Reference Points and Micro-Entrepreneurship*

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Abstract

This paper presents empirical evidence on the relationship between aspirations and economic growth. Approximately 600 micro-entrepreneurs were randomized into treatments providing information about a role model, additionally the importance of establishing realistic goals, and how to maintain funds within their enterprises. Six months after implementation we find significant positive effects of shifts in aspirations on effort levels and savings. These effects can be precisely estimated one year after implementation. On average, changes in investment behavior translate to sales increases of 40%-45% compared to a control group. In contrast, human capital improvements have no effect on investment behavior. Furthermore, setting business goals mitigates the positive effects of role models on economic growth. Despite similar effects on effort levels, participants that condition their reference points on a one-year goal save less and the positive effects on sales disappears over time.

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1 Introduction

Micro-enterprises are an important income source of many poor households in developing countries, yet evidence on the constraints that hold these businesses back from developing into SMEs and how to relax them is scarce. Productivity gains from human capital interventions are surprisingly small[1] and returns to access to financial capital in most settings puzzlingly low.[2]

This raises a number of questions. Are internal constraints binding for the development of micro-enterprises? Is an intervention relaxing internal constraints more efficient than interventions teaching basic business skills? Are there complementarities that can be achieved by combining both approaches? Perhaps the most important, but difficult, question to answer is what specific types of internal constraints are most important and how to design successful policies to overcome them.

These questions become particularly prevalent in conflict-ridden countries such as Mozambique. Decades of independent and civil wars, and ongoing conflict between the incumbent party and the opposition have not only constrained economic resources and access to education but also impaired the population's trust in the future. Without entrepreneurs believing in economic growth and stability it is unlikely that they will set themselves business objectives that foster investments. Furthermore, a lack of positive examples and role models to follow will likely restrain higher aspiration levels, leading to suboptimal business efforts and practices.

We tackle these questions in urban vendor clusters of the greater Maputo area, i.e. formal street markets in the capital of Mozambique and its neighboring sister city Matola. Entrepreneurs in these markets typically operate on extremely low profitability margins, have no formal training, low general education levels, and limited perspectives for business growth. We identified an experimental sample of approximately 790 market vendors in these clusters of which 600 were randomly assigned to watch an inspirational video, additionally learn about and set a "SMART" goal, receive basic business skills training, neither or a combination of these interventions.

The video documents the path to success of a young male entrepreneur that started his business career as a street merchant selling school supplies in the city of Maputo. Without any major external support, he managed to continuously grow his business and is nowadays the owner of several stores in different market clusters and a two-story supermarket in a newly constructed neighborhood of Matola. We showed the video to entrepreneurs individually at their stalls in a separate visit after having collected baseline information about household and business outcomes. By providing participants with a new perspective on business growth

[1] See McKenzie and Woodruff (2013) for a detailed summary on the returns to traditional business skills training.
[2] See de Mel et al. (2014) and Blattman et al. (2014) for two examples of conflicting evidence on the impact of cash drops on entrepreneurship.

(through role model exposure) we expect to shift their reference points and increase vendors' aspirations in the long run. Aspirations are, similarly to self-confidence, expected to translate into greater efficacy, effort, and ultimately business success through increased sales and profits.

An immediate concern about changing aspirations arises in settings where knowledge on how to save and invest or set feasible business goals is limited such that higher aspirations might not necessarily translate into productive behavior. We approach these limitations by providing vendors with either simple rules-of-thumb to separate their personal and business expenses, supporting them in developing a business goal to be achieved over the course of maximum one year, or both. The goal setting intervention is modeled on standard management practices generally known as "SMART" (Specific, Measurable, Achievable, Results-focused, Time-bound) goals adapted to the literacy level of our participants.

To test the impact of our interventions, we returned six months and 14 months after implementation to collect survey data on psychometric indicators, business practices, and household and business outcomes. The effects of our simple nudge of watching a short video are impressively large. Shifting entrepreneurs' reference points increases sales by approximately 68% compared to the control group. Additionally providing them with a goal setting training though diminishes this effect substantially. We cannot confirm any effects from business skills training by itself. These effects seem to be driven by three major mechanisms. Our role model intervention significantly increases savings over both time periods by 34%. These effects are driven by formal savings in bank accounts. Entrepreneurs that watched our video additionally increase their effort by working more days per week and having longer shop hours than entrepreneurs in the control group. Entrepreneurs in both the video group and the extended video group increase risky behavior as measured by an incentivized lottery question.

Our results expand on recent evidence by Campos et al. (2017) that evaluate the effectiveness of a personal initiative training versus the effects of basic business and marketing skills. Transforming the mindsets of entrepreneurs towards greater innovativeness without providing additional business skills training or cash grants leads to significant increases of profits by 30%. These results support the idea that internal constraints might be much more important to entrepreneurial growth than previously thought. However, the training under examination in this study is a multi-component treatment that does not allow to evaluate through which channels these constraints operate, or whether a combination of psychological interventions, and business skills training might translate higher innovativeness into business success more effectively. Among internal constraints, aspirations have gained widespread attention as a potentially limiting factor in economic growth. From a theoretical perspective, the idea that aspirations and economic change might be related was first formalized by Ray (2006). Building upon this contribution, Genicot and Ray (2017) argue that individual aspirations are shaped by society-wide economic conditions and that these in turn affect individual investment

incentives. Dalton et al. (2015) again show that aspirations failure is a consequence of poverty that might lead to a behavioral poverty trap. Bernard et al. (2014) present evidence that suggests a significant impact of aspirations on forward-looking behavior – an important predictor of business growth. By exposing study participants to potential role models, the authors find a positive, persistent effect on aspirations as well as a positive effect of aspirations on children's education.

This study adds to our understanding of constraints to micro-entrepreneurial business growth, particularly the importance of reference points and how to shift them. Without changing entrepreneurs' perspectives and business goals first, financial and human capital interventions are unlikely to yield positive returns.

2 Country Background: Mozambique

The randomized control trial used to answer the research questions examined in this paper was conducted in Mozambique. These research questions, namely those related to the impact of internal constraints on micro-enterprise development and to their interaction with the micro-entrepreneurs' general lack of business skills, are particularly relevant in conflict-ridden countries such as Mozambique. Recent decades of independence and civil wars, and ongoing conflict between the incumbent party and the opposition have not only constrained economic resources and access to education, but also impaired the population's trust in the future. Without entrepreneurs believing in economic growth and stability, it is unlikely that they will set themselves business objectives that foster investment and long run business growth – which necessarily require trading off current for future gains. Furthermore, a lack of positive examples and role models to follow is likely to restrain micro-entrepreneurs' higher aspiration levels, potentially leading to suboptimal business efforts and practices.

