Learning to see the world's opportunities: The impact of imagery on entrepreneurial success*

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Recent work in neuroscience and psychology has underscored the impact of visualizing future scenarios on decision making, via mental simulation, emotional amplification, and consolidation of memory. We show evidence of the path and importance of imagery-based decision making for the vital economic activity of entrepreneurship. We also highlight that the use and impact of this ability is highly heterogeneous depending on people's life experiences, and it has the potential to benefit vulnerable populations the most. First, using a data set of roughly 2,000 would-be entrepreneurs in Colombia, we show that measures of imagery use correlate strongly and positively with economic outcomes. Second, we design a training curriculum to teach visualization skills, and test it using a randomized control trial in which the same entrepreneurs were given access to either the imagery-based entrepreneurial training program, a placebo program of traditional business skills training, or no program at all. In follow-up surveys conducted 8 and 14 months after the intervention, those who participated in the imagery training demonstrated a strengthened capacity for using visualization and significantly improved economic outcomes compared to the placebo. For individuals with high levels of baseline trauma, imagery addresses their deficit in positive imagery. Women in the imagery training improve along all margins compared to men, and are negatively impacted by traditional business training. Improved entrepreneurial outcomes appear to be driven by enhanced ability to obtain credit, build savings, and undertake creative marketing with customers and competitors. Our results suggests that training which ignores the emotional content of economic activity is not as effective as that which leverages the emotions inherent in economic decisions. **JEL Codes:** D91, J24, L26, M53

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"Provision for the future makes no inconsiderable demands on our intellectual strength...The present always gets its rights. It forces itself upon us through our senses. To cry for food when hungry occurs even to a baby. But the future we must anticipate and picture. Indeed, to have any effect in the future, we must form a double series of anticipations. We must be able to form a mental picture of what will be the state of our wants, needs, feelings, at any particular point of time. And we must be able to form another set of anticipations as to the fate of those measures which we take at the moment with a view to the future"

-Böhm-Bawerk, The Positive Theory of Capital and Interest (1889)

1 Introduction

To form a mental picture of what will be the state of our wants, needs and feelings at any point in time - and to recognize the potential impact of actions we take in those states - is a vital skill for economic activity from savings to entrepreneurship (Gabaix and Laibson, 2017; Becker and Mulligan, 1997).[1] The process of mental experiencing or "seeing with the mind's eye" by accessing information from memory (J. Pearson, Naselaris, E. A. Holmes, *et al.*, 2015; E. A. Holmes, Blackwell, Burnett Heyes, *et al.*, 2016) has been the subject of extensive work in psychology and neuroscience. While humans think in either words or images, images are faster to retrieve and offer a heightened sense of realism. Mental imagery is multi-sensory in nature just like reality is. In previous research, thinking in images has been shown to facilitate mental scenario simulation (E. A. Holmes and Mathews, 2005), heightened motivation through emotional amplification, and the consolidation of learning and memory (Schönfeld, Ehlers, Böllinghaus, *et al.*, 2007).[2]

Imagery works by drawing on information stored in our memory to imagine and predict future events. Recent neuro-imaging studies including fMRI scans suggest that the same neural machinery used to store information is activated to produce mental simulations about

[1] Indeed, the Bohm-Bawerk quote above continues: "Our knowledge of causal processes must enable us beforehand to form an adequate picture of the forms which goods will take, of the quantity of them, and of the time when they will come to maturity as result of those productive or commercial activities which we are now commencing. To make this double work of anticipating a comparatively remote future clear and true to fact, is not possible to the infant, and not much more than possible to the child and the savage. Civilisation of course teaches us this difficult art gradually. But, even among the most advanced peoples, the art is still very far from being perfect, and the practical economic provision for the future is correspondingly inadequate. But, be the degree of anticipation and provision for the future what it may, wherever it exists in the most general way [...] future goods and future services are as much actual objects of economical dealing as present goods. We strive to get them; we produce them; we value them; we buy and sell them" (page 244, 1889).

[2] Lab experiments have indeed demonstrated that imagery has a more powerful impact on emotions than verbal cognition, because it activates brain systems underlying emotion more directly than symbolic representations (E. Holmes and Mathews, 2010; E. A. Holmes, Blackwell, Burnett Heyes, *et al.*, 2016).

the future and adopt the perspective of others (Saxe and Kanwisher, 2003; Schacter, Addis, and Buckner, 2007a). Thus distressing experiences stored in one's memory database not only can directly affect decision making (Bordalo, Gennaioli, and Shleifer, 2020), but can also impoverish the foundations for imagining the future.

Exposure to trauma is common throughout the world, with over 70% of people estimated to have experienced at least one traumatic event in their lifetime (Benjet, Bromet, Karam, *et al.*, 2016; Kessler, Aguilar-Gaxiola, Alonso, *et al.*, 2017).[3] The projection of traumatic memories into the future induces an over-weighting of negative future scenarios and emotions, and creates a deficit in the ability to imagine positive and detailed scenarios (McNally, Lasko, Macklin, *et al.*, 1995; Tulving, 2002; Moore and Zoellner, 2007; Kleim and Ehlers, 2008; Kleim, Graham, Fihosy, *et al.*, 2014). The inability to imagine a certain behavior in one's mind, in turn, leads to avoidance of that behavior in reality and emotional shut-down. Shedding light on how imagery can help decision making for people with trauma is not only policy relevant, but also offers a crucial step in developing our understanding about how the memory can impact decision making.

In this paper, we explore the role of imagery-based decision making in entrepreneurial activity and for populations with high levels of psychological distress and trauma.[4] Traditional financial and business training programs ignore the role of emotions. Our curriculum, in contrast, emphasizes that both positive and negative emotions can be productivity-enhancing, as long as participants learn how to regulate and control them. Our intervention's classroom-based training was designed to facilitate participants to both experience and regulate emotions that arise with respect to economic activity and outcomes.

We first use standard psychology survey measures on imagery ability to show that a more frequent use and higher quality of mental imagery correlate strongly with higher asset accumulation, earnings, and life satisfaction. This motivates the importance of mental imagery in individual decision-making. Consistent with clinical evidence, we also find that high trauma individuals imagine substantially more vivid and emotional negative future scenarios, but not positive future scenarios. Moreover, women in our sample tend to show greater emotional intensity when asked to imagine future scenarios, and also display greater trauma symptoms and psychological distress than men.

[3]The prevalence of trauma is only likely to be exacerbated with the Covid-19 pandemic (E. A. Holmes, O'Connor, Perry, *et al.*, 2020).

[4]Governments and international organisations invest vast amounts of resources in promoting entrepreneurship, with the World Bank spending USD $9 billion in recent years (Blattman and Ralston, 2015). However, these programmes have been largely unsuccessful in generating employment, increasing profits and transferring knowledge and skills to entrepreneurs (McKenzie and Woodruff, 2013). One reason may be that most business training follows a standard cognitive pedagogical approach which requires to put aside images and emotions.

Second, we design a curriculum that embeds imagery-based learning within a traditional business training program. The goal of the curriculum is to harness the three components of mental imagery - scenario simulation, emotions and memory consolidation - within the entrepreneurship domain. Scenario simulation allows people to practice business-related decision making, including the experience of counterfactual events, in order to avoid real costly experimentation and choose the best course of action. Effective scenario simulation, in turn, triggers emotions, which contribute to the individual estimation of utilities under different scenarios. Finally, simulated but realistic images get stored in memory, just like lived experiences, and thus can be retrieved when needed.[5]

We test the impact of our curriculum on imagery skills and economic outcomes through a randomised control trial with roughly 2,000 would-be entrepreneurs in Colombia. The ten-session curriculum teaches entrepreneurs to use imagine future scenarios and the pathways for achieving these outcomes with vividness and emotion, as well as mentally practice useful behaviours, such as saving. The curriculum is also specifically designed to build up the ability to produce imagery of positive future scenarios for entrepreneurs who have experienced past trauma, following programmes developed in clinical psychotherapy (E. A. Holmes, Arntz, and Smucker, 2007; E. A. Holmes, Hales, Young, *et al.*, 2019).[6]

The randomised control trial was conducted in partnership with the local government of Bogotá and randomly assigned participants to our imagery curriculum, a traditional business training (placebo), or a no-intervention control group. Our focus is on the comparison between the imagery curriculum and the traditional training, which we designed to have an identical structure, content and delivery method. The only difference between the two is that the traditional training features written and verbal group-based activities instead of imagery exercises. For instance, in the credit session we asked participants to practice going to a bank to ask for a loan. In the imagery training, participants went through a mental imagery guided exercise and simulated the scenario in their minds. In the traditional training, instead, participants were asked to write down a list of steps they would take to prepare for the meeting at the bank. We conduct two follow-up phone surveys 8 and 14

[5]The choice of bundling together psychological and economic content in the curriculum is also important. We are implicitly hypothesising that there is a complementarity between enhancing skills for economic production and imagery, such that teaching the latter within the former will be more effective rather than doing two separate trainings - one in imagery and one in business. Interviews conducted with the National Victims Unit before starting our project suggested that people would be more motivated to get better in their psychology when this learning is bundled with how to improve their livelihoods.

[6]In clinical psychotherapy, mental imagery has also been used to rescript negative intrusive memories, in addition to encouraging positive imagery (E. A. Holmes, Arntz, and Smucker, 2007; E. A. Holmes, Hales, Young, *et al.*, 2019). However, rescripting negative memories requires specialised clinical skills, which do not lend itself to scalable policies that can be delivered by lay trainers. Consequently, we focus on the development of positive imagery as a low-cost policy lever that could be used to substitute for negative imagery, rather than directly address the negative imagery itself.

months after the end of the intervention and during the Covid-19 pandemic.

When comparing the imagery training to the traditional entrepreneurship training, we find that imagery can be trained: we observe a 0.18 standard deviations improvement ($p < 0.1$) on an imagery index measuring the frequency of imagery use, enhanced vividness (specificity) and emotional intensity of imagined future business scenarios. We also find that those who receive the imagery training have significantly higher earnings on average, both before and after the start of the Covid-19 pandemic. Relative to the placebo group, entrepreneurs report on average an increase of 0.19 and 0.14 standard deviations in earnings pre- and post-pandemic lockdown respectively. These findings are both statistically significant at the 5% level. Imagery participants also report significantly higher business survival during the pandemic, but not before the pandemic.

To check whether imagery-based learning can particularly benefit vulnerable populations, we look at two sources of heterogeneity in our results: trauma and gender. We find that improvements in imagery skills are stronger in the sub-sample of participants with high baseline trauma symptoms. In particular, the imagery training increases positive images of the future for vulnerable populations with strong trauma symptoms, which is aligned with our original goal. These effects translate through to higher earnings, although the difference between the high- and low-trauma group is not statistically significant.

Imagery also disproportionately benefits women, who have limited experience as entrepreneurs and a heavier trauma burden at baseline. Women learn business-related imagery more effectively than men, and are able to bring this learning also into other domains of their lives. Consistent with previous findings, there is a significant gender gap in economic performance in the traditional training as well as pure control groups. The imagery-based curriculum effectively mitigates the gap by improving outcomes for women, but not for men.

Finally, we turn to our policy-benchmark comparison and compare the impact of the traditional training to the pure control. We find a negative and significant impact of our traditional program on both imagery skills and economic performance. Such negative impact, moreover, is stronger among the two sub-samples that benefit the most from imagery, high-trauma participants and women. This suggests that the traditional training, based on written exercises and word-based activities rather than imagery, crowds-out people's use of mental imagery in the entrepreneurship domain, with negative downstream outcomes. Our imagery training, in contrast, is able to overcome such negative impact.

We hypothesize that imagery can improve upon standard training in three ways. First, *mental simulations* should facilitate skill development, goal attainment and overcoming of obstacles (Driskell, Copper, and Moran, 1994; Munroe, Giacobbi Jr., Hall, *et al.*, 2000). Second, our imagery training introduces more positive images to participants, and guides

them through the arising of negative emotions (for example, not getting a bank loan or not having enough savings when a health shock hits). In contrast, if negative emotions arise in the traditional training, participants have no way to control them, and this can lead to inattention and avoidant behaviors. Third, imagery can lead to memory consolidation and better learning by making business content more easily available in one's mind eye through images.

We find support for the emotional component of imagery in explaining differences between the two groups. Imagery-trained people are more likely to engage into creative marketing activities that may give them bad news, such as seeking clients' feedback and comparing own with competitors' products. For instance, they are 8 pp more likely to check a competitor's shop than traditionally-trained people. In contrast, the decline in imagery skills in the traditional training leads to a substitution of creative activities with more cognitive word-based activities (e.g., record keeping).

We do not find support for memory consolidation as a channel of the effects, because there are no differences in business knowledge between treatment groups. Similarly, imagery-trained participants are not more likely to innovate, indicating that mental simulation of future novel scenarios - e.g., the introduction a new product in the market - is not the main driver of the improved outcomes observed in the paper.

Our paper speaks to three bodies of literature. First, our results highlight a critical role for the ability to imagine future scenarios and the future consequences of current actions more vividly, contributing to the literature advancing micro-foundations for inter-temporal decision making. Becker and Mulligan (1997) and Gabaix and Laibson (2017) have made the theoretical case for the importance of imagining the future as a means to micro-found inter-temporal discounting. However, only two papers in economics have empirically tested whether visualising the future affects economic choices. In a primary school setting, Alan and Ertac (2018) show that students who learn to imagine their future selves and to build counterfactual scenarios in their minds make more patient inter-temporal choices in incentivised experiments and perform better in the classroom. A recent working paper by A. John and Orkin (2021) compares the impact of imagery with a standard planning intervention and a pure control to encourage the take-up of water chlorination. For their primary behavioural outcome of interest, the presence of chlorine within household drinking water, they find large effects of the imagery treatment compared to the control group. In other work in psychology, imagining an older version of the self has been found to increase savings (Hershfield, E. M. John, and Reiff, 2018). In contrast to these papers, we stress the key role of emotions in motivating action and measure the impact of imagery on a wider range of economic outcomes, such as earnings and business survival.

Our results also contribute to the literature on the long-lasting effects of trauma and conflict by showing that the ability to imagine the future in a more balanced way is an important determinant of entrepreneurial success. Temporary shocks have already been shown to shift social, risk and time preferences in the longer term. For example, exposure to violence has been shown to result in higher risk aversion (Voors, Nillesen, Verwimp, *et al.*, 2012; Callen, Isaqzadeh, Long, *et al.*, 2014), most pertinently in a Colombian context where the decades-long civil conflict has affected a large share of the population (Moya, 2018). In this paper, we explore another channel through which past traumatic experiences can affect economic choices: the ability to imagine the future, by impacting memory. The role of memory in limiting decision making and imagining the future has been explored theoretically in economics (Mullainathan, 2002; Gennaioli and Shleifer, 2010; Bordalo, Coffman, Gennaioli, *et al.*, 2016; Bordalo, Gennaioli, and Shleifer, 2018). Although we cannot draw a direct link between memory and future imagery, we show how an imagery training can rebalance the ways in which past experiences affect future-oriented decision making, by mediating overly negative future imagery and increasing the quality of positive future imagery.

Lastly, we apply a structured imagery programme to the domain of entrepreneurship and showcase another example of a business training focused on promoting soft skills. Efforts to train entrepreneurs in general have had modestly positive effects on average (McKenzie, 2021). There is, however, increasing evidence that using lessons from psychology to promote "soft" skills could enhance the effectiveness of entrepreneurship training for subsistence-level enterprises (McKenzie, Woodruff, Bjorvatn, *et al.*, 2021). For instance, a personal initiative training advocating a "proactive" mindset in Togo increased micro-enterprise profits by 30 percent on average over two years (Campos, Frese, Goldstein, *et al.*, 2017), although the long-term effects were not replicated in other contexts (Alibhai, Buehren, Frese, *et al.*, 2019; Ubfal, Arraiz, Beuermann, *et al.*, 2019). Business training programmes for the youth have also combined soft and hard skill development, with success in promoting self-employment (Alaref, Brodmann, and Premand, 2020; Chioda, Contreras-Loya, Gertler, *et al.*, 2021). Similarly, we postulate that entrepreneurs require the skill to imagine the future: imagine new products, customers, competitors – "to form an adequate picture of the forms which goods will take, of the quantity of them, and of the time when they will come to maturity as result of those productive or commercial activities which we are now commencing", as Böhm-Bawerk (1889) describes. We demonstrate that combining hard entrepreneurship skills training with this soft skill can improve earnings in the short term. With aid agencies and governments spending more than a billion US$ on entrepreneurship training annually (McKenzie, Woodruff, Bjorvatn, *et al.*, 2021), integrating psychological methods into these programmes offers a clear pathway to impact at scale.

The next section presents a short primer on mental imagery and trauma, and a motiva-

tional framework for conceptualising how imagery shapes future-oriented thinking. Section 3 presents correlational evidence to motivate that imagery matters for economic outcomes. We describe our curriculum innovation in Section 4. Section 5 outlines our experimental design. We summarise our approach to measurement and empirical strategy in Sections 6 and 7 respectively. We present results in Section 8, exploratory channels in Section 9 and robustness checks in Section 10. Section 11 concludes.

2 A primer on imagery, future thinking and trauma

2.1 Evidence from neuroscience and psychology

We define imagery as a process of mental experiencing or visualising resulting in an experience akin to "seeing with the mind's eye" (E. A. Holmes, Blackwell, Burnett Heyes, *et al.*, 2016). While humans think either words or images, images are faster to retrieve and offer a heightened sense of realism. This heightened sense of realism occurs through two channels: increased specificity or vividness and increased emotive content of the imagined scenarios. From a neuroscience perspective, the perceptual equivalence between images and reality arises from the common activation of brain systems that are involved in perception, such as the amygdala, early visual cortex, frontal and parietal areas (E. Holmes and Mathews, 2010).[7]

Yet imagery is not used uniformly across individuals; rather, its use varies, along two dimensions, with significant implications for decision making (Nelis, E. A. Holmes, Griffith, *et al.*, 2019). First, there may be variation in how much mental imagery is used.[8] Second, the content of mental imagery is not homogeneous and there exists stark differences in the nature of the projections it gives rise to. In turn, variation in use and content has prompted questions of whether imagery should be thought of as an innate trait or a malleable skill that can be trained.

An individual's past experiences of trauma may be a driver of both types of variation. Research demonstrates that imagining the future and reflecting on the past use the same

[7]Mental imagery is multi-sensory, leading it to act as an "emotional amplifier" as termed in psychology. Physiologically speaking, this is the result of mental images activating brain systems underlying emotion more directly than symbolic representations that do not use sensory prompts (E. Holmes and Mathews, 2010). Lab experiments have demonstrated imagery's more powerful impact on emotions than verbal cognition (E. A. Holmes, Blackwell, Burnett Heyes, *et al.*, 2016).

[8]Less than 1% of the population who are otherwise healthy are estimated to have aphantasia, which is the inability to produce visual imagery (Zeman, Dewar, and Della Sala, 2015; J. Pearson, 2019). However, this condition typically applies to the visual domain, so this small subset of the population may still be able draw on other senses during mental imagery.

neural machinery (Schacter, Addis, and Buckner, 2007b). Put differently, we draw on our memory to imagine the future.[9] Unsurprisingly, therefore, distressing circumstances which bring about trauma can influence future mental imagery both in terms of the quality and nature of imagery. Trauma may decrease specificity or hijack mental projections in such a way that all mental images become characterised by only negative outcomes. A substantial literature supports the idea of trauma inducing either an overly negative or "over-general" personal memory (McNally, Lasko, Macklin, *et al.*, 1995; Moore and Zoellner, 2007; Kleim and Ehlers, 2008). Indeed, evidence suggests that those suffering from post-traumatic stress disorder (PTSD) experience decreased specificity, compared to those without the condition. However, this decreased specificity is present in response to positive, but not negative, cuesy suggesting that positve imagey is especiallhampered by trauma (Kleim, Graham, Fihosy, *et al.*, 2014). Furthermore, those who have experienced past trauma may struggle to use imagery at all, with studies showing deficits in memory (Douglas Bremner, Randall, Scott, *et al.*, 1995; Jenkins, Langlais, Delis, *et al.*, 1998; Buckley, Blanchard, and Neill, 2000) and hence the ability to mentally project into the future.[10] When imagery involves reliving distressing circumstances of the past due to intrusive negative imagery, people may avoid imagining altogether. In many ways, deficiencies in terms of the content and the use of imagery, brought about by trauma, cannot be disentangled. Collectively, they result in a sense of a "foreshortened future", whereby individuals struggle to project themselves into future experiences.[11]

Mental experiencing has been shown to be closely linked to decision making. Vivid and emotional images can be motivational and induce behavioural change, more so than verbal descriptions of the same scenarios (Mathews, Ridgeway, and E. A. Holmes, 2013); (J. Pearson, Naselaris, E. A. Holmes, *et al.*, 2015). Specifically, imagery can be used to identify a concrete and emotionally motivating future outcome and then mentally map out the possible pathways towards achieving that outcome, both in terms of the steps and potential obstacles. Empirical evidence from psychology supports the notion that imagining one's own future behaviour can increase the likelihood of enacting that behaviour in reality (Gregory, Cialdini, and Carpenter, 1982; Koehler, 1991; Conway, Singer, and Tagini, 2004; Rutchick, Slepian,

[9]Neuroimaging studies, including fMRI scans that look at blood flows to the brain to detect areas of activity, find that the same neural machinery used to store information is activated during mental simulations about the future and perspective of others (Schacter, Addis, and Buckner, 2007b).

[10]Changes to important brain areas, such as the hippocampus, amygdala, and medial prefrontal cortex, that support the memory function have been shown to occur (Bremner, 2006).

[11]A similar phenomenon occurs in depression. Imagery of past negative events and suicidal imagery of the future coexist in depressed individuals (E. A. Holmes, Arntz, and Smucker, 2007). Imagining predominantly negative scenarios may lead to persistent negative mood, which hinders active behaviour. Moreover, depressed individuals are more likely to avoid imagining altogether in the attempt to stop negative intrusive memories, even when compared to non-depressed individuals with a similar frequency of intrusive memory (Newby and M. Moulds, 2011).

Reyes, *et al.*, 2018; Renner, F. Murphy, J. Ji, *et al.*, 2019). For instance, imagining the process of voting has been shown to increase voter turnout (Libby, Shaeffer, Eibach, *et al.*, 2007). In an economics domain, an imagery intervention that encouraged women to visualise the future increased take-up of water chlorination and reduced child diarrhoea (A. John and Orkin, 2021). The frequency, speed and emotional intensity with which a person can imagine certain scenarios also increases the subjective probability that the scenario will occur, through a form of an "availability heuristic" (Carroll, 1978), in turn also driving behavioural change. Naturally, deficits in the ability to generate vivid and emotional mental images can hinder decision making, especially for those who have experienced past trauma. For instance, feeling anxiety or fear, in response to a threatening or negative image, increases the decision maker's awareness of the danger involved in that scenario (Arntz, Rauner, and Van den Hout, 1995; Forgas, 1995). The subjective probability attached to the feared outcome increases avoidant, and ultimately sub-optimal, behaviour.

To improve future-oriented decision making, therefore, requires rebalancing the content of future imagery among those who have experienced past trauma. Previous efforts to improve future-oriented decision making have operated in non-economic domains, while those focused on addressing the effects of trauma have lacked scalability. For example, mental imagery is already frequently adopted by professional athletes and musicians to mentally rehearse and avoid physical injury from over-practice, thereby reducing performance anxiety (Driskell, Copper, and Moran, 1994; Munroe, Giacobbi Jr., Hall, *et al.*, 2000; Osborne, Greene, and Immel, 2014).[12] On the other hand, in clinical psychotherapy, imagery has been used to re-script negative intrusive memories, in order to lessen their emotional content or build up the ability to produce positive imagery as a substitute for negative imagery (E. A. Holmes, Arntz, and Smucker, 2007; E. A. Holmes, Hales, Young, *et al.*, 2019). The program required specialised clinical skills leading to high unit costs. This paper extends the application of this skill to the domain of business decision making while ensuring it remains a low-cost, scalable policy lever.

Teaching mental imagery within a given domain - entrepreneurship - raises the question of whether we expect participants' learning to be domain-specific or to be extended more broadly into other decision-making areas. A substantial literature in developmental psychology has drawn the distinction between domain-general (Li, Christ, and Cowan, 2014) and domain-specific (Siegler, 2006) theories of learning and development. While we acknowledge that mental imagery has the potential to be domain-general, our intervention focuses on

[12] "Repeatedly imagining a finger movement sequence (as in piano playing) not only improves performance but there is a corresponding change in motor cortex. Thus, imagery selectively activates those areas involved in processing related sensory information in reality, or in producing similar responses and actions" (E. Holmes and Mathews, 2010, p. 351).

how imagery can be effective when applied to specific business-related scenarios. In addition, to the large literature exploring targeted mental imagery applications, there are instances where adjustments to the mental imagery training used can produce different physiological responses, with possible implications for whether the training is beneficial within a given domain (Spring and Deutsch, 1981; Warner and McNeill, 1988; Page, Levine, Sisto, *et al.*, 2001). We take an agnostic approach in the paper on whether our imagery training is effective beyond the business domain. We let the data speak to this point by collecting measures on people's mental imagery in both business-specific and non-business scenarios.

A few studies in the entrepreneurship literature have explored whether mental imagery can be linked to better business decision making. Anthony, Bennett III, Maddox, *et al.* (1993) find that mental imagery can be used to enhance long term strategic thinking whilst C. P. Neck, H. M. Neck, Manz, *et al.* (1999) find that mental imagery can aid organisational leadership. The study by Zaleskiewicz, Bernady, and Traczyk (2020) compares imagery ability among entrepreneurs and non-entrepreneurs, finding that there are no differences in the use of non-business imagery between the two groups. However, entrepreneurs in their study are more frequent users of business-related imagery which, in turn, is correlated with increased risk taking and improved economic outcomes. Evidence of this kind suggests that entrepreneurship may be a particularly effective domain in which to focus the use of imagery.

2.2 A motivating theoretical framework on imagery and future thinking

In this section, we present a simple motivating framework to conceptualise how imagery can shape future thinking and the role of trauma in undermining this ability.

The key intuition is that mental imagery makes the downstream consequences of current and future actions more concrete and thus can improve choices in the pathway to achieving future outcomes. Consider a perfectly rational and risk-neutral entrepreneur making a choice between actions A and B. A has a known utility outcome of U_A and it is the default option. B has either a high utility of U_B^H or a low utility of U_B^L, but the true utility is unknown to the entrepreneur. We assume that $U_B^H > U_A > U_B^L$. The entrepreneur holds a prior belief over the probability of obtaining a high utility outcome from B, represented by γ. The expected utility of B is given by $\gamma U_B^H + (1-\gamma)U_B^L < U_A$. The inequality follows from the notion that A is the default action in the status quo.

Mental imagery reveals the true utility with probability λ at a small mental cost of C. In other words, the entrepreneur can exert mental effort to experience each option and, thus, get a better idea of their utility. In the extreme case of perfect introspection, the

entrepreneur will choose B in the high utility state and A if B has a low utility. Even if mental imagery imperfectly captures reality, imagery 'demystifies the future' by adding an additional level of specificity and emotion to future outcomes, and thus increases expected utility prior to imagery as follows:

$$\lambda(\gamma U_B^H + (1-\gamma)U_B^L) + (1-\lambda)(U_A) - C \underbrace{>}_{small\ C} U_A$$

In other words, when the mental cost of imagery is relatively low, the expected utility of deciding between A and B after imagining is higher than simply choosing the status quo.

Trauma undermines the ability to imagine the future through two channels. Firstly, trauma can increase the cost of mental imagery C if future imagery is overly negative or suppressed, such that $C_T > C$. Secondly, trauma can induce an over-general memory and hence non-specific future imagery. In other words, trauma can reduce the quality of mental imagery and thus lower the probability with which the true future utility is revealed by imagery, so $\lambda_T < \lambda$. As a result, some people who experienced past trauma might choose not to use imagery or if they do, the imagery could be overly negative or non-specific.[13]

A training that promotes positive mental imagery serves to reduce the mental cost of imagery C and increase the probability λ that imagery reveals the true utility of future outcomes. As a result, training can induce a greater use and quality of imagery. On quality, the training can help individuals to increase the level of specificity and emotional intensity of images about future outcomes.

3 Correlations between imagery and economic outcomes

In this section, we show that mental imagery is correlated with better economic outcomes, which motivates the importance of imagery in economic choices.[14] We also explore differences in imagery quality and frequency among people that differ by gender and trauma symptoms, which motivate our heterogeneity analysis.

Upon investigation of the importance of mental imagery in determining economic outcomes, we document four new empirical observations.

1. People who have a higher capacity to use imagery invest more in durable goods

[13]We do not model the asymmetry between imagery of positive or negative scenarios. One way to do so would be to define two different weights, λ_1 for positive scenarios and λ_2 for negative scenarios, with $\lambda_2 > \lambda_1$ for a traumatized decision maker, .

[14]Section 5 provides further details about the data and sample.

and are more satisfied with their life.

We hypothesise that higher quality mental imagery as an innate trait should be related with better long-term outcomes, such as asset accumulation and life satisfaction. We measure trait mental imagery using a contextually-adapted version of a well-known psychometric scale, the Plymouth Sensory Imagery Questionnaire or Psi-Q (Andrade, May, Deeprose, *et al.*, 2014). Akin to a personality trait, the Psi-Q is intended to capture a cognitive trait and in particular, the extent to which a person's use of imagery is richly developed. We show that trait mental imagery is positively related with both outcomes that typically unfold over time for our entire sample at baseline.

The left panel of Figure 1 shows that trait mental imagery (on the x-axis) is positively correlated with the total count of household assets (on the y-axis), both measured at baseline and controlling for age, gender, income categories, entrepreneurship status, and the time period and group in which the respondents participated in the programme. Including these controls allows us to test whether a correlation exists between imagery and wealth *within* groups of people who share these same characteristics. Quantitatively, the correlation between imagery and asset count is small, but statistically significant: an increase of one standard deviation in the Psi-Q score is correlated with an increase in assets of 0.23 ($p < 0.05$), which corresponds to a quarter of a television or a mobile phone, the latter being an asset owned by most of the sample.

The right panel of Figure 1 shows that trait imagery (on the x-axis) is positively correlated with self-reported life satisfaction using the Cantril ladder (y-axis), both measured at baseline and controlling for the same variables as above. More precisely, the scatter plot shows that going from one standard deviation below to one standard deviation above the mean in the Psi-Q score is correlated with an increase in life satisfaction of approximately half a step along the Cantril ladder ($p = 0.000$).

2. Individuals who use mental imagery with higher frequency and quality over a short time period achieve better earnings in the same time frame.

We also assess whether the use of mental imagery is correlated with better economic outcomes in the short term. We build an imagery index that combines the extent to which people report using imagery in daily life by spontaneously producing images in their minds (Spontaneous Use of Imagery Scale or SUIS (Nelis, E. A. Holmes, Griffith, *et al.*, 2019) and the vividness and emotional intensity with which respondents report imagining pre-defined future scenarios (Prospective Imagery Task or PIT (E. A. Holmes, Lang, M. L. Moulds, *et al.*, 2008)). The index thus measures both the frequency and quality with which individuals use

mental imagery in the immediate term (i.e. over a few months), rather than an innate trait that would be invariant over time. Figure 2 shows a positive correlation between maximal earnings reported in the six months before the first national lockdown imposed in response to the Covid-19 pandemic, and the use and quality of imagery measured three months after the start of the lockdown.[15] We restrict our sample to respondents that did not receive training[16], and again control for gender, age, business status, time period and group of programme participation.

We find that an increase of one standard deviation in the imagery index is related to an increase of approximately 0.2 standard deviations in the earnings index ($p = 0.001$). As a benchmark, this effect is comparable to the average impact of business training programmes that focus on teaching 'soft' or psychological skills, which typically amounts to approximately 10 percent on business sales in low- and middle-income countries (McKenzie, 2021; McKenzie, Woodruff, Bjorvatn, *et al.*, 2021). Overall, Observation 1 and 2 demonstrate that there is good reason to believe that the ability to use mental imagery is relevant for economic outcomes and wellbeing.

3. Stronger symptoms of trauma are positively related with negative future imagery.

Third, we document that trauma can cause a distortion in the way in which people imagine future scenarios, by creating disproportionately powerful negative future imagery, often to the detriment of positive future imagery. In Figure 3, we examine the relationship between trauma symptoms and the self-reported quality of positive and negative future scenarios imagined using the PIT scale. We measure symptoms of trauma using the Impact of Event Scale-Revised, which is a 22-item self-reported measure that assesses subjective distress caused by past traumatic events. Imagery quality is represented by an index that combines vividness, emotional intensity and likelihood of the imagined non-business scenario occurring in real-life from the PIT scale. For example, we asked participants to imagine that the Covid-19 pandemic is over and they are struggling to make ends meet (negative future scenario) or they have saved enough money to buy an asset they really want (positive future scenario). We again restrict the sample to the no-intervention group.

The left panel of Figure 3 shows that individuals with higher trauma symptoms report significantly more vivid and emotionally intense negative future scenarios using the PIT

[15]The earnings index includes both income and business sales and it is standardised to be mean zero and unitary standard deviation in the no-intervention control group. For more detail on the construction of this index, see Section 6 for more detail.

[16]If we restrict our sample to those who received the traditional training, we find consistent results for Observations 2, 3 and 4.

scale (slope of 0.014; $p = 0.000$), but there is no relationship between trauma symptoms and positive future scenarios (slope of -0.004; $p = 0.219$), as shown in the right panel.

4. Women have stronger negative imagery, trauma burden and greater anxiety/depression.

Finally, Figure 4 shows gender differences in imagery, psychological distress and trauma. While women and men have very similar positive imagery, women tend to score higher on negative imagery. This indicates that they may have more frequent, vivid and emotionally intense negative images of the future (the effect is actually driven by negative emotions). Women also have a higher trauma burden and worse psychological welfare. In our sample, we identify 27% of women with trauma levels above a clinically worrying threshold of trauma symptoms (33 in the IES-R), compared to 19% of men. Women also score around 0.2 SD higher than men on the Depression and Anxiety Kessler scale.

In addition to potential genetic reasons why women may respond more to imagery-based training, their greater propensity towards anxiety and depression, particularly in developing countries (Ridley, Rao, Schilbach, *et al.*, 2020), may make imagery training particularly useful. Why? Anxiety and depression decrease mental bandwidth (Ridley, Rao, Schilbach, *et al.*, 2020), making learning new skills more difficult and emotional regulation and planning more challenging (E. A. Holmes, Arntz, and Smucker, 2007; Dunn, 2012).

4 Intervention

4.1 Description of intervention

To test whether mental imagery can be taught and whether it improves economic outcomes, we designed an entrepreneurship training overlaid with imagery techniques (termed 'imagery curriculum') and compared its impact to a traditional entrepreneurship training (termed 'placebo curriculum').[17] We designed the imagery and placebo curricula to be as similar as possible in terms of structure, content and delivery. Both programmes were implemented by

[17]We conducted extensive qualitative data collection with marginalised entrepreneurs and victims of conflict to inform the curriculum content and language. In order to adapt and refine the sessions to the needs of the target population, we piloted the curriculum twice in November 2018 and May 2019 with a total of 60 entrepreneurs. We also obtained ongoing feedback throughout the curriculum development process from various government ministries that were mandated to develop and deliver programmes that benefit vulnerable populations. In particular, we worked closely with the lead psychologist team at the National Victims Unit (Unidad para las Victimas), Alta Consejería for Victims' Rights within the local government, and the National Training Service (Servicio Nacional de Aprendizaje or SENA).

the local government of Bogotá, specifically the District Department of Social Integration (SDIS) and District Department of Economic Development.

Both curricula took the form of ten three-hours sessions covering the same entrepreneurship themes in identical order. We structured the ten sessions to follow the journey of an aspiring entrepreneur, whereby each session centres on a particular topic deemed relevant from extensive qualitative interviews with our population of interest. These themes include product development, customer experience, marketing, competition, savings, accessing finance, productivity and managing employees.[18] At the beginning of each session in both curricula, we motivated the relevance of the content through real-life stories and relatable examples.

Both treatment arms also had an identical delivery format. The curricula were implemented in weekly sessions with participants assigned to a particular time slot. Each session had a class size of between 15 and 25 participants and venues were located in the same neighbourhoods across Bogotá. Two trainers led each session, with one trainer experienced in psychology or social work and the second in entrepreneurship. All trainers were recruited through the same call using a well-defined selection criteria. Moreover, to minimise the impact of trainer heterogeneity, trainers were required to follow a standardised scripted manual and presentation deck prepared by the research team. Trainers received over three weeks of training. They also rehearsed before each week's session in group workshops led by four supervisors who had co-designed and piloted the curricula together with the research team. For all activities, trainers were kept separate by treatment arm. Participants received a certificate if they attended seven or more sessions.

The key feature that distinguishes the imagery curriculum from the placebo curriculum is the inclusion of three to four imagery exercises in each session. In the placebo curriculum, we replace the imagery exercises with group discussions, role play and written work of the same content time length. For example, in the imagery curriculum, participants were encouraged to imagine their product or service in detail and how they felt towards the product, before imagining the day in the life of their business and noting the emotions that arise. In contrast, participants in the placebo curriculum were asked to think about their product and write down the ways in which their business idea matches their passions and skills.[19] The

[18]The curricula drew on materials from existing entrepreneurship training programmes, including the International Labour Organization's Start and Improve Your Business programme.

[19]As a second example, participants in the imagery treatment were asked to imagine their product or service from the shoes of their target customer in the third session and empathise with the customer to determine whether the product satisfied their customers' needs. In contrast, participants undertaking the placebo training filled out a table that summarised the characteristics and needs of their customer and then list the ways in which their product fulfilled these needs. Participants subsequently discussed their tabulated response with another participants.

following subsection describes the imagery exercises in more detail.

4.2 Teaching imagery

As highlighted by Böhm-Bawerk, imagery is like a muscle. While individuals might differ in the extent to which they use imagery naturally (a physical endowment), it ultimately takes costly effort to learn how to visualise the future. We designed our imagery curriculum with the goal to teach imagery in business decision making and to make subjects aware that this is a portable skill that needs to be trained and strengthened with practice. In particular, we exemplify how imagery might be used to increase the specificity of future scenarios and goals, and thus help entrepreneurs make business decisions with medium to long-term consequences (e.g., when choosing the product to sell, when asking for a loan in a bank). The curriculum seeks to demonstrate the value of imagery in various ways, including showing how performance might be improved with the use of imagery within the sessions and linking the exercises to real-life behaviours and outcomes. Moreover, providing a safe space to practice imagery in a guided way should also reduce the cost of future imagery, which is particularly fitting for participants for whom imagery may be unpleasant due to the lack of specificity in imagery or involuntary reminders of a traumatic past. Under the common goal of teaching imagery as a portable skill, imagery activities fall into one of three categories: (1) thinking about the future, (2) mental practice and (3) adopting the perspective of others.

The first category of exercises required participants to imagine future scenarios, different counterfactuals and think through the downstream consequences of their actions. In doing so, the imagery exercises encouraged participants to become more specific about these future scenarios. The future scenarios encompass both those that arise as a result of behaviours taken in the present (such as savings) or plausible scenarios that may occur beyond one's control. In many exercises, participants are asked to set a goal, which ranged from a big picture aspiration to concrete weekly goals. Once the goal had been defined, participants were encouraged to use imagery to pave concrete steps for achieving these goals.[20] For instance, we designed a session on savings, after learning that many entrepreneurs shared the view that saving was perceived to be impossible for them during our qualitative study. In this session, participants first performed basic accounting to establish the minimum amount of money they could realistically commit to saving every week and then imagined their savings contribution accumulating over weeks, months and years to appreciate the long-term power of small habits. To motivate the importance of savings, participants subsequently visualised

[20] Our extensive qualitative study highlighted the need to concretise the pathway of actions for our population of interest. Many victims of conflict who aspired to start a business envisioned exporting their products without being able to describe how they plan to make their first sale.

the consequences of experiencing a personal negative shock in the instance where they had saved versus not.[21] Moreover, they established a use for their savings and developed a simple savings strategy that entailed a set of actions triggered in response to a pre-identified reminder.

By becoming more specific about future scenarios through imagery, the curriculum also sought to enable participants to simulate the utility they attach to these future scenarios. Imagery can produce a strong emotional response in participants, which carries information about the utility associated with the content of the imagery. Consequently, in the second session, we motivate the value of imagery by asking participants to decide whether they would like to start a business as a fishmonger. After making a provisional decision, participants are asked to imagine the day in the life of a fishmonger in the most intimate details, including smelling the fish upon arriving at the fish market. Details are provided in the following excerpt:

> *Now, I will take you through a day in Julián's life. Your alarm clock rings at 3 am. It is still dark and cold. You travel in your truck for an hour to get to Paloquemao's market. You arrive to the fish market. You can see and smell fresh fish piled up on top of the tables, with noisy salesmen. Think about this scene for a moment. I would like for you to paint an image or a video in your head, as if you were an artist or a film director trying to capture this moment. What do you see? What do you smell? How do you feel right now?*

Participants then imagine describing their day and business to a relative or friend and noting how they feel during this conversation. Upon completing the exercise, participants are asked to reflect on what imagery has taught them and reconsider whether they would like to become a fishmonger after all. In contrast, the placebo curriculum did not place any emphasis on emotion and instead encouraged participants to rationalise their utility by writing lists. During this particular exercise, participants were asked to write down the ways in which becoming a fish monger matched or did not align with their passions and skills, before discussing these reflections in pairs.

[21] The following excerpt showcases how imagery is used to imagine a counterfactual future scenario:

> *Imagine your entrepreneurial business works well and you receive a constant flow of profits. You feel satisfied and use your profits to cover personal expenses that you could not afford before. As you pay all these expenses, you forget to save. Six months later, you discover that one of your relatives or close friends gets sick. You need an emergency treatment that is awfully expensive. But you realize that you have no savings. What do you do? How do you feel in this situation? Is this a situation you could imagine happening in the future? How would this event affect your life in one year from now?*

If the first category of imagery exercises can be thought of as experimentation between different pathways of action and identifying the utility associated with those actions, the second category reinforces these insights through mental practice. In other words, participants use imagery to practice a plan chosen through mental trial and error. While mentally practicing their plan in a safe space, participants identify potential obstacles and how to overcome them. Mental rehearsing should improve the concreteness and realism in their plan and thus increase their propensity to choose the better option more frequently. For example, participants visualise making an origami step-by-step before attempting in reality. We intend for this illustrative example to highlight how practising plans improves performance and reduces errors. Similarly, we extend this idea to the entrepreneurship domain by asking participants to mentally practise conducting their customer survey, their savings strategy or a plan to become more productive and reduce waste, to name a few examples. Participants are encouraged to implement these plans as homework and report back on their experiences, with the hope that these reflections should serve to improve the quality of imagery over time.

The final category of exercises entails adopting the perspective of others. We hypothesise that mental simulations should allow people to predict the choices and behaviour of others more precisely and react accordingly. Adopting the perspective of others is particularly important for entrepreneurs who should cater to their customers, while differentiating themselves from their competitors. Moreover, with high credit constraints, our sample of micro-entrepreneurs may be required to request funding from informal and formal networks and adapt their pitch to sell their proposal most effectively. In addition, our sample hire approximately two part or full time employees on average; managing and motivating these employees will thus be necessary. Our curriculum is designed to develop perspective taking for this wide range of situations. For instance, over several sessions, participants visualise their product or service from the shoes of their target customer and identify how best to improve their product so to satisfy their needs[22], differentiate from their closest competitors and minimise customer dissatisfaction.

All imagery exercises were implemented following a standardised structure. The facilitator first introduces the purpose of the exercise and prepares participants with the correct posture and breathing. The facilitator subsequently follows a script to guide participants through the exercise, which lasts five to ten minutes on average. The scripts are designed to be sufficiently general in nature, such that participants could apply the imagery to their own business case. After the exercise, participants are asked to reflect on a few debriefing

[22]In place of this particular imagery exercise, the placebo curriculum asked participants to describe their target customer in detail to a partner and reflect on their needs. Their partner then evaluated whether the product met the needs of the respective customer on a scale of 1 to 5. Upon sharing the score, the pair discussed ways in which to improve the product such that it better meets the needs of the customer.

questions in pairs and as a group, which aim to provide feedback on their experience and motivate how they may use the technique in their business decision making. The structure was designed to teach imagery as a general skill that could be used more broadly in the domain of business decision making. Through debriefs and homework tasks, participants were repeatedly provided the opportunity to practise the three applications outlined above and reminded of the value of imagery in connection with real-life behaviours and outcomes.

5 Experimental design

This section provides an overview of the treatment arms, the timeline of activities, a description of the sample, take up rates and attrition.

5.1 Treatment arms

1967 participants were randomised into three treatment arms across two waves of implementation in a randomised control trial. To isolate the effect of imagery, we randomised 956 participants into the imagery programme and 558 participants into the placebo training. Of these, 770 and 431 participants in the imagery and placebo training arms respectively agreed to participate in the training prior to knowing their treatment status. To test the effect of the training, we randomised a further 453 people into a no-intervention group that received nothing. We doubled the number of participants in the imagery training relative to both the placebo and no-intervention control groups in order to meet the budget reporting requirements of our government implementing partner.

5.2 Timeline of activities and data collection

For ease of implementation, the intervention was delivered in two waves, the first taking place from July to September 2019 and the second from September to December 2019. Figure 5 shows the timeline of the intervention and data collection. We conducted an extensive qualitative study and two pilots to refine the curriculum and RCT design in the year prior to implementation. Before starting the training within both waves, we first screened interested applicants to determine eligibility, randomised eligible participants into the three treatment arms and conducted a baseline survey. We conduct the first follow-up phone survey 6 to 8 months and the second follow-up phone survey 12 to 14 months after the end of the training

programme.[23]

To reduce the correlation between treatment assignment and social desirability bias in survey responses, we used surveyors from Innovations for Poverty Action (IPA) Colombia, an independent nonprofit research organisation. IPA Colombia communicated to respondents that they were conducting a survey on entrepreneurs in Bogotá in collaboration with our local government partner. All respondents were compensated COP $10,000 ($2.8) for their time, irrespective of whether they completed the survey.

5.3 Sample

We designed our curricula to target a low-income population in a country where there are over eight million registered victims of conflict, of whom 85% were forcibly displaced, and more than 1.2 million Venezuelan migrants. Our government partners recruited participants through a multi-channel media campaign by advertising an entrepreneurship programme promoting soft skills, including through community centres and social media platforms. Interested applicants were required to fill out a short application form online or in-person, which we used to screen for eligibility.[24] To meet their mandate, the District Secretariat of Social Integration was required to train numerous sub-populations, all of whom can be defined as low income.[25] When we randomly select and randomise eligible applicants into our three treatment arms, we stratified by subdivision, sex, age, entrepreneurship status (existing business or idea), sales for business owners or income for people without a business.[26]

Our final sample include 1,967 would-be entrepreneurs with either an existing business (51%) or a stable business idea only (49%). Table 1 provides descriptive statistics for this sample. In line with the mission of our government partners to serve "vulnerable" pop-

[23]Our in-person follow-up survey was scheduled to commence in early March 2020. However, the survey was cancelled shortly thereafter in response to the Covid-19 pandemic and the stringent nationwide lockdown in Colombia. We implemented two phone surveys commencing in May and November 2020 instead.

[24]3553 individuals applied to attend our programme, of which 2337 were deemed eligible according to our predefined criteria. To be eligible, participants needed to demonstrate entrepreneurship potential by reporting having a business or plans to launch a business in the following three months. We further defined entrepreneurship potential to encompass those who could describe their business or business idea in a few words and classify them by sector. In the second wave, we also prioritised applicants who reported taking at least three steps towards starting or growing their business in the last six months. In order to account for the need to self-fund transportation costs to the training centres, we limited eligibility to those applicants who reported either non-zero income or business sales in the past six months. Eligible applicants were also required to be literate, over the age of 18 years and to provide three points of contact.

[25]The sub-populations include: victims of conflict; Venezuelan migrants; low-income youth; LGBTQ groups; entrepreneurs with disabilities or carers thereof; the formerly homeless; and the elderly. Appendix Table A1 summarises the breakdown of the sample by subdivision and treatment status.

[26]Participants who reported living in the same address were assigned to the same treatment status to avoid spillovers. Moreover, formerly homeless participants affiliated with the same shelter were also assigned to the same treatment status. For our analysis, we aggregate the data to household level.

ulations, 85% reported baseline exposure to traumatic past experiences, including armed conflict and forced displacement. 58% of participants are women. The average entrepreneur is 32 years old and has completed secondary school. Participants earn an average monthly income of COP $693,077 (approximately USD $200) at baseline, which is approximately 80% of the Colombian monthly minimum wage of COP $877,802.

As presented in Table 1, participants appear well balanced on baseline characteristics across all treatment and control groups. This balance extends across a wide range of characteristics, including variables that were not used for stratification in the randomisation procedure.

5.4 Take up and attrition

We find that take up of the treatment is substantial, with about 67% of individuals attending at least one session in the imagery training across both waves, conditional on confirming attendance. By way of comparison, attendance rates in the McKenzie and Woodruff (2014) review of business training programmes in developing countries range from 39 to 92%, with a mean of 64%. Of those attending at least one session, 48% attended seven or more of the ten sessions in the imagery treatment and qualified for a certificate. Similarly, 63% attended at least one session in the placebo training across both waves. Of those attending at least one session, 53% attended seven or more sessions in the placebo training.[27]

We surveyed 74% of all participants in our first follow-up survey and 63% of participants in our second follow-up survey. We test whether attrition is differential across all three treatment groups. We find that 64% of participants from our imagery and placebo groups responded to our endline survey, so there is no differential attrition. However, only 57% of the no-intervention group were interviewed in the second follow-up survey. The difference is statistically significant at the 10% level.[28]

Table A10 shows that there is little evidence to suggest that there is selective attrition

[27]Take up rates are 58% and 55% in the imagery and placebo group, respectively, if we do not condition on confirmed attendance. Our sample is highly resource-constrained and mobile. In collaboration with SDIS, we developed several strategies to maximise compliance among those who were randomised to both training treatments. For instance, participants were assigned to venues that matched their location preferences to the best extent possible. Our supervisors ensured that participants were reminded on a weekly basis over WhatsApp groups, text messages and phone calls. Participants who attended seven or more sessions received a certificate signed off by SDIS and our World Bank collaborator and invited to attend a graduation ceremony in the case of the second wave.

[28]Although the differential attrition is more pronounced in the second follow-up survey, we see early evidence of selective attrition in the first follow-up survey. While we interviewed 74% and 75% of respondents from the placebo and imagery treatments respectively, only 70% of the no-intervention group responded to the first follow-up survey. A t-test reveals that the difference across the no-intervention group and imagery/placebo treatment is marginally significant with $p = 0.1$.

on observable characteristics at endline, especially between imagery and placebo groups. Attrition tables at the stage of training acceptance and at midline are provided in the Appendix Tables A8 and A9.

6 Measurement

In constructing our outcome measures, we follow a detailed pre-analysis plan, registered in the American Economic Association Registry.[29] We collect all data via phone surveys and therefore our measures are limited by this format.

6.1 Primary outcome measures

We are interested in three sets of primary outcomes (or "families"): imagery, psychological resilience and economic outcomes. The imagery outcomes are considered "first stage" outcomes, used to check that the curriculum combining entrepreneurship and imagery is having their intended impact. The psychological resilience and economic outcomes are considered "second stage" outcomes that we hypothesise are affected by imagery.

6.1.1 Mental imagery

Our intervention was designed to increase the frequency with which participants make use of imagery in their business lives and to improve the quality of the images generated, conditional on using imagery. We construct a mental imagery index that captures both dimensions through adapted versions of two widely-used imagery scales in the psychology literature. We are primarily interested in the channel through which imagery might affect business decision making, so we adapt these scales to the entrepreneurship domain.

To measure the frequency of imagery usage, we adapt the Spontaneous Use of Imagery Scale (Reisberg, D. Pearson, and Kosslyn, 2003) to the entrepreneurship domain. Our scale consists of eight statements designed to assess the propensity of an individual to make use of imagery in business-related scenarios. Specifically, respondents are asked to consider business-related statements and determine the extent to which they agree with the statement using a five-point Likert scale. For example, we ask respondents to consider "When I need to go to a meeting, I picture the route in my mind before going."

To assess the quality of imagery in an entrepreneurship domain, we adapt the Prospective Imagery Task (MacLeod, 1996; Stöber, 2000). This exercise asks respondents to imagine

[29] `https://www.socialscienceregistry.org/trials/6576`

three positive and three negative business-related and non-business-related scenarios. For example, respondents are asked to imagine a scenario in which "the Covid-19 pandemic is over, and you are struggling to make ends meet" or in which "the Covid-19 pandemic is over, and your business is doing well". Respondents are then asked to assess the vividness or level of detail of each image, and the emotional intensity generated by the image. We measure vividness and emotional intensity to pick up on the extent to which imagery is an "emotional" and "motivational amplifier".

From this scale, we build four sub-indices: two indices for imagery vividness and two indices for the emotional intensity of the images associated with the positive and negative scenarios respectively. We construct separate sub-indices for positive and negative imagery, as we expect the intervention to have differential effects on each type, especially for participants with a past history of trauma. In particular, participants with post-traumatic stress disorder tend to lack vividness in autobiographical positive imagery and overcompensate in the emotional intensity of negative imagery (Kleim, Graham, Fihosy, *et al.*, 2014).

The full list of questions used in the construction of the imagery index can be found in Appendix Table A2.

6.1.2 Psychological resilience

We explore whether the imagery training has downstream effects on mental wellbeing during the pandemic by building two indices. The first index captures psychological resilience, defined as the ability to respond well in the face of adversity. The second index reflects psychological distress, as measured by the Kessler K6 non-specific distress scale. The full list of questions used in the construction of the psychological resilience indices can be found in Appendix Table A3.

6.1.3 Economic outcomes

In addition to mental wellbeing, we assess the downstream impact of imagery training on economic outcomes. Our methodology allows us to unpack whether the imagery training improves economic decision making and outcomes relative to a more traditional entrepreneurship training or no training at all. Given the onset of a Covid-19-induced national lockdown in Colombia three months after the end of our intervention, we are well placed to evaluate whether imagery improves economic resilience in response to a negative shock. We construct economic indices to capture these downstream treatment effects and distinguish between two time periods: (1) economic activity period prior to the Covid-19 induced lockdown (i.e. before 24 March 2020) and (2) economic activity during the lockdown.

Our first primary economic outcome is an index of sales and take-home income, conditional on owning a business, or simply take-home income if no business exists at the time of the survey. We ask participants to recall both outcomes for the period prior to the national lockdown and in the week prior to the survey. Business status is our second economic outcome of interest and in particular, whether a business is open or only temporarily closed (versus permanently closed) during the lockdown. Our third economic outcome of interest is business investment undertaken both pre-Covid and during the pandemic. We construct the investment index by identifying whether respondent newly acquired or significantly improved existing business assets in a predefined list. We are furthermore interested in whether our imagery training helped entrepreneurs in developing better safety nets, proxied by savings in the pre-Covid period and their perceptions of informal support networks during the pandemic. Finally, we assess whether treated entrepreneurs adapt their business more effectively to the pandemic and the associated government restrictions. To measure this, we ask participants to respond with yes/no answers to a list of thirteen business behaviours, ranging from setting up a safe work environments to identifying alternative supply chains to diversifying their products. We combine the index of behaviours with a sub-index of reverse-coded "unsafe" working hours, defined as the proportion of total hours worked "unsafely" in which social distancing, frequent hand washing, the use of face masks or home working were not adhered to (the government Covid-19 guidelines of the day).

The full list of questions used in the construction of the economic indices for the period prior to the Covid-19 national lockdown and during the lockdown can be found in Appendix Tables A4 and A5 respectively.

6.1.4 Trauma

Research in clinical psychology and neuroscience suggests that trauma can increase the cost of mental imagery by inducing distressing images and alter the quality of imagery by undermining the specificity of images. Accordingly, we expect our imagery programme to have differential treatment effects for those individuals who reported higher baseline levels of trauma.

We measure trauma at baseline by first conducting a contextually-relevant trauma history checklist that captures whether respondents experienced or witnessed a traumatic event. To proxy for the level of trauma, we use the 22-item Impact of Event Scale-Revised to assess subjective distress in the past month caused by the most traumatic event ever lived, conditional on experiencing a traumatic event. Symptoms include "trouble concentrating", "troubles removing them from memory" and "trying not to talk or think about them". We construct a dummy variable for high trauma by assigning a value of one to participants with

an Impact of Event Scale-Revised score of above 33 at baseline. A score of 33 is considered the threshold above which post-traumatic stress symptoms may be considered to be a probable clinical concern (Creamer, Bell, and Failla, 2003). All respondents who reported that they did not experience a traumatic event in the past were assigned a score of zero.

We also measure the number of past traumatic events at baseline by conducting a contextually-relevant trauma history checklist that captures whether respondents reported experiencing or witnessing traumatic events.

6.1.5 Variable and index construction

To construct the variables of interest, we follow the procedure outlined in our pre-analysis plan. Given the presence of outliers, we winsorise the main economic measures (e.g. revenues, income, savings) at the 99th percentile. To address the right-skewed nature of their distributions, we use the inverse hyperbolic sine transformation of the raw measures.

We use the methodology of Kling, Liebman, Katz, *et al.* (2007) to construct indices and adopt the following steps: (i) we first ensure that all variables are consistently signed (e.g. higher value associated with higher imagery ability); and (ii) then standardise each component of the index by subtracting the no-intervention group mean and dividing by its standard deviation. In the case where there are multiple sub-scales, we take two additional steps: (iii) we take the sum of the standardised components and (iv) standardise the sum again using the control group mean and standard deviation. For the psychological scales, we first sum the individual response items within a scale prior to standardising the indices.

7 Empirical strategy

The Covid-19 pandemic heightened the noise inherent in business revenue and household income. Given the low auto-correlation in these measures, we conducted multiple follow-up surveys to average out the noise and increase statistical power. There were two surveys in total: the first commencing in May 2020 and the second commencing in November 2020. Hence, our analysis combines these two phone surveys, with clustering at the household level and the inclusion of survey fixed effects.

For each primary outcome, we estimate the following specification at the household

level:[30]

$$y_{iws} = \beta_0 + \beta_1 \cdot T_{iw} + \theta m_{iw} + \phi x_{iw} + \eta_w + \delta_s + \mu_{iw}, \quad (1)$$

where y_{iw} is the outcome of interest for household i in wave w and survey s; T_{iw} is a dummy capturing whether the household was offered a given training; m_{iw} is the vector of randomisation strata dummy variables; x_{iw} is the vector of baseline covariates used to increase precision in our estimates; and η_w and δ_s are wave-subdivision pair and survey fixed effects respectively. The strata variables include the subdivision, gender, age group, entrepreneurship status (business, business idea or both) and income/sales group (low, medium or high) of the individual included in the randomisation.

We first compare the results for the imagery training relative to the placebo training to isolate the effect of teaching imagery. We then compare results for both the imagery and placebo training to the no-intervention group in order to evaluate the effect of business training more broadly. Our estimates measure the intent-to-treat impacts of the interventions relative to the defined control group. For every primary outcome, we test the null hypothesis that the treatment has no impact. For inference, we present standard errors clustered at the household level and false discovery rate q-values calculated within each family of primary outcomes using the sharpened two-stage procedure of Benjamini, Krieger, and Yekutieli (2006). We present results with and without the inclusion of baseline covariates x_{iw} as controls. Following Belloni, Chernozhukov, and Hansen (2014), we adopt the "post-double selection" method for selecting regressors, including first-order interactions and quadratic terms.

Following our pre-analysis plan, we restrict the sample for analysis to people who confirmed their participation in the imagery or placebo programmes, which is approximately 78 percent of the sample for these treatment groups. Participants were blind to which programme they would receive when they had to confirm their intention to participate. Moreover, staff members who called potential participants to ask for their confirmation were following guidelines and scripts that did not contain any reference to the exact treatment to which people were assigned. Nevertheless, we collected outcomes on the full sample (including people who did not confirm participation) to check for differences between groups.

We also present heterogeneous treatment effects by trauma and gender in separate specifications. In each of them, we split the sample by an indicator H_{iw} for being a woman or having experienced a high level of trauma symptoms in the past month and we repeat our main specifications within each sample. The coefficient β_1 now captures the average

[30]The majority of participants reflect single-unit households. We collapse the data to the household level for those individuals who reported living in the same address as another selected participant at screening and were thus randomised into the same treatment status.

treatment effect within each sample, eg. for high-trauma individuals or women.

8 Results

We begin by evaluating the impact of our imagery curriculum on imagery skills and downstream economic and psychological outcomes. Our main comparison is between the imagery treatment relative to the traditional training. With the exception of the imagery exercises in the imagery treatment, the two interventions were otherwise identical in terms of content and delivery. Our main tables also report the comparison between the traditional training and the pure control, which is the policy benchmark in our context. The following results are also robust to controlling for baseline covariates selected using a post-double selection method following Belloni, Chernozhukov, and Hansen (2014) and the inclusion of participants who did not confirm participation to the training when still blind to treatment status.

8.1 Imagery

We first consider whether the imagery training had its intended impact: to develop imagery as a skill in business decision making. We present results for an overall imagery index which combines the SUIS, PIT vividness and emotional intensity measures. We look at overall imagery across domains, but also split the index in a business-related component (which includes only answers to business-related scenarios) and a non-business component. While we expect the business index to improve in the imagery treatment group, it's an empirical question whether the improvement will spill-over into other domains of participants' lives.

In support of the hypothesis that business imagery can be trained, we find a 0.177 standard deviation difference in our imagery index for business scenarios between the imagery and placebo groups ($p < 0.05$), as reported Column (2) of Table 2. A caveat of this result is that business scenarios were only asked to individuals with a business at the time of the surveys, and thus we are considering only approximately half our sample for this result.[31]

Column (3) of Table 2 shows that there are no differences in our imagery index between

[31]Notice that having a business at the time of the surveys is endogenous to treatment status. However, we can restrict our sample to households that had a business at baseline (51% of the sample) and re-run the same estimation, with almost unchanged results (coeff=0.181, p=0.058). Importantly for the validity of this exercise, we find that there is no differences in baseline business status across treatment arms in both follow-up surveys, lending support to the assumption of monotonicity: 84.5% of households in the imagery treatment that had a business at baseline also had a business in the first follow-up survey, compared to 81% in the placebo group (difference not statistically significant at $p = 0.286$). These proportions shift to 75.5% in the imagery treatment and 73.7% in the placebo training in the second follow-up survey (difference not statistically significant at $p = 0.660$).

the imagery and placebo groups when we consider non-business scenarios (-0.006 standard deviations). In the overall sample, therefore, the impact of the imagery training seem to be limited to business-related imagery.

There are two possible reasons underlying the stronger imagery treatment effects in business-specific scenarios relative to non-business scenarios. First, imagery may be domain specific and thus can only be trained for a specific type of decision making, while recognising that business decision making encompasses a rather broad cluster of decisions. Second, the sub-sample of entrepreneurs who had a business may be better able to train in imagery, either because they had more opportunities to practice the skill or because of different baseline characteristics. To distinguish between these alternative explanations, we check whether the business sub-sample learnt imagery so well that they were able to apply it also in non-business domains. However, we do not find support for this effect, as also the business sub-sample does not improve non-business imagery in the imagery training (0.007 standard deviations). See Appendix Table A6.

Columns (4) to (8) of Table 2 further decompose the imagery index into its five constituent parts, with each component including both business and non-business scenarios.[32] We do not find any effect of the imagery training on the SUIS measure, which captures a general individual propensity to use images rather than words. This confirms that the training does not develop a habit of using imagery for the participants, but rather gives them tools to be used purposefully in business decision making. Coefficients on the imagery training dummy for the PIT sub-components are all positive, pointing to a general improvement in the quality of the images produced by our participants when they are prompted with a specific scenario. Only the results on the quality of negative future imagery are statistically significantly different from zero. Relative to the placebo training, the imagery treatment increased the emotional intensity of negative future business scenarios by 0.10 standard deviation ($p < 0.10$) on average. This increase in negative emotions may suggest that people are more prone to simulate negative scenarios, or that they are actually able to face with more realism possible negative future event. The fact that the perceived likelihood of negative events does not change (Column (10)) suggest that it's not the propensity towards negative event that changes. None of these results remain statistically significant once we correct for multiple hypothesis testing across these five hypotheses, following Benjamini, Krieger, and Yekutieli (2006).

Panel B of Table 2 compares the imagery skills of participants in the traditional training with the pure control group. Column (2) shows that business imagery decreases in the

[32] Appendix Table A6 shows the same results for the subset of individuals who had a business at baseline and for business-imagery only.

traditional training group with respect to the pure control group. The magnitude of this decrease is very similar to the increase seen in the imagery training. This suggests that the traditional training crowds-out participants' imagery in the business domain, an effect which is mitigated by our main treatment arm. Columns (4) to (8) show that the traditional program makes participants less able to produce quality images of different scenarios in their mind, as the coefficients are negative in all the dimensions of imagery ability we asked about (but not statistically significant).

The last two columns of Table 2 also report the perceived likelihood of positive and negative imagined future scenarios occurring in participants' lives. After having imagined a given PIT scenarios, participants were asked to state the likelihood that they attached to the scenario actually happening in their lives. This is for us an exploratory measure, which we included to understand whether people's expectations of events are also affected by the training. However, interpretation of changes in this measure is challenging. First, we didn't specify a time horizon for the event to happen, thus there can be heterogeneity in people's interpretation of this time range. Second, how the likelihood of an event changes depends on priors, which can be correlated with a certain imagery ability. For instance, take an over-optimist with poor imagery. If the imagery training increases their imagery ability, this would help them realize that some scenarios are very unlikely, thus likelihood will go down. The opposite, however, would happen to a pessimist with poor imagery, whose positive likelihood would increase go up. These challenges are reflected in the fact that results on the perceived likelihood of scenarios tend to be noisy.

8.2 Downstream outcomes

In this section, we show that imagery training improves economic outcomes, both before and after the start of the Covid-19 pandemic. Figure 6 and Table 3 show the comparison between the imagery and placebo training for all our main downstream outcomes.

We first review a set of results for condensed economic outcomes, where we combine our economic outcomes to create two indices: economic outcomes before the Covid-19-induced national lockdown and economic outcomes during the lockdown.

Relative to the placebo group, those who received the imagery treatment score 0.13 standard deviations better on average ($p = 0.044$) on our combined pre-Covid-19 economic index. Moreover, during the Covid-19 pandemic, the imagery group scores 0.14 standard deviations higher on average ($p = 0.019$) on our combined economic outcomes relative to the placebo group. In contrast, we observe no difference in emotional resilience measured at the time of the surveys (0.004 standard deviations; $p = 0.950$).

Table 3 shows the full set of results for the economic and psychological outcomes, reporting both the p-values and sharpened q-values. Individuals receiving the imagery training report higher earnings, both before and after the start of the Covid-19 pandemic. Relative to the placebo group, imagery participants report on average a 0.19 standard deviations increase in pre-Covid-19 earnings ($p = 0.022$) and a 0.14 standard deviations increase in earnings during the Covid-19 pandemic ($p = 0.020$). Both earnings results survive correcting for multiple hypothesis testing across our seven primary economic outcomes at the 10% level of significance ($q = 0.082$ for both results).

Imagery participants report significantly higher business survival of 0.048 standard deviations ($p = 0.058$) on average during the Covid-19 pandemic relative to the placebo group. In contrast, there is no observed difference in the average rate of business survival before the Covid-19 pandemic started ($p = 0.455$). Moreover, imagery participants report higher average levels of investment (0.066 standard deviations) and a more pro-active business behavioural response to the Covid-19 pandemic (0.084 standard deviations), although these results are not statistically significant with $p = 0.218$ and $p = 0.148$ respectively. There is no effect on the safety net index ($p = 0.669$). These broader set of results mirror the condensed results presented above. Lastly, when we look at our pre-specified outcomes that make up the condensed emotional resilience index, we observe no difference in the Kessler Psychological Scale of Distress and general psychological resilience index between the imagery and placebo group. The imagery training was not meant to be a clinical intervention, and thus no change in these variables is not surprising.

Overall, the results are broadly consistent with our hypotheses that leveraging mental imagery in business training can improve economic outcomes. However, given the observed decline in imagery in the traditional training, one may wonder whether the gap in economic outcomes stems from an actual improvement in the imagery program, or a decline in the traditional program which is compensated by teaching through images rather than words. Several studies report indeed negative results of traditional training programs on economic outcomes (Renner, F. C. Murphy, J. L. Ji, *et al.*, 2019).

Relative to the no-intervention group, we find that the traditional training group reports lower earnings on average, both in the six months before the start of the Covid-19 pandemic and during the pandemic itself. Specifically, the placebo group earned 0.222 standard deviations less in the pre-Covid-19 period ($p = 0.020$) and 0.144 standard deviations less during the pandemic ($p = 0.043$), relative to the no-intervention group. Participants in the traditional training also perform worse in most of the other economic outcomes, but differences are smaller and we cannot reject the null hypothesis of zero effects of the traditional training (see also Figure 7).

The difference between the coefficients in Panels A and B of Table 3 also provides an indication of the comparison between the imagery training and the no-intervention group. Figure A1 shows that differences between the imagery training relative to the no-intervention group are much smaller in size and we cannot reject that treatment effects are statistically significantly different from zero across all outcomes of interest. Nevertheless, the point estimates are positive on business imagery and on several economic outcomes during the Covid-19 lockdown period, including earnings, business survival, safety nets and investment.[33]

8.3 Heterogeneous treatment effects

We hypothesise that imagery training should benefit people who have high costs to undertaking mental imagery or are unable to produce vivid and detailed images when imagery is used. In this section, we provide evidence suggesting that the impact of the imagery treatment is heterogeneous across different groups, with strong positive treatment effects for those with high baseline trauma and women.[34]

8.3.1 Heterogeneity by trauma

Distressing past experiences can increase the cost of adopting mental imagery. On the one hand, past trauma increases the vividness of negative images, either in intrusive flashbacks or deliberate recalling. On the other hand, trauma undermines the quality of positive imagery when it is used. We designed the curriculum with a twofold goal tailored to traumatized participants. First, we aimed at boosting positive future imagery among populations with high levels of past trauma, increasing both the frequency and quality of positive images. Second, despite the non-clinical nature of the program, we still wanted to provide high-trauma participants with a safe space where they could learn how to regulate and tolerate the emergence of negative images and emotions.

In line with these original goals, we assess whether the effect of the imagery treatment is different for individuals with high levels of trauma relative to the rest of the sample. We define participants with high levels of trauma as those having an Impact of Event Scale-Revised (IES-R) score above 33, the threshold above which symptoms become clinically concerning. Just under a quarter of the sample can be identified as showcasing high levels of trauma using this definition. Previous studies leveraging IES-R scores as a measure of

[33] Appendix Table A7 tabulate these results.

[34] We pre-specified heterogeneity by trauma and defined high trauma as individuals with above 33 on the IES-R scale in our pre-analysis plan. We did not pre-specify gender; however, as we explain below, gender has a close relationship with trauma.

trauma symptoms demonstrate this to be a high level.[35]

Table 6 reports the heterogeneous effects of the imagery treatment on the imagery index and its sub-components by splitting the sample on trauma levels: high (above 33 in IES-R) and low (below 33 in IES-R).

First, starting from the summary statistics at the bottom of the table, we note that the imagery indices are on average larger for high-trauma individuals than low-trauma individuals in the group with no intervention. While this seems to go against the idea that traumatized people avoid imagery altogether, it is consistent with an imbalance between positive and negative imagery. The gap in imagery between the high and low trauma sample is mainly driven by negative imagery, which is significantly higher in the high-trauma sample than the low-trauma sample. The difference in imagery goes reaches a high of 0.4 SD in negative emotions.

Second, Column (2) of Table 6 shows that the imagery treatment significantly improves business imagery in both the high-trauma and low-trauma sample. However, the coefficient on the treatment dummy in the high-trauma sample is more than twice the coefficient in the low-trauma sample and large in magnitude (0.39 SD). While we cannot reject the null of equality between the two coefficients ($p = 0.57$), traumatized people in the imagery treatment achieve an overall significantly higher business imagery than low-trauma people in the same training group ($p = 0.01$). There are no observed differences between the two samples in the vividness or emotