Stress Management Practices, Owner Well-Being, and Firm Outcomes in Bangladesh[*]

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Abstract

This paper studies the impact on well-being and business outcomes from teaching stress-management practices to small firm owners in Bangladesh. Female owners were randomly assigned either to a treatment group that received a 10-week Cognitive Behavioral Therapy (CBT) course featuring priority-setting and relaxation techniques, or to a control group exposed to Empathic Listening. CBT leads to large initial reductions in owner stress, but no initial increase in firm profits. Six months after receiving CBT, owners in sectors with a low concentration of women show large and significant effects on stress, and their firms show increased profits. By contrast, owners in female-dominated sectors experience a short-lived reduction in stress, and firms show no changes in profits. The large post-treatment differences in well-being and profits between industries suggest that the ability to manage stress is malleable, and that industry choice proxies for traits that are strongly correlated with returns to training.

JEL classification: I15, J16, J24, L26, M53, Z13

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1 Introduction

Small firm owners, particularly those in developing countries, routinely confront daily demands that compete for time and effort needed to address vital, overarching managerial tasks. An emerging theme in the business training literature suggests that nudging owners to direct attention toward long-term business goals, and away from day-to-day operations, can lead to firm growth (Bruhn et al. (2017); Field et al. (2016). Furthermore, teaching entrepreneurial attitudes, such as proactiveness and persistence in the pursuit of goals, has been shown to have large positive effects on sales and profits compared to standard business training (Campos et al. (2017)). Identifying interventions and mechanisms conducive to increases in profits of entrepreneurs has implications for economic growth (Berge et al. (2015)), with particular implications for emerging economies, where small and medium-sized enterprises (SMEs) account for approximately 45 percent of total employment and 33 percent of GDP (OECD (2017)).

A dimension of the entrepreneurial outlook that has received little attention so far is the ability to stay focused on goals, and to perform well in times of stress or adversity. Exposure to high levels of stress over long periods of time interferes with information processing and decision making, and has deleterious effects on health (Calvo and Gutierrez-Garcia (2016); Schneiderman et al. (2005)). The management science literature has documented that firm owners often operate under conditions of high arousal and that their ability to endure stress is strongly correlated with firm revenue and growth (Baron et al. (2016); Roche et al. (2014); Baron et al. (2012)). Nonetheless, evidence on causal links in lacking.

In this paper, I test the hypothesis that teaching stress-management skills can lead to increased profits and sales among SMEs in a low-income setting. To investigate this, I evaluate the impact of a 10-week course of Cognitive Behavioral Therapy (CBT) that was provided to female business owners in Bangladesh.

A sample of 310 female owners of SMEs affiliated with the Bangladesh Women Chamber of Commerce and Industry participated in the experiment. Nearly 58 percent of the women owned handicrafts or clothing shops (also known as "boutiques"). These are by far the two most popular entrepreneurial choices among

women in Bangladesh (Asian Development Bank (2015)). The remaining owners were engaged in a wide range of sectors, including electronics, interior design and food processing. These have a very low concentration of women, and are considered "less traditionally female" (Shamim (2008)).

All participants were told that the purpose of the study was to understand what type of intervention could help improve well-being levels among businesswomen. Half of the sample was randomly offered CBT, which is considered to be the current best practice treatment for stress and anxiety-related disorders (Hofmann et al. (2012); Butler et al. (2006)). CBT is a talking therapy that teaches strategies to change habits associated with negative health outcomes.[1] In each session, the CBT therapist guides the trainee through written and physical exercises that facilitate the adoption and maintenance of new behaviors (Schmidt and Woolaway-Bickel (2000)). For example, CBT encourages practicing muscle-relaxation techniques[2] instead of using medication for anxiety. The CBT exercises, which included priority-setting and relaxation techniques, were adapted to the local context for the purposes of this study by the Department of Clinical Psychology of the University of Dhaka. An independent clinical supervisor was hired to ensure adherence to the standard CBT intervention protocol by the therapists.

The other half of the sample consisted of an active control group that was offered Empathic Listening (EL), a form of non-directive counseling often used as a comparison for CBT in studies of clinical effectiveness (Stain et al. (2016); Kahn et al. (2017)). EL provides emotional support but no direct advice (Rautalinko et al. (2007)).

Immediately after the 10-week-long treatment, measurements of an aggregate index of symptoms of stress showed a 0.33-standard-deviation decrease for the group that had received CBT compared to the group that had received EL. The stress reduction did not translate into immediate increases in profits or sales at that point in time. Six months after the treatment, CBT continued to lead to lower levels

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[1] For instance, stress can induce changes in eating patterns and is considered a common risk factor for obesity and drug addiction (Sinha and Jastreboff (2013).

[2] Muscle relaxation has been shown to reduce salivary cortisol and heart rate. See Varvogli and Darviri (2011) for a review of relaxation strategies and their associated health benefits.

of stress but to a smaller degree (0.12 standard deviations and not significant for the average owner), and the effect on profits and sales was positive but statistically insignificant.

These average effects, however, mask large differences across participants. Owners in sectors with a low concentration of women (e.g., electronics, food processing) experience large and persistent improvements in well-being, and their profits and sales increase over time. Owners in female-dominated industries (e.g., handicrafts, shops) experience only short-lived reductions in stress levels after receiving CBT, and the impact on profits and sales is null. Looking at the differences in effects of CBT on these two groups of businesswomen shows that less than a month after receiving CBT, owners in sectors with a low concentration of women had stress levels between 0.25 and 0.32 standard deviations lower than owners in female-dominated industries in the CBT group.

Six months after the treatment, owners in sectors with a low concentration of women continue to show larger effects of CBT than women who had also received CBT but whose businesses are in female-dominated sectors. Measurements of stress for women in sectors with a low concentration of women are between 0.46 and 0.48 standard deviations lower than those of their counterparts who received CBT but work in female-dominated industries - and approximately 0.40 standard deviations lower than those of the average owner in the group that received EL. The treatment effect on profits and sales is positive and increases over time for owners in sectors with few women. The effect is roughly USD 193.15 six months post-treatment, relative to a control mean of USD 407.76. The effect immediately after the treatment was small and negative (USD 39.67 lower than the control group, which had sales of USD 395.27). I find no significant changes in owner working hours or the number of employees. This is consistent with the hypothesis that the treatment improves decision making and time management, and that skill formation takes time before translating into improved business outcomes.

Taken together, my findings suggest that teaching priority setting and stress-management techniques using CBT could help to improve well-being and firm outcomes for female owners in sectors with a low concentration of women. This is in line with previous studies showing that selection into less female-dominated industries

proxies for personality traits and skills that affect the returns to capital (De Mel et al. (2009a)). In my context, owners in women-dominated industries have more years of education and business experience, and implement better managerial practices than others. In addition, they spend a similar amount of time doing household chores and caring for family members. These patterns suggest that industry choice reflects entrepreneurial abilities, such as opportunity recognition[3], that are difficult to measure but likely to explain why some owners - namely, those who can identify situations where applying new and existing skills can be valuable - benefit from training and others do not.

This paper is closely related to a growing body of literature studying the influence of soft skills (also called "non-cognitive" or "socio-emotional" skills) on labor market outcomes (Heckman and Corbin (2016); Glewwe et al. (2013); Heckman and Kautz (2013); Heckman and Kautz (2012)) and their malleability in adults (Kautz et al. (2014)). Promising evidence has emerged on the efficacy of CBT-based interventions to teach a wide range of socio-emotional skills - including self-control, effective communication and decision making - and to increase the labor supply and productivity of different sub-populations in developing countries (Blattman et al. (2017); Adhvaryu et al. (2016)). The present study is distinct in that it focuses on the importance of a narrow set of "entrepreneurial skills," and its design allows me to identify the effect of skill formation by minimizing social desirability bias[4] and Hawthorne effects.

My results also add to a growing literature studying sources of heterogeneity in the effects of business programs. A recurrent finding is that small firms in developing countries differ in the obstacles they face, and, hence, standard business approaches often fail to benefit all (Fischer and Karlan (2015); Bruhn et al. (2017)). Recent studies have found that the impact of providing training and access to finance is moderated by the existence of social constraints. For example, Field et al. (2010) show that inviting women to attend business counseling with a female friend

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[3] Baron (2006) provides an overview of cognitive skills involved in the process of recognizing business opportunities and mobilizing resources to seize them. See Calderon et al. (2015) and Gielnik et al. (2012) for recent evidence on the importance of opportunity recognition in developing countries.

[4] The tendency of respondents to provide answers that are likely to be viewed favorably by the implementer of an intervention or survey.

makes them more likely to borrow capital, and to expand their business, but the effects are concentrated on those whose mobility is neither severely restricted nor completely unrestricted. Gine and Mansuri (2017) find that providing training and loans improve business outcomes only for women who own large firms, and who have enough bargaining power within their households to make most of the managerial decisions by themselves. My results suggest that industry choice is indicative of entrepreneurial traits that are not captured by proxies for intra-household bargaining, such as time-use patterns among women.

The rest of the paper is organized as follows. Section 2 describes the conceptual framework and the interventions. Section 3 provides details on the sample and experimental design. Section 3 explains the empirical strategy. Section 4 presents the main results. Section 5 discusses sources of heterogeneity in treatment effects. Section 6 concludes.

2 The Stress Management Intervention

2.1 Conceptual Framework: Owner Stress and Firm Performance

The correlation between owner stress levels and firm performance has been well documented in the management literature. A growing number of studies indicate that differences between entrepreneurs, CEOs and high-level managers in "psychological capital" levels - especially, an ability to endure stress, and to maintain confidence in one's ability to succeed, even in face of adversity - explain a large portion of the variance in firm revenue and employment growth (Roche et al. (2014); Hmieleski and Carr (2008)). The topic has also been covered in the popular and business press, with most articles pointing at feelings of lack of control over external challenges and not having enough time to complete all tasks as important sources of stress.[5] Nonetheless, these articles refer to firms in high-income economies. Evidence from low-income settings is limited.

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[5] To mention just two examples, Forbes published an article titled "Common Stresses and Reliefs of Small Business Owners" on October 13, 2014, and The Huffington Post published one titled "Small-Business Owners Most Stressed by Running Business" on January 1, 2012.

Owners in developing countries are routinely confronted with complex situations that escape their control. Arduous regulatory processes, inadequate access to finance, and the absence of high-quality infrastructure cause workflow disruptions, and demand time and attention (The Asia Foundation (2010)). The World Bank's Doing Business initiative documents large differences between countries in the time and effort required to comply with relevant regulations at different stages of the business life cycle. For example, getting electricity takes four procedures and 79 days in the United Kingdom, and nine procedures and 428.9 days in Bangladesh. Similar patterns have been documented in other developing countries.

In addition, female business owners face social barriers that limit their ability to expand their firms, and these barriers can become a source of stress (Asian Development Bank (2015)). Among the most frequently cited is the behavioral prescription that women should spend a larger portion of the day than men doing household chores and caring for family members. It has also been documented that women face restrictions in their mobility and social interactions (Field et al. (2016)) that make selling products or purchasing inputs difficult (Gine and Mansuri (2017)).

Exposure to multiple stressful events makes individuals more likely to experience symptoms of anxiety and depression, such as persistent negative thoughts, unpleasant physical sensations (including exhaustion, aches and muscular tension), and changes in sleep and appetite (Liu et al. (2017); Sinha and Jastreboff (2013)). These symptoms can be worsened by habits adopted by individuals, such as consuming caffeinated drinks to tackle fatigue, or taking sleeping tablets to ease insomnia, which can affect cognitive performance and mood (Lieberman et al. (2002); Mitchell et al. (2012)).

The negative effects on motivation and decision making of stress, a condition characterized by high levels of anxiety and depressive mood, have been recently documented in the economics literature (De Quidt and Haushofer (2017); Riis-Vestergaard et al. (2017); Haushofer et al. (2015)). While most studies to date have focused on the health and cognitive effects of financial worries among the poor, it is increasingly being recognized that stress can affect economic outcomes in the general population and at levels that are not considered clinically significant. In particular, it has been shown that moderate levels of stress are positively correlated

with performance, but chronically high stress levels deplete cognitive resources and have deleterious effects on health and everyday functioning (Calvo and Gutierrez-Garcia (2016); Schneiderman et al. (2005)).

Because of the high number of difficulties they face, female SME owners are at increased risk of experiencing stress. However, character and socio-emotional skills are malleable in adults, and they can be taught through mentoring-based interventions (Kautz et al. (2014)). Hence, I ask whether training in stress management can help them improve their health and professional performance, and, thereby, improve their productivity and their firms' prospects over time. The intervention is expected to operate through two channels. The first is by helping participants identify crucial tasks through priority-setting exercises, and allocate an optimal amount of time to these tasks. The second is by teaching participants strategies to deal effectively with symptoms of stress that may draw attention away from the task at hand.

2.2   The CBT and Empathic Listening Interventions

CBT is a psychological intervention that has been proven to be effective in modifying a broad range of behaviors conducive to negative health outcomes, such as using hypnotic drugs to treat insomnia (Morgan et al. (2004); Gonzalez and Mc-Carl (2010); Hofmann et al. (2012); Weck et al. (2015)). Currently it is considered to be the best practice for treatment of anxiety-related disorders and depression. Evidence suggests that its effects persist over time and can be detected six months, one year and even two years after treatment (DiMauro et al. (2013)). CBT is increasingly being used as a general skill-building approach outside of clinical settings because it has been shown to produce persistent reductions in anger, aggression, criminal activities, and sleep and eating disorders (see Butler et al. (2006) for a comprehensive review of applications).

CBT promotes skill development through homework assignments, in addition to talking through problems and discussing solutions during therapy. These exercises are designed to challenge thinking patterns and behaviors that have harmful effects on well-being and cognitive functioning (Wells and Simons (2009); Heimberg et al. (2004)). For example, deep breathing is presented as a more positive way

of reducing feelings of anxiety than prescription drugs, alcohol or smoking, which can have deleterious side effects. Other hallmark techniques of CBT are scheduling a "worry time" each day, keeping a written log of problems that come to mind while performing a task, and looking for solutions only during the pre-established worry time, instead of engaging in unplanned problem solving throughout the day (Saulsman et al. (2015)).

The skills learned during the sessions are meant to be immediately transferrable to everyday life situations. Participants are told that mastering them requires regular practice, and that this is the mechanism through which the treatment effect is expected to last following its termination. New habits are developed primarily through learning by doing, although informational handouts and exercises are provided, discussed and practiced during the sessions (Blattman et al. (2017)).

The program was designed jointly with the Department of Clinical Psychology of Dhaka University and received Insitutional Review Board (IRB) approval from Innovations for Poverty Action and the University of Warwick. Both the CBT and EL interventions consisted of five individual, face-to-face, two-hour sessions. The sessions were delivered over a period of 10 weeks and took place in the Bangladesh Women Chamber of Commerce and Industry's training center (BWCCI), in central Dhaka. Six clinical psychologists trained in Cognitive Behavioral Therapy and six counselors trained in Empathic Listening delivered the CBT and EL interventions, respectively.

Participants in the CBT group received short follow-up phone calls between sessions in order to offer additional coaching, and to ensure adherence to the intervention protocol. These calls lasted between five and 10 minutes. The intervention featured strategies to manage time efficiently, and to deal with thoughts and physical sensations that could draw attention away from the task at hand. The time management component teaches participants to prioritize activities that are important and urgent, and to delegate or postpone those that require immediate attention but are not important. The second component tries to minimize symptoms of stress (anxiety and depression) that result in divided attention by teaching attention training and relaxation techniques, including progressive muscle relaxation and deep breathing.

We conducted a series of in-depth interviews to test the relevance of the topics and the specific choice of CBT materials. All handouts and exercises were translated to Bangla from templates published by the Centre for Clinical Interventions and the National Health Service (NHS). (These are publicly available on their websites.) For internal monitoring purposes, we collected a small sample of handouts from participants at the end of the program.

Following the Ethical Framework for Good Practice of Counseling and Psychotherapy of the British Association for Counseling and Psychotherapy (BACP (2013)), we hired an external clinical supervisor to take charge of the oversight of the intervention, and to ensure that the therapists adhered to the clinical protocol and the BACP Ethical Framework. The clinical supervisor evaluated the therapists' conduct, and determined whether they needed further training. In addition, he performed patients' risk assessments, and undertook caseload risk management[6]. Weekly supervision meetings were held with the CBT therapists to discuss progress, the participants' responsiveness to exercises, and any difficulties encountered during the sessions.

The EL intervention provided an equal number of therapy sessions. This type of non-directive counseling consists of listening and repeating the situations and feelings shared by the patient in different words, both factual and emotional, without providing an interpretation, explanations or suggesting techniques to help the client make a decision (Rautalinko et al. (2007)). Participants in the EL group received handouts with general health information. The topics included a diet pyramid displaying types of food that should be consumed several times per week (such as fruits and vegetables) and those that should be limited to once or twice per week (e.g., processed meats and desserts), in addition to press articles on the potential health and mood benefits of developing new hobbies.

Due to financial constraints, it was not feasible to have both an active control and a pure control group. An active control group was preferred because receiving professional counseling could affect response rates, and introduce both recall bias

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[6] The clinical supervisor is a clinical psychologist (BSc Psychology, MSc and MPhil in Clinical Psychology) with over 20 years of experience providing psychological support, counseling and education in Bangladesh.

and social desirability bias in the answers. Thus, EL was designed to provide emotional support but no specific guidance, with a view to identifying the effect of teaching skills. Providing a small dose of treatment to a comparison group, rather than using a pure control, has the additional advantage of decreasing the risk of differential attrition between treatment and control groups. Indeed, "light-treatment" comparison groups have been used in recent evaluations of business programs in the economics literature (Bloom et al. (2013); Field et al. (2016)).

Both the CBT and EL interventions provided social support and were therefore expected to have positive effects on well-being in the short run. Recent clinical studies assessing the efficacy of CBT have used active control groups based on EL (Stain et al. (2016); Kahn et al. (2017)). This design allows me to ascertain whether the effect of teaching coping skills is distinguishable from that of offering a non-judgmental environment to discuss problems and express emotions.

3 The Sample and Experimental Design

3.1 Target Population and Recruitment

To gain access to a large network of female business owners, I partnered with the Bangladesh Women Chamber of Commerce and Industry. The BWCCI is a non-profit organization established in 2001 to provide training and access to support services to women-owned SMEs.

The Chamber disseminated information about the program among its members. A staff member contacted them by phone and email, and explained that the purpose of the study was to understand whether training in stress management could increase the well-being levels of businesswomen in the country. After scheduling all sessions, the Chamber sent reminders to reduce program dropout and survey attrition. The intervention took place between December 2016 and March 2017. All participants received a travel allowance of a maximum of 400 Bangladeshi Taka (BDT) (equivalent at the time to USD 4.90) and BDT 200 (USD 2.40) per survey round, to compensate them for their time. No other payments were made to encourage participation.

Participants could select a suitable day and time to receive the first session, but many did not show up at the agreed time. Since more than one-third of the sample dropped out of the study in the week prior to the training, we replaced them and used a pure randomization strategy at the time-slot level. A research assistant conducted the randomization by assigning a random number to each participant in Excel, and allocating those above or below the median value to each group. Participants chose the time slot between 9 a.m. and 6 p.m. that suited them best. Among those selecting a given slot, half were randomly assigned to CBT, and the other half to EL. Hence, I do not have any reason to believe that the treatment-allocation strategy caused non-random differences in characteristics between CBT and EL recipients. In total, 159 participants were offered CBT, and 151 were offered EL.

3.2   Data and Randomization Balance

The baseline survey was conducted on the first day of training, before the session started. Two follow-up surveys were conducted over the phone. The first took place immediately after the training was completed. Some participants were able to attend all sessions within 10 weeks, and finished the training in February. Others requested to reschedule one or more sessions, and received the last one in March. Therefore, the first follow-up survey was conducted between February and March 2017. The second was conducted six months after completion, between July and August 2017. Attrition rates were low and similar across groups. The group of participants who either refused to take part in a survey or who could not be reached consisted of four EL and five CBT participants in the first follow-up survey, and 14 EL and 16 CBT participants in the second survey. These rates are equivalent to approximately 2 percent and 9 percent of the sample in each group, for the first and second follow-up surveys respectively.

Basic business information was collected in each survey round, including profits, sales and inventories in the previous month, daily hours worked by the owner on average and the number of formal and casual employees. We also measured self-reported symptoms of anxiety and depression using the seven-item Generalized Anxiety Disorder (GAD-7) scale and the nine-item Patient Health Questionnaire (PHQ-9), and the number days lost to physical illness in the two weeks prior to the

survey.

Following De Mel et al. (2009b), profits were measured by asking owners directly to report profits in the previous month, excluding wage payments to themselves. This eliciting method presents advantages over alternative measures. It reduces recall bias and, for instance, errors related to a timing mismatch between revenues and expenses. Recent micro-enterprise experiments rely on this construct as the main measure for profits (Atkin et al. (2017); Blattman et al. (2014)). Managerial ability is measured using the Business Practices questionnaire developed by McKenzie and Woodruff (2017) for small firms.

I construct a Stress Index by standardizing the unweighted sum of the GAD-7 anxiety score (Spitzer et al. (2006)) and the PHQ-9 depression score ((Kroenke et al. (2010) using the control group mean and standard deviation. These scales have been extensively used to measure stress and monitor symptoms of anxiety and depression by mental health practitioners across the world, and have shown good levels of reliability and validity (Moriarty et al. (2015); Löwe et al. (2008); Spitzer et al. (2006); Kroenke et al. (2010)). Aggregating variables that are conceptually related and move in the same direction into standardized indices has become common practice in the economics literature, because it helps to address concerns over multiple hypothesis testing (Kling et al. (2007); Karlan and Valdivia (2011); Drexler et al. (2014)).

Stress levels, profits and sales have long right tails, even after winsorizing the last two at the 99th percentile. To reduce the influence of observations on the top tail, I compare the effects of CBT on the stress index, profits and sales in levels and the inverse hyperbolic sine transformation of each of these variables.

In addition, more detailed owner and firm characteristics were measured at the baseline and second follow-up surveys. 24-hour recall time use questionnaires were included in both surveys[7], but they were modified to capture different dimensions.

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[7] The use of 24-hour recall methods has limitations, because it might not be representative of an average day (see Jackson et al. (2008)). I chose it over the more accurate 72-hour recall method for convenience. In my setting, participants were reluctant to answer long questionnaires, and hence, there was a trade-off between precision and survey attrition. Despite its arguable inaccuracy, the elicited number of hours of work shows good correlations with direct measures of daily working hours as reported by the respondent.

The baseline time use survey followed the same structure as the Bangladesh (2012) Time Use Survey Pilot and recorded every primary and secondary activity performed in the 24 hours prior to the survey, and the time spent on each of them. The purpose of using this questionnaire was to obtain a first estimate of the number of hours spent daily on household chores, providing unpaid care services to family members, engaging in a wide range of self-care, entertainment and social activities, and working in the business. The time use section used in the second follow-up survey was a modified version of the Executive Time Use Project questionnaire (Bandiera et al. (2012)), and focused on measuring the amount of time spent on managerial and non-managerial activities during working hours.

Table 1 shows baseline characteristics and balance across treatment and active control individuals. It reports regressions of each variable on a treatment dummy, whose coefficient captures the difference between group means, and a constant (the control group mean). For most variables, including stress levels and profits, differences in the mean value across experimental groups are not significant. Average monthly profits are winsorized at the 99th percentile to trim outliers, yielding an average of BDT 18,780 (USD 229) in the control group.

Despite randomization, the treatment group has a higher number of firms in sectors with a high concentration of women (clothing and handicrafts) and higher sales. Owners in the CBT group also report working longer hours (0.76 additional hours per day). However, when using the time use survey to calculate the number of hours worked in the 24 hours prior to the survey, the number of hours members of the two different groups spent working on the business and doing household chores does not differ to a statistically significant degree.

The Stress Index and several measures of managerial ability are balanced. The mean age among owners in the control group is 36 years, and the average household size is 4.28. Only 7 percent of firm owners did not complete class V, which was the last year of primary school until 2016, when a reform to extend primary school until class VIII was approved. Approximately 70 percent of the owners are married, and 46 percent have a bachelor's degree.

The average number of sessions completed is also balanced across groups. Around 13 percent attended one session only (18 participants in the EL and 22

in the CBT group), and around 74 percent of the EL participants and 77 percent of the CBT participants attended all the sessions.

4   Effects on Stress and Firm Outcomes

4.1   Empirical Specification

I estimate the causal effects of the CBT training on profits and sales at the time of the first and second follow-up surveys separately, and then combine them to increase precision. McKenzie (2012) shows that the analysis of covariance estimator outperforms the fixed effects estimator when the outcome variable is measured with noise and autocorrelation across survey rounds is low. Therefore I use a regression of the form

$$Y_{it} = \beta_0 + \beta_1 CBT_i + \beta_2 Y_{i,t=0} + \beta_3 X_{h,i} + \tau_t + \epsilon_{it} \tag{1}$$

where Y_{it} is an outcome for firm i in period t, CBT_i is the treatment dummy and takes value 1 if the owner was assigned to CBT and β_1 is the treatment effect. $Y_{i,t=0}$ is the lagged outcome variable, $X_{h,i}$ controls for baseline covariates (firm years, the number of workers and a sector dummy, demeaned using the control group mean), and τ_t is a survey round fixed effect. In my sample, 10 owners run more than one type of business. Hence, standard errors are clustered at the owner level for the specification combining the two rounds of data. Because not everyone who was invited and attended the first session completed the training, these are intent-to-treat estimates.

Participants in my sample had many opportunities to make up for missed sessions. Therefore I expect that failing to attend even one session can affect treatment outcomes, in part because it might indicate low engagement and poor adherence to the CBT protocol. A recent meta-analysis of clinical evaluations showed that interventions that require treatment completion have larger ITT effects on therapy outcomes than those in which completion is not required (Hans and Hiller (2013)). For this reason, I also estimate treatment effects on the treated (TOT) by creating a dummy for those who attended all five sessions and running the following regression

$$Y_{it} = \beta_0 + \beta_1 CBTcomplete_i + \beta_2 Y_{i,t=0} + \beta_3 X_{h,i} + \tau_t + \epsilon_{it} \tag{2}$$

where $CBTcomplete_{i,t=1}$ takes the value 1 if an owner assigned to CBT attended all five sessions. I instrument $CBTcomplete_{i,t=1}$ with the variable CBT_i.

4.2 CBT Impact on Stress Levels

Immediately after finishing the treatment, the effect is large and significant for all owners (Table 2, columns 1 and 2). CBT leads to a reduction of 0.33 standard deviations in the aggregate index of stress symptoms. The effect of CBT on the hyperbolic sine transformation of the index is also large and significant. Since this transformation places less weight on observations at the upper tail of the distribution, these results suggest that the CBT does not only benefit those with very high levels of stress before the program starts.

The TOT estimates show that the positive effect of CBT on well-being is stronger among those who attended all the sessions (228 participants, or 75 percent of the sample). As a robustness check, I run a regression where TOT compares those who attended at least four sessions (around 80 percent) with those who attended three or less, and the results remain qualitatively unchanged. The point estimates are smaller but significant at the 1 percent level.

Six months after the treatment, the effect of CBT on stress is no longer significantly different from zero, although it enters with a negative sign. The coefficient is minus 0.12 for stress index. Likewise, the effect among those who completed the program is negative but insignificant.

Figure 1 shows changes in the distribution of stress levels over time for owners in the CBT and EL groups. The evidence does not reject the hypothesis of equality of distribution in initial stress levels between the CBT and EL groups (Graph (a)). Graphs (b) and (c) show a shift to the left in the distribution of stress for owners in the CBT group compared to the EL group. However, the Kolmogorov-Smirnov test only rejects the hypothesis of equality of distributions immediately after treatment (Graph (b)), at the 5 percent level.

4.3 CBT Impact on Profits and Sales

I first examine whether the large reduction in stress levels observed immediately after the intervention affected profits and sales. Table 3 reports intent-to-treat estimates for winsorized profits in levels and the inverse-hyperbolic sine transformation of non-winsorized profits. Immediately after the program, the point estimate for profits in levels is BDT 4,980 (USD 60.33) and statistically insignificant. This is relative to a control mean of BDT 33,610 (USD 404.21). The coefficient in the regression using the hyperbolic sine transformation of profits is negative but also insignificant. The coefficient of the treatment dummy in the regression for sales in levels indicates an effect close to zero (BDT 12, less than USD 0.15), while that in the regression using the hyperbolic sine transformation of sales is small but positive. These results suggest that the average effect of CBT is measured with noise, and the effect might be different for firms at the top and bottom of the distributions of sales and profits.

Six months after the treatment, the effect of CBT on profits and sales increases in magnitude and is positive for firms at the upper and lower tails of the distribution of sales and profits. However, all coefficients are insignificant. The point estimate for profits is BDT 3,600 (USD 43.61), relative to a control mean of BDT 32,580 (USD 396.50). The effect on sales is BDT 20,340 (USD 246.40), relative to a mean of BDT 139,770 BDT (USD 1,693.16) in the control group.

Combining the two rounds of data increases power, but all effects remain statistically insignificant. Overall, these results suggest that the positive effects of receiving CBT might be increasing over time for some owners, but are estimated with noise. All TOT coefficients follow a similar pattern to those of the ITT regressions, and are only marginally larger in size.

I next examine the treatment effects on the distribution of profits. Consistent with the results from the regression analysis, Figure 2 shows a slight shift towards the right in the distribution of profits between the first and second follow-up surveys.

Average profits were similar between treatment groups at the time of the baseline. Figure 2 shows that the distribution of the hyperbolic sine transformation of profits had a higher standard deviation in the EL group before the treatment

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started, but looked similar to that of the CBT group after the treatment ended. My data suggest that, conditional on taking part in the survey, participants provided more accurate answers during the first and second endlines compared to the baseline. No one reported negative profits at the time of the baseline, but some did in the second endline. This could be because we asked them in advance to suggest a time to complete the survey, and they were better prepared to answer our questions (which they knew from previous rounds); or because the intervention helped to build rapport, and they reported more truthfully.

To rule out the possibility that the CBT and EL groups differed in their tendency to trust us with information on profits, and that this may be driving my results, I use two approaches that correct for imbalances in covariates and differences in the probability to be assigned to each treatment group (section 4.5). I find no support for the hypothesis that my results are sensitive to differences in the distribution of baseline profits.

4.4   Effects on Inputs

Next, I study whether CBT affected inputs that could lead to changes in profits and sales. Table 4 shows that CBT reduces average investment in inventories. The magnitude must be interpreted with caution for the regressions in levels (columns 1 and 5). The size of the ITT estimates is large relative to the average value of inventories of the median firm. This is caused by a small number of observations (between eight or nine observations, or around three percent in each survey round) which have values above BDT 5,000,000 (USD 60,587.85), fluctuate across rounds, and are not trimmed after winsorizing. Columns 2 and 6 suggest that the treatment had a small, negative and statistically insignificant effect on inventories.

The impact of CBT on the number of working hours and the number of formal employees is not significantly different from zero. Columns 3 and 4 in Table 4 show that the point estimates are positive in the first follow-up but small in size (0.12 hours and 0.03 workers). Columns 7 and 8 show negative point estimates at the time of the second follow-up (minus 0.15 hours and minus 0.18 workers respectively). The effect of CBT on those who attended all five sessions is similar in sign and magnitude for most of these inputs, with the exception of the sine transformation

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of inventories, which is negative and significant when combining the two rounds of data.

In addition, I find suggestive evidence that the CBT training did not affect the amount of time allocated to managerial on non-managerial tasks. Using cross-sectional data from the second follow-up, I study changes in time use patterns six months after the treatment by aggregating activities into four categories. The first is essential daily functions that could be delegated to employees, such as providing aesthetic services (facials and haircuts) or selling clothes to customers directly. The second is human resources management, and includes training employees and supervising them while they are attending to customers or keeping records. The third is strategic planning and includes tasks as varied as revising the business plan or checking sales and profits. The fourth aggregates all other activities, including attending business fairs or training programs. I find no differences between owners in the treatment and control groups in the amount of time they spend in each activity type.

4.5   Robustness to Baseline Imbalance

To investigate whether the observed differences in baseline characteristics between the CBT and EL group are driving the results, I compare them with those obtained using alternative matched control groups. I find no evidence that differences in baseline characteristics are driving the main results (Appendix, Table A1).

Firstly, following Austin (2011) and Austin (2014), I use caliper matching on the logit of the propensity score, with a caliper of 0.2 standard deviations. This method has recently been used to address baseline imbalances in the evaluation of a business consulting program (Bruhn et al. (2017)). Table A1 shows similar results to those reported in tables 2 and 3. CBT leads to a 0.35 reduction (significant at the 1 percent level) in the stress index immediately after treatment. The effect disappears within six months. The impact on profits in levels is positive and increases from BDT 10,200 (USD 122.67) in immediately post-treatment to BDT 18,100 (USD 217.68) six months later, with respect to a control group mean of BDT 33,600 (USD 404.09) and BDT 32,600 (USD 392.07) in the first and second follow-up surveys respectively.

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Secondly, I use randomization inference, which can be employed to test for the sharp null hypothesis of no treatment effect even if the probability of being assigned to the treatment group is not the same for all units (Imbens and Wooldridge (2009)). I follow Hennessy et al. (2016) and use a conditional randomization test to account for covariate imbalance. The results are shown in Table 9 (Appendix A.1). The estimated effect of CBT on stress and profits remains qualitatively unchanged when using randomization inference. The estimated effect of CBT on sales becomes negative but is measured with noise, and hence the treatment effect coefficient is not statistically significantly different from zero.

Lastly, I use inverse probability weighting (IPW) estimators, which calculate propensity scores (logit estimation) using flexible functions of the covariates of interest (Imbens and Wooldridge (2009)). Each weight is the inverse of the estimated probability that an individual is assigned to CBT. Table 9 (Appendix A.1) shows that the main results do not change qualitatively when using IPW. I verify that the four covariates are balanced across groups. The overidentification test does not reject the null hypothesis that the IPW model balanced firm years, sales, daily hours and industry choice ("female-dominated" dummy). The regression for profits (panel B) includes baseline profits as a covariate - although its mean value was similar between treatment groups - because it had a higher standard deviation. As a robustness check, I ran the same regression with and without including baseline profits, and verify that the main results remain largely unchanged.

5 Heterogeneity Analysis: Who Benefits from Learning Stress Management Techniques?

To understand the mechanisms through which CBT is likely to operate and why its effect on mental health decreases sharply within six months, I examine whether its impact varies across owners. For this, I focus on the most important sources of heterogeneity documented in the business training literature.

5.1 Differences in Treatment Effects Across Sectors

A leading explanation for heterogeneity in the effects of business programs among women is self-selection into a female-dominated industry (De Mel et al. (2009a)). In my sample, nearly 58 percent of the firms are boutiques and handicrafts shops, with some selling both clothes and handicrafts. The rest of the firms are scattered across various sectors, including electronics, food processing and education. I aggregate boutiques and handicrafts shops into a single category (hereafter, I refer to all of them as "boutiques"), which indicates that the owner operates a firm in an industry with a high concentration of women. All others are pooled into a category representing industries with a low concentration of women. Although data on male- to-female ratios in firm ownership at the sub-sector level (within retail or services) are limited, this division has been documented in previous reports on female entrepreneurship in Bangladesh (Shamim (2008)).

First, I document differences in firm and owner characteristics between industries (Table 5). It is important to note that, by many measures, women in female-concentrated sectors have better managerial skills. They have been in business three more years, on average, and they implement more managerial practices (both differences are significant at the 1 percent level). In addition, their educational attainment and the number of hours devoted to their businesses are slightly higher. I aggregate the four measures into a standardized index of managerial ability, and confirm that the new variable is, on average, higher for owners in female-concentrated sectors at the 1 percent level.

Second, I study whether the effect of CBT on owner stress and firm outcomes varies across industries. To investigate this, and to examine whether differences in household liquidity and entrepreneurial ability could explain differences in treatment effects across industries, I follow (De Mel et al. (2009a) and use a regression of the form

$$Y_{it} = \beta_0 + \beta_1 CBT_i + \beta_2 CBT_i * LowFemale_i + \sum_{h=1}^{H} \beta_3 CBT_i * X_{h,i}$$

$$+ \sum_{h=1}^{H} \beta_4 CBT_i * X_{h,i} * LowFemale_i + \sum_{h=1}^{H} \beta_5 X_{h,i} * LowFemale_i$$

$$+ \beta_6 LowFemale_i + \beta_7 Y_{i,t=0} + \epsilon_{it}$$

where Y_{it} is an outcome (e.g. stress index, profits or sales) for owner i in period t, CBT_i is the treatment dummy, $LowFemale_1$ takes value one if the owner operates in an industry with a low concentration of women, $X_{h,i}$ controls for entrepreneurial ability (standardized index of business practices, education, firm years and daily working hours) and household liquidity[8]. $Y_{i,t=0}$ is the baseline outcome variable. Robust standard errors are estimated. To address concerns over multiple hypothesis testing and sample splitting, I report Sidak-adjusted p-values (Table A.4).

Tables 6 and 7 show that self-selection into a sector with a high concentration of female-owned businesses is strongly correlated with treatment effects. After receiving CBT, owners in less female-dominated industries have lower stress levels, relative to their EL counterparts and to those in the CBT group who operate in female-dominated sectors. In addition, their profits and sales increase over time when compared to those two groups. Table 6 shows that, immediately after the treatment, the stress index is between 0.25 and 0.32 standard deviations lower than for those who received CBT but own a boutique. Six months after the end of the intervention, the impact of CBT on stress levels remains large and statistically significant for owners in low-female-concentration sectors. The stress index is between 0.46 and 0.48 standard deviations lower than that for boutique owners in the CBT group (Table 6, column 3). The p-value of the sum of the treatment and the interaction effect is also significant, indicating that owners of firms in non-female-concentrated sectors have statistically significantly lower stress levels than the average owner in the EL group. The difference is approximately 0.4 standard deviations six months after treatment.

Table 7 shows that, immediately after the treatment ends, the effect of CBT on profits and sales is not significantly different for owners in different sectors. The interaction of the treatment and low-female-concentration dummies enters most specifications with a negative sign, but standard errors are large. Six months after the treatment, profits are between BDT 20,000 (USD 240.53) and BDT 22,620 (USD 272.04) higher for owners in the CBT group who operate in a sector with a low concentration of women, relative to boutique owners in the CBT group (Table 7, column 5). The average effect of CBT on profits for non-boutique owners ranges

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[8] The index is the sum of monthly expenditures in food, electricity, gas, water, mobile phone and rent or mortgage, standardized using the control group mean and standard deviation.

from BDT 14,860 and BDT 18,600, an increase of between USD 180.01 and USD 225.31 with respect to their baseline levels of USD 440.89. The sum of the CBT treatment and the interaction of the treatment and the low female concentration dummies is significant for the sine transformation at the 10 percent level (column 6) in most specifications. The point estimates are also positive but non-significant for sales, with sizes ranging from BDT 61,990 (USD 745.53) to BDT 116,710 (USD 1,403.63) with respect to owners in the CBT group operating in a female-dominated sector.

I find no differential treatment effects on any source of change in profits between industries (Table 8). Immediately after the program ends, CBT has a negative effect on inventories on average, but owners in low-female-concentration industries have higher inventories after receiving CBT than their control group counterparts (columns 1 and 2). The negative effect of CBT on inventories for the average owner increases in magnitude over time (columns 5 and 6), but owners in sectors with a low concentration of women have higher values of inventories than their EL counterparts and other owners in the CBT group. The sum of the treatment dummy and the interaction of the treatment and industry type is not significantly different from zero. Reducing inventories is generally considered a best practice in manufacturing settings, and is a key dimension of the "lean production" system (see, for example, Bloom et al. (2010)). However, I do not have information to confirm that reducing inventories is the optimal decision for all firms in my predominantly retail context. I find no differences in treatment effects on other inputs. The impact on the number of hours worked or the number of employees between sectors is close to zero.

In sum, my results are in line with those from previous studies showing that self-selecting into a sector with a high concentration of women is an important source of heterogeneity in treatment effects. These results are robust to the inclusion of several variables that could confound the effect of industry choice. My data do not support the hypothesis that high-ability business owners are more likely to benefit from training, or the hypothesis that they increase their effort after the treatment, as previous studies have documented in other low-income settings (Gine and Mansuri (2017)).

An alternative mechanism could be that, by encouraging participants to think

about the payoffs of spending time on competing personal and professional activities, the CBT treatment prompted some participants to adjust their business-related efforts downwards. This might be the optimal decision for those who perceive their returns to investing in personal and social networks to be higher than the return to investing in their business. However, this is not borne out by the data on time-use patterns. Women in different industries spend similar amounts of time on business and household production activities.

5.2 Alternative Mechanisms

In this section I examine mechanisms that could explain the observed heterogeneity in the effects of CBT and have received little attention by economists. I focus on factors that have been identified as key drivers of therapy success and firm outcomes in the clinical psychology and management science literatures respectively.

