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Constraints to female entrepreneurship in Pakistan

The role of goals and aspirations

Giovanna d'Adda
Mahreen Mahmud
Farah Said
Diego Ubfal

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Giovanna d'Adda[†], Mahreen Mahmud[‡], Farah Said[§] & Diego Ubfal[¶]

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1 Introduction

There is a growing literature that documents drivers of enterprise expansion in developing countries (de Mel et al., 2009, 2014; Fafchamps et al., 2014). Microfinance has been found to have a limited effect on fostering new businesses or growth in existing ones (Banerjee et al., 2015), particularly of those owned by women. Recent studies instead show that there is scope for innovative light-touch training, focusing on constraints faced by women and peer support (DuBois et al., 2011; Macours and Vakis, 2014), to be effective in encouraging female enterprise growth.

Psychological and social factors that limit female autonomous decision making and control over resources have been cited as important obstacles to the impact of microfinance and business training programs (Jakiela and Ozier, 2015; Field et al., 2010, 2016; de Mel et al., 2014). Psychological factors include self-control problems, feeling incapable of resisting demands from peers and family members, and low

*See http://www.socialscienceregistry.org/trials/2980 for the trial registration. The study received IRB approval from the Lahore School of Economics RERC on 22 Januray 2018 (RERC-052017-01) and University of Oxford on 8 February 2018 (SSD/CUREC1A/BSG_C1A-18-007).

[†]University of Milan
[‡]University of Oxford
[§]Lahore School of Economics
[¶]Bocconi University

perceived self-efficacy. Social factors may include intra-household constraints on women's ability to work outside the home or interact with non-household members and lack of bargaining power. Indeed, though the social psychology literature documents the effectiveness of interventions aiming to change individual motivation and mind-set, their effectiveness has not been tested in the context of microfinance interventions.

We test for the influence of psychological and social factors on female entrepreneurship directly through an intervention in Punjab, Pakistan, targeting women's aspirations and their ability to set and achieve goals. All women in our sample have received an enterprise loan from our collaborating partner, the National Rural Support Programme and currently have an enterprise. We expose female borrowers to an intervention specifically targeted at overcoming barriers to agency, by raising their aspirations and by helping them overcome obstacles to the implementation of their business goals through planning. We anticipate that this exploratory study will feed into a large scale Randomised Control Trial with the National Rural Support Program Pakistan (NRSP) to determine whether these psychological elements, combined with microcredit loans, can lead to enterprise creation and improve business outcomes.

A second treatment dimension varies the presence of spouses during the training. The focus on the role of intra-household dynamics on female business preformance is motivated by experimental evidence revealing that men and women hide money from each other, even to the detriment of overall household welfare (Mani, 2011; Fiala, 2017; Kebede et al., 2014). Women may refrain from investing money in a business if it makes resources visible and hence susceptible to capture by other household members. To our knowledge, there is no study that explores the impact on female entrepreneurship of an intervention altering perceived intra-household norms.

At the time of writing this report, we have conducted baseline interviews with nearly 1,800 female entrepreneurs. Our main intervention was implemented right after the baseline survey, and repeated six to twelve months later. We conducted a phone follow-up survey three to six months after the baseline with a small sub-sample and a face-to-face followup survey when we repeated the intervention.[1] We intend to conduct a detailed second face-to-face follow-up survey one year after the baseline survey.[2] This report summarizes the main findings from the first face-to-face follow-up survey and presents key insights from the baseline survey. Our analysis was specified in a Pre-Analysis Plan registered at the AEA registry.[3]

[1] Data from the face to face follow-up interviews with approximately 100 women in our sample is still undergoing quality back-checks. This data will be included in the full analysis at a later stage.

[2] This long-term followup will be conducted using top-up funds provided by the Lahore School of Economics.

[3] Available at http://www.socialscienceregistry.org/trials/2980.

Initial findings indicate that the treatment video has some immediate effects on those who are assigned to the difficult task in the first round of an incentivised effort task done right after the intervention. If they fail in the first round, the treated group are more likely to to attempt the difficult task again in the subsequent rounds. However, we are worried about response to a phone follow up survey three-six months later that shows that the complete video was not watched by nearly half the sample. Hence we repeat the entire intervention and find much higher rates of attention. We conducted a post intervention quiz to both ensure attention and to test for it. We find no effects of the first intervention administered right after the baseline on a wide range of actual business outcomes and aspirations and expectations about it. These are measured at the six-twelve month follow up before the intervention was administered a second time.
The remainder of the report is organized as follows: Section 2 provides the study background, Section 3 describes the experimental design. Section 4 discusses the estimation strategy and Section 5 describes the data. Sections 6 and 7 discuss the results and Section 8 concludes.

2 Context

Pakistan is an appropriate setting for the project, given the low social acceptability of female economic activities conducted outside the household (Roomi, 2013; Gine and Mansuri, 2014). We implement a Randomised Control Trial in collaboration with the National Rural Support Programme (NRSP) in the district of Gujranwala in Punjab. Gujranwala, one of Punjab's industrial hubs, is an area where demand for NRSP microenterprise loan is high and, in general, is one of the districts with the largest microfinance outreach.[4]

NRSP offers 12-month enterprise loans for working capital and investment needs of existing businesses. Loan amounts typically range between PKR 30,000 - 50,000 ($200 - 330) and the median loan amount is PKR 40,000 ($260). Loans are disbursed to women. However, even if the applicant has to be a woman, each loan requires a male guarantor from the family. Approval is based on predicted repayment capability. NRSP has no requirement for the funds being used primarily by the female applicant and usage of loans for a purpose different from the one stated in the application is rarely penalized - the main metric for explicit or implicit penalization (in the form of not approving follow-up financing) is delayed repayment of the loan.

Indeed, while loan repayment rates are high, utilization of the loan for a female-led business is very low. Between February and October 2018, we conducted an independent listing exercise of all individual-

[4] See Microwatch Issue 45 (September 2017), available at http://www.microfinanceconnect.info/publications/category/MicroWatch.

liability microenterprise loans issued each week in our target area - 24 NRSP branches in Gujranwala district. The listing was in the form of a phone survey to identify women with existing businesses and to check whether or not they were investing the loan in their own business. From the nearly 4,300 applicants we interviewed on the phone, only 51% of women said they will be making use of the loan for their own personal or business needs; while the others reported the loan would be used by a male relative (usually husband or son).

