Confidence, Confidence Training, and Entrepreneurial Behavior: Field and Lab-in-Field Experiment

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Abstract

We provide a randomized control trial to study the effect of an entrepreneurship program in the Gagauzia region, Moldova. We randomly assign applicants to the entrepreneurship training to three educational tracks: (1) Business and confidence training; (2) Confidence training; (3) No training (control group). To understand the underlying behavioral mechanisms of the intervention we elicit participants' behavioral characteristics in a lab-in-field experiment . We find that confidence and ambiguity preference, but not risk preferences or self-efficacy, are associated with entrepreneurial behavior. We also find that a combination of business and confidence training affects the level of investment sought by nascent entrepreneurs, but not other entrepreneurship-related decisions.

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1. Introduction

Entrepreneurship is one of the key drivers of economic prosperity (Van Praag and Versloot, 2007). Governments invest heavily in entrepreneurial training hoping to increase entrepreneurial activity (Fairlie et al., 2015; European Commission, 2015). Unfortunately, little is known about which entrepreneurial training effectively promotes entrepreneurship and if this training is cost-effective.

Meta-studies that aggregate information over all previous empirical work find only small positive effects of training on entrepreneurial intentions, entrepreneurship-related human capital, and outcomes (Unger et al., 2011; Martin et al., 2013; Valerio et al., 2014; Bae et al., 2014; Benus et al., 2008; McKenzie and Woodruff, 2014). Moreover, entrepreneurial intentions only weakly translate to actual actions (Kautonen et al., 2015) and entrepreneurship-related human capital is not a good predictor of business success (Unger et al., 2011). All this calls for rigorous study and further search for trainings that can foster entrepreneurship.

Meta-analysis of observational studies (Zhao et al., 2010; Hamilton, 2014) provide evidence that personality traits are a strong predictor of entrepreneurial intentions and performance. This observation goes in line with a recent discussion regarding the importance of character for future success (Heckman et al., 2014; Sampson, 2016) and, specifically, whether confidence can be relevant for entrepreneurial activity (Astebro et al., 2014). One can target this personal characteristic, confidence, to increase the number of entrepreneurs. Nevertheless, it is unclear if confidence training boosts confidence and if it translates to entrepreneurial activity.

We aim to fill this research gap by providing a randomized control trial and a lab-in-field experiment in the Gaugazia region, Moldova (October 2015). We investigate whether confidence training has a positive impact on confidence and

entrepreneurship-related outcomes. To better understand what the underlying behavioral mechanisms of potential changes are we use incentivized laboratory experiments to measure confidence levels, cognitive abilities as well as risk and ambiguity attitudes.

We find that confidence level, but not self-efficacy, is associated with entrepreneurship-related behavior and the effect of entrepreneurship training. In line with previous literature (Koudstaal et al., 2014) we do not find that risk attitudes explain entrepreneurship-related behavior, but in accordance with laboratory findings (Åstebro and Gutierrez, 2016) we find that ambiguity aversion drives participation in a business competition and start-up activity.

We also find that business and confidence training affects entrepreneurship-related decisions. However, we do not find evidence that any of the training changes the willingness to take a loan, participate in the business competition or engage in start-up activity.

The rest of the paper proceeds as follows: Section two provides a review of the related literature. Section three presents the context of the study and our study design. Section four provides the results of the experiment. Section five concludes.

2. Related Literature

Most studies that examine entrepreneurship training rely on observational, correlation research (Bae et al., 2014; Grimm and Paffhausen, 2015; Martin et al., 2013; Valerio et al., 2014; Unger et al., 2011). Results from these studies can be biased due to various forms of endogeneity – selection bias, simultaneity, omitted variable bias. Therefore, researchers (Bae et al., 2014; Martin et al., 2013; Valerio et al., 2014) have called for carrying out randomized control trials.

In the U.S. results of the large scale randomized control trial GATE show that, even though the entrepreneurial training increased business ownership by a small rate in the short-run, after a year the difference disappeared, making the program cost-ineffective for society (Fairlie et al., 2015). These results were replicated in several follow-up studies under different circumstances (e.g. de Mel et al., 2014; Karlan and Valdivia, 2011) showing that standard business training has no or only a small impact (see for review McKenzie and Woodruff, 2014).

Interestingly, several studies show that entrepreneurship education and training for school kids and and college students can change their cognitive skills related to enterpeneurial behavior (Huber et al., 2014; von Graevenitz et al., 2010), even though they have a negative effect on entrepreneurial intentions (Huber et al., 2014; von Graevenitz et al., 2010; Oosterbeek et al., 2010). The relative effectiveness of entrepreneurship programs among young participants, but not among more mature adults, suggests that entrepreneurial behavior is linked with character.

Indeed, studies that focus on personal characteristics seem to result in changes in several domains of personality relevant for entrepreneurial activity (Campos et al., 2017; Glaub et al., 2012; Premand et al., 2012). However, it is still unclear if those changes lead to changes in start-up activity. Premand et al. (2012) find that an entrepreneurship program in Tunisia that targeted behavioral skills among others marginally increased self-employment, whereas Astebro and Hoos (2016) find no evidence that a business leadership program in France increased participants' entrepreneurial intentions or business activity.