5.2.1 Traits Affecting Therapy Outcomes

Despite strong evidence of efficacy of CBT for improving mental health outcomes, some people do not fully respond to treatment (Flynn (2011)). Most clinical studies suggest that treatment success depends primarily on certain personality traits and non-cognitive skills that are difficult to measure, such as the client's capacity to identify and share thoughts and feelings (Renaud et al. (2014)). It is then plausible that CBT works best for individuals who have high levels of self-awareness and self-discipline because these make it easier for them to engage in the therapy and comply with homework assignments. As a proxy for these variables, I use data on educational achievement. Having a bachelor's degree indicates that the individual has the ability to process abstract information. In addition, holding a university degree is an indicator of self-discipline, for this trait has been shown to outperform IQ in predicting academic achievement (Duckworth and Seligman (2005)).

I examine whether participants with a Bachelor's degree, who are almost 50 percent of my sample, experience larger reductions in stress levels than those who do not have a university degree. I find no evidence that those with higher education benefit more from CBT in terms of improved mental health (Online Appendix). The coefficient associated with the interaction of being assigned to CBT and having a

Bachelor's degree is not statistically different from zero, and it enters with a positive sign in all specifications for stress. Furthermore, the interaction term enters with a negative sign in many of the regressions for profits and sales, although it is never significant. Similarly, it has no effect on any inputs.

Compliance with treatment, as measured by the level of completion of homework assignments, has also been shown to predict therapy outcomes (Mausbach et al. (2010); LeBeau et al. (2013)). The CBT intervention for this study was designed to encourage compliance through follow-up phone calls. In addition, a high percentage of participants attended all five sessions, which is likely to be an indicator of engagement and motivation. This is because of the high time and effort costs associated with travel within central Dhaka, where the sessions took place. However, my TOT estimates suggest that completion does not make owners more likely to benefit from CBT six months after the treatment. Neither does completion of treatment significantly increase profits, sales or any intermediate outcomes, such as inventories, time-use patterns, or the number of employees.

5.2.2 Entrepreneurial Traits and Success in Developing Countries

Skills gaps are among the most important constraints to firm growth in developing countries (Bruhn et al. (2017)). However, specific skills deficits and training needs vary across firms (Fischer and Karlan (2015)). In my context, a possible explanation for the observed heterogeneity is that owners in female-dominated industries lack essential entrepreneurial skills that impede the CBT treatment from having an effect on mental health and profits.

The management literature has long regarded "opportunity recognition" as the foremost ability of entrepreneurs because all other skills become relevant only after a source of profits is identified (Kirzner (1979); Baron and Ensley (2006); Ozgen and Baron (2007); Tang et al. (2012); Tumasjan and Braun (2012); Prandelli et al. (2016)). For instance, compared to managers, entrepreneurs are more likely to actively search for new business ventures and ways of turning them into sources of revenue (Baron (2006)). If self-selecting into a sector with a low concentration of women - or a less-competitive sector in general - is indicative of having this attitude, the question becomes whether owners in female-dominated sectors (who,

in my setting, have better managerial skills than the others) are unable to turn new skills into increased profits because they do not grasp when and how to apply them.

Testing this mechanism is challenging in practice. Multiple cognitive and non-cognitive abilities are involved in the process of finding and exploiting opportunities. Moreover, there is, to date, no consensus on which specific traits, skills, alone or in combination, are necessary for owners to benefit from training and capital, or to succeed in absence of support. For example, Bhagavatula et al. (2010) provide a comprehensive list of human and social capital dimensions correlated with entrepreneurial success in India, while Gielnik et al. (2012) focus on the role of creativity in explaining new venture success in Uganda. Furthermore, recent evidence from Mexico shows that female SME owners who enter self-employment driven by opportunity, as opposed to necessity, run more profitable firms. However, there is a large overlap in personality traits between "necessity" and "opportunity" entrepreneurs, including self-control, imagination, attitudes towards risk and the big five (Calderon et al. (2015)).

6 Conclusion

This paper investigates the effects of using Cognitive Behavioral Therapy (CBT) to teach stress-management skills to female business owners in Bangladesh. The intervention offered CBT, featuring priority setting and relaxation techniques, to one group of business owners and Empathic Listening (EL), which provides emotional support but no specific guidance on how to develop new skills, to the other group. I compare the impact of CBT and EL on owner stress levels, and firms' profits and sales.

In the short run, CBT leads to a large reduction in stress levels, but profits and sales do not increase. Six months after the treatment, owners in the CBT group still have lower levels of stress relative to baseline, but the effect is smaller than immediately after treatment; profits and sales remain unchanged. I document large differences in how owners in different industries respond to CBT. For owners in sectors with a low concentration of women, such as electronics or food processing, CBT has large negative effects on stress immediately after treatment and six months later; firm profits increase over time. For owners of firms in female-dominated

sectors (58 percent of my sample), the reduction in stress levels is short lived - the effect almost disappears after six months - and the impact on sales and profits is close to zero.

Despite compelling evidence that high-ability owners in developing countries are more likely to benefit from training (Gine and Mansuri (2017)), I find no support for this hypothesis in my setting. Owners in female-dominated industries have slightly higher levels of education than owners in other sectors, their firms are three years older on average and their managerial practices are better.

My results support the hypotheses that non-cognitive skills are malleable and can be taught to adults (Kautz et al. (2014)), and that nudging small business owners to devote more attention to long-term goals and less to day-to-day operations can foster firm growth in many industries (Bruhn et al. (2017)). In my context, the effects are concentrated on women who run firms in sectors with a lower concentration of women. This is in line with previous studies showing that self-selection into female-dominated industries is indicative of traits that moderate the returns to capital (De Mel et al. (2009a)).

Understanding what makes some owners more likely to benefit from business support programs remains one of the most important gaps in the literature (Fischer and Karlan (2015)). Existing evidence does not allow to identify specific combinations of traits affecting returns to capital and training among women. However, several cognitive and non-cognitive skills involved in recognizing new business ventures show a strong correlation with entrepreneurial success in developing countries (Gielnik et al. (2012); Calderon et al. (2015); Bhagavatula et al. (2010)). Owners choosing less conventional sectors might be better able to identify and mobilize resources to seize profitable opportunities, including newly-acquired skills and capital injections. Testing this hypothesis will require improved measures of entrepreneurial traits and experimental designs that stratify on entrepreneurial aptitude or industry choice.

References

Adhvaryu, A., Kala, N., and Nyshadham, A. (2016). The skills to pay the bills: Returns to on-the-job soft skills training. *Working paper*.

Asian Development Bank (2015). Gender equality results case study (Bangladesh): Small and medium-sized enterprise development project.

Atkin, D., Khandelwal, A. K., and Osman, A. (2017). Exporting and firm performance: Evidence from a randomized experiment. *The Quarterly Journal of Economics*, 132(2):551–615.

Austin, P. C. (2011). Optimal caliper widths for propensity-score matching when estimating differences in means and differences in proportions in observational studies. *Pharmaceutical statistics*, 10(2):150–161.

Austin, P. C. (2014). A comparison of 12 algorithms for matching on the propensity score. *Statistics in Medicine*, 33(6):1057–1069.

Bandiera, O., Guiso, L., Prat, A., and Sadun, R. (2012). What do CEOs do? Technical report, Centre for Economic Performance, LSE.

Baron, R. A. (2006). Opportunity recognition as pattern recognition: How entrepreneurs "connect the dots" to identify new business opportunities. *The Academy of Management Perspectives*, 20(1):104–119.

Baron, R. A. and Ensley, M. D. (2006). Opportunity recognition as the detection of meaningful patterns: Evidence from comparisons of novice and experienced entrepreneurs. *Management science*, 52(9):1331–1344.

Baron, R. A., Franklin, R. J., and Hmieleski, K. M. (2016). Why entrepreneurs often experience low, not high, levels of stress: The joint effects of selection and psychological capital. *Journal of Management*, 42(3):742–768.

Baron, R. A., Hmieleski, K. M., and Henry, R. A. (2012). Entrepreneurs' dispositional positive affect: The potential benefits–and potential costs–of being "up"? *Journal of Business Venturing*, 27(3):310–324.

Berge, L. I. O., Bjorvatn, K., and Tungodden, B. (2015). Human and financial capital for microenterprise development: Evidence from a field and lab experiment. *Management Science*, 61(4):707–722.

Bhagavatula, S., Elfring, T., Van Tilburg, A., and Van De Bunt, G. G. (2010). How social and human capital influence opportunity recognition and resource mobilization in india's handloom industry. *Journal of Business Venturing*, 25(3):245–260.

Blattman, C., Fiala, N., and Martinez, S. (2014). Generating skilled self-employment in developing countries: Experimental evidence from Uganda. *The Quarterly Journal of Economics*, 129(2):697–752.

Blattman, C., Jamison, J. C., and Sheridan, M. (2017). Reducing crime and violence: Experimental evidence from Cognitive Behavioral Therapy in Liberia. *The American Economic Review*, 107(4):1165–1206.

Bloom, N., Eifert, B., Mahajan, A., McKenzie, D., and Roberts, J. (2013). Does management matter? Evidence from India. *The Quarterly Journal of Economics*, 128(1):1–51.

Bloom, N., Genakos, C., Martin, R., and Sadun, R. (2010). Modern management: good for the environment or just hot air? *The Economic Journal*, 120(544):551–572.

Bruhn, M., Karlan, D., and Schoar, A. (2017). The impact of consulting services on small and medium enterprises: Evidence from a randomized trial in Mexico. *Journal of Political Economy*, Forthcoming.

Butler, A. C., Chapman, J. E., Forman, E. M., and Beck, A. T. (2006). The empirical status of Cognitive-Behavioral Therapy: A review of meta-analyses. *Clinical Psychology Review*, 26(1):17–31.

Calderon, G., Iacovone, L., and Juarez, L. (2015). Opportunity vs necessity: Understanding the heterogeneity of female micro-entrepreneurs. *World Bank Economic Review. Oxford: Oxford Press.*

Calvo, M. G. and Gutierrez-Garcia, A. (2016). Cognition and stress. In Fagerberg, J., Mowery, D. C., and Nelson, R. R., editors, *Stress: Concepts, Cognition, Emotion, and Behavior*, chapter 16, pages 139–144. Elsevier.

Campos, F., Frese, M., Goldstein, M., Lacovone, L., Johnson, H. C., McKenzie, D., and Mensmann, M. (2017). Teaching personal initiative beats traditional training in boosting small business in West Africa. *Science*, 357(6357):1287–1290.

De Mel, S., McKenzie, D., and Woodruff, C. (2009a). Are women more credit constrained? Experimental evidence on gender and microenterprise returns. *American Economic Journal: Applied Economics*, 1(3):1–32.

De Mel, S., McKenzie, D. J., and Woodruff, C. (2009b). Measuring microenterprise profits: Must we ask how the sausage is made? *Journal of Development Economics*, 88(1):19–31.

De Quidt, J. and Haushofer, J. (2017). Depression for economists. *NBER Chapters*.

DiMauro, J., Domingues, J., Fernandez, G., and Tolin, D. F. (2013). Long-term effectiveness of CBT for anxiety disorders in an adult outpatient clinic sample: A follow-up study. *Behaviour research and therapy*, 51(2):82–86.

Drexler, A., Fischer, G., and Schoar, A. (2014). Keeping it simple: Financial literacy and rules of thumb. *American Economic Journal: Applied Economics*, 6(2):1–31.

Duckworth, A. L. and Seligman, M. E. (2005). Self-discipline outdoes IQ in predicting academic performance of adolescents. *Psychological Science*, 16(12):939–944.

Field, E., Jayachandran, S., and Pande, R. (2010). Do traditional institutions constrain female entrepreneurship? A field experiment on business training in India. *The American Economic Review*, 100(2):125–129.

Field, E., Jayachandran, S., Pande, R., and Rigol, N. (2016). Friendship at work: Can peer effects catalyze female entrepreneurship? *American Economic Journal: Economic Policy*, 8(2):125–153.

Fischer, G. and Karlan, D. (2015). The catch-22 of external validity in the context of constraints to firm growth. *The American Economic Review*, 105(5):295–299.

Flynn, H. A. (2011). Setting the stage for the integration of motivational interviewing with Cognitive Behavioral Therapy in the treatment of depression. *Cognitive and Behavioral Practice*, 18(1):46–54.

Gielnik, M. M., Frese, M., Graf, J. M., and Kampschulte, A. (2012). Creativity in the opportunity identification process and the moderating effect of diversity of information. *Journal of Business Venturing*, 27(5):559–576.

Gine, X. and Mansuri, G. (2017). Money or management? A field experiment on constraints to entrepreneurship in rural Pakistan. *Working paper*.

Glewwe, P., Huang, Q., and Park, A. (2013). Cognitive skills, noncognitive skills, and the employment and wages of young adults in rural china. *Working paper*.

Gonzalez, J. S. and McCarl, L. A. (2010). Cognitive Behavioral Therapy for adherence and depression (CBT-AD) in type-2 diabetes. *Journal of Cognitive Psychotherapy*, 24(4):329.

Hans, E. and Hiller, W. (2013). Effectiveness of and dropout from outpatient Cognitive-Behavioral Therapy for adult unipolar depression: A meta-analysis of nonrandomized effectiveness studies. *Journal of Consulting and Clinical Psychology*, 81(1):75–88.

Haushofer, J., Jang, C., and Lynham, J. (2015). Stress and temporal discounting: Do domains matter? *Working paper*.

Heckman, J. J. and Corbin, C. O. (2016). Capabilities and skills. *Journal of Human Development and Capabilities*, 17(3):342–359.

Heckman, J. J. and Kautz, T. (2012). Hard evidence on soft skills. *Labour economics*, 19(4):451–464.

Heckman, J. J. and Kautz, T. (2013). Fostering and measuring skills: Interventions that improve character and cognition. Technical report, National Bureau of Economic Research.

Heimberg, R. G., Turk, C. L., and Mennin, D. S. (2004). *Generalized anxiety disorder: Advances in research and practice*. Guilford Press.

Hennessy, J., Dasgupta, T., Miratrix, L., Pattanayak, C., and Sarkar, P. (2016). A conditional randomization test to account for covariate imbalance in randomized experiments. *Journal of Causal Inference*, 4(1):61–80.

Hmieleski, K. M. and Carr, J. C. (2008). The relationship between entrepreneur psychological capital and new venture performance. *Frontiers of Entrepreneurship Research*, 28(4):1.

Hofmann, S. G., Asnaani, A., Vonk, I. J., Sawyer, A. T., and Fang, A. (2012). The efficacy of cognitive behavioral therapy: A review of meta-analyses. *Cognitive Therapy and Research*, 36(5):427–440.

Imbens, G. W. and Wooldridge, J. M. (2009). Recent developments in the econometrics of program evaluation. *Journal of Economic Literature*, 47(1):5–86.

Jackson, K. A., Byrne, N. M., Magarey, A. M., and Hills, A. P. (2008). Minimizing random error in dietary intakes assessed by 24-h recall, in overweight and obese adults. *European Journal of Clinical Nutrition*, 62(4):537.

Kahn, M., Ronen, A., Apter, A., and Sadeh, A. (2017). Cognitive–behavioral versus non-directive therapy for preschoolers with severe nighttime fears and sleep-related problems. *Sleep Medicine*, 32:40–47.

Karlan, D. and Valdivia, M. (2011). Teaching entrepreneurship: Impact of business training on microfinance clients and institutions. *Review of Economics and Statistics*, 93(2):510–527.

Kautz, T., Heckman, J. J., Diris, R., Ter Weel, B., and Borghans, L. (2014). Fostering and measuring skills: Improving cognitive and non-cognitive skills to promote lifetime success. Technical report, National Bureau of Economic Research.

Kirzner, I. M. (1979). *Perception, opportunity, and profit*. University of Chicago Press.

Kling, J. R., Liebman, J. B., and Katz, L. F. (2007). Experimental analysis of neighborhood effects. *Econometrica*, 75(1):83–119.

Kroenke, K., Spitzer, R. L., Williams, J. B., and Löwe, B. (2010). The patient health questionnaire somatic, anxiety, and depressive symptom scales: a systematic review. *General Hospital Psychiatry*, 32(4):345–359.

LeBeau, R. T., Davies, C. D., Culver, N. C., and Craske, M. G. (2013). Homework compliance counts in Cognitive-Behavioral Therapy. *Cognitive Behaviour Therapy*, 42(3):171–179.

Lieberman, H. R., Tharion, W. J., Shukitt-Hale, B., Speckman, K. L., and Tulley, R. (2002). Effects of caffeine, sleep loss, and stress on cognitive performance and mood during US navy SEAL training. *Psychopharmacology*, 164(3):250–261.

Liu, Y., Song, Y., Koopmann, J., Wang, M., Chang, C.-H. D., and Shi, J. (2017). Eating your feelings? Testing a model of employees' work-related stressors, sleep quality, and unhealthy eating. *Journal of Applied Psychology*, 102(8):1237–1258.

Löwe, B., Decker, O., Müller, S., Brähler, E., Schellberg, D., Herzog, W., and Herzberg, P. Y. (2008). Validation and standardization of the generalized anxiety disorder screener (GAD-7) in the general population. *Medical care*, 46(3):266–274.

Mausbach, B. T., Moore, R., Roesch, S., Cardenas, V., and Patterson, T. L. (2010). The relationship between homework compliance and therapy outcomes: An updated meta-analysis. *Cognitive Therapy and Research*, 34(5):429–438.

McKenzie, D. (2012). Beyond baseline and follow-up: The case for more T in experiments. *Journal of Development Economics*, 99(2):210–221.

McKenzie, D. and Woodruff, C. (2017). Business practices in small firms in developing countries. *Management Science*, 63(9):2967–2981.

Mitchell, M. D., Gehrman, P., Perlis, M., and Umscheid, C. A. (2012). Comparative effectiveness of Cognitive Behavioral Therapy for insomnia: A systematic review. *BMC family practice*, 13(1):40.

Morgan, K., Dixon, S., Mathers, N., Thompson, J., and Tomeny, M. (2004). Psychological treatment for insomnia in the regulation of long-term hypnotic drug use. *Health Technology Assessment*, 8(8):iii–iv.

Moriarty, A. S., Gilbody, S., McMillan, D., and Manea, L. (2015). Screening and case finding for major depressive disorder using the patient health questionnaire (PHQ-9): A meta-analysis. *General hospital psychiatry*, 37(6):567–576.

OECD (2017). *Enhancing the Contributions of SMEs in a Global and Digitalised Economy*. OECD, Paris.

Ozgen, E. and Baron, R. A. (2007). Social sources of information in opportunity recognition: Effects of mentors, industry networks, and professional forums. *Journal of Business Venturing*, 22(2):174–192.

Prandelli, E., Pasquini, M., and Verona, G. (2016). In user's shoes: An experimental design on the role of perspective taking in discovering entrepreneurial opportunities. *Journal of Business Venturing*, 31(3):287–301.

Rautalinko, E., Lisper, H.-O., and Ekehammar, B. (2007). Reflective listening in counseling: Effects of training time and evaluator social skills. *American Journal of Psychotherapy*, 61(2):191.

Renaud, J., Russell, J. J., and Myhr, G. (2014). Predicting who benefits most from Cognitive-Behavioral Therapy for anxiety and depression. *Journal of Clinical Psychology*, 70(10):924–932.

Riis-Vestergaard, M. I., van Ast, V., Cornelisse, S., Seinstra, M., Joëls, M., and Haushofer, J. (2017). The effect of hydrocortisone administration on intertemporal choice. *Working paper*.

Roche, M., Haar, J. M., and Luthans, F. (2014). The role of mindfulness and psychological capital on the well-being of leaders. *Journal of Occupational Health Psychology*, 19(4):476.

Saulsman, L., Nathan, P., Lim, L., Correia, H., Anderson, R., and Campbell, B. (2015). *What? Me Worry!?! Mastering Your Worries*. Perth, Western Australia: Centre for Clinical Interventions.

Schmidt, N. B. and Woolaway-Bickel, K. (2000). The effects of treatment compliance on outcome in Cognitive-Behavioral Therapy for panic disorder: Quality versus quantity. *Journal of Consulting and Clinical Psychology*, 68(1):13.

Schneiderman, N., Ironson, G., and Siegel, S. D. (2005). Stress and health: psychological, behavioral, and biological determinants. *Annual Review of Clinical Psychology*, 1:607–628.

Shamim, M. U. (2008). Building women in business: A situation analysis of women entrepreneurs in Bangladesh. Technical report, Bangladesh Women Chamber of Commerce and Industry.

Sinha, R. and Jastreboff, A. M. (2013). Stress as a common risk factor for obesity and addiction. *Biological Psychiatry*, 73(9):827–835.

Spitzer, R. L., Kroenke, K., Williams, J. B., and Löwe, B. (2006). A brief measure for assessing generalized anxiety disorder: the GAD7. *Archives of Internal Medicine*, 166(10):1092–1097.

Stain, H. J., Bucci, S., Baker, A. L., Carr, V., Emsley, R., Halpin, S., Lewin, T., Schall, U., Clarke, V., Crittenden, K., et al. (2016). A randomised controlled trial of cognitive behaviour therapy versus non-directive reflective listening for young people at ultra high risk of developing psychosis: The detection and evaluation of psychological therapy (DEPTh) trial. *Schizophrenia Research*, 176(2):212–219.

Tang, J., Kacmar, K. M. M., and Busenitz, L. (2012). Entrepreneurial alertness in the pursuit of new opportunities. *Journal of Business Venturing*, 27(1):77–94.

The Asia Foundation (2010). Bangladesh Economic Governance Index. A measure of economic governance at the district level.

Tumasjan, A. and Braun, R. (2012). In the eye of the beholder: How regulatory focus and self-efficacy interact in influencing opportunity recognition. *Journal of Business Venturing*, 27(6):622–636.

Varvogli, L. and Darviri, C. (2011). Stress management techniques: Evidence-based procedures that reduce stress and promote health. *Health Science Journal*, 5(2):74–89.

Weck, F., Gropalis, M., Hiller, W., and Bleichhardt, G. (2015). Effectiveness of Cognitive-Behavioral Group Therapy for patients with hypochondriasis (health anxiety). *Journal of Anxiety Disorders*, 30:1–7.

Wells, A. and Simons, M. (2009). *Metacognitive Therapy*. Wiley Online Library.

Table 1: Baseline Balance

	Control group mean	Difference in treatment	N
Profits	20.52	9.53	287
	(4.33)	(7.15)	
Sales	83.76	133.75**	229
	(16.58)	(62.03)	
Inventories	420.89	353.07	264
	(109.20)	(219.92)	
Formal Employees	2.54	0.54	307
	(0.39)	(0.64)	
Elicited Working Hours	6.52	0.02	310
(Time Use Survey)	(0.35)	(0.50)	
Average Hours	6.17	0.76**	307
(Direct Reporting)	(0.27)	(0.36)	
Chores & Caregiving Hours	4.90	-0.31	310
(Time Use Survey)	(0.30)	(0.41)	
Business Score	13.25	0.50	310
	(0.35)	(0.51)	
Boutique	0.54	0.10*	310
	(0.04)	(0.06)	
Age	36.08	1.05	310
	(0.84)	(1.20)	
Stress Index	0.00	-0.01	310
	(0.08)	(0.11)	
Bachelor's	0.46	-0.02	310
	(0.04)	(0.06)	
HH size	4.28	0.02	310
	(0.14)	(0.21)	
Sessions completed	4.17	0.04	309
	(0.12)	(0.17)	

Notes: Table reports a regression of the named variable on a constant and treatment dummy. The coefficients in column 2 are the control group mean, and those in column 3 report the difference with respect to the treatment group. Robust standard errors in parenthesis. Profits and sales are winsorized at the 99th percentile to trim outliers. Without winsorizing, profits and inventories remain statistically balanced between treatment and control groups, and sales are imbalanced at the five percent level. Profits, sales and inventories are expressed in thousands of Bangladeshi Taka (1,000 BDT $\approx$10 GBP). The Business Score is the number of good business practices implemented by the owner and takes values from 0 to 26. The Stress Index is the standardized sum of symptoms of anxiety and depression, using the control group mean and standard deviation. The 7-item scale for Generalized Anxiety Disorders (GAD-7) and the 9-item scale Patient Health Questionnaire (PHQ-9) were used to measure symptoms of anxiety and depression, respectively. The final rows report session attendance. Significance: *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Figure 1: Kernel Density of Standardized Index of Stress Symptoms
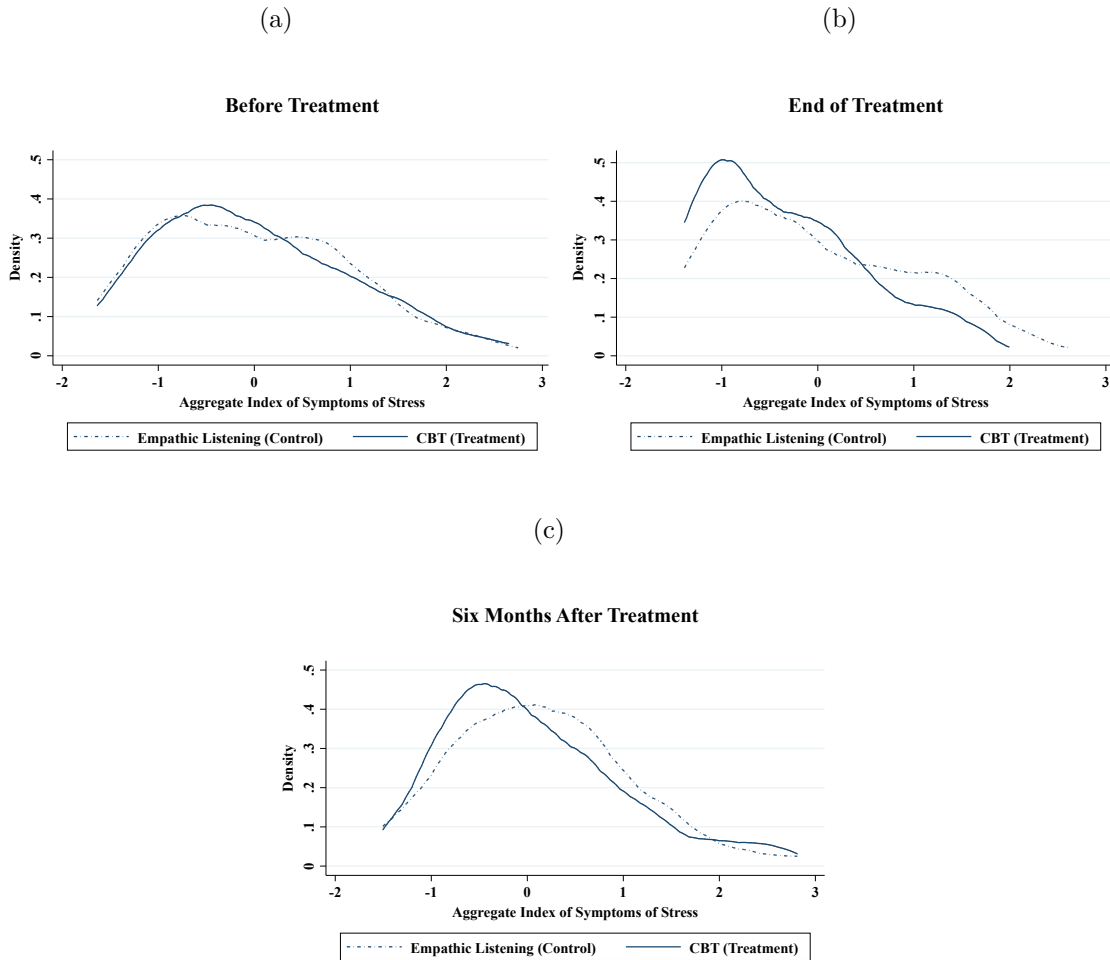
(a)   (b)

Before Treatment   **End of Treatment**

(c)

Six Months After Treatment

Notes: Figure shows the distribution of stress levels before the intervention, immediately after and six months later. The Stress Index is the standardized sum of symptoms of anxiety and depression, using the control group mean and standard deviation. The 7-item scale for Generalized Anxiety Disorders (GAD-7) and the 9-item scale Patient Health Questionnaire (PHQ-9) were used to measure symptoms of anxiety and depression, respectively. The Kolmogorov-Smirnov test does not reject the null hypothesis of equality of distributions in (a) and (c), and it does reject the hypothesis of equality of distributions in (b) at the 5% level.

Table 2: Impact of Training on the Stress Index

	End of Treatment		6 Months After End	
	(1) Stress Index	(2) IHS Stress	(3) Stress Index	(4) IHS Stress
ITT	-0.33***	-0.26***	-0.12	-0.11
	(0.09)	(0.08)	(0.10)	(0.08)
Adj R-squared	0.31	0.32	0.26	0.26
TOT	-0.44***	-0.35***	-0.16	-0.15
	(0.12)	(0.10)	(0.13)	(0.11)
First stage F-stat	419.80	419.90	395.05	395.36
Control Mean	0.00	-0.03	0.15	0.11
Observations	297	297	277	277

Notes: Table reports treatment effects on stress levels. The Stress Index is the standardized sum of the 7-item scale for Generalized Anxiety Disorders (GAD-7) and the 9-item scale Patient Health Questionnaire (PHQ-9) for depression. IHS is the hyperbolic sine transformation of the stress index. The intent-to-treat estimates report the coefficient of a dummy that takes value one if the participant was originally assigned to the CBT group. The treatment-on-the-treated estimates use treatment assignment as an instrumental variable for treatment completion; a dummy that takes value one when the participant attends all five sessions. All regressions control for the baseline outcome variable. Robust standard errors. Significance:*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 3: Impact of CBT on Profits and Sales

	End of Treatment				6 Months After End				Combined			
	(1) Profit	(2) IHS Profit	(3) Sales	(4) IHS Sales	(5) Profit	(6) IHS Profit	(7) Sales	(8) IHS Sales	(9) Profit	(10) IHS Profit	(11) Sales	(12) IHS Sales
ITT	4.98	-0.16	-0.12	0.03	3.60	0.35	20.34	0.04	4.14	0.10	7.79	0.02
	(10.70)	(0.14)	(64.25)	(0.16)	(9.56)	(0.26)	(56.88)	(0.21)	(8.74)	(0.16)	(55.74)	(0.15)
Adj R-squared	0.47	0.43	0.62	0.63	0.51	0.24	0.38	0.46	0.49	0.29	0.47	0.53
TOT	6.24	-0.20	-0.15	0.03	4.68	0.46	26.64	0.06	5.30	0.13	10.14	0.03
	(13.21)	(0.17)	(81.79)	(0.20)	(12.29)	(0.33)	(73.36)	(0.27)	(11.07)	(0.20)	(71.86)	(0.20)
First stage F-stat	418.63	405.31	296.58	316.10	375.83	362.86	278.89	287.11	439.43	428.96	318.24	336.33
Control Mean	33.61	3.14	170.49	4.38	32.58	2.37	139.77	3.95	33.08	2.74	154.50	4.16
Observations	224	224	197	197	239	239	205	205	463	463	402	402

Notes: Table reports treatment effects on profits and sales. Profits and sales are expressed in thousands of Bangladeshi Taka and winsorized at the 99th percentile to trim outliers. The inverse hyperbolic sine transformation (IHS) uses non-winsorized profits and sales. The intent-to-treat estimates report the coefficient of a dummy that takes value one if the participant was originally assigned to the CBT group. The treatment-on-the-treated estimates use treatment assignment as an instrumental variable for treatment completion; a dummy that takes value one when the participant attends all five sessions. Standard errors are clustered at the owner level in the specifications combining both data rounds, and robust when the specification includes a follow-up and the baseline only. All regressions control for the baseline outcome variable. Significance:*** p<0.01, ** p<0.05, * p<0.1

Figure 2: Kernel Density of Monthly Profits (Hyperbolic Sine Transformation)
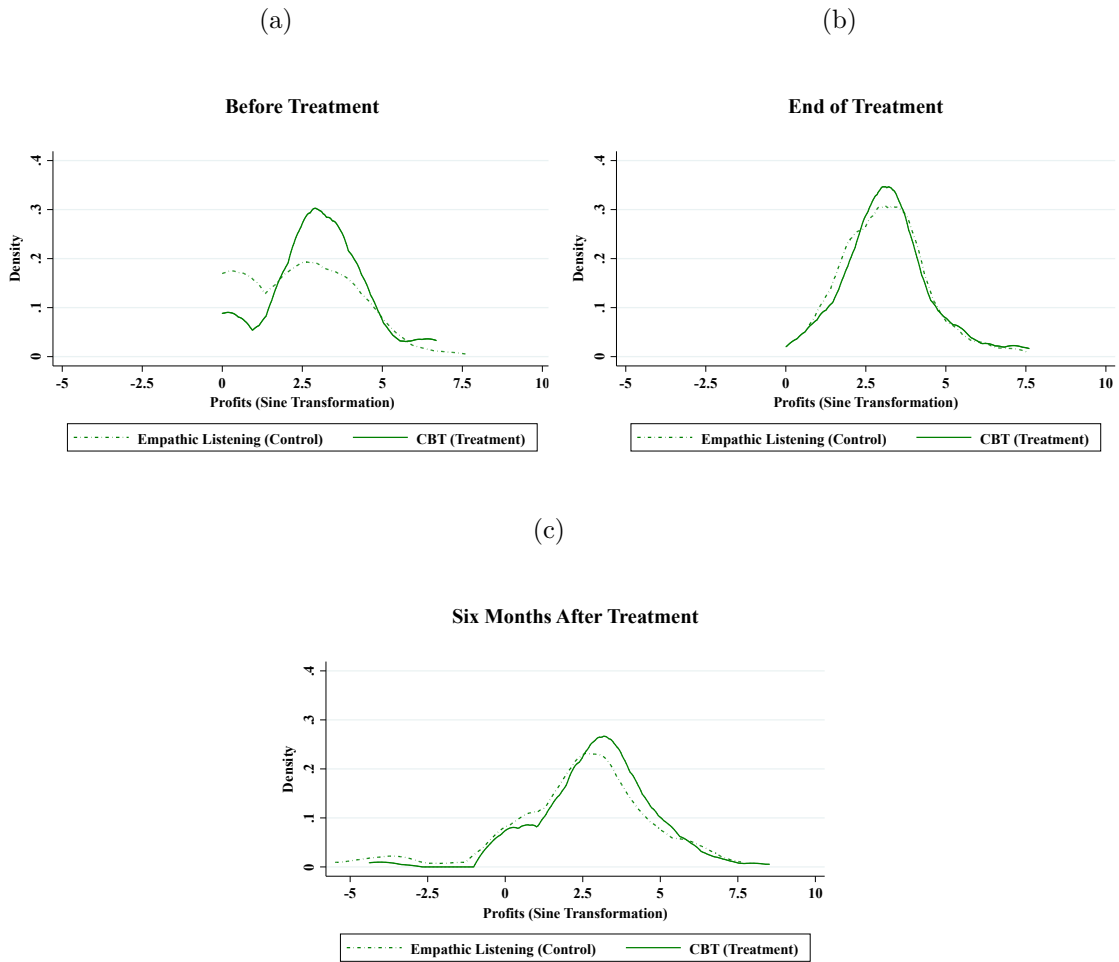
(a)

(b)

(c)

Notes: Figure shows the distribution of the hyperbolic sine transformation of monthly profits. The Kolmogorov-Smirnov test rejects the null hypothesis of equality of distributions at the 1% level in (a) and at the 10% level in (c). It does not reject the hypothesis of equality of distributions in (b).

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Table 4: Impact of Training on Inputs

	End of Treatment				6 Months After End				Combined			
	(1) Invent.	(2) IHS Invent.	(3) Hours	(4) Workers	(5) Invent.	(6) IHS Invent.	(7) Hours	(8) Workers	(9) Invent.	(10) IHS Invent.	(11) Hours	(12) Workers
ITT	30.36	-0.18	-0.12	0.03	-190.42	-0.26	-0.19	-0.40	-57.93	-0.22	-0.15	-0.18
	(172.20)	(0.16)	(0.28)	(0.46)	(317.21)	(0.19)	(0.35)	(0.55)	(182.89)	(0.15)	(0.26)	(0.41)
Adj R-squared	0.54	0.51	0.27	0.38	0.37	0.48	0.26	0.53	0.41	0.50	0.29	0.46
TOT	38.33	-0.23	-0.16	0.03	-234.73	-0.32	-0.25	-0.54	-72.29	-0.27	-0.20	-0.23
	(214.75)	(0.20)	(0.37)	(0.61)	(385.50)	(0.23)	(0.46)	(0.74)	(226.18)	(0.19)	(0.35)	(0.52)
First stage F-stat	415.44	423.29	404.60	401.12	418.79	431.37	369.30	369.30	440.44	452.72	394.83	424.74
Control Mean	713.96	5.36	6.64	2.51	1084.63	5.66	5.67	2.55	1085.89	5.51	6.17	2.53
Observations	241	241	293	292	223	223	274	274	464	464	567	566

Notes: Table reports heterogeneous treatment effects on inventories, the number of daily hours spent by the owner on the business on an average day, and the number of formal employees at the time of the survey. Inventories are expressed in thousands of Bangladeshi Taka and are winsorized at the 99th percentile to trim outliers. The inverse hyperbolic sine transformation (IHS) uses non-winsorized inventories. The intent-to-treat estimates report the coefficient of a dummy that takes value one if the participant was originally assigned to the CBT group. The treatment-on-the-treated estimates use treatment assignment as an instrumental variable for treatment completion; a dummy that takes value one when the participant attends all five sessions. Standard errors are clustered at the owner level in the specifications combining both data rounds, and robust when the specification includes a follow-up and the baseline only. All regressions control for the baseline outcome variable. Significance:*** p<0.01, ** p<0.05, * p<0.1

Table 5: Differences in Firm and Owner Characteristics by Industry

	High Women Concentration	Low Women Concentration	P-Value Difference (High-Low)
Consumption Index	0.10	0.16	0.6430
	(0.98)	(1.16)	
Domestic Helper	0.58	0.50	0.1632
	(0.50)	(0.50)	
Household Chores (Hours)	4.56	5.07	0.2249
	(3.45)	(3.88)	
Initial Stress Index	0.03	0.01	0.9028
	(0.98)	(1.01)	
Entrepreneurial Ability Index	0.38	-0.10	0.0002
	(1.19)	(1.04)	
Firm Years	9.01	6.38	0.0033
	(8.07)	7.24	
Business Score	13.98	12.81	0.0226
	(4.21)	(4.77)	
Daily Hours	6.68	6.36	0.3826
	(3.20)	(3.21)	
Education	15.54	15.09	0.1428
	(2.53)	(2.82)	
No Competitor	0.07	0.12	0.0731
	(0.25)	(0.33)	
Initial Profits	21.29	30.49	0.2030
	(46.65)	(75.60)	
Initial Sales	144.58	159.01	0.8206
	(489.32)	(491.50)	
Initial Number of Workers	2.47	3.27	0.2136
	(4.80)	(6.59)	

Notes: Table reports mean, standard deviation and the p-value of the difference in means in observable characteristics between owners in different industries. The consumption index aggregates expenditures in food, rent, water, electricity, gas and mobile phone, and is standardized using the control group mean and standard deviation. "Domestic helper" is a dummy that takes value one if the owner has a maid. The entrepreneurial index is the standardized sum of firm years, business score, daily hours spent by the owner on the business and her education. Profits and sales are in winsorized at the 99th percentile to trim outliers and expressed in thousands Bangladeshi Taka. Significance:*** p<0.01, ** p<0.05, * p<0.1

Figure 3: Kernel Density of Standardized Index of Stress Symptoms. Heterogeneous Treatment Effects by Industry
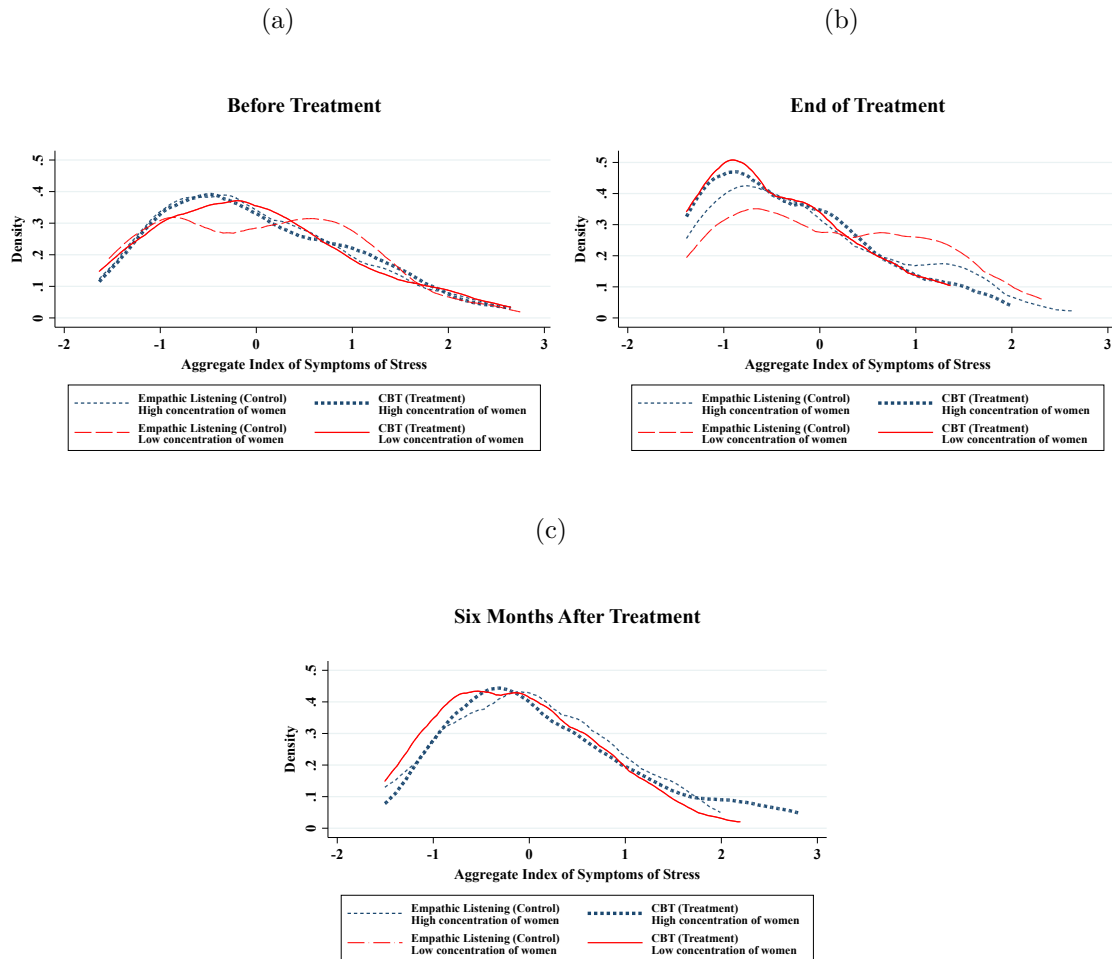
(a)   (b)

(c)

Notes: Figure shows the distribution of stress levels before the intervention, immediately after and six months later. The Stress Index is the standardized sum of symptoms of anxiety and depression, using the control group mean and standard deviation. The 7-item scale for Generalized Anxiety Disorders (GAD-7) and the 9-item scale Patient Health Questionnaire (PHQ-9) were used to measure symptoms of anxiety and depression, respectively. In figure (a), the Kolmogorov-Smirnov test does not reject equality of distribution of any of the pairwise distributions; in figure (b) the test rejects the hypothesis of equality of distribution between treatment and control group for owners in sectors with a low concentration of women (at the 10 % level), but not for owners in female-dominated sectors. When studying pairwise differences within each experimental group, the test does not reject the hypothesis of equality of distribution by sector (high versus low concentration of women) for owners in either experimental group. In figure (c), the test does not reject equality of distribution of any of the pairwise distributions.

Table 6: Heterogeneous Effects on Stress by Industry

	End of Treatment		6 Months After End	
	(1) Stress	(2) IHS Stress	(3) Stress	(4) IHS Stress
Panel A. Controlling for treatment heterogeneity with: entrepreneurial ability				
CBT* Low Female Concentration	-0.30	-0.25	-0.48**	-0.35**
	(0.19)	(0.16)	(0.20)	(0.16)
CBT	-0.18	-0.14	0.08	0.03
	(0.13)	(0.10)	(0.13)	(0.10)
LowFem	0.17	0.15	0.25*	0.18
	(0.14)	(0.11)	(0.14)	(0.11)
CBT*LowCon+CBT	-0.48***	-0.39***	-0.40***	-0.32***
P-value: CBT*LowCon+CBT	0.001	0.001	0.01	0.012
Panel B. Controlling for treatment heterogeneity with: household liquidity				
CBT* Low Female Concentration	-0.25	-0.20	-0.46**	-0.33**
	(0.19)	(0.15)	(0.19)	(0.16)
CBT	-0.23**	-0.18*	0.07	0.02
	(0.12)	(0.10)	(0.12)	(0.10)
LowFem	0.19	0.16	0.25*	0.18
	(0.14)	(0.11)	(0.14)	(0.11)
CBT*LowCon+CBT	-0.48***	-0.38***	-0.39***	-0.30***
P-value: CBT*LowCon+CBT	0.001	0.002	0.009	0.014
Panel C. Controlling for treatment heterogeneity with: all factors				
CBT* Low Female Concentration	-0.32*	-0.27*	-0.47**	-0.33**
	(0.19)	(0.16)	(0.20)	(0.16)
CBT	-0.17	-0.13	0.07	0.02
	(0.12)	(0.10)	(0.13)	(0.10)
LowFem	0.21	0.17	0.24*	0.17
	(0.14)	(0.11)	(0.15)	(0.12)
CBT*LowCon+CBT	-0.50***	-0.40***	-0.40***	-0.31***
P-value: CBT*LowCon+CBT	0.001	0.001	0.009	0.013

Notes: Table reports heterogeneous treatment effects. The Stress Index is the standardized sum of symptoms of anxiety and depression, using the control group mean and standard deviation. The 7-item scale for Generalized Anxiety Disorders (GAD-7) and the 9-item scale Patient Health Questionnaire (PHQ-9) were used to measure symptoms of anxiety and depression, respectively. IHS is the hyperbolic sine transformation of the stress index. All regressions control for the baseline outcome; a triple interaction of the treatment dummy, self-selection into an industry with a low concentration of women and additional confounders (as specified in each panel); as well as pairwise interactions of the treatment dummy, the sector type and each confounder. Confounders are entrepreneurial ability and household liquidity. Entrepreneurial ability is the standardized sum of firm years, business score, daily hours spent by the owner on the business and her education. Household liquidity is measured using an index that aggregates expenditures in food, rent, water, electricity, gas and mobile phone, and is standardized using the control mean and standard deviation. Robust standard errors. Significance:*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Figure 4: Kernel Density of Monthly Profits (Hyperbolic Sine Transformation)
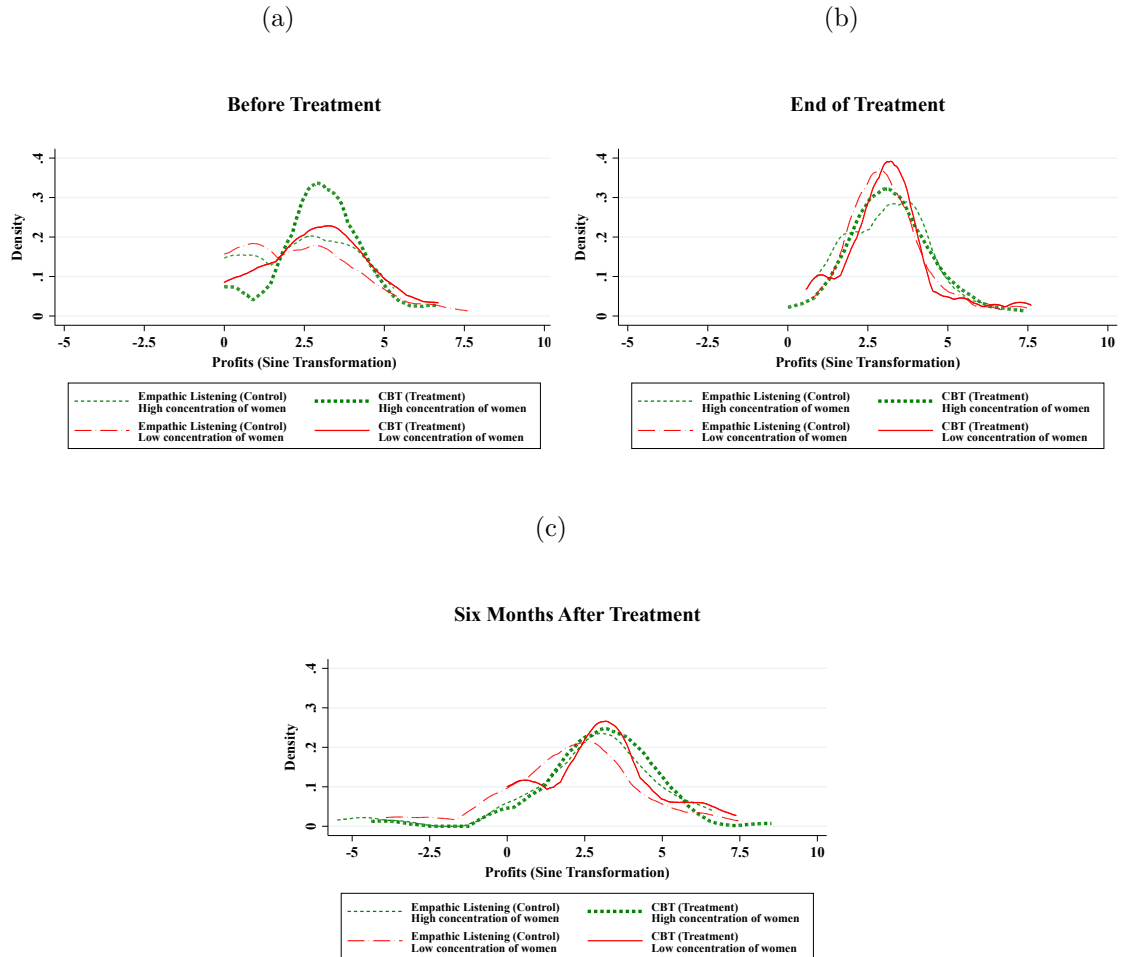
(a)   (b)

(c)

Notes: Figure shows the distribution of the hyperbolic sine transformation of monthly profits. In Graph (a), the Kolmogorov-Smirnov test does not reject the null hypothesis of equality of all pairwise distributions in (a), except for differences between CBT and EL for owners in sectors with a high concentration of women. In Graph (b), the test does not reject any pairwise distributions. In Graph (c), the test only rejects the null hypothesis that owners in the CBT and EL groups have a similar distribution of stress for those who operate in a sector with a low concentration of women.

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Table 7: Heterogeneous Treatment Effects on Profits and Sales

	End of Treatment				6 Months After End			
	(1) Profit	(2) IHS Profit	(3) Sales	(4) IHS Sales	(5) Profit	(6) IHS Profit	(7) Sales	(8) IHS Sales
Panel A. Controlling for treatment effect heterogeneity with: entrepreneurial ability								
CBT* Low Female Concentration	-4.94	-0.14	-0.47	-0.06	20.06	0.84	116.71	0.47
	(27.91)	(0.32)	(168.73)	(0.35)	(22.30)	(0.53)	(138.20)	(0.44)
CBT	1.68	-0.17	-11.26	0.00	-4.14	-0.02	-44.39	-0.14
	(10.94)	(0.22)	(41.14)	(0.22)	(9.10)	(0.33)	(46.81)	(0.27)
LowFem	0.33	0.21	67.33	0.00	-10.33	-0.49	42.81	-0.22
	(20.51)	(0.23)	(127.03)	(0.25)	(13.56)	(0.42)	(87.73)	(0.30)
CBT*LowCon+CBT	-3.27	-0.31	-11.72	-0.06	15.92	0.82***	72.33	0.33
P-value: CBT*LowCon+CBT	0.90	0.17	0.94	0.82	0.43	0.05	0.57	0.34
Panel B. Controlling for treatment effect heterogeneity with: household liquidity								
CBT* Low Female Concentration	0.08	-0.03	18.68	-0.13	20.95	0.77	60.99	0.45
	(24.34)	(0.29)	(144.78)	(0.32)	(18.61)	(0.49)	(135.53)	(0.43)
CBT	-0.98	-0.19	-1.19	0.13	-6.09	-0.02	1.47	-0.08
	(10.33)	(0.20)	(44.63)	(0.20)	(8.88)	(0.31)	(68.57)	(0.26)
LowFem	-2.86	0.02	39.73	-0.05	-10.03	-0.47	25.6	-0.33
	(15.85)	(0.22)	(99.48)	(0.24)	(11.37)	(0.39)	(79.89)	(0.31)
CBT*LowCon+CBT	-0.90	-0.22	17.49	-0.01	14.86	0.75***	62.46	0.38
P-value: CBT*LowCon+CBT	0.97	0.28	0.90	0.98	0.38	0.05	0.56	0.29
Panel C. Controlling for treatment effect heterogeneity with: all factors								
CBT* Low Female Concentration	-3.61	-0.08	0.51	-0.06	22.62	0.88	95.78	0.44
	(27.82)	(0.31)	(153.53)	(0.34)	(19.72)	(0.53)	(130.29)	(0.43)
CBT	-1.12	-0.23	-8.37	0.01	-4.02	-0.06	-37.81	-0.14
	(11.37)	(0.21)	(41.24)	(0.22)	(8.97)	(0.33)	(49.97)	(0.27)
LowFem	-0.97	0.16	60.88	-0.03	-12.20	-0.51	43.73	-0.23
	(20.78)	(0.23)	(115.28)	(0.24)	(12.87)	(0.43)	(88.27)	(0.30)
CBT*LowCon+CBT	-4.72	-0.31	-7.86	-0.05	18.60	0.82***	57.97	0.30
P-value: CBT*LowCon+CBT	0.86	0.16	0.96	0.84	0.30	0.05	0.62	0.38

Notes: Table reports heterogeneous treatment effects. Profits and sales are expressed in thousands of Bangladeshi Taka and winsorized at the 99th percentile to trim outliers. The inverse hyperbolic sine transformation (IHS) uses non-winsorized profits and sales. All regressions control for the baseline outcome; a triple interaction of the treatment dummy, self-selection into an industry with a low concentration of women and additional confounders (as specified in each panel); as well as pairwise interactions of the treatment dummy, the sector type and each confounder. Confounders are entrepreneurial ability and household liquidity. Entrepreneurial ability is the standardized sum of firm years, business score, daily hours spent by the owner on the business and her education. Household liquidity is measured using an index that aggregates expenditures in food, rent, water, electricity, gas and mobile phone, and is standardized using the control mean and standard deviation. Robust standard errors. Significance:*** p<0.01, ** p<0.05, * p<0.1

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Table 8: Heterogeneous Treatment Effects on Inputs

	End of Treatment				6 Months After End			
	(1) Inventories	(2) IHS Inventories	(3) Workers	(4) Hours	(5) Inventories	(6) IHS Inventories	(7) Workers	(8) Hours
Panel A. Controlling for treatment effect heterogeneity with: entrepreneurial ability								
CBT*Low Female Concentration	464.52	0.51	0.97	0.44	556.85	0.28	0.42	0.07
	(442.40)	(0.37)	(0.94)	(0.62)	(913.50)	(0.42)	(0.87)	(0.78)
CBT	-222.4	-0.43*	-0.50	-0.14	-392.48	-0.29	-0.43	0.02
	(333.48)	(0.24)	(0.64)	(0.43)	(265.28)	(0.26)	(0.53)	(0.52)
LowFem	-221.05	-0.47*	-0.51	-0.77*	555.77	-0.03	-0.59	-0.59
	(338.29)	(0.29)	(0.72)	(0.41)	(659.59)	(0.30)	(0.68)	(0.55)
CBT*LowCon+CBT	242.11	0.07	0.47	0.30	164.36	-0.01	-0.01	0.09
P-value CBT*LowCon+CBT	0.39	0.77	0.49	0.50	0.85	0.98	0.99	0.88
Panel B. Controlling for treatment effect heterogeneity with: household liquidity								
CBT*Low Female Concentration	432.02	0.47	0.82	0.32	724.73	0.28	0.37	0.17
	(430.51)	(0.37)	(0.94)	(0.61)	(932.89)	(0.42)	(0.91)	(0.77)
CBT	-195.3	-0.44*	-0.40	-0.02	-710.70**	-0.41*	-0.41	-0.04
	(329.11)	(0.24)	(0.70)	(0.42)	(315.30)	(0.24)	(0.67)	(0.53)
LowFem	-227.6	-0.60**	-0.74	-0.94**	582.85	-0.07	-0.92	-0.89
	(333.10)	(0.30)	(0.73)	(0.41)	(712.38)	(0.32)	(0.73)	(0.54)
CBT*LowCon+CBT	236.72	0.03	0.41	0.30	14.04	-0.13	-0.04	0.14
P-value CBT*LowCon+CBT	0.38	0.91	0.50	0.50	0.99	0.71	0.95	0.81
Panel C. Controlling for treatment effect heterogeneity with: all factors								
CBT*Low Female Concentration	432.95	0.53	1.25	0.5	415.6	0.33	0.52	0.04
	(459.07)	(0.37)	(1.01)	(0.62)	(925.12)	(0.42)	(0.86)	(0.78)
CBT	-189.76	-0.47*	-0.78	-0.24	-336.86	-0.35	-0.49	-0.01
	(361.09)	(0.25)	(0.74)	(0.43)	(266.67)	(0.26)	(0.54)	(0.52)
LowFem	-245.01	-0.52*	-0.74	-0.78*	590.2	-0.06	-0.67	-0.57
	(366.53)	(0.29)	(0.80)	(0.40)	(707.95)	(0.30)	(0.67)	(0.54)
CBT*LowCon+CBT	243.19	0.06	0.46	0.26	78.74	-0.02	0.03	0.03
P-value CBT*Otpar+CBT	0.38	0.81	0.49	0.57	0.93	0.94	0.97	0.96

Notes: Table reports heterogeneous treatment effects. Inventories are expressed in thousands of Bangladeshi Taka and winsorized at the 99th percentile to trim outliers. The inverse hyperbolic sine transformation (IHS) uses non-winsorized inventories. All regressions control for the baseline outcome; a triple interaction of the treatment dummy, self-selection into an industry with a low concentration of women and additional confounders (as specified in each panel); as well as pairwise interactions of the treatment dummy, the sector type and each confounder. Confounders are entrepreneurial ability and household liquidity. Entrepreneurial ability is the standardized sum of firm years, business score, daily hours spent by the owner on the business and her education. Household liquidity is measured using an index that aggregates expenditures in food, rent, water, electricity, gas and mobile phone, and is standardized using the control mean and standard deviation. Robust standard errors. Significance:*** p<0.01, ** p<0.05, * p<0.1

Table A1: Robustness of Main Results to Baseline Imbalance

| | End of Treatment | | 6 Months After End | |
| | (1) | (2) | (3) | (4) |
Panel A. Stress Index	Stress Index	IHS Stress	Stress Index	IHS Stress
ATE Propensity Score Matching	-0.35***	-0.28***	-0.02	-0.03
(Caliper=0.2)	(0.14)	(0.12)	(0.14)	(0.13)
ATE Fisher's Randomization Test	-0.34***	-0.27***	-0.12	-0.11
	(0.09)	(0.08)	(0.10)	(0.08)
ATE Inverse Prob. Weight.	-0.33***	-0.27**	-0.05	-0.06
	(0.13)	(0.10)	(0.11)	(0.09)
Potential Outcome Mean (Treatment EL)	0.05	0.14	0.11	0.02
Overidentification test	0.99	0.99	0.98	0.98
(H0: Covariates are balanced)				
	(1)	(2)	(3)	(4)
Panel B. Profits	Profit	IHS Profit	Profit	IHS Profit
ATE Propensity Score Matching	10.20	-0.02	18.10	0.52*
(Caliper=0.2)	(13.74)	(0.19)	(16.24)	(0.29)
ATE Fisher's Randomization Test	5.00	-0.28	16.37	0.37
	(14.73)	(0.15)	(16.43)	(0.27)
ATE Inverse Prob. Weight.	-0.16	-0.07	11.37	0.59*
	14.61	0.16	19.15	0.33
Potential Outcome Mean	42.27	3.24	35.94	2.36
Overidentification test	0.98	0.98	1.00	1.00
(H0: Covariates are balanced)				
	(1)	(2)	(3)	(4)
Panel C. Sales	Sales	IHS Sales	Sales	IHS Sales
ATE Propensity Score Matching	-160.81	-0.24	-160.54	0.00
(Caliper=0.2)	(227.15)	(0.24)	0.58	0.26
ATE Fisher's Randomization Test	-189.72	-0.02	-352.30	0.00
	(240.39)	(0.16)	(469.73)	(0.21)
ATE Inverse Prob. Weight.	-174.06	0.16	-405.52	-0.01
	(246.08)	(0.20)	(474.67)	(0.21)
Potential Outcome Mean	416.05	4.54	631.20	4.29
Overidentification test	0.98	0.98	0.99	0.99
(H0: Covariates are balanced)				

Notes: Table reports robustness of main results to baseline imbalance in firm characteristics. Profits and sales are expressed in thousands of Bangladeshi Taka and winsorized at the 99th percentile to trim outliers. The Stress Index is the standardized sum of symptoms of anxiety and depression, using the control group mean and standard deviation. The 7-item scale for Generalized Anxiety Disorders (GAD-7) and the 9-item scale Patient Health Questionnaire (PHQ-9) were used to measure symptoms of anxiety and depression, respectively. The inverse hyperbolic sine transformation (IHS) uses non-winsorized profits and sales. Inverse Probability Weighting (IPW) uses firm years, daily working hours, baseline sales and operating in a sector with a low concentration of women to calculate the inverse probability of being assigned to the treatment. Fischer's randomization test shows results for 10,000 replications. Using 1,000 and 100,000 replications does not affect these results. Robust standard errors. Significance:*** p<0.01, ** p<0.05, * p<0.1

Table A2: Robustness of Main Results to Difference-in-Difference Estimation

	(1) Stress	(2) IHS Stress	(3) Profit	(4) IHS Profit	(5) Sales	(6) IHS Sales
Panel A. End of Treatment						
CBT*Post	-0.34***	-0.27***	6.49	-0.47***	25.64	-0.07
	(0.10)	(0.08)	(10.39)	(0.16)	(65.34)	(0.16)
Observations	603	603	507	507	440	440
Adj R-squared	0.62	0.62	0.62	0.72	0.75	0.84
Panel B. Six Months After Treatment						
CBT*Post	-0.13	-0.11	4.96	0.14	-35.56	-0.11
	(0.11)	(0.09)	(9.51)	(0.25)	(69.78)	(0.21)
Observations	583	583	522	522	448	448
Adj R-squared	0.60	0.60	0.65	0.53	0.60	0.72

Notes: Table reports robustness of main results to difference-in-difference estimation. Profits and sales are expressed in thousands of Bangladeshi Taka and winsorized at the 99th percentile to trim outliers. The Stress Index is the standardized sum of symptoms of anxiety and depression, using the control group mean and standard deviation. The 7-item scale for Generalized Anxiety Disorders (GAD-7) and the 9-item scale Patient Health Questionnaire (PHQ-9) were used to measure symptoms of anxiety and depression, respectively. The inverse hyperbolic sine transformation (IHS) uses non-winsorized profits and sales. Robust standard errors. Significance:*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table A3: Robustness of Main Results to Multiple Testing Hypothesis (ANCOVA Specification with Sidak-Adjusted P-Values)

	(1) Stress	(2) IHS Stress	(3) Profit	(4) IHS Profit	(5) Sales	(6) IHS Sales
Panel A. End of Treatment						
CBT	-0.33***	-0.27***	4.98	-0.16	-0.12	0.03
	(0.09)	(0.08)	(10.53)	(0.14)	-66.34	-0.16
Observations	297	297	224	224	197	197
Adj R-squared	0.31	0.32	0.47	0.43	0.62	0.63
Panel B. Six Months After Treatment						
CBT	-0.12	-0.12	3.6	0.35	20.34	0.04
	(0.10)	(0.08)	(9.75)	(0.25)	(71.11)	(0.21)
Observations	277	277	239	239	205	205
Adj R-squared	0.26	0.26	0.51	0.24	0.38	0.46

Notes: Table reports robustness of main results to multiple hypothesis testing. Profits and sales are expressed in thousands of Bangladeshi Taka and winsorized at the 99th percentile to trim outliers. The Stress Index is the standardized sum of symptoms of anxiety and depression, using the control group mean and standard deviation. The 7-item scale for Generalized Anxiety Disorders (GAD-7) and the 9-item scale Patient Health Questionnaire (PHQ-9) were used to measure symptoms of anxiety and depression, respectively. The inverse hyperbolic sine transformation (IHS) uses non-winsorized profits and sales. Robust standard errors. Significance:*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table A4: Robustness of Heterogeneity Analysis to Multiple Testing Hypothesis (Sidak-Adjusted P-Values)

	End of Treatment				Six Months After End			
	(1) Stress	(2) IHS Stress	(3) Profit	(4) IHS Profit	(5) Stress	(6) IHS Stress	(7) Profit	(8) IHS Profit
Panel A. Controlling for treatment effect heterogeneity with: entrepreneurial ability								
CBT* Low Female Concentration	-0.30	-0.25	-4.94	-0.14	-0.48**	-0.35**	20.06	0.84
	(0.19)	(0.16)	(23.37)	(0.31)	(0.20)	(0.16)	(20.15)	(0.52)
CBT	-0.18	-0.14	1.68	-0.17	0.08	0.03	-4.14	-0.02
	(0.13)	(0.10)	(15.23)	(0.20)	(0.13)	(0.11)	(13.45)	(0.35)
CBT*LowCon+CBT	-0.48	-0.39	-3.27	-0.31	-0.40	-0.32	15.92	0.82
*P-value: CBT*LowCon+CBT*	0.001	0.001	0.85	0.19	0.008	0.009	0.29	0.04
Panel B. Controlling for treatment effect heterogeneity with: household liquidity								
CBT* Low Female Concentration	-0.25	-0.20	0.08	-0.03	-0.46**	-0.33**	20.95	0.77
	(0.18)	(0.15)	(22.27)	(0.30)	(0.20)	(0.16)	(19.48)	(0.50)
CBT	-0.23*	-0.18*	-0.98	-0.19	0.07	0.02	-6.09	-0.02
	(0.12)	(0.10)	(14.12)	(0.19)	(0.13)	(0.10)	(12.63)	(0.33)
CBT*LowCon+CBT	-0.48	-0.38	-0.90	-0.22	-0.39	-0.30	14.86	0.75
*P-value: CBT*LowCon+CBT*	0.001	0.001	0.96	0.35	0.009	0.012	0.32	0.05
Panel C. Controlling for treatment effect heterogeneity with: all factors								
CBT* Low Female Concentration	-0.32*	-0.27*	-3.61	-0.08	-0.47**	-0.33**	22.62	0.88*
	(0.19)	(0.16)	(23.31)	(0.31)	(0.20)	(0.16)	(20.25)	(0.52)
CBT	-0.17	-0.13	-1.12	-0.23	0.07	0.02	-4.02	-0.06
	(0.13)	(0.10)	(15.23)	(0.20)	(0.14)	(0.11)	(13.53)	(0.35)
CBT*LowCon+CBT	-0.50	-0.40	-4.72	-0.31	-0.40	-0.31	18.60	0.82
*P-value: CBT*LowCon+CBT*	0.001	0.001	0.79	0.18	0.008	0.01	0.22	0.04

Notes: Table reports robustness of heterogeneity to multiple hypothesis testing. Profits and sales are expressed in thousands of Bangladeshi Taka and winsorized at the 99th percentile to trim outliers. The Stress Index is the standardized sum of symptoms of anxiety and depression, using the control group mean and standard deviation. The 7-item scale for Generalized Anxiety Disorders (GAD-7) and the 9-item scale Patient Health Questionnaire (PHQ-9) were used to measure symptoms of anxiety and depression, respectively. The inverse hyperbolic sine transformation (IHS) uses non-winsorized profits and sales. Robust standard errors. Significance:*** $p<0.01$, ** $p<0.05$, * $p<0.1$