We used the phone survey to select the sample for our study. We screened out from the list of borrowers provided by NRSP women who did not own a business or did not have a major role in any family business. That is, we excluded all borrowers who had taken out a new microenterprise loan from NRSP, but were not involved in a business, were unaware of business decisions and inputs, and did not spend any of their time on the business. 2,931 (68%) of the respondents in the listing reported that they had a business. Respondent ownership or involvement in a business was then confirmed in home visits. Home visits found that only two-thirds of those who reported a business on the phone actually had a business that they were involved with. Our study sample at baseline consists of the 1,850 women, whose involvement in a business (either their own or joint with someone else) we could confirm.

3 Experimental design

3.1 Intervention

All women in our sample had access to finance, and had very recently received an enterprise loan from the partner microfinance institution. Our experiment is designed to test the influence of psychological and social factors on loan usage and business outcomes. The main intervention consists of showing to NRSP female clients documentaries of real local women using their loans for their own business, who act as role models (Bernard and Tafesse, 2014; Field et al., 2010). We use stories of women who our intended sample could easily identify with, i.e. women from the same area and background. We identified the local business women in collaboration with NRSP - these were current or past NRSP borrowers who had been successfully running a business for some years.

In order to prepare the videos, we conducted interviews with seven women.[5] We asked them to highlight how they set up the business, the obstacles they faced, how they overcame these obstacles and how they

[5] The women were involved in a variety of businesses, mostly home activities. These include: stitching and embroidery business, a clothing boutique, intricate silver work for woman's clothes, micro-scale manufacturing of rubber washers used in machines, rope and bed making and a small utility/grocery store.

dealt with family members, suppliers, clients and members of the society. Out of these seven women, five gave their consent to being filmed for a documentary. We then piloted these 5 videos with a sample of 100 current NRSP borrowers, asking them if they could relate to the main character, about the stories that inspired them the most and the type of videos they would like to see. As a result of this process, the final 10-minute video portrays the stories of the two female entrepreneurs that most people could relate to and found inspiring.[6]

We also conduct a short exercise on goal setting, planning and implementation intentions techniques with the treatment sample after they have watched the video (Duckworth et al., 2013). We ask female applicants to formulate short- and long-run goals for their business. We encourage treated respondents to think about structured SMART goals - Specific, Measurable, Ambitious, Realistic and Time-bound.[7] Drawing from the psychology literature on implementation planning (Gollwitzer and Sheeran, 2006), we ask respondents to think about likely obstacles that they can encounter in their business and to formulate plans to overcome these obstacles. We ask treated women to circle relevant dates on a calendar, delivered by the enumerator, which can be displayed at home or her place of work. The process was designed to allow respondents to remember goals and possible obstacles and the strategies they devised for overcoming them.

3.2 Randomisation

We implement a 2 2 design. We randomized half of the sample into the treatment, which consisted of the role model video and the goal setting and implementation planning exercise. The control group was shown a placebo video, which was part of a travelogue in Northern areas of Pakistan.[8] Women assigned to the control group were not exposed to the goal setting or implementation planning exercises. Furthermore, to test the effect of intra-household dynamics on female business, we cross-randomize the main intervention to whether or not the spouse is asked to be present during the intervention. In case the respondent is unmarried or does not live with her husband, the enumerator administers the intervention in the presence of the male decision maker within the household identified by the research team in the phone listing exercise.

[6] Both women are from Gujranwala district. They were NRSP borrowers and operated a growing business. One of them is divorced, and operate a thread and silver embroidery business from home. She has several employees. The other is a manufacturer of rubber washers for mechanical devices and construction. She set up the business at home and operated it with the help of her family. Both women talk about the initial obstacles they faced; the role their family has played; and the importance of hard work and persistence.

[7] See Campos et al. (2017) and Ubfal et al. (2019) for evaluations of soft-skills training for entrepreneurs that included elicitation of SMART goals.

[8] Figures A2 and A3 provide screen shots of the treatment and placebo videos. Full copies the videos are available upon request

Randomization to our main treatment was conducted in the field using SurveyCTO at the end of the baseline survey, while randomization to the "spouse" treatment arm was conducted in Stata before the baseline survey. The resulting sample size assigned to each treatment is presented in Table 1:

Table 1: Treatment design

	Intervention with spouse/male decision maker	
Type of video	*No*	*Yes*
Treatment	457	456
Placebo	488	449

Note: Cells provides the number of respondents in each treatment arm at baseline.

3.3 Implementation

The intervention was administered twice: once at the end of baseline interviews (February 2018 - February 2019); and once during a short follow-up survey between March 2019 - June 2019, conducted at NRSP branches. We repeated the intervention for two reasons. First, we received feedback from enumerators at the time of the baseline about respondents sometimes being inattentive to the intervention. We believe this may have been due to the fact that the intervention was conducted after an hour-long baseline survey; at which point, respondents' attention was diverted to other activities around them. Second, while immediate quality control back-checks revealed that both the video and goal setting/implementation planing interventions had been administered, a phone survey conducted three-six months after the video was administered with 230 respondents revealed that only 56% could accurately recall the videos and another 14% said they had not seen a video at all.

The repeat intervention was preceded by a 10-minute survey to collect information on business inputs and outcomes that might have been affected by the intervention conducted after baseline. Then, both treatment and placebo videos were shown to the respective groups and, for the treated group, we conducted the goal setting exercise again. Importantly, in order to encourage respondents to pay attention to the video, they were told that we would conduct a quiz after the video with questions related to its contents. Respondents were rewarded with a sum of PKR 100 for each correctly answered question.

The repeat intervention was conducted in either in the presence or not of the spouse, following the groups randomly assigned at baseline. In order to facilitate spouses' participation at the baseline survey and intervention, enumerators set up appointments with the respondent for a time when both the respondent

and the husband/male decision maker would be available for the meeting. However, take-up of the spouse treatment was not perfect. Men participated in 65% of the 456 interviews assigned to be conducted with the husband. In the placebo group, where 449 interviews were to be conducted with the spouse, 63% were actually present. In the face-to-face followup when we conducted the repeat intervention, the rates of male participation were 57% and 58% for the treated and placebo group, respectively. Therefore, the analysis presented in section 6 is the *intent-to-treat* effects of the spouse intervention on business outcomes.

4 Estimation strategy

4.1 Balance

To test for treatment balance on the set of pre-specified baseline characteristics, we regress each covariate on the main treatment indicator (taking a value of one if assigned to the video and goal setting/implementation planning exercise). We pre-specified that the spouse intervention would be part of our secondary analysis. In this case, we check balance in baseline covariates by running a regression of covariates on an indicator for the main treatment, an indicator for the spouse treatment (taking a value of one if assigned to the intervention in the presence of the spouse) and their interaction.

4.2 Primary Analysis

Our primary regression model calculates the Intent to Treat (ITT) effect of the intervention:

(1)

where is the outcome value for respondent i, indicates whether participant was assigned to the main intervention (video, goal setting and implementation planning). is the baseline value of the dependent variable. is a vector of control variables containing unbalanced baseline covariates.[9]

4.3 Secondary Analysis

Our secondary analysis studies whether the intent-to-treat effects differ by whether the main treatment was administered with the female respondent alone or in the presence of her spouse.

(2)

[9] If is missing we replace its value by 0 and include a dummy variable for missing observations.

where is the outcome value for respondent i, and are treatment group indicators: Treatment was defined above and Spouse corresponds to being assigned to receiving the main treatment in the presence of the spouse. is the baseline value of the dependent variable. is a vector of control variables containing any unbalanced baseline covariates.

4.4 Attrition in the short-term followup survey

We test if attrition differs by treatment status and baseline characteristics. We regress an indicator for attrition to our follow-up surveys on predetermined characteristics and their interaction with the main treatment indicator.

5 Data and variables

We use two types of data to analyse the effects of the treatment. First, we have survey data on business outcomes and individual beliefs about the business from two rounds of face-to-face interviews with the respondent. The second, is a novel incentivised task conducted right after the intervention at baseline to measure immediate effects of the intervention on measures of respondents' effort and persistence. We describe both sources of data next.

5.1 Survey data

The baseline survey was conducted over a period of one year, from February 2018 to February 2019, with the sample of 1,850 women with existing businesses that were identified through the listing exercise and home visits described above. The baseline interviews collected information on demographics, household members, individual preferences (time, risk) and personality traits (grit, persistence). We asked about sales, expenses and profits of the business, the number of employees, opening hours, innovation and other questions designed to understand the involvement of the respondent in the business, the nature of the activity and aspirations for growth of the business. We discuss these variables in section 5.3 below.

We conducted a phone follow-up survey between August 2018 and January 2019. The goal of this survey was (i) to update business and contact information and (ii) to collect information on intervention recall. The phone survey was conducted with a sub-sample and the response rate was low - of the 656 clients we attempted to contact, only 37% were willing to provide answers on the phone. At that point, we asked if the respondent remembered watching the video and about the characters portraing in the video. We

also asked about business outcomes (expenses, sales and profits in the previous month; opening hours; investment in the business); household expenses and saving; and, of treated respondents, whether they had achieved the goals they had set.

Faced with the low rates of response to the phone survey and recall of the baseline intervention, we decided to interview respondents again and to repeat the intervention. We have been conducting short face-to-face surveys since March 2019. This survey is much shorter than the baseline survey. We asked questions about the business status; business profits in the previous month; innovation; opening hours; investment; and aspirations and expectations about business growth. We then repeated the intervention at the end of this short follow-up survey.

At the time of the writing of this report, we have completed field work in 20 branches, which include 1,713 participants of the 1,850 women in our sample.[10] We have successfully conducted surveys and the repeat intervention with 1,415 of them (83% of the sample interviewed at baseline). Of the 298 women we could not survey, 25 (8%) refused to participate; 91 (31%) were not at home or in the city in either of the two attempts made to establish contact, and 142 (48%) were no longer at the address in our record and could not be contacted on the phone number(s) provided. In section 5.5, we test if this attrition varies by treatment status.

5.2 Post-intervention baseline effort task

In the baseline survey, we included an incentivized task to measure respondents' propensity to choose difficult tasks with potentially higher returns than easier tasks; and their tendency to persist after failure.[11] By comparing treated and control subjects, we test whether our intervention is successful in improving these measures of effort and perseverance. The design of the task was finalised after extensive piloting with 100 participants in our sample. The rules of the game are as follows:

Rules: The enumerator starts by explaining the task that consists of picking colored chickpeas out of a bowl of white chickpeas in fifteen seconds. There are two bowls containing white chickpeas: the red bowl is associated with the difficult task and the yellow bowl with the easy task. The red bowl is full of white chickpeas and contains 10 colored chickpeas: 5 are red and 5 are black. The difficult task consists in picking all the black chickpeas before picking the red ones. If participants follow all rules and complete

[10] Data for the remaining 136 participants have not been received yet and are not included in the analysis presented in this report.

[11] Similar tasks were used to measure grit among children Alan et al. (2019) and perseverance among entrepreneurs Ubfal et al. (2019).

this task in the allowed time, they receive PKR 500 ($3). The yellow bowl is full of white chickpeas and contains only 5 black chickpeas. The easy task consists in picking all the black chickpeas. For completing this task subjects receive PKR 250 ($1.5).

There are four rounds. Respondents are asked to select a bowl to attempt in each round.

Round 1 Respondents are randomly assigned to one of the two following tasks:

- **Task 1A**: Respondents have to perform the difficult task (i.e. they cannot choose which of the two bowls to attempt.)
- **Task 1B**: Respondents have to choose between the easy and the difficult task, i.e. between the red and the yellow bowls. They have 15 seconds to complete the task.

Rounds 2 - 4 Respondents choose between the easy and difficult task. They have 15 seconds to complete the task in each round.

Variables constructed from this task are defined in section 5.3. They capture whether respondents select the easy or the difficult task and whether they persist even in the face of failure.

5.3 Outcome Variables

We investigate ITT effects on the following primary outcomes and mechanisms that can drive these effects:

Primary business outcomes (survey data)

- Has a business: Indicator for whether respondent currently owns or manages a business.
- Business Profits: Total monthly profit (PKR) winsorized at top and bottom 1% and coded to 0 for individuals who no longer have a business.
- Large investment: Indicator variable if a large capital investment was made in the business in the last 3 months.

Mechanisms (survey data)

Mechanisms are defined in the following way:

- Inputs index: Anderson index using the following variables.

  - Number of people who work in the business, excluding the entrepreneur, but including unpaid workers, managers and owners who work in the business.
  - Number of hours business operates per week

- Recent new product: Dummy variable for whether at least one new product was introduced in the last 6 months.
- Aspirations: Dummy variable for whether respondent wants her business to grow.
- Expectations: Categorical variable indicating how respondent sees her business in 5 years (Bigger than now, same as now, smaller than now, closed).
- Business hours Number of hours business operates per week

Perseverance (effort task)

- Persistence: We will consider the following two measures for persistence
  - Persistence (1): Dummy variable for whether participant has chosen the difficult task for all rounds where they could choose (rounds 2 to 4)
  - Persistence (2): Integer variable taking a value from 0 to 3, indicating the number of times participant has chosen the difficult task (rounds 2 to 4)
- Perseverance: We will consider the two following measures for perseverance.
  - Perseverance (1): Dummy variable for whether a participant, who failed in the difficult task, chose the difficult task again in the following round.
  - Perseverance (2): Dummy variable for whether participants, who were assigned to task 1A (difficult task) and failed, chose the difficult task in the following round.