Moreover, prior studies typically rely on subjective by necessity self-reported data. To have more objective measures one can combine self-reported data with the analysis of incentivized behavior in settings that mirror economic situations such as

market entry or investment decisions.

Koudstaal et al. (2014) combine surveys and lab-in-field experiments to measure the difference in risk attitudes between entrepreneurs, managers, and employees. Using this methodology they reconcile previous mixed results: Entrepreneurs only perceive themselves as less risk averse, while the experimental measure shows that risk attitudes are similar between groups.

Berge et al. (2015) provide additional evidence that risk attitudes do not explain entrepreneurial behavior but they show that willingness to enter into competition measured in experimental games has a positive association with entrepreneurship-related outcomes. Counter to the previous literature (Busenitz and Barney, 1997; Koellinger et al., 2007) they do not find a robust correlation between self-reported overconfidence and entrepreneurial outcomes. In a lab experiment, Åstebro and Gutierrez (2016) provide a potential explanation for this finding by stressing the combined role of confidence and ambiguity preferences for entering into competition.

The next step is to use these measures in a field experiment (Camerer, 2011; Falk and Heckman, 2009; Viceisza, 2016). By using lab-in-field experiments before an intervention a researcher can assess heterogeneous treatment effects relying on robust measures. Using lab-in-field experiments after the intervention allows to open up the "black box" of the intervention and to link the treatment effect with theory. This is especially important in light of recent critiques of randomized control trials for alleged lack of generalizability (see for discussion Deaton, 2010; Deaton and Cartwright, 2016; Falk and Heckman, 2009; Hausman and Welch, 2010; Imbens, 2010)

3. Context and Study Design

3.1. Background

Comrat State University provides an annual business competition and entrepreneurship training to promote entrepreneurial activity in the Gagauzia region, Moldova.[1] The typical program consists of standard business courses and a business plan competition that results in financial support of the winners.

In 2015 the program was expanded. It was advertised to recruit subjects from the whole region and complemented with confidence training. Applicants submitted an online application describing their business idea and provided basic business related information: required investment, access to financial means (bank, friends, own, other), place of residence (Comrat or not), business experience, gender as well as student status. All applicants were invited to participate in the business competition. 99 subjects showed up on the first day of the training.

3.2. Study Design

3.2.1. Field Experiment

We randomly assigned applicants for the 2015 training to three educational tracks (treatments): (1) Business and confidence training; (2) Only confidence training; (3) No training (control group). To avoid imbalances in the small sample (Bruhn and McKenzie, 2009), we employ the min-max t-statistic method for randomization balancing on the following variables: business experience, city (Comrat or not), required investment, access to the financial means and student status. Descriptive statistics of baseline characteristics by treatment are provided in Appendix

[1] Moldova has relatively low GDP per capita – 5047$ PPP (World Bank, 2016) and medium level of human capital index – 71st, (Forum World Economic, 2016).

A.

The duration of the full course (Business and confidence training) is five days; for confidence training it was two days. During the business training part, subjects study basics of management, basics of accounting and finance, taxation, business planning, and innovation management. During the confidence training part, subjects study leadership, confidence and personal growth courses. Courses were given by university professors, practitioners, and government administrators[2].

After the training, we asked about the investment that participants would like to get for their start-ups from third-parties as well as their willingness to take a loan from the bank. These questions were incentivized since decisions about project funding and giving the loan were based on subjects' answers. We informed subjects about this by writing on the computer screen: "Important! Please take the next questions seriously, they will be considered by the committee[bank] that decides about financing the business project." These are the key dependent variables in our study. We also observed if subjects decided to participate in the competition (i.e. give a pitch).

After a year (winter, 2016) we conducted phone interviews to understand if applicants had started up the business. We double checked the responses given in the interviews.

3.2.2. Lab-in-field experiment

We implemented incentivized computerized lab-in-field experiments to elicit subjects' behavioral characteristics before and after the training.[3] Sessions of the

[2]The detailed description of the program can be found in supplementary materials.

[3]We used z-tree software for the experiments (Fischbacher, 2007).

experiment before the training consisted of three tasks. Sessions after the training consisted of only one task. Subjects were paid for one choice in one of the sessions chosen at random to avoid income effects. Subjects could earn from 30 Leu ($\approx$€ 1.4) to 700 Leu ($\approx$€ 30). All sessions ended with a questionnaire[4].

Task 1. We measured participants' level of confidence before and after the training using a version of the market entry game (Camerer and Lovallo, 1999). In this game, subjects have to decide whether to enter into competition. Their payoffs depend on market capacity and the relative rank of the subject (see table 1). Subjects' ranks are (1) taken at random from a uniform distribution in the random condition (treatment) or (2) based on quiz answers in the skill condition (treatment). The rank is unknown to subjects. Subjects make tvelve entry decisions in each condition. The sequence of market capacity is taken at random but identical in both conditions.