Mozambique became independent from the Portuguese colonization in 1975. In the preceding 10 years, there was an independence war and social unrest that disrupted the Mozambican economy. Since the end of this war with Portugal in 1975, the country has been led under a single-party, socialist regime. Two years after independence, the country's two major political parties began a very destructive civil war. Estimates suggest that up to one million people died as a consequence of war and five million civilians have been displaced. In 2013, the peace agreement signed in 1992 was broken when upheavals reemerged. Hundreds were killed and displaced, with tensions spiking in the north and center of the country in 2015 and 2016. Most of the Mozambican population, around 70% in 2016, live in rural areas from agriculture. These livelihoods are at constant risk due to recurring natural disasters such as floods. The increasing climate change is expected to lead to an increase in the occurrence of such disasters.

As a consequence of both conflict and natural disasters, the country faces high internal and international

migration.[3] Most Mozambicans move to the largest Mozambican cities and to South Africa. Mozambique's capital, Maputo, is the country's most populous city. Around 9%, 2.7 million, of the Mozambican population live in the Maputo metropolitan area. There are few formal, salaried jobs. Most workers earn money through a mix of casual employment and petty businesses. The turnover in these businesses is high and workers regularly interrupt their business activities. Concentrated in local market clusters, these entrepreneurs face a high degree of competition. They have no formal business training, little education, and limited access to capital.

Supporting the development of such businesses is a major concern of the government. The Mozambican private sector is underdeveloped with only a few large firms[4] and an almost entirely absent SME sector. Most businesses are too small to pay taxes. Understanding the constraints holding micro-businesses in Mozambique back allows for government policies that foster SME development and economic growth. As self-employment is the only income source of many urban households, supporting business growth is also a poverty alleviation scheme.

3 Experimental Design and Implementation

To estimate both the effect of changes in reference points and potential complementarities of these with goal-setting and business skill training, we used a 2x3 factorial design, as illustrated in Figure 1.

Figure 1: 2X3 Experimental Design.

	PLACEBO VIDEO	VIDEO ONLY	VIDEO + GOALS
CONTROL	98 vendors	96 vendors	98 vendors
BUSINESS SKILLS	98 vendors	89 vendors	89 vendors

3.1 Interventions

3.1.1 Aspirations Video

The video showcases the successful career and business development of Sr. Tivane. He is a young entrepreneur that developed from a street vendor to a businessman with several shops and a grocery store spanning two floors. His shops are located in markets that are not included in our sample. None of the entrepreneurs that watched the video indicated that they knew his story before the video. The video shows several sequences of the neighborhood and the store of Sr. Tivane while a narrator describes his way of success. They are complemented with interview sequences with the owner himself, his wife, a development worker, and

[3] See Batista and Vicente (2018) for further evidence on the relationship between natural disasters and migration in Mozambique.

[4] See the Enterprise Mapping made by Sutton for the IGC.

the country director of the *Associação NOVAFRICA para o Desenvolvimento Empresarial e Económico de Moçambique* (NOVAFRICA Association for Mozambican Business and Economic Development). The statements emphasize the success of Sr. Tivane as a businessman and potential role model. There was minimal framing on how to imitate his success. The video is explicit in the importance of ambitions to grow a business and get out of poverty.

Role Model Background and Pilot We piloted videos about four different entrepreneurs. The video about Sr. Tivane proved to be most successful in inspiring entrepreneurs. The pilot group identified with the role model. Much like the majority of our sample, Sr. Tivane has little education and no formal business training. He started his career as a flying vendor selling school products in the streets of Maputo. He then managed to rent a stall in one of the markets and grew his business successively. At the same time, his business is sufficiently developed to mark a significant difference between our experimental sample and our role model. He has several employees that run his shops in urban markets in Maputo and the grocery store in his neighborhood.

Implementation and Aims The runtime of the video is 8 minutes – this seemed to be the approximate time span for which the treatment group remained engaged and attentive. The video was shown individually on tablets with headphones. We visited vendors during their business hours at their shops. The video was followed by a brief discussion of the video content with the trainer. The video was designed to encourage two types of change: First, it increases aspirations – forward-looking reference points – by providing information on the attainability of entrepreneurial success. Bernard et al. (2014) have shown that aspirations influence behavior and that they respond to interventions. These empirical results validate theoretical models about the role of aspirations for savings and investments (Genicot and Ray (2017)). Second, the video describes in detail the intrinsic motivation and ambitions of our role model. It increases self-efficiency by emphasizing the importance of own effort. The narrative tried to convince entrepreneurs that our role model's business success was not a result of external help or luck.

3.1.2 Goal Setting

We adapted the SMART goal setting approach to the context of micro-entrepreneurs to strengthen their goal setting behavior. The acronym defines a desirable goal as one that is specific, measurable, attributable, realistic, and time-sensitive. The trainers first explained the concept of a SMART goal with examples of fictional characters. Each entrepreneur was then asked to select a goal for their own business. The training then followed the SMART scheme in specifying the objective and respective cost. Based on the overall cost

and the responsible's monthly savings capacity the trainer helped define a financing model. If the initial goal was deemed unrealistic for the next year, the entrepreneur was asked to revise and choose a different goal. We left a hand-written copy of the goal achievement plan and a leaflet explaining the definition of SMART goals with the entrepreneur.

3.1.3 Placebo Video

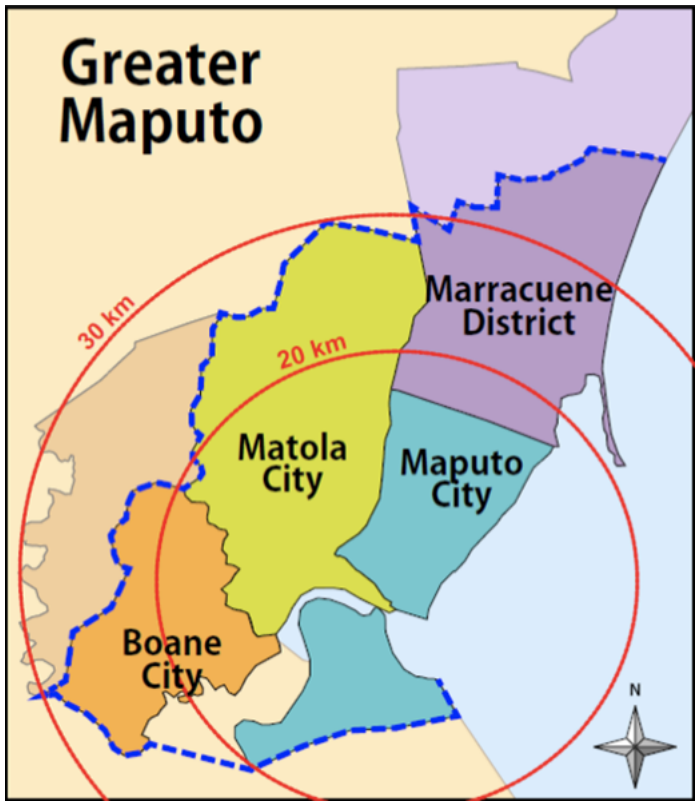
We produced a short video in Portuguese about the Limpopo National Park. The purpose of this video is to ensure that any effects found on aspirations and business outcomes of individuals are not driven by the experience of watching a video itself.[5] The placebo video is similar in length to the aspirations video. It was displayed on tablets and with headphones as well.

3.1.4 Basic Skills Training

The business skills training is an adaptation of the rules-of-thumb approach by Drexler et al. (2014). Instead of providing entrepreneurs with complex accounting and financial literacy skills, the rules-of-thumb approach provides entrepreneurs with simple rules on how to run their business. We focus on four main lessons: First, the trainer explains the importance of separating business and household accounts. Keeping business money apart helps entrepreneurs calculate their profits and evaluate their business performance. A central mechanism, however, is nudging entrepreneurs into mental accounting. Mental accounting increases business savings[6] and investments, and thus subsequently business growth. The trainer then explains that money for different purposes should not only be stored separately but also safely. We provide each entrepreneur with two money pouches to increase adoption of these rules. The third rule asks entrepreneurs to establish a salary for themselves based on their needs and business income. The last rule allows entrepreneurs to borrow money from their business account for their household as long as it is paid back within seven days. The training was provided individually at the business. We left a leaflet with a summary of the training in Portuguese[7] and a flyer with the four rules of thumb with each entrepreneur after the training.

[5] Bernard et al. (2015) provide a detailed exposition of the importance of placebo treatments with video interventions.
[6] See Thaler (1999) for a detailed exposition on mental accounting.
[7] Over 94% of our sample indicate that they speak Portuguese. As Changana, the second most spoken language in the Maputo region, is mostly a spoken language but rarely written, we decided to provide our supporting material in one language only.

Figure 2: Maputo Metropolitan Area.



Source: JICA Report (2014)

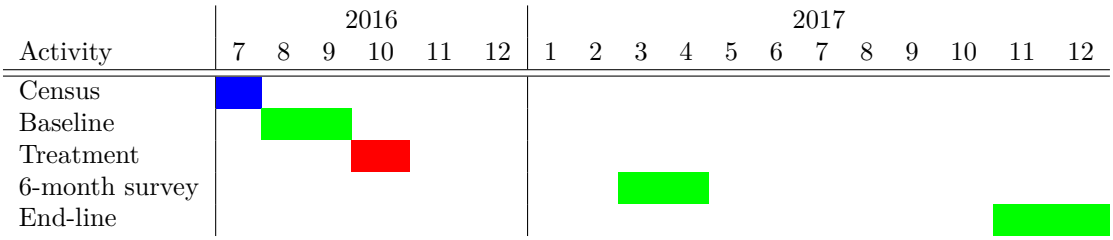
3.2 Sampling, data collection and experimental implementation

3.2.1 Sampling

We randomly selected about 600 micro-entrepreneurs in different markets to participate in our study. With no reliable administrative data on the universe of micro-entrepreneurs in the metropolitan area of Maputo, we set out to obtain census data for a representative sample of market vendors. In 2016, 82 markets were officially registered. We focused our sample on markets located in the cities of Maputo and Matola. We excluded markets located outside these city borders as depicted in Figure 2 and the island of Inhaca. We further excluded markets that were indicated on our administrative list and confirmed by our local RA team to have less than 100 vendors. Due to security concerns we also excluded two informal markets. The sampling strategy at this stage then followed neighborhood market clusters. In areas where we could not find the initial market or it had moved we proceeded with a census of market vendors in the new local market. In total, we obtained a representative sample of 3.136 market vendors in 33 different markets. This represents approximately 76% of all markets within our sampling framework.

Most of these markets are organized in designated open-air areas. They serve the population in the

Figure 3: Project Timeline.



respective neighborhood and supply groceries, clothes, household and construction goods. Vendors in these markets typically sell in structures similar to small stalls or on benches. The most advanced shops are covered and lockable, and have access to electricity. Other shops barely have a roof or walls, and vendors collect their products at the end of the day to take them home. We only sampled businesses with a designated vending area. Flying vendors with movable carts that switch between different markets are excluded.

For these 3.136 market vendors we obtained census data on individual characteristics relevant to our interventions. During the census we recorded the name of the shop owner or managing staff, their age, gender, nationality, and whether they had basic literacy. We furthermore obtained data on their perspective of remaining active in the respective market during the next year, their consent to participate in our study, as well as the location of the shop and the shop responsible's contact details.

We applied the following exclusion restrictions: Due to possible identification problems with our Mozambican role model, we excluded all foreign market vendors; All market vendors with a business horizon of less than a year and more than 50 years old[8] were excluded from the sample; Due to business type homogeneity, we excluded all fruit/vegetable sellers, restaurants, bars, and kiosks, as well as any shops selling illegal products, traditional medicine, or wholesale merchants.

Applying these eligibility criteria, we obtained a representative subsample of 788 market vendors in 32 markets. We proceeded by randomly selecting 624 market vendors in 29 markets for the baseline survey. Three markets were excluded as less than six vendors meeting our requirements operated on those markets. During our treatment visit we were able to located 568 vendors, 95% of our sample, again. Treatment allocation was randomized on the individual unit and stratified by market clusters.

3.2.2 Experimental implementation

As illustrated in Figure 3 the baseline survey took place one month after the census.

We randomized entrepreneurs by computerized assignment conditional on a completed baseline survey.[9]

[8] Between 2010 and 2015, life expectancy at birth in Mozambique was 56 years according to the United Nations Population Division report "World Population Prospects" (2017).

[9] Around 3.8% of the interviews conducted at baseline were not completed as entrepreneurs interrupted the interview and were not willing to continue. One entrepreneur had to be excluded from the sample due to religious reasons that did not allow

We completed baseline surveys for 600 individuals. Treatment assignment was stratified by market clusters. The training visits took place in the month after the completion of all baseline surveys. We ran end-line surveys 6 months and 13-14 months after the training visits.

Balance We could find 94.6% of our baseline sample during the treatment visit. This resulted in 16.9% assignment to the role model video only, 17.25% to the role model video with goal setting training, 17.25% to the rules-of-thumb training only, 15.67% to the role model video and rules-of-thumb training, 15.67% to the group that received all components, and 17.25% to neither. Figure 1 illustrates this distribution. Table 1 reports balance tests for each treatment for select covariates.

3.2.3 Data Collection and Measurement Strategies

We tried to survey each firm owner four times: 1) at baseline before the training visit, 2) during the training visit for additional baseline data on business outcomes and immediate effects on psychometric indicators, 3) "short-run" surveys 6 months after the training, and 4) at end-line 13-14 months after the training. Subjects also conducted a set of incentivized dictator and risk aversion games after the baseline and "short-run" survey. For the following analysis we restrict our sample to subjects that were present during the training visit. Of those, we collected data on 86% at the 6-month visit and 80% at the end-line visit.

On average participants are 33 years old. Almost half of our sample is composed of women. Vendors spent approximately 8 years in school, providing them with less than high-school education. Only eleven percent of participants have ever received formal training in their business area and households are composed of six members on average. Two and a half of these household members are dependents - this includes biological children and other minors living in the same household. Vendors that watched the video and received business skills training are slightly more likely to live in households with many children.

Businesses have on average 0.3 employees. Business owners are personally in charge of their stalls 6.4 days during a normal week. Each day they work almost 10 hours. This effort translates into 1.873Mts in sales (this is equivalent to US$12 applying the 2016 exchange rate average at the time of the baseline survey). The reported sales are the median sales during the week prior to our baseline visit. This control for outlier sales days. Median profits are slightly higher for the treatment group that received all components of our intervention.

him to participate in the dictator games or watch a video. Given that all entrepreneurs either saw the role model video or the placebo he could not participate in the study.

Table 1: Descriptive Statistics and Randomization Balance for Select Covariates.

	Means, full sample						
Variables	Control	Video	Video & Goals	Business Skills	Video * Business Skills	Video & Goals Business Skills	Joint F-stat p-value
	Demographics						
Age	33.03	1.02	0.63	-0.76	-0.12	-0.14	0.89
		(1.34)	(1.3)	(1.34)	(1.32)	(1.33)	
Female	0.45	0.02	-0.05	-0.06	0.00	-0.04	0.80
		(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	
Education	8.06	-0.07	0.22	0.11	-0.23	0.03	0.93
		(0.43)	(0.42)	(0.45)	(0.43)	(0.41)	
Formal Training	0.11	0.03	-0.01	-0.02	-0.06	-0.04	0.29
		(0.05)	(0.04)	(0.04)	(0.04)	(0.04)	
Household Size	6.02	-0.40	-0.44	-0.28	0.29	-0.28	0.36
		(0.33)	(0.32)	(0.36)	(0.38)	(0.33)	
	Business Characteristics						
Employees	0.32	0.00	0.03	-0.06	-0.05	0.01	0.95
		(0.12)	(0.11)	(0.10)	(0.12)	(0.11)	
Workdays/Week	6.37	-0.11	-0.20	-0.07	-0.22	-0.02	0.53
		(0.14)	(0.13)	(0.11)	(0.16)	(0.09)	
Workhours/Day	9.8	-0.01	-0.30	-0.07	-0.25	0.02	0.76
		(0.26)	(0.25)	(0.23)	(0.27)	(0.24)	
	Lagged Outcomes						
Sales (median)	1,873.30	-263.07	-443.13	57.16	185.70	553.19	0.31
		(418.80)	(339.54)	(480.37)	(498.92)	(578.73)	
Profit (median)	1,210.02	176.24	58.50	13.69	584.05	982.08*	0.47
		(433.14)	(371.34)	(416.93)	(524.18)	(596.65)	

Note: Standard errors of the differences reported in parenthesis. * significant at 10%; ** significant at 5%; *** significant at 1%.

3.3 Key Outcomes

We focus our analysis on four main groups of outcomes: one final outcome group – business outcomes – and three intermediate outcome groups that drive final outcomes. The core hypotheses and potential mechanisms were outlined in a 2015 International Growth Center proposal. We report treatment effects for all time periods where the respective measure is available. We also estimate the pooled treatment effect over the "short-run" and end-line survey. This strategy allows us to understand the dynamic effects of our trainings and estimate more precise effects by increasing statistical power when more than one post-training period is available.

Business outcomes focus on an entrepreneur's sales and profits. We asked subjects to indicate their sales for the week prior to the interview by day and product category. This strategy is less prone to recalling error than asking about an entrepreneur's total sales over the last week. Expenditures are reported following the same strategy. We calculate profits as the difference between sales and expenditures. Our results are robust to different sales measures. In Table 2 we report treatment effects for sales and profits for the last three days prior to the interview date and self-reported profits[10] over the last month.

The main intermediate outcome group is changes in forward-looking behavior. We asked subjects about their total savings as well as savings amounts that are stored with others, at bank accounts, and at home. We also asked subjects whether they had invested any money in their business and if so how much. We complement this data with self-reports on having business objectives and goals, and an incentivized risk aversion measure.

We measure effort as the number of days a subject is personally taking care of the shop. As this indicator is self-reported, we complement it with the total opening hours of the shop over the week. We interpret indicators on client management as further measures of individual effort. Our trainings could furthermore affect business outcomes by incentivizing subjects to obtain skills training. We estimate effects on changes in business practices in three dimensions: the likelihood on keeping books about sales, clients buying on credit, and product inventory; computing business measures; and whether subjects took out any business money for personal expenses.

4 Identification Strategy

Given our experimental design, we estimate the coefficients of interest as average treatment effects (ATE) using the following Difference-in-Differences specification:

[10]The exact phrasing of the question (translated from Portuguese) was "How much of your sales did you have left over after paying all expenses of your business last month?". Subjects that did not know the exact amount were asked to indicate one out of seven profit bins. We use the median of each bin as profit value whenever the subject did not indicate the exact value. Our estimates are robust to estimating treatment effects on profit bins rather than absolute values.

$$Y_{it} = \theta + \alpha T_{it} + \gamma Post + \beta[T_{it} \times Post] + \delta X_{it} + \epsilon_{it} \quad (1)$$

Where Y_{it} is the outcome of interest for individual i at survey round t, and X_{it} is a vector of controls that includes market fixed effects and survey round fixed effects - where the latter apply only for the pooled sample specification. Y_{it} is the pooled effect of the 6-month and the end-line survey values in those specifications where both time periods are available.

$$\beta = [\beta_V \beta_{VG} \beta_S \beta_{VS} \beta_{VGS}] \quad (2)$$

is the vector of treatment effects, where V denotes the Video intervention, G stands for the goal-setting intervention, and S represents the skill-training intervention.

$$T_{it} = [(Video_{it})(VideoGoal_{it})(Skills_{it})(Video_{it} \times Skills_{it})(VideoGoal_{it} \times Skills_{it})] \quad (3)$$

is a vector of dummy variables representing (random) assignment to the three main treatment arms. In the full specification, interaction terms are also included.

For all outcomes variables, we report the main effects and the full specification separately. The main effects are the ATE from random assignment to watching the aspirations video; watching the video and receiving the goal setting treatment; and rules-of-thumb training. The interaction term estimates the additional effect of the rules-of-thumb training on the effect of watching the video (or watching the video and receive goal setting treatment). Robust standard errors are clustered at the individual level - our unit of randomization.[11] To reduce sensitivity to outliers, we winsorized outcome data on sales, profits, and savings at the 1st and 99th percentile. We estimate **??** using OLS for continuous dependent variables, and Probit for all binary outcomes.

5 Empirical Results

5.1 Firm Performance

We measure firm performance using three distinct outcome measures: self-reported sales, calculated profits, and self-reported profits. Table 2 reports the impact on sales of the three treatment arms in columns (1), (3), and (5). Effect size is shown in Meticais – the local currency.

[11] We follow Abadie et al. (2017) in our reasoning for clustering standard errors at the individual level.

Table 2: Treatment Effects on Firm Performance.

(a) Pooled Effects.

Dependent Variable:		Sales		Profit	
		ATE	se	ATE	se
		(1)	(2)	(3)	(4)
video – β_V		1.207***	(0.405)	0.888**	(0.373)
video & goal – β_{VG}		0.755*	(0.388)	0.367	(0.371)
skills training – β_S		0.428	(0.405)	0.102	(0.383)
video * skills training – β_{VS}		-1.198**	(0.603)	-1.002*	(0.518)
video & goal * skills training – β_{VGS}		-0.641	(0.615)	0.149	(0.506)
mean dep. variable post-treatment		7.674		7.249	
$\beta_{VG} - \beta_V = 0$	F-stat	0.307		0.099	
$\beta_V + \beta_S + \beta_{VS} = 0$	F-stat	0.265		0.977	
$\beta_{VG} + \beta_S + \beta_{VGS} = 0$	F-stat	0.208		0.116	
r-squared adjusted		0.032		0.030	
number of observations (cluster)		1,403		892	

In the short run, sales increased among those that received either of the two trainings focused on changes in reference points. Surprisingly, the more comprehensive intervention that includes goal setting training yields smaller effects than the simple intervention. Additionally training subjects on goal setting and establishing a business goal decreases the positive effect from improved aspirations on sales. The same conclusions hold when pooling over both survey rounds with no improvements over precision for winsorized outcomes. Changing subjects' reference points increases sales by approximately 40% compared to the control group that watched a placebo video. The impact of our role model video on sales is significant at the 5% level. Our results on the impact of our video alone are robust to the inclusion of interaction terms. We discuss the impact of the interaction terms in detail in Section 7.1.

Table 2: Treatment Effects on Firm Performance.

(b) 6-months Effects.

Dependent Variable:		Sales		Profit	
		ATE	se	ATE	se
		(1)	(2)	(3)	(4)
video – β_V		1.362***	(0.511)	0.460	(0.513)
video & goal – β_{VG}		0.921*	(0.518)	-0.137	(0.521)
skills training – β_S		0.567	(0.499)	-0.413	(0.522)
video * skills training – β_{VS}		-1.352*	(0.728)	-0.670	(0.734)
video & goal * skills training – β_{VGS}		-0.461	(0.715)	0.647	(0.715)
mean dep. variable post-treatment		7.706		7.525	
$\beta_{VG} - \beta_V = 0$	F-stat	0.413		0.204	
$\beta_V + \beta_S + \beta_{VS} = 0$	F-stat	0.252		0.266	
$\beta_{VG} + \beta_S + \beta_{VGS} = 0$	F-stat	0.033		0.859	
r-squared adjusted		0.030		0.035	
number of observations (cluster)		985		466	

Table 2: Treatment Effects on Firm Performance.

(c) One-year Effects.

Dependent Variable:		Sales		Profit	
		ATE	se	ATE	se
		(1)	(2)	(3)	(4)
video – β_V		1.057**	(0.441)	1.217**	(0.488)
video & goal – β_{VG}		0.569	(0.416)	0.904*	(0.499)
skills training – β_S		0.289	(0.489)	0.664	(0.543)
video * skills training – β_{VS}		-1.021	(0.696)	-1.337*	(0.711)
video & goal * skills training – β_{VGS}		-0.852	(0.734)	-0.442	(0.705)
mean dep. variable post-treatment		7.870		6.974	
$\beta_{VG} - \beta_V = 0$	F-stat	0.294		0.450	
$\beta_V + \beta_S + \beta_{VS} = 0$	F-stat	0.473		0.325	
$\beta_{VG} + \beta_S + \beta_{VGS} = 0$	F-stat	0.991		0.034	
r-squared adjusted		0.030		0.037	
number of observations (cluster)		922		426	

Notes: Outcomes are inverse hyperbolic sine transformations of sales over the last two days prior to interview and self-reported profits as described in the text. All regressions on sales are difference-in-difference estimations. Regressions on profit are OLS as baseline measures are not available. Survey round fixed effects are included for all pooled regressions. Columns (1) and (3) display ATEs of each intervention. βV is the treatment effect for all individuals that have seen the video but not received goal setting training. βVG is the treatment effect for all individuals that have seen the video and received goal setting training. βS equals one for all individuals that received rules-of-thumb training. βVS determines the additional effect of receiving skills training on watching the video for individuals that only watched the video. βVGS is the additional effect of receiving skills training on watching the video and receiving goal setting training. P-values of the respective linear hypothesis tests for joint effects are reported below coefficients. Columns (2) and (4) show standard errors in parentheses. Standard errors are clustered at the individual level. * significant at 10%; ** significant at 5%; *** significant at 1%.