5.4 Summary statistics and balance

The average respondent is 38 years old and married, with 2 or more children over the age of 5. Literacy levels are generally low, but one-third of the sample has had vocational training in the past. Respondents report, on average, PKR 27,836 ($174) in monthly business sales, PKR 18,828 ($120) in monthly business profits and PKR 32,526 ($200) in monthly household income. Table 2 shows that randomization generated a balanced sample in terms of the pre-specified characteristics.

Table 2: **Baseline characteristics and balance**

	N	Mean	Treatment	Spouse	Treatment* Spouse
	(1)	(2)	(3)	(4)	(5)
Respondent's age (years)	1832	38.3	0.16	0.24	-0.37
Household size	1850	5.6	0.15	0.18	-0.12
Respondent is currently married	1850	0.9	-0.03	0.00	0.02
Number of children (<5 years old)	1850	0.5	-0.02	-0.01	0.06
Number of children (>5 years old)	1850	2.7	0.14	0.16	-0.08
Years lived in the neighborhood	1850	19.5	1.05	1.81	-2.79
Respondent's years of education	1832	2.6	-0.00	-0.07	0.15
Respondent has ever received a vocational training	1850	0.3	-0.01	-0.04	0.02
Number of businesses respondent has	1850	1.0	0.00	0.00	-0.00
Monthly business sales	1850	27836.1	-690.08	5112.69	-2591.22
Total monthly expenditures	1850	20086.3	-8.00	-912.16	3623.44
Monthly business profits	1850	18828.1	-1243.35	1603.25	462.76
Number of paid employees	1850	11.0	0.02	44.67	-44.70
Number of unpaid employees	1850	0.0	-0.00	0.02	0.00
Household home is owned by a household member	1850	0.8	0.01	0.03	-0.07
Monthly household expenditure	1850	31703.7	1905.41	1737.24	-1549.23
Monthly Household income	1850	31486.4	-491.20	-149.73	-645.91
Household decision making Index	1850	-0.0	0.04	0.14	-0.10
Attitudes towards empowerment Index	1836	-0.0	-0.05	0.05	0.07

The table shows descriptive summary statistics of the sample and results of the balance tests. Columns (3), (4) and (5) report the coefficient on Treatment, Spouse and the interaction Treatment*Spouse in a regression of the baseline characteristic in the row on treatment variables.

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5.5 Attrition at short-run follow-up

Given the 83% response rate to the face-to-face follow-up survey, we test if the attrition is significantly related to treatment status. Appendix Table A1 shows the results. Attrition is not related to treatment. While attrition is lower among married women, women with older children, individuals with lower household expenditure and higher business sales, baseline characteristics are jointly insignificant in predicting attrition. Note, the coefficients on household expenditure and business sales are particularly small and over all, the F-stat on the joint significance of baseline characteristic is statistically insignificant.

5.6 Intervention checks

Baseline (post intervention) and phone checks

Appendix Table A2 panel (a) summarizes the results from the attention checks we conducted at baseline with a sub-sample of 248 treatment and 261 placebo group respondents. About 15% of the treated and 12% of the placebo group did not watch the video at all. Only about half in each group watched the complete video (with half of these reported to be distracted).

We believe that respondent attention might have been affected by the length of the baseline survey. It is possible that when they watched the videos at the end of the survey, they were already too tired to focus on their content. Indeed, only about one third of the 248 individuals that were asked about the treatment video said they liked or felt inspired by it.[12]

We also conducted phone checks with a sub-sample of 230 respondents who had taken part in the baseline intervention, when we asked simple questions to check if they remembered the contents of the video. For instance, both treatment and placebo videos were centered around at least one character - for the treatment videos, this was the role model, while for the placebo video, this was the guide who was providing relevant information on the travel destination. We asked respondents if they remembered having seen any characters in the video; only 55% remembered seeing a video with characters. Overall, we conclude that attention paid to the intervention video at baseline and the subsequent recall of the video was quite low.

In Appendix Table A4 and A5, we present some basic statistics from the goal setting exercise, the second part of the intervention. Respondents report giving high importance to business goals and being highly committed to achieving those goals, both at baseline and the repeat intervention. Furthermore, there are no meaningful differences in these averages in the sample of women alone or by the sample of women that was accompanied by their spouse/male household member. However, we see a substantial improvement in the repeat intervention on the willingness to revise their goals to make them SMART goals. Revisions are around 60% at baseline, while they are over 90% after the repeat intervention. This indicates a more active participation at the repeat intervention, in line with respondents being less tired and more attentive than after the baseline survey.

[12] It is important to note that we had piloted the same videos with a sample of similar 100 female entrepreneurs and they had provided very positive feedback about the videos. This leads us to believe that the tiredness factor was important for the low opinion of the video among our final sample.

In person follow-up (post intervention)

Appendix Table A2 panel (b) provides a summary of the post-intervention questions on respondent attention in the in-person follow-up survey. Compared to the baseline intervention that took place after an hour-long survey, respondents (women and if applicable their spouses) appear to have paid far greater attention to the repeat intervention. Only about 1% of the respondents did not watch the video at all with more than 90% of the respondents having watched the full video, even if one-third (nearly half) of these in the treated (placebo) group were reported to be distracted.

We believe that the incentivized video quiz encouraged viewers to pay greater attention to the video (table A3 in appendix). On average, both treatment and control participants were able to answer 4 out of 5 questions correctly about the video they watched. On a scale from 1 to 7, median responses to being affected by the video and wanting to find out more about the video, were 6 and 5 respectively. This indicates that the interest in the videos was high.

6 Preliminary results of short-run follow-up survey

We see in our immediate and short term intervention checks that, whether due to distractions at home or to the long length of the survey that preceded the intervention, respondents have difficulty remembering the intervention content (both treatment and placebo). As a result, we do not anticipate the treatment administered at baseline to have led to significant changes on business outcomes. Indeed, we find that the treatment does not have a significant effect on any business outcome measured at the follow-up (Table 3), and on any of the measures that could act as drivers of change. In Table 4, we see that the treatment did not effect any of the potential mechanisms (inputs, aspirations, business hours).

Next, we decompose the treatment effect by whether the treatment or placebo intervention was delivered with the woman alone or in the presence of her spouse/male decision maker. Results are shown in Tables 5 and 6. Treatment effect for profits are negative for treated women, whether treated with spouse or alone, though these effects are small and no longer statistically significant. The baseline treatment did not have an effect on any other outcomes measures or expected mechanisms of change in the follow-up survey. Treatment effects from the booster intervention implemented at the time of this follow-up remain to be seen. Results from the second follow-up will be available in 2020.

Table 3: Intent to treat effects from baseline intervention: Primary outcomes

	(1) Has a business	(2) Profits	(3) Large investment
Treatment	0.010	-803.130	-0.012
	(0.008)	(558.271)	(0.021)
Mean	0.987	16393.523	0.414
Observations	1415	1389	1389
R	0.001	0.046	0.002

Note: 'Treatment' is a binary variable equal to 1 if the respondent is assigned to view the treatment documentary and take part in a goal setting exercise. 'Mean' is the simple average value of the outcome for the control sample. Standard errors in parentheses.

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Table 4: Intent to treat effects from baseline intervention: Mechanisms

	(1) Inputs Index	(2) Recent new product	(3) Aspirations	(4) Expectations	(5) Business hours
Treatment	107.870	-0.006	0.000	0.002	0.138
	(108.292)	(0.026)	(0.021)	(0.019)	(0.129)
Mean	0.239	0.924	0.794	0.824	7.712
N	1415	1389	1387	1415	1389
R	0.001	0.001	0.000	0.004	0.031

Note: 'Treatment' is a binary variable equal to 1 if the respondent is assigned to view the treatment documentary and take part in a goal setting exercise. 'Mean' is the simple average value of the outcome for the control sample. Standard errors in parentheses.

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Table 5: Intent to treat effects from baseline intervention by treatment types: Primary outcomes

	(1) Has a business	(2) Profits	(3) Recent large invest.
Treatment	0.002	-664.750	-0.021
	(0.011)	(793.857)	(0.030)
Spouse Present	-0.000	-664.038	-0.010
	(0.011)	(792.578)	(0.030)
Treatment*Spouse	0.015	-248.062	0.018
	(0.015)	(1115.410)	(0.043)
Mean	0.987	16393.523	0.414
Observations	1415	1389	1389
R	0.003	0.048	0.003

Note: 'Treatment' is a binary variable equal to 1 if the respondent is assigned to view the treatment documentary and take part in a goal setting exercise. 'Treatment*Spouse' is a binary variable for if the intervention was provided in the presence of the spouse or male decision maker. 'Mean' is the simple average value of the outcome for the control sample. Standard errors in parentheses

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Table 6: Intent to treat effects from baseline intervention by treatment types: Mechanisms

	(1) Inputs Index	(2) Recent new product	(3) Aspirations	(4) Expectations	(5) Business hours
Treatment	220.476	-0.030	0.016	-0.009	0.168
	(153.774)	(0.037)	(0.029)	(0.027)	(0.184)
Spouse Present	0.472	-0.032	0.015	-0.021	-0.082
	(153.459)	(0.037)	(0.029)	(0.027)	(0.184)
Treatment*Spouse	-220.861	0.049	-0.031	0.023	-0.055
	(216.666)	(0.052)	(0.041)	(0.039)	(0.259)
Mean	0.239	0.924	0.794	0.824	7.712
N	1415	1389	1387	1415	1389
R	0.002	0.002	0.000	0.004	0.031

Note: 'Treatment' is a binary variable equal to 1 if the respondent was assigned to view the treatment documentary and take part in a goal setting exercise. 'Treatment*Spouse' is a binary variable for if the intervention was assigned to be provided in the presence of the spouse or male decision maker. 'Mean' is the simple average value of the outcome for the control sample. Standard errors in parentheses

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7 Results from the post-intervention effort task at baseline

We find that the treatment intervention improves measures of perseverance from the incentivised effort task conducted immediately after the intervention at baseline, while effects on measures of persistence are small and insignificant. Treated respondents who were randomly assigned to the difficult task in the first round are more likely to persevere and attempt the difficult task in the subsequent round even after having failed in the first round (Table 7, column (4)).[13] We do not find any differential effect on when the respondents participated in the activity in the presense of their spouse or male partner (Table 8, column (4)).

These results are encouraging and suggest the intervention succeeds in improving persistence among respondents as intended, at least in the short run. Whether these effects persist over the long run, is still to be seen from the final follow-up survey that will be conducted later this year.

Table 7: Post-intervention intent to treat effects on persistence and perseverance

	(1) Persistence (1)	(2) Persistence (2)	(3) Perseverance (1)	(4) Perseverance (2)
Treatment	-0.00305	0.0487	-0.0170	0.118
	(0.0226)	(0.0547)	(0.0357)	(0.0463)
Mean	0.277	1.619	0.438	0.605
Observations	1570	1570	771	411
	0.000	0.001	0.000	0.016

Note: 'Treatment' is a binary variable equal to 1 if the respondent viewed the treatment documentary and took part in the goal setting exercise. 'Persistence (1)' is a binary equal to 1 if the respondent selects the difficult task in rounds where they can choose, 0 otherwise; and 'Persistence (2)' is count variable from 0 to 3, indicating the number of times the respondent selects the difficult task. 'Perseverance (1)' is a binary variable which is equal to 1 if the respondent selected the difficult task despite failing to complete the difficult task in an earlier round, 0 otherwise; and 'Perseverance (2)' is a binary variable equal to 1 if the respondents assigned to the difficult task in the first round, failed and chose to do the difficult task in the next task, 0 otherwise. Standard errors in parentheses

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[13] Note that both the assignment to the difficult task and the numbers who fail are balanced across the treatment and control groups. 385 treated and 386 controls were assigned to the difficult task of which 206 and 205 fail respectively.

Table 8: Post-intervention intent to treat effects on persistence and perseverance

	(1) Persistence (1)	(2) Persistence (2)	(3) Perseverance (1)	(4) Perseverance (2)
Treatment	0.00283	0.101	-0.0306	0.150
	(0.0318)	(0.0770)	(0.0506)	(0.0663)
Spouse Present	-0.0316	-0.00873	-0.0246	0.0483
	(0.0313)	(0.0759)	(0.0505)	(0.0659)
Treatment*Spouse	-0.00977	-0.102	0.0268	-0.0601
	(0.0452)	(0.109)	(0.0715)	(0.0930)
Mean	0.277	1.619	0.438	0.605
Observations	1570	1570	771	411
	0.002	0.002	0.001	0.017

Note: 'Treatment' is a binary variable equal to 1 if the respondent is assigned to view the treatment documentary and take part in a goal setting exercise. 'Treatment*Spouse' is a binary variable equal to 1 if the intervention was assigned to be provided in the presence of the spouse or male decision maker, 0 otherwise. 'Persistence (1)' is a binary equal to 1 if the respondent selects the difficult task in rounds where they can choose, 0 otherwise; and 'Persistence (2)' is count variable from 0 to 3, indicating the number of times the respondent selects the difficult task. 'Perseverance (1)' is a binary variable which is equal to 1 if the respondent selected the difficult task despite failing to complete the difficult task in an earlier round, 0 otherwise; and 'Perseverance (2)' is a binary variable equal to 1 if the respondents assigned to the difficult task in the first round, failed and chose to do the difficult task in the next task, 0 otherwise. Standard errors in parentheses

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8 Conclusion

In this study, we investigate the potential of behavioural interventions in spurring female run enterprises. Our sample consists of female micro-entrepreneurs in Gujranwala, Pakistan, who are current microfinance borrowers. We administer a psychological intervention to randomly selected women in this sample and test if the intervention, when given to female micro-entrepreneurs with access to finance, has an effect on their behaviour and business outcomes.

The intervention varies two key dimensions: One, whether the respondents are shown a documentary of role models - women from the same area who talk about their business, the obstacles they faced and how their business grew, followed by a brief goal setting discussion; or a placebo video on an unrelated topic. Second, we vary the presence of spouses in this training in order to measure the effect of intra-household dynamics on business outcomes.

Initial findings from an incentivised effort task, measured after the intervention was administered, show that the intervention had some immediate effect on individual behavior. Women who watched the role model video and were assigned to a difficult task in the activity, were more likely to attempt the difficult task again if they fail.

However, post-intervention checks revealed that respondents were often distracted when watching the videos. Phone checks administered 6 months after the initial intervention indicated that recall of the video was low. As a result, we administered a repeat intervention and find substantial improvement in attention. We find no change in business outcomes due to the treatment in the 6-12 months between the initial intervention and the follow-up exercise, possibly explained by the lack of attention to the video the first time it was shown. We intend to conduct another follow-up survey to test treatment effects 4-6 months after the repeat intervention, the results of which will be available soon.

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Appendix: Tables

Table A1: Attrition in the follow-up survey

Dependent variable: Respondent attrited in the follow-up survey			
	(1)	(2)	(3)
Treatment	-0.024		-0.076
	(0.018)		(0.145)
Respondent age (year)		-0.000	0.001
		(0.001)	(0.003)
Household size		-0.005	0.013
		(0.008)	(0.016)
Respondent is married		-0.056*	-0.010
		(0.031)	(0.061)
Number of children (<5 years old)		0.000	-0.041
		(0.014)	(0.027)
Number of children (>5 years old)		0.002	-0.032*
		(0.009)	(0.018)
Years lived in the neighborhood		-0.000	-0.002
		(0.001)	(0.002)
Respondent's years of education		0.002	0.002
		(0.006)	(0.012)
Respondent has had vocational training		0.012	-0.032
		(0.021)	(0.042)
Number of businesses		-0.044	0.065
		(0.031)	(0.063)
Monthly business sales (PKR)		0.000	-0.000*
		(0.000)	(0.000)
Monthly business expenditure (PKR)		-0.000	-0.000
		(0.000)	(0.000)
Monthly business profits (PKR)		0.000	0.000
		(0.000)	(0.000)
Number of paid employees		-0.000	-0.004
		(0.000)	(0.015)
Number of unpaid employees		0.002	0.024
		(0.019)	(0.038)
Household home is owned by hh member		0.041	0.022

		(0.026)	(0.053)
Monthly household expenditure (PKR)		-0.000	0.000*
		(0.000)	(0.000)
Monthly household income (PKR)		-0.000	-0.000
		(0.000)	(0.000)
Decision making index		-0.001	-0.018
		(0.010)	(0.020)
Attitudes towards empowerment index		0.005	-0.014
		(0.010)	(0.019)
F test of joint significance (-value)	0.1873	0.5296	0.4270
Observations	1,713	1,713	1,713

Column (3) reports the coefficient on the interaction of treatment status and baseline characteristic mentioned in the row, in a regression with treatment, baseline characteristic. Missing values for the variables age, education and empowerment index of the respondent have been replaced with 0 and indicators for missing values added as controls. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A2: Viewer attention to video, at baseline and follow up (%)

	did not watch	Partially, distracted	Partially, full attention	Complete, distracted	Complete, full attention	# of obs
Panel (a): *Baseline*						
Respondent: placebo	11.49	16.86	19.16	28.74	23.75	261
Respondent: treatment	14.92	19.76	18.15	21.37	25.81	248
Panel (b): *Follow-up*						
Respondent: placebo	0.71	2.98	2.13	38.58	55.6	705
Respondent: treatment	1.13	3.38	2.96	26.06	66.48	710
Husband: placebo	5.09	3.7	3.24	32.41	55.56	216
Husband: treatment	8.93	5.36	5.8	26.34	53.57	224

Table A3: Viewer self-reported reaction to video, at baseline and follow up

	count	mean	med	min	max
Panel (a): *Baseline*					
Inspired by the treatment video	248	0.64	1.00	0.00	1.00
Liked the treatment video	248	0.67	1.00	0.00	1.00
Panel (b): *Follow up*					
Total correct answers in treatment video quiz	710	4.04	4.00	0.00	5.00
Total correct answers in placebo video quiz	705	3.91	4.00	0.00	5.00
Treatment video affected respondent emotionally	699	5.64	6.00	1.00	7.00
Placebo video affected respondent emotionally	686	5.49	6.00	1.00	7.00
Wants to learn more about treatment video information	698	4.93	5.00	1.00	7.00
Wants to learn more about placebo video information	688	4.89	5.00	1.00	7.00

Questions in panel (a) required yes (1) or no (0) answers. Questions in panel (b) are answered on a likert scale from 1 (fully disagree) to 7 (fully agree).

Table A4: Average response in goal setting exercise at baseline

	count	mean	med	min	max
Importance of business goal (out of 10) (female treatment)	447	8.43	9.00	0.00	10.00
Importance of business goal (out of 10) (spouse treatment)	449	8.67	9.00	0.00	10.00
Commitment to achieving business goal (female treatment)	420	9.04	10.00	0.00	10.00
Commitment to achieving business goal (spouse treatment)	425	9.11	10.00	0.00	10.00
Willing to change goal after discussion (female treatment)	428	0.57	1.00	0.00	1.00
Willing to change goal after discussion (spouse treatment)	426	0.61	1.00	0.00	1.00

Note: Importance given to business goals and self-reported commitment to achieving business goals are both answered on a scale of 0. Willing to change goal is based on enumerator observation of the respondent changing her self reported goal after discussion on setting 'SMART' goals.

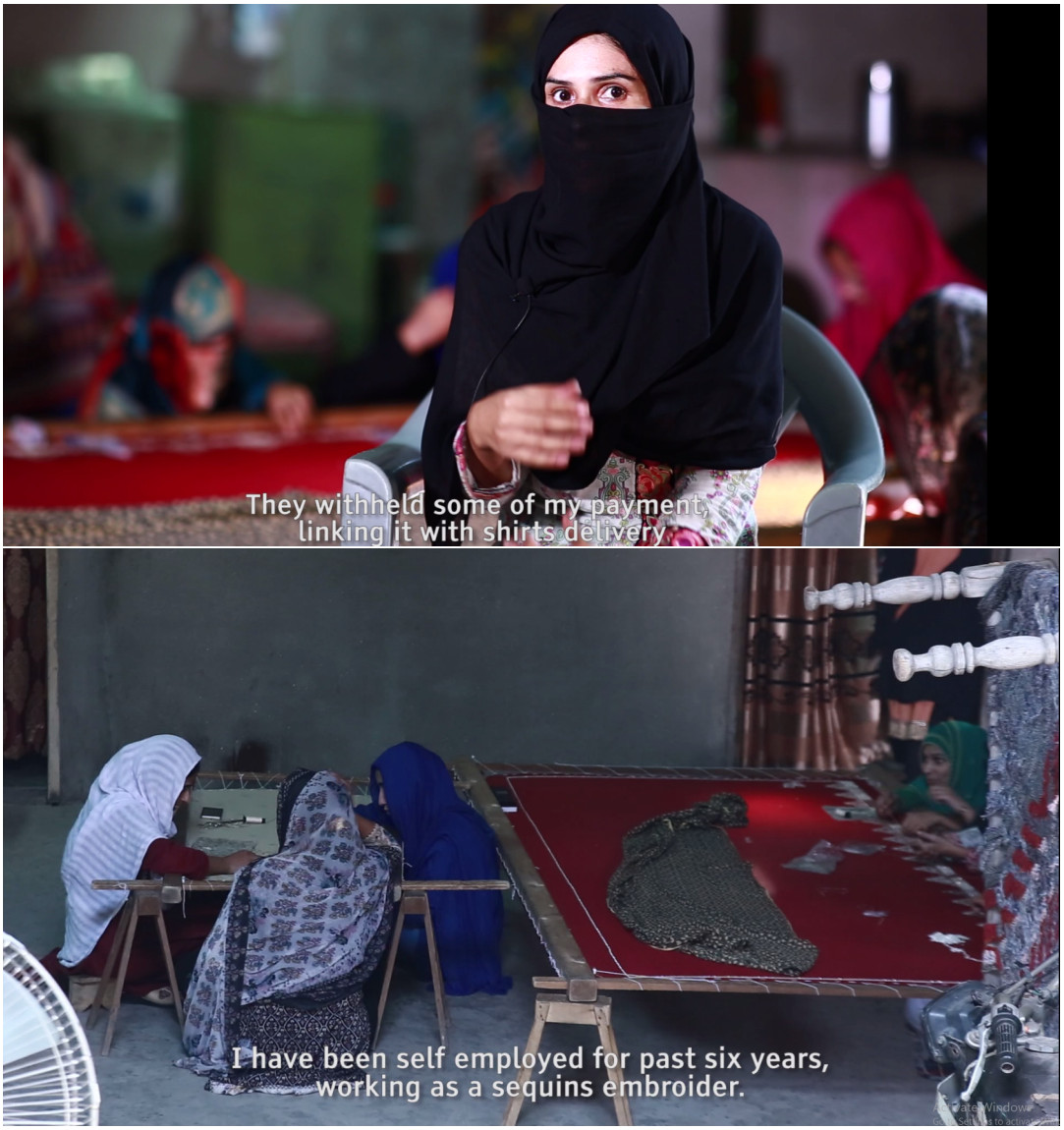
Table A5: Average response in goal setting exercise at follow-up repeat intervention

	count	mean	med	min	max
Importance of business goal (out of 10) (female treatment)	348	8.97	9.00	0.00	10.00
Importance of business goal (out of 10) (spouse treatment)	362	9.17	10.00	3.00	10.00
Commitment to achieving business goal (female treatment)	348	8.71	9.00	3.00	10.00
Commitment to achieving business goal (spouse treatment)	362	8.73	9.00	4.00	10.00
Willing to change goal after discussion (female treatment)	345	0.91	1.00	0.00	1.00
Willing to change goal after discussion (spouse treatment)	358	0.93	1.00	0.00	1.00

Note: Importance given to business goals and self-reported commitment to achieving business goals are both answered on a scale of 0. Willing to change goal is based on enumerator observation of the respondent changing her self reported goal after discussion on setting 'SMART' goals.

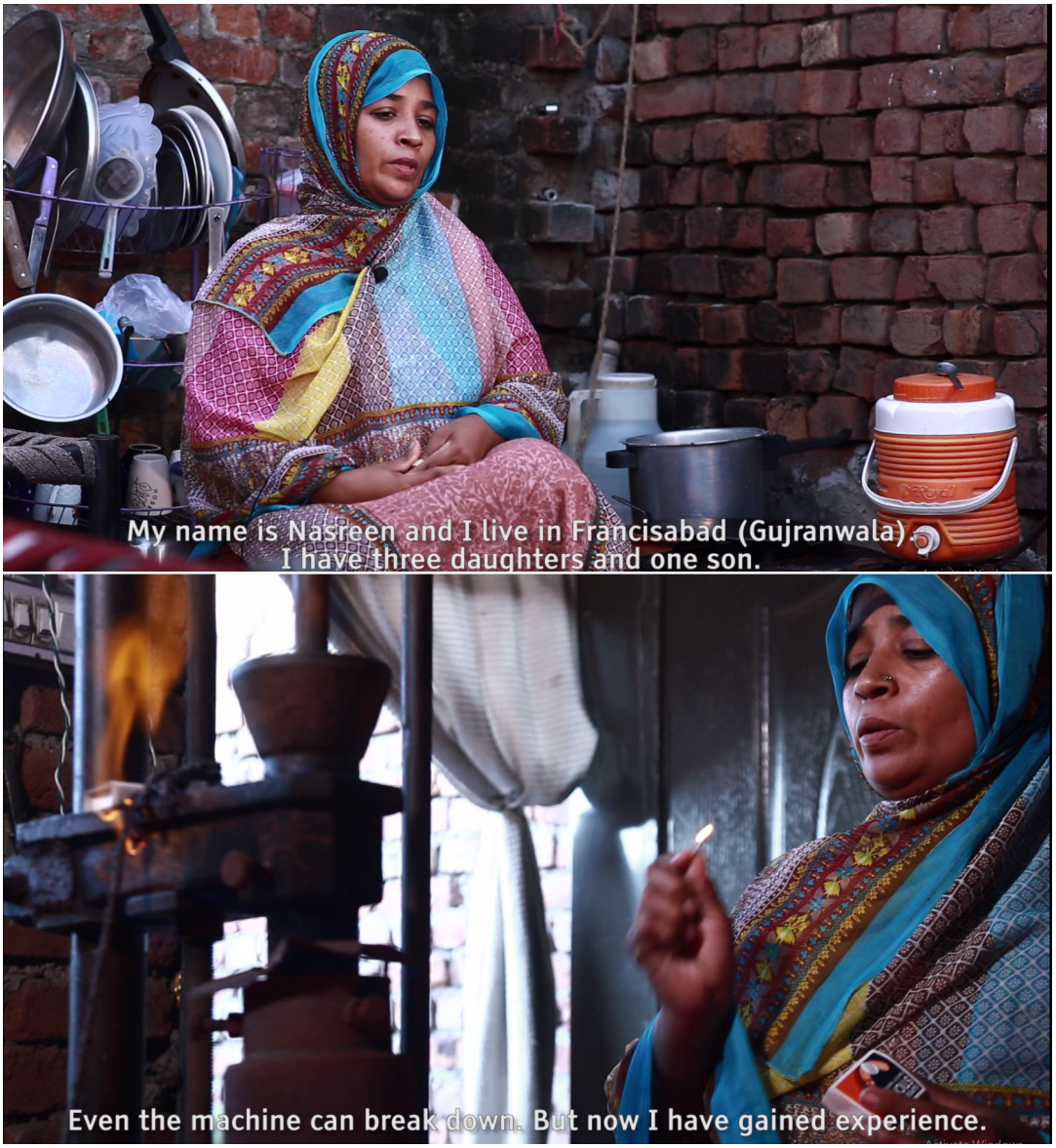
Appendix: Screenshots of intervention videos

Figure A1: Treatment video: Role model 1



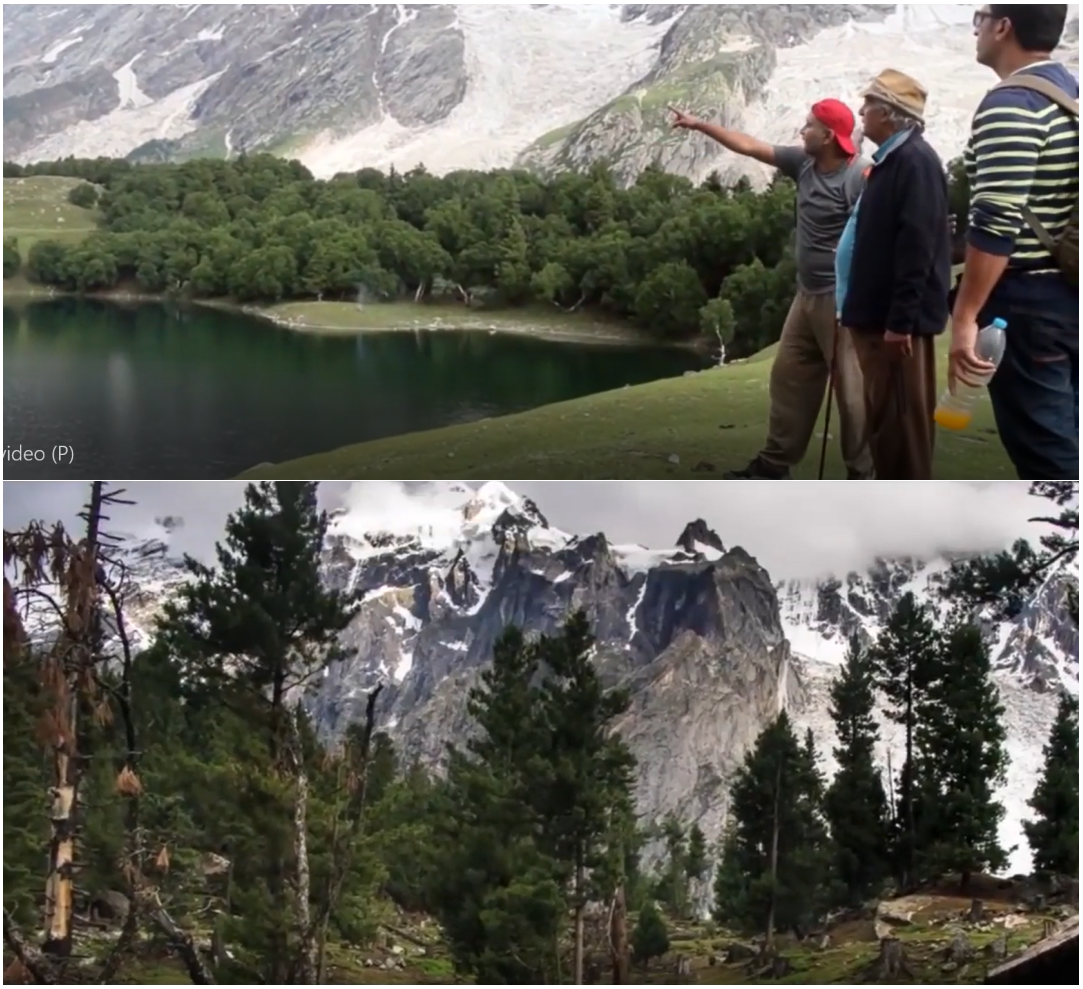
The first role model, Saba, has an thread and silver embroidery business that she operated from home. Saba started this business 6 years ago on her own and now employs 6 permanent workers.

Figure A2: Treatment video: Role model 2



The second role model, Nasreen, used to work in a rice mill before she started her own business. She makes rubber washers that are used in mechanical devices. Saba started this business 3 years ago and runs it with the help of her husband and daughter.

Figure A3: Placebo video



The placebo video was a travelogue discussing the people and scenary of Haramosh valley in Hunza, Pakistan.

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