Table 1: Payoffs of Successful Entrants

	Market Capacity			
Rank	2	4	6	8
1	330	200	140	110
2	170	150	120	100
3		100	100	80
4		50	70	70
5			50	60
6			20	40
7				30
8				20

Task 2. We measured cognitive abilities with the cognitive reflection test (Frederick, 2005). This test highly correlates with standard measures of cognitive abilities e.g. Scholastic Achievement Test (SAT). It consists of only three ques-

[4]The experimental instructions and end session questionnaires can be found in the supplementary materials.

tions. The subject can come up easily with the answer, however, the correct answer is "counter-intuitive" and demands additional reflection. In the experiment, each correct answer earned the subject 100 Leu.

Task 3. To measure subjects' risk and ambiguity preferences we employed the elicitation procedure as used in Cettolin and Riedl (2016). We used six lotteries with two outcomes eliciting subjects' certainty equivalents. Table 2 shows the outcomes and the probabilities used. Subjects faced the description of the lottery and a list of 20 certain amounts. Certain amounts decreased by equal steps from the lottery's highest to lowest outcome. Probabilities were expressed both in percentages and in a pie chart. Subjects were not allowed to switch back and forth between the certain amount and the lottery. Thus, we elicited a unique switching point for each lottery.

Table 2: Lotteries, p is the probability of winning r_1 points.

Lottery	p	r_1	r_2
1	0.20	400	0
2	0.50	160	0
3	0.80	100	0
4	0.50	120	40
5	0.25	160	40
6	0.33	120	0

Similarly, we elicited subjects' attitudes towards ambiguity. We confronted them with six decision problems where they could make choices between an ambiguous lottery – lottery with unkown probablities – and a number of risky ones. In the same decision problem, both the ambiguous lottery and the risky lotteries had the same pairs of outcome and the outcomes were the same as in table 2.

4. Results

4.1. Confidence and Sample Characteristics

We find that despite a high level of self-reported self-efficacy, subjects are not confident on average in the market entry game. The reported self-efficacy level (average across six questions) of subjects that participate in the program is 4.7 on the scale from 1 to 6, but there are actually fewer subjects entering in the entry game under the skill rank conditions than under the random rank conditions, difference -0.04 (SE=0.02). Applying a non-parametric Wilcoxon test we can reject the null hypothesis that there is no difference between random and skill rank conditions ($p = 0.0239$).[5]

The distribution of confidence types by treatment is reported in table 3. The overconfident type enters more often in the skill condition than in the random condition. Table 3 shows that (1) most of the subjects are non-overconfident and (2) the distribution is balanced across treatments.

Table 3: Distribution of Confidence Types by Treatment (Baseline)

	Control T.	Confid. T.	Full T.	Total
Overconfident	6	6	8	20
Non-overconfident	16	22	21	59

As concerns other characteristics, subjects have relatively low cognitive skills: On average they correctly answer only 0.08 ($s.e. = 0.02$) out of 3 questions in the cognitive reflection test, with most subjects answering none of the questions correctly. (0 correct - 79%, 1 correct - 20%, 2 correct - 1%, 3 correct - 0%). Subjects are risk-averse: $\alpha = 0.53$ ($s.e. = 0.09$).[6] Risk aversion level is consistent with

[5]Throughout the paper the estimations of the exact Wilcoxon test are based on the Shift Algorithm by Streitberg and Röhmel (1986).

[6]To asses α we estimate subject i's certainty equivalents $ce_{i,n}$ for each risky lottery n by taking

previous studies (see meta-analysis by Filippin and Crosetto, 2016). Subjects are also highly ambiguity averse: Mean prior-belief is 0.26 (s.e.=0.02).

4.2. Treatment Effect

In this section we examine the effect of different trainings. We assess the Intent to Treat (ITT) effect using the following regression specification:

$$Y = \beta_0 + \beta_F T_{Full} + \beta_{Conf.} T_{Confidence} + X_i + u_i, \quad (1)$$

where Y is the outcome measure, T_{Full} is a dummy variable that equals one if the subject is assigned to the full training, T_{Conf} is a dummy variable that equals one if the subject is assigned to confidence training, and X_i is a vector of control variables to account for the balanced method of randomization (Bruhn and McKenzie, 2009): business experience, city, required investment, access to the financial means, and student status.

We use robust linear regression for the requested investment variable since it is not normally distributed (Shapiro-Wilk test of normality: $p = 3.629606 \times 10^{-19}$). For the binary outcome variables (competition, start-up rate) and for the outcome variable expressed as a percentage (requested loan level) we use logistic regression. Results are reported in Table 4.

We observe that full treatment has a positive effect on the requested amount of investment (Full Treat.: $p = 0.0469$). In contrast, we cannot reject the null-

the arithmetic mean of the smallest certain amount preferred to the lottery and the next certain amount in the list. We use a CRRA utility function $U(r) = r^{\alpha}$, where $0 < \alpha < 1$ indicates risk aversion, $\alpha = 1$ denotes risk neutrality and $\alpha > 1$ implies risk seeking preferences. We estimate α by minimizing the sum of squares difference between theoretically predicted certainty equivalent for each lottery n and the elicited certainty equivalent of subject i for corresponding lottery. We correct for heteroscedasticity by normalizing the payoffs of lotteries to a uniform length. We assess subjects' ambiguity aversion in a similar way.

Table 4: Training Effect

	Dependent variable:				
	Confidence	Inv.in 1000 Leu	Loan (%)	Compet.	Start-up
	OLS	*robust linear*	*logistic*	*logistic*	*logistic*
	(1)	(2)	(3)	(4)	(5)
Full T. (ITT)	0.02	27.92**	0.28	0.71	−0.07
	(0.05)	(13.63)	(0.75)	(0.67)	(1.20)
Conf. T. (ITT)	0.06	16.95	0.55	0.29	−0.52
	(0.05)	(13.79)	(0.73)	(0.69)	(1.44)
Constant	−0.02	−16.95	−2.31*	−3.14***	−5.98**
	(0.07)	(20.85)	(1.19)	(1.07)	(2.71)
Set of Controls	Yes	Yes	Yes	Yes	Yes
Observations	75	75	75	91	91
R^2	0.11				
Log Likelihood			−30.16	−47.09	−14.72
Note:					*p<0.1; **p<0.05; ***p<0.01

hypothesis of no difference between trainings for the other outcome variables at any conventional level of significance: Not for behavior in the entry game after the treatment (confidence), the share of the loan requested, participation in business competition, or for the start-up rate one year after the intervention.

Based on these findings, the intervention seems to be ineffective. This is especially evident if one looks at the distribution of start-ups numbers by treatment (see table 5). The number of start-ups is identical across the three treatments, suggesting that the treatments barely had any effect on the key outcome of interest.

Table 5: Distribution of Start-ups by Treatment (One Year After)

	Full T.	Confid. T.	Control T.	Total
No Start-Up	33	33	25	91
Start-Up	2	2	2	6

4.3. Behavioral Characteristics and Entrepreneurial Behavior

We now turn to the analysis of behavioral characteristics and entrepreneurial behavior. We estimate a model similar to regression 1 but including behavioral characteristics measured in the lab-in-field experiment at baseline, confidence level, self-efficacy, cognitive abilities, risk and ambiguity preferences.[7] Results are reported in table 6.

Table 6: Subject characterstics and enterprenerual behavior

	Dependent variable:			
	Inv.in 1000 Leu	Loan (%)	Compet.	Start-up
	robust linear	*logistic*	*logistic*	*logistic*
	(1)	(2)	(3)	(4)
Full Treat. (ITT)	45.15**	0.37	1.41*	0.22
	(22.96)	(0.84)	(0.79)	(1.94)
Confidence Treat. (ITT)	32.72	0.41	0.06	−4.28
	(22.80)	(0.79)	(0.75)	(2.86)
Confidence Level	−73.43	−5.16**	−5.11**	−7.57
	(62.13)	(2.32)	(2.17)	(8.31)
Self-efficacy	1.58	−0.09	−0.07	−0.43
	(9.47)	(0.33)	(0.33)	(0.85)
Risk Preferences (α)	−3.06	−0.11	0.77*	1.93
	(13.87)	(0.49)	(0.44)	(1.20)
Ambiguity Preferences	−74.22	1.88	3.17*	18.08*
	(54.12)	(1.84)	(1.88)	(10.35)
Cognitive Abilities	−59.87	0.68	0.25	2.11
	(62.72)	(2.08)	(1.96)	(4.79)
Constant	−27.19	−2.72	−5.87***	−18.46*
	(48.67)	(1.74)	(1.93)	(9.95)
Set of Controls	Yes	Yes	Yes	Yes
Observations	75	75	91	92
Log Likelihood		−26.64	−40.53	−10.05
Note:				*p<0.1; **p<0.05; ***p<0.01

Interestingly, we find that confidence levels are negatively asssociated with

[7]For start-up activity we do not include access to financial means as a control variable to avoid the problem of perfect separation.

the requested share of the loan (Column 2, confidence: $p = 0.026$) and also with the propensity to participate in the business competition (Column 3, confidence: $p = 0.0188$). Underconfident subjects seem to have a higher need for external finances and are more likely to take part in the business competition, where they can get external finances in form of a loan or a subsidy from a third party.

We also find that ambiguity seeking behavior has a positive association with participation in business competition (Column 4, Ambiguity: $p = 0.0907$) and start-up activity (Column 4, Ambiguity: $p = 0.0807$). This finding is in line with laboratory findings (Åstebro and Gutierrez, 2016). In line with previous studies (Koudstaal et al., 2014) we do not find a relation between risk preferences measured in the laboratory setting and entrepreneurship-related behavior.

4.4. Heterogeneity of Treatment Effect: Requested Amount of Investment.

Finally, we analyze a heterogeneous treatment effect on the requested amount of investment. The left plot in figure 1 shows the requested investment amounts by treatment and confidence level. Requested amounts differ across treatments, with the largest difference between the full and the control treatments. More importantly, this disparity is solely driven by non-overconfident subjects.

To check if this observed regularity is not an artifact of initial conditions, we plot the difference in requested amount before and after the program (see figure 1, right plot). Indeed, the non-overconfident subjects change the requested amount, whereas the overconfident do not.