As we did not obtain data on self-reported profits at baseline, the results in Table 2 provide OLS estimates for post-treatment periods only. Although not statistically significant, the video raises self-reported profits in the short-run. The impact for those that also established a goal is close to zero. We find positive impacts of the video significant at the 5% level on profits in the pooled sample. Those that watched the video increased profits by almost 26% compared to the control group. We do not find significant impacts of the enhanced video intervention or the rules-of-thumb training on profits.

These results are puzzling as the general opinion tends to favor holistic entrepreneurship programs over small nudges. It is also surprising that our effects increase over time instead of fading out. Our initial hypothesis stated that goal setting training supports micro-entrepreneurs in achieving the goals they set themselves. By ensuring that goals are realistic and developing a plan on how to achieve them, subjects should find it easier to translate higher aspirations into business success. A potential explanation for our findings could be constrained reference points. By enhancing subjects' focus on one specific goal we might limit changes in forward-looking behavior towards this goal. To see this, we assess forward-looking behavior in three ways. We estimate dynamic treatment effects on savings, and specifically types of savings. Given the heterogeneity of productive investments by business type we estimate the impact on the likelihood of investments in the last six months and the invested amount.

5.2 Forward-Looking Behavior

Table 3 reports treatment effects on intermediary outcomes related to forward-looking behavior. For continuous variables we provide difference-in-differences estimates with standard errors clustered at the unit of randomization, the individual. For design purposes we collected end-line data only for our main outcome variables of interest. We estimate probit difference-in-differences effects for binary outcome measures.

5.2.1 Savings

We report the total amount of savings in Meticais in bank accounts in Column (1) of Table 3. In the short-run, increases in aspirations lead to increases in savings. These effects are significant at the 5% and the 1% level for the video only and the enhanced video group, respectively. The amount saved is higher for those that watched the video and also set a specific goal. Watching the video only increases savings by 112% compared to the control group after 6 months. Those that also set a specific goal have 119% more savings than the control group. The positive impact of rules-of-thumb training on savings is not distinguishable from zero.

Table 3: Treatment Effects on Forward-Looking Behavior.

Dependent Variable:		Bank Savings		Having a Goal		Sales Objective	
		ATE	se	ATE	se	ATE	se
		(1)	(2)	(3)	(4)	(5)	(6)
video – β_V		8,156.301**	(3,899.530)	0.139*	(0.084)	0.153*	(0.079)
video & goal – β_{VG}		8,689.668***	(3,345.864)	0.050	(0.083)	-0.049	(0.083)
skills training – β_S		3,083.474	(4,068.193)	-0.012	(0.080)	-0.026	(0.084)
video * skills training – β_{VS}		-1,334.998	(5,350.114)	-0.093	(0.112)	-0.187	(0.115)
video & goal * skills training – β_{VGS}		-1,830.591	(4,568.492)	-0.033	(0.111)	0.015	(0.117)
mean dep. variable post-treatment		7,308.40		0.805		0.439	
$\beta_{VG} - \beta_V = 0$	F-stat p-value	0.829		0.258		0.009	
$\beta_V + \beta_S + \beta_{VS} = 0$	F-stat p-value	0.014		0.683		0.472	
$\beta_{VG} + \beta_S + \beta_{VGS} = 0$	F-stat p-value	0.004		0.956		0.478	
r-squared adjusted		0.048		0.023		0.096	
number of observations (cluster)		1,003		963		414	

Notes: Regressions on bank savings and having a goal are difference-in-difference estimations. Estimates are only available for baseline and 6-month survey. Coefficient of "Having a goal" are based on Linear Probability Model. "Having a sales objective" is only available for the 6-month survey. Estimates are OLS coefficients of a Linear Probability Model. Column (1), (3), and (4) display ATEs of each intervention. βV is the treatment effect for all individuals that have seen the video but not received goal setting training. βVG is the treatment effect for all individuals that have seen the video and received goal setting training. βS equals one for all individuals that received rules-of-thumb training. βVS determines the additional effect of receiving skills training on watching the video for individuals that only watched the video. βVGS is the additional effect of receiving skills training on watching the video and receiving goal setting training. P-values of the respective linear hypothesis tests for joint effects are reported below coefficients. Columns (2) and (4) show standard errors in parentheses. Standard errors are clustered at the individual level. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 4: Treatment Effects on Effort.

(a) Pooled Effects.

Dependent Variable:		Workdays per Week	
		ATE	se
		(1)	(2)
video – β_V		0.313**	(0.147)
video & goal – β_{VG}		0.105	(0.130)
skills training – β_S		0.150	(0.127)
video * skills training – β_{VS}		-0.101	(0.257)
video & goal * skills training – β_{VGS}		-0.185	(0.202)
mean dep. variable post-treatment		6.277	
$\beta_{VG} - \beta_V = 0$	F-stat p-value	0.246	
$\beta_V + \beta_S + \beta_{VS} = 0$	F-stat p-value	0.052	
$\beta_{VG} + \beta_S + \beta_{VGS} = 0$	F-stat p-value	0.560	
r-squared adjusted		0.006	
number of observations (cluster)		1,470	

5.2.2 Forward-Looking Business Practices

Business Goals and Sales Objective We also ask subjects if they have established a business goal for the next six months. Respondents were free to indicate any type and number of goals they wanted. We assess the impact of our interventions on the likelihood of having established any business goal. Results are shown in Column (3) of Table 3. Those that watched the video are more likely to have a goal for their business and a sales objective.

5.3 Effort

Higher business ambitions, nudged by the video, might also trigger increases in effort. We assess the impact of aspiration changes on effort on two dimensions: working hours and shop opening hours.

5.3.1 Working Hours

We collected data on two measures of effort in relation to working hours. First, we asked subjects to indicate how many days per week they personally take care of their business. As we cannot assess the quality of effort during business hours, we focus on the extensive margin of work effort. Our results are reported in Table 4. At the short-run, subjects in either aspirations intervention group significantly increase their effort after controlling for interaction effects of treatments. Subjects in both groups work around 0.3 days more (significant at the 5% level) than the control group. After one year, this effect fades off for subjects that received goal setting treatment. The impact on their effort level though equally strong in the beginning, is

short lived. Those that only watched the video maintain their higher effort level at approximately the same magnitude even one year after the intervention. This effect can be precisely estimated at the 5% level (10% level after including interaction terms).

