	{0.54}	(0.05)	{0.53}	(0.06)	(0.06)	
Comfortable in mixed-gender workplace?	0.90	0.03	0.92	0.00	0.02	803
	{0.30}	(0.03)	{0.28}	(0.03)	(0.03)	
Think spouse will be comfortable with mixed-gender workplace?	0.81	0.04	0.84	-0.03	-0.01	803
	{0.39}	(0.03)	{0.37}	(0.03)	(0.04)	
Attitudes towards gender roles index	0.00	0.04	0.04	-0.09	-0.04	788
	{1.07}	(0.09)	{0.93}	(0.09)	(0.10)	
Consider the following statements: (Strongly Disagree=1; Strongly Agree=5)						
A thirty year old woman who has a good job but is not yet married should not be pitied	4.37	0.01	4.37	-0.06	-0.01	793
	{0.90}	(0.08)	{0.82}	(0.08)	(0.09)	
Women should occupy leadership positions in society	4.04	-0.01	4.04	-0.10	0.03	799
	{1.04}	(0.09)	{1.00}	(0.10)	(0.10)	
Women should be allowed to work outside of home	4.25	0.01	4.26	0.01	-0.07	798
	{0.87}	(0.08)	{0.78}	(0.07)	(0.08)	
Educating boys is not more important than educating girls	4.64	0.01	4.67	-0.08	-0.06	798
	{0.75}	(0.06)	{0.61}	(0.06)	(0.07)	
Boys should do as much domestic work as girls	3.59	0.03	3.63	-0.02	0.03	798
	{1.05}	(0.09)	{1.03}	(0.10)	(0.11)	

Notes: This table reports impacts on three indices and the variables that are included in each index. To make the index we standardize each variable, take the sum, and standardize again (Kling et al 2007). For the index about "attitudes towards work and marriage" we code missing responses to "how will work affect marriage prospects" as zero. Column 1 reports the control group mean for the variable listed in each row, with standard deviations reported in brackets below. Column 2 reports the intent to treat estimate of a binary treatment variable that is equal to one if the individual was assigned to any of the three training arms. Column 3 reports the mean value for those assigned to the "Soft Skills" training arm, with standard deviations in brackets. Columns 4 & 5 report the intent to treat esimtates of assignment to the "techinical" training arm or the "techincal & soft" training arm compared to the soft skills training arm respectively. Regressions in columns 2, 4 & 5 include cohort fixed effects as well as baseline variables chosen using the post-double selection method outlined in Belloni (2014). Robust standard errors reported in parentheses. Statistical Significance *0.10 **0.05 ***0.01.