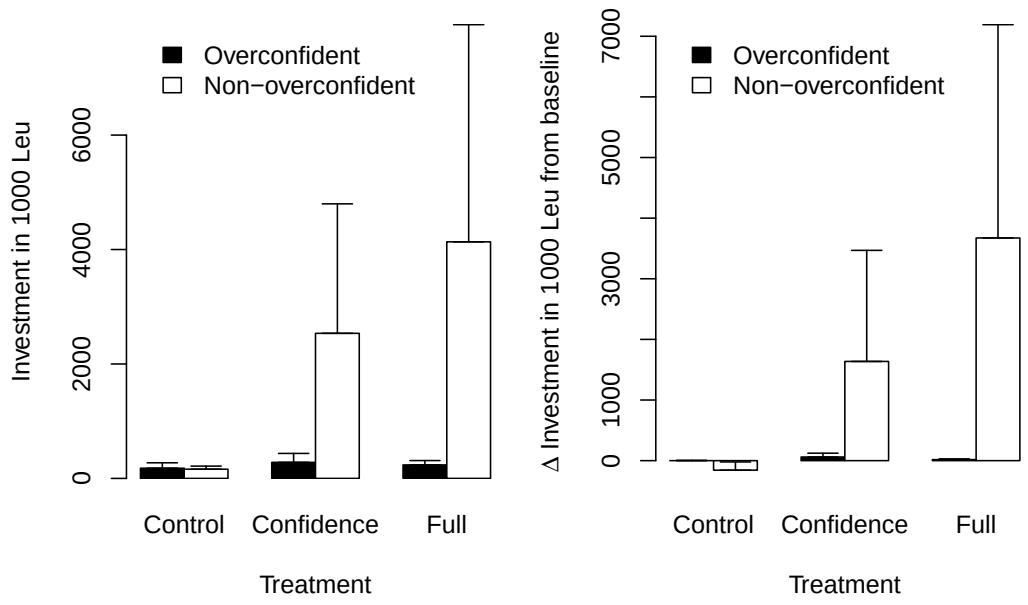

Figure 1: Required investment by treatment and confidence level.

To assess the significance of the observed result we use a regression analysis similar to regression 1 but interacting the treatment dummy with the confidence level at baseline (see table 7). We find that, indeed, less confident subjects more likely to respond to the full treatment (Column 1, Full T.X Conf. Level: $p = 0.0373$).

In addition, we test if subjects' change in the requested amount of investment is mediated by their self-efficacy level. We use similar robust linear regressions interacting the treatment effect with the self-efficacy measure (see table 7 in Appendix B.). However, we cannot reject the null-hypothesis that there is no difference in the response to treatment between people with high level of self-efficacy (Model 1, Full T.X Self-efficacy Level: $p = 0.2428$; Confidence T.X Self-efficacy Level: $p = 0.4465$)

Table 7: Determinants of Required Investment Request

	Dependent variable:	
	Investment in 1000 Leu	
	(1)	(2)
Full Treat. (ITT)	76.96*	164.77*
	(41.09)	(98.12)
Full T. (ITT)X Conf. Level	−642.87**	−1,336.21**
	(261.31)	(627.70)
Confidence Treat. (ITT)	50.44	129.62
	(42.05)	(99.15)
Conf. T. (ITT) X Conf. Level	93.36	12.87
	(263.99)	(631.46)
Confidence Level	−48.64	13.12
	(184.67)	(447.83)
Self-efficacy		−25.77
		(40.16)
Risk Preferences (α)		23.45
		(60.52)
Ambiguity Preferences		−408.96*
		(231.58)
Cognitive Abilities		−180.23
		(273.85)
Constant	−93.65	−63.91
	(62.62)	(206.79)
Set of Controls	Yes	Yes
Observations	75	75
Note:	*p<0.1; **p<0.05; ***p<0.01	

5. Conclusion

We provide a randomized control trial to assess the effect of different types of entrepreneurship training on entrepreneurship-related behavior and to understand the mechanisms underlying behavioral changes. To obtain a more objective measure of subjects characteristics than self-reported information we use a lab-in-field experiment measuring confidence, risk, ambiguity attitudes and cognitive abilities.

We find that despite a high level of self-reported self-efficacy subjects are underconfident on average in the market entry game. They have relatively low cognitive skills, as well as high risk and ambiguity aversion, which can be explained by

the disadvantageous position of people who live in Moldova's Gagauzia region.

With regard to the main outcomes of our study, we do not find any training impacts on the willingness to take a loan or participate in a business competition, or in start-up activity. However, we find that the combination of confidence and business training significantly changes the requested amount of investment. Interestingly, we find that the combination of confidence and business training has a higher effect on subjects who had a low level of confidence measured in the confidence game, but we do not find that self-efficacy is mediating this effect. We conjecture that intervention does not show the effect since it is hard to change the personal characteristics in adults.

As concerns behavioral characteristics, we observe that initial confidence level is a strong predictor of the requested loan amount and of participation in the business competition (giving a pitch). We also find that ambiguity preferences are associated with participation in the business competition and with starting up the business. These findings correspond to laboratory results (Åstebro and Gutierrez, 2016) , strengthening the link between the lab and the field. In line with previous research (Koudstaal et al., 2014), we do not observe that risk attitudes are associated with higher intentions of engaging in entrepreneurial activity, taking a larger loan or willingness to invest more. Also, cognitive abilities do not seem to play substantial role.

In a nutshell, we do not find that confidence training provided with or without business training affects start-up activity. However, we find that confidence level and ambiguity preferences play a significant role in entrepreneurial behavior. In line with studies that focus on personal characteristics and entrepreneurship (e.g. Astebro and Hoos, 2016), we argue that entrepreneurship training should target

another population group. Thus, future research is needed to assess if one can find a better program or target different group of people, e.g. children (Huber et al., 2014) or business owners (Anderson et al., 2016), to change confidence and ambiguity preferences to increase entrepreneurial activity.

References

Anderson, S. J., Chandy, R. and Zia, B. (2016), 'Pathways to Profits: The Impact of Marketing versus Finance Skills on Business Performance Stephen', *mimeo* .

Astebro, T. B. and Hoos, F. (2016), 'The Effects of a Training Program to Encourage Social Entrepreneurship', *SSRN Electronic Journal* .
URL: *http://papers.ssrn.com/abstract=2715384*

Åstebro, T. and Gutierrez, C. (2016), 'The Impact of Overconfidence on Market Entry', *Working Paper* (HEC Paris), 0–44.

Astebro, T., Herz, H., Nanda, R. and Weber, R. a. (2014), 'Seeking the Roots of Entrepreneurship: Insights from Behavioral Economics', *Journal of Economic Perspectives* **28**(3), 49–70.
URL: *http://pubs.aeaweb.org/doi/abs/10.1257/jep.28.3.49*

Bae, T. J., Qian, S., Miao, C. and Fiet, J. O. (2014), 'The Relationship Between Entrepreneurship Education and Entrepreneurial Intentions: A Meta-Analytic Review', *Entrepreneurship: Theory and Practice* **38**(2), 217–254.

Benus, J., McConnell, S., Bellotti, J., Shen, T., Fortson, K. and Kahvecioglu, D. (2008), 'Growing America Through Entrepreneurship: Findings from the Eval-

uation of Project GATE', *US Department of Labor Report* (US Department of Labor, Washington DC), 367–477.

Berge, L. I. O., Bjorvatn, K., Garcia Pires, A. J. and Tungodden, B. (2015), 'Competitive in the lab, successful in the field?', *Journal of Economic Behavior and Organization* **118**, 303–317.

Bruhn, M. and McKenzie, D. (2009), 'In Pursuit of Balance: Randomisation in Practice in Development Field Experiments', *American Economic Journal: Applied Economics* **1**(4), 200–232.
URL: *http://www.jstor.org/stable/25760187*

Busenitz, L. W. and Barney, J. A. Y. B. (1997), 'Differences between entrepreneurs and managers in large organizations: Biases and heuristics in strategic decision-making.', *Journal of business venturing* **12**(1), 9–30.
URL: *http://dx.doi.org/10.1016/S0883-9026(96)00003-1*

Camerer, C. (2011), The Promise and Success of Lab-Field Generalizability in Experimental Economics: A Critical Reply to Levitt and List.
URL: *http://papers.ssrn.com/sol3/Papers.cfm?abstract_id=1977749*

Camerer, C. and Lovallo, D. (1999), 'Overconfidence and excess entry: An experimental approach', *American economic review* **89**(1), 306–318.

Campos, F., Frese, M., Goldstein, M., Iacovone, L., Johnson, H., McKenzie, D. and Mensmann, M. (2017), 'Teaching personal initiative beats traditional business training in boosting small business growth', *Science* **1290**(September), 1287–1290.

Cettolin, E. and Riedl, A. (2016), 'Justice under Uncertainty', *Management Science* **XX**(XX), XX.
URL: *http://hal.archives-ouvertes.fr/halshs-00086032/*

de Mel, S., McKenzie, D. and Woodruff, C. (2014), 'Business training and female enterprise start-up, growth, and dynamics: Experimental evidence from Sri Lanka', *Journal of Development Economics* **106**, 199–210.
URL: *http://dx.doi.org/10.1016/j.jdeveco.2013.09.005*

Deaton, A. (2010), 'Instruments, Randomization, and Learning about Development', *Journal of Economic Literature* **48**(2), 424–455.

Deaton, A. and Cartwright, N. (2016), Understanding and Misunderstanding Randomized Controlled Trials.
URL: *http://www.nber.org/papers/w22595*

European Commission (2015), *Entrepreneurship education: A road to success*.

Fairlie, R. W., Karlan, D. and Zinman, J. (2015), 'Behind the GATE experiment: Evidence on effects of and rationales for subsidized entrepreneurship training', *American Economic Journal: Economic Policy* **7**(2), 125–161.
URL: *http://www.nber.org/papers/w17804*

Falk, A. and Heckman, J. J. (2009), 'Lab experiments are a major source of knowledge in the social sciences.', *Science* **326**(5952), 535–538.
URL: *http://www.ncbi.nlm.nih.gov/pubmed/19900889*

Filippin, A. and Crosetto, P. (2016), 'A Reconsideration of Gender Differences in Risk Attitudes', *Management Science* **62**(11), 3138–3160.
URL: *http://pubsonline.informs.org/doi/10.1287/mnsc.2015.2294*

Fischbacher, U. (2007), 'z-Tree: Zurich toolbox for ready-made economic experiments', *Experimental economics* **10**(2), 171–178.
URL: *http://link.springer.com/10.1007/s10683-006-9159-4*

Forum World Economic (2016), *The human capital report 2016*.

Frederick, S. (2005), 'Cognitive Reflection and Decision Making', *Journal of Economic Perspectives* **19**(4), 25–42.
URL: *http://pubs.aeaweb.org/doi/abs/10.1257/089533005775196732*

Glaub, M., Frese, M., Fischer, S. and Hoppe, M. (2012), 'Personal Initiative Training for Business Owners in South Africa'.

Grimm, M. and Paffhausen, A. L. (2015), 'Do interventions targeted at micro-entrepreneurs and small and medium-sized firms create jobs? A systematic review of the evidence for low and middle income countries', *Labour Economics* **32**, 67–85.
URL: *http://dx.doi.org/10.1016/j.labeco.2015.01.003*

Hamilton, B. (2014), 'Right Stuff? Personality and Entrepreneurship.', *Personality and Entrepreneurship* (May, 19, 2014).
URL: *http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2438944*

Hausman, D. M. and Welch, B. (2010), 'Debate: To nudge or not to nudge', *Journal of Political Philosophy* **18**(1), 123–136.

Heckman, J., Humphries, J. and Kautz, T. (2014), *Achievement Tests and the Role of Character in American Life*.
URL: *http://home.uchicago.edu/ tkautz/Heckman_Kautz_2014_Achievement Tests.pdf*

Huber, L. R., Sloof, R. and Van Praag, M. (2014), 'The effect of early entrepreneurship education: Evidence from a field experiment', *European Economic Review* **72**, 76–97.
URL: *http://dx.doi.org/10.1016/j.euroecorev.2014.09.002*

Imbens, G. W. (2010), 'Better LATE Than Nothing: Some Comments on Deaton (2009) and Heckman and Urzua (2009)', *Journal of Economic Literature* **48**(2), 399–423.

Karlan, D. and Valdivia, M. (2011), 'Teaching Entrepreneurship: Impact of Business Training on Microfinance Clients and Institutions.', *Review of Economics & Statistics* **93**(2), 510–527.
URL: *http://search.ebscohost.com/login.aspx?direct=true&db=buh&AN=60276799&site=ehost-live*

Kautonen, T., van Gelderen, M. and Fink, M. (2015), 'Robustness of the theory of planned behavior in predicting entrepreneurial intentions and actions', *Entrepreneurship: Theory and Practice* **39**(3), 655–674.

Koellinger, P., Minniti, M. and Schade, C. (2007), '"I think I can, I think I can": Overconfidence and entrepreneurial behavior', *Journal of Economic Psychology* **28**(4), 502–527.

Koudstaal, M., Sloof, R. and van Praag, M. (2014), Risk, Uncertainty, and Entrepreneurship: Evidence from a Lab-in-the-Field Experiment.
URL: *http://ftp.iza.org/dp8577.pdf*

Martin, B. C., McNally, J. J. and Kay, M. J. (2013), 'Examining the formation of human capital in entrepreneurship: A meta-analysis of entrepreneurship educa-

tion outcomes', *Journal of Business Venturing* **28**(2), 211–224.
URL: *http://dx.doi.org/10.1016/j.jbusvent.2012.03.002*

McKenzie, D. and Woodruff, C. (2014), 'What are we learning from business training and entrepreneurship evaluations around the developing world?', *World Bank Research Observer* **29**(1), 48–82.

Oosterbeek, H., van Praag, M. and Ijsselstein, A. (2010), 'The impact of entrepreneurship education on entrepreneurship skills and motivation', *European Economic Review* **54**(3), 442–454.

Premand, P., Brodmann, S., Almeida, R. and Grun, R. (2012), 'Entrepreneurship training and self-employment among university graduates'.
URL: *http://www.academia.edu/download/41199504/54a80ff60cf267bdb90b2f7e.pdf20160115-19908-ze2xjs.pdf*

Sampson, R. J. (2016), 'The Characterological Imperative: On Heckman, Humphries, and Kautz's The Myth of Achievement Tests: The GED and the Role of Character in American Life', *Journal of Economic Literature* **54**(2), 493–513.

Streitberg, B. and Röhmel, J. (1986), 'Exact distributions for permutations and rank tests: An introduction to some recently published algorithms', *Statistical Software Newsletter* **12**(1), 10–17.
URL: *http://scholar.google.com/scholar?hl=en&btnG=Search&q=intitle:Exact+distributions+for+*

Unger, J. M., Rauch, A., Frese, M. and Rosenbusch, N. (2011), 'Human capital and entrepreneurial success: A meta-analytical review', *Journal of Business Venturing* **26**(3), 341–358.

Valerio, A., Parton, B. and Robb, A. (2014), Entrepreneurship Education and Training Programs around the World, Technical report.

Van Praag, C. M. and Versloot, P. H. (2007), 'What is the value of entrepreneurship? A review of recent research', *Small Business Economics* **29**(4), 351–382.

Viceisza, A. C. G. (2016), 'Creating a Lab in the Field: Economics Experiments for Policymaking', *Journal of Economic Surveys* **30**(5), 835–854.

von Graevenitz, G., Harhoff, D. and Weber, R. (2010), 'The effects of entrepreneurship education', *Journal of Economic Behavior and Organization* **76**(1), 90–112.

World Bank (2016), 'Gross national income per capita 2015', (October), 1–4.

Zhao, H., Seibert, S. E. and Lumpkin, G. T. (2010), 'The Relationship of Personality to Entrepreneurial Intentions and Performance: A Meta-Analytic Review', *Journal of Management* **36**(2), 381–404.
URL: *http://jom.sagepub.com/content/36/2/381.abstract*

Appendix A. Baseline characteristics

Table A.8: Baseline Characterisitcs of Treated and Control groups (Showed-up)

	Control	Confidence	Full	p-value
N	27	35	35	
Share of Females	0.58 (0.50)	0.60 (0.50)	0.48 (0.51)	0.617
Share of Students	0.73 (0.45)	0.82 (0.39)	0.76 (0.44)	0.676
Business Experience	0.27 (0.45)	0.18 (0.39)	0.21 (0.42)	0.693
Comrat	0.60 (0.50)	0.47 (0.51)	0.55 (0.51)	0.614
Own Inv.(%)	17.60 (22.04)	13.82 (15.77)	16.36 (22.05)	0.755
Friends Inv.(%)	17.20 (18.38)	16.18 (13.93)	14.24 (15.01)	0.761
Bank Inv.(%)	13.20 (19.30)	15.88 (23.37)	16.36 (25.35)	0.862
Investment (1000 Leu)	279.63 (450.81)	364.49 (1046.10)	669.41 (1842.51)	0.448
Cognitive Abilities	0.11 (0.21)	0.05 (0.12)	0.10 (0.17)	0.285
Self-efficacy	3.81 (0.96)	3.80 (0.98)	3.75 (0.94)	0.968
Confidence	-0.01 (0.20)	-0.00 (0.16)	-0.03 (0.18)	0.858
Risk preferences	0.59 (0.86)	0.41 (0.72)	0.66 (0.81)	0.395
Ambiguity Preferences	0.26 (0.25)	0.23 (0.19)	0.31 (0.19)	0.271

Table A.9: Baseline Characterisitcs of Treated and Control groups (Paritcipated)

	Control	Confidence	Full	p-value
N	22	29	28	
Share of Females	0.57 (0.51)	0.59 (0.50)	0.48 (0.51)	0.714
Share of Students	0.71 (0.46)	0.82 (0.39)	0.78 (0.42)	0.682
Business Experience	0.29 (0.46)	0.14 (0.36)	0.19 (0.40)	0.463
Comrat	0.62 (0.50)	0.50 (0.51)	0.63 (0.49)	0.576
Own Inv.(%)	18.00 (21.67)	15.00 (16.44)	14.81 (21.55)	0.837
Friends Inv.(%)	18.00 (19.36)	15.71 (14.51)	12.22 (15.02)	0.464
Bank Inv.(%)	13.00 (20.80)	16.43 (24.98)	15.93 (27.21)	0.884
Investment (1000 Leu)	280.23 (468.82)	394.38 (1145.04)	753.91 (2054.07)	0.462
Loan (1000 Leu)	29.00 (45.27)	33.73 (91.95)	109.14 (377.83)	0.373
Cognitive Abilities	0.09 (0.18)	0.06 (0.13)	0.08 (0.15)	0.702
Self-efficacy	3.76 (0.94)	3.79 (1.00)	3.62 (0.97)	0.791
Confidence	-0.03 (0.17)	-0.03 (0.15)	-0.04 (0.15)	0.946
Risk preferences	0.59 (0.89)	0.33 (0.53)	0.72 (0.88)	0.169
Ambiguity Preferences	0.23 (0.24)	0.23 (0.20)	0.33 (0.18)	0.107

Table A.10: Laboratory Experiment Perception

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max
Exp. Interesting	100	3.49	1.18	1.00	3.00	4.25	5.00
Exp. Length	100	2.78	0.93	1.00	2.00	3.00	5.00
Exp. Understandable	100	3.49	1.05	1.00	3.00	4.00	5.00
Task difficulty	100	5.31	2.21	1.00	4.00	7.00	10.00

Appendix B. Additional Estimations

Table B.11: Determinants of Required Investment Request.

	Dependent variable:	
	Investment in 1000 Leu	
	(1)	(2)
Full Treat. (ITT)	−1.85	−328.32
	(104.19)	(463.96)
Full T. (ITT)X Self-efficacy	13.72	143.26
	(26.83)	(120.14)
Confidence Treat. (ITT)	127.40	493.40
	(106.95)	(478.28)
Conf. T. (ITT) X Self-efficacy	−27.51	−95.28
	(28.01)	(124.87)
Confidence Level		−283.11
		(297.92)
Self-efficacy	8.83	−59.43
	(20.99)	(93.87)
Risk Preferences (α)		70.78
		(68.43)
Ambiguity Preferences		−663.92**
		(266.71)
Cognitive Abilities		−164.42
		(301.15)
Constant	−76.66	41.40
	(90.28)	(408.99)
Set of Controls	Yes	Yes
Observations	75	75
Note:	*p<0.1; **p<0.05; ***p<0.01	