Table 4: Treatment Effects on Effort.

(c) One-year Effects.

Dependent Variable:		Workdays per Week	
		ATE	se
		(1)	(2)
video – β_V		0.310*	(0.168)
video & goal – β_{VG}		-0.089	(0.185)
skills training – β_S		0.103	(0.158)
video * skills training – β_{VS}		0.031	(0.279)
video & goal * skills training – β_{VGS}		-0.054	(0.269)
mean dep. variable post-treatment			6.310
$\beta_{VG} - \beta_V = 0$	F-stat p-value		0.073
$\beta_V + \beta_S + \beta_{VS} = 0$	F-stat p-value		0.022
$\beta_{VG} + \beta_S + \beta_{VGS} = 0$	F-stat p-value		0.812
r-squared adjusted			0.005
number of observations (cluster)			983

Notes: All regressions are difference-in-difference estimations. Survey round fixed effects are included for all pooled regressions. Column (1) displays ATEs of each intervention. βV is the treatment effect for all individuals that have seen the video but not received goal setting training. βVG is the treatment effect for all individuals that have seen the video and received goal setting training. βS equals one for all individuals that received rules-of-thumb training. βVS determines the additional effect of receiving skills training on watching the video for individuals that only watched the video. βVGS is the additional effect of receiving skills training on watching the video and receiving goal setting training. P-values of the respective linear hypothesis tests for joint effects are reported below coefficients. Columns (2) and (4) show standard errors in parentheses. Standard errors are clustered at the individual level. * significant at 10%; ** significant at 5%; *** significant at 1%.

This measure is self-reported and might thus give reason to concerns if measurement error for this outcome is correlated with treatment status. We confirm our results with a less salient measure on business hours. For each day of the week we collect data on shop opening and closing hours. We then compute the total amount of hours (in minutes) the business is operating. The results on this exercise are reported in column (3) of Table 4b. Our estimates confirm our previous results. Those that received any of our aspirations treatments work approximately 4.2 hours more than the control group. These effects are significant at the 5% level. Controlling for interaction terms those that watched the video only work about 6.5 hours more, and the second group 6 hours more than the control group (both significant at the 5% level).

Table 4: Treatment Effects on Effort.

(b) 6-months Effects.

Dependent Variable:		Workdays per Week		Shop Hours	
		ATE	se	ATE	se
		(1)	(2)	(3)	(4)
video – β_V		0.317**	(0.157)	392.845**	(154.935)
video & goal – β_{VG}		0.277**	(0.129)	360.097**	(153.362)
skills training – β_S		0.201	(0.143)	182.225	(162.044)
video * skills training – β_{VS}		-0.218	(0.283)	-279.454	(259.478)
video & goal * skills training – β_{VGS}		-0.307	(0.213)	-228.291	(231.064)
mean dep. variable post-treatment		6.299		6,245.374	
$\beta_{VG} - \beta_V = 0$	F-stat p-value	0.817		0.834	
$\beta_V + \beta_S + \beta_{VS} = 0$	F-stat p-value	0.166		0.143	
$\beta_{VG} + \beta_S + \beta_{VGS} = 0$	F-stat p-value	0.222		0.054	
r-squared adjusted		-0.008		0.124	
number of observations (cluster)		1,037		1,045	

5.4 Business Practices

A further explanation for the positive impact of role models on firm performance could be improved business skills. Higher aspirations could encourage entrepreneurs to seek out better skills. If so, we should observe positive effects of our interventions on business practices. We estimate effects for a family of business practices measures that are covered in traditional entrepreneurship programs.

5.4.1 Bookkeeping

Columns (1) – (6) in Table 5 show short-term effects on keeping track of sales, clients that buy on credit, and product inventory. Those that watched the video are more likely (significant at 5% level) to have books on clients that buy on credit and their product inventory. Those that watched the video and received goal setting treatment do not change their bookkeeping practices.

Table 5: Treatment Effects on Tracking Business Measures

Dependent Variable:		Sales book		Clients that bought on credit		Inventory	
		ATE	se	ATE	se	ATE	se
		(1)	(2)	(3)	(4)	(5)	(6)
video – β_V		0.076	(0.085)	0.200**	(0.087)	0.176**	(0.084)
video & goal – β_{VG}		0.010	(0.091)	0.109	(0.093)	-0.100	(0.086)
skills training – β_S		0.133	(0.090)	0.098	(0.091)	0.105	(0.090)
video * skills training – β_{VS}		-0.125	(0.122)	-0.207	(0.129)	-0.254**	(0.124)
video & goal * skills training – β_{VGS}		0.004	(0.131)	-0.069	(0.137)	0.157	(0.127)
mean dep. variable post-treatment		0.225		0.266		0.220	
$\beta_{VG} - \beta_V = 0$	F-stat p-value	0.439		0.332		0.001	
$\beta_V + \beta_S + \beta_{VS} = 0$	F-stat p-value	0.343		0.312		0.751	
$\beta_{VG} + \beta_S + \beta_{VGS} = 0$	F-stat p-value	0.127		0.155		0.070	
r-squared adjusted		0.052		0.024		0.070	
number of observations (cluster)		1,020		1,028		1,033	

Notes: All regressions are difference-in-difference estimations for Linear Probability Models. Estimates are only available for baseline and 6-month survey. Columns (1), (3), and (5) display ATEs of each intervention. βV is the treatment effect for all individuals that have seen the video but not received goal setting training. βVG is the treatment effect for all individuals that have seen the video and received goal setting training. βS equals one for all individuals that received rules-of-thumb training. βVS determines the additional effect of receiving skills training on watching the video for individuals that only watched the video. βVGS is the additional effect of receiving skills training on watching the video and receiving goal setting training. P-values of the respective linear hypothesis tests for joint effects are reported below coefficients. Columns (2) and (4) show standard errors in parentheses. Standard errors are clustered at the individual level. * significant at 10%; ** significant at 5%; *** significant at 1%.

5.4.2 Taking Business Money

The rules-of-thumb training focuses on the importance of separating business and household accounts. To assess whether subjects adopted the taught practices we collect self-reported data on whether entrepreneurs took any money from the business to pay household expenses during the last six months. This framing is less salient than the direct question of whether subjects separate accounts. Six months after the training, subjects in the rules-of-thumb group are less likely to have taken money from the business to pay household expenses. This effect is statistically significant at the 1% level after controlling for interaction effects. None of our aspirations treatments have an impact on taking business money.

Table 6: Treatment Effects on Adoption of Skills Training.

Dependent Variable:		Take money from business	
		ATE	se
		(1)	(2)
video – β_V		-0.070	(0.060)
video & goal – β_{VG}		-0.071	(0.061)
skills training – β_S		-0.186***	(0.069)
video * skills training – β_{VS}		0.227**	(0.094)
video & goal * skills training – β_{VGS}		0.110	(0.099)
mean dep. variable post-treatment			0.863
$\beta_{VG} - \beta_V = 0$	F-stat		0.987
$\beta_V + \beta_S + \beta_{VS} = 0$	F-stat		0.653
$\beta_{VG} + \beta_S + \beta_{VGS} = 0$	F-stat		0.035
r-squared adjusted			0.010
number of observations (cluster)			454

Notes: Regression is OLS estimates of a Linear Probability Model. Estimates are only available for 6-month survey. Column (1) displays ATEs of each intervention. βV is the treatment effect for all individuals that have seen the video but not received goal setting training. βVG is the treatment effect for all individuals that have seen the video and received goal setting training. βS equals one for all individuals that received rules-of-thumb training. βVS determines the additional effect of receiving skills training on watching the video for individuals that only watched the video. βVGS is the additional effect of receiving skills training on watching the video and receiving goal setting training. P-values of the respective linear hypothesis tests for joint effects are reported below coefficients. Columns (2) and (4) show standard errors in parentheses. Standard errors are clustered at the individual level. * significant at 10%; ** significant at 5%; *** significant at 1%.

6 Potential Threats to identification

Self-reported Business Data Self-reported measures of sales and profits are a threat to identification if measurement error is correlated with treatment status. In our design, sales measures might be prone to measurement error in two ways: first, treated subjects might become better in tracking their sales due to an increased skill set; and second, treated subjects might misreport sales out of compliance desires. In

the absence of administrative data, we developed a sales measure to validate survey measures of business outcomes through actual sales observation and recording. Section **??** reports the approach and measure in detail. Self-reported business data is strongly correlated with observed sales. There is no systematic difference in this correlation across treatments. It is thus unlikely that our results are driven by a compliance bias and motivational lying.

Spillovers Our estimates might be biased in the presence of spillovers. We do not have the research design to estimate equilibrium effects from an increase in competition. Nevertheless, the majority of our sample operates in large market clusters where equilibrium effects are unlikely to drive our results. The mechanisms explaining treatment effects on sales are furthermore largely independent from equilibrium effects. Spillovers between treatment arms where subjects learn from or inspire each other would lead us to underestimate our effects. As we have no reliable data on social networks within these markets we cannot estimate this effect. The two effects, if present, should cancel each other out.

7 Is skills training a substitute or a complement to aspirations?

Our experimental design allows us to estimate complementarity effects of skills training on changes in reference points. Given the sample size of our study we are only powered to detect large effects. As additionally providing skills training is substantially costlier than our aspirations interventions alone, we believe this exercise is still worthwhile. If complementarity effects are small it would not be cost-efficient to provide such additional trainings. The respective results are reported in the same tables as the main effects. The interaction terms can be interpreted as the additional impact of rules-of-thumb training on the respective aspirations treatment.

7.1 Firm Performance

Effects on firm performance are shown in Table 2. Additionally training subjects on rules-of-thumb has a negative impact on sales. Effects are significant at the 5% level on the short-run only for those that also received goal setting treatment. The negative impact is substantial. It offsets the gains from the video and goal setting treatment entirely (though not statistically significant).

Impacts on self-reported profits are slightly more positive. The additional impact from skills training in the short-run is not distinguishable from zero. One year after the training, additional rules-of-thumb training significantly (5% level) reduces profits for those that watched the video only. The additional effect of the rules-of-thumb training is not larger than the effect of the video and the skills training combined.

7.2 Effort

The general treatment effect on effort is reduced by additional skills training. Those subjects that received training on rules-of-thumb exert consistently less effort than those that have watched the video only. Similarly, those that received skills and goal setting training work less hours than those that did not learn about the rules-of-thumb (not statistically significant).

7.3 Business Practices

Our results in Table 5 provide evidence that subjects with skills training are less likely to keep track about clients buying on credit and their product inventory than their peers that watched the video only.

These results suggest that additional skills training is a substitute to aspirations interventions rather than a complement. A potential explanation could be that separating accounts is less costly than increasing aspirations. Defining and executing a plan to fulfill personal ambitions requires a higher level of cognitive effort. In our setting the impact of rules-of-thumb is limited. Focusing cognitive effort in applying the learned rules rather than translating ambitions into actions can potentially explain the negative impact of additional skills training.

8 Discussion and Implications

Increasing the productivity of micro-entrepreneurs is a major challenge for policy makers, international institutions, and NGOs. Mozambique is currently highly dependent on its coal and aluminum exports, and private sector development is still lagging behind. Existing evidence has provided little guidance for stakeholders on how a transformation of micro-enterprises into productive SMEs can be achieved. This paper provides novel insights on the importance of reference points for business success. Increasing aspirations and shifting reference points can substantially increase profitability of enterprises that have formerly operated on low profit margins.

We estimate the impact of video exposure to a role model, additional goal setting treatment, and rules-of-thumb on sales, calculated profits, and self-reported profits. Nudging a change in reference points through a video intervention increases sales by 40% and profits by 29% compared to a control group. Effects are observable both in the short-run and over the course of one year. This effect is driven by statistically significant changes in forward-looking behavior and effort. Subjects that watched the video save more, are more likely to have sales and business goals, work more hours and show improved client management. There is some evidence that those subjects improve bookkeeping on a subset of dimensions but not in computing

key business measures.

In the short-run, we find similar results on effort for those that additionally received goal setting training. These effects, on the contrary to the group that watched the video only, disappear over time. Although the positive effects on savings are similar for this group, they translate into higher business outcomes in the short-run only.

We find no or negative effects of rules-of-thumb training on any of these outcomes. Finally, we examine the joint effect of the different interventions and their complementarities. Providing skills training crowds out the positive effects of changing reference points for most of our outcomes. A possible explanation could be the cognitive cost of realizing higher ambitions compared to implementing simple rules-of-thumb.

Our evidence supports the view that internal constraints limit micro-entrepreneurs in their business ambitions and from exploiting positive returns to human capital interventions. While much of the literature has focused on the theoretical concepts behind a behavioral firm and the role of reference points for savings decisions in insurance contexts, we are the first to document experimentally the interaction between reference points and business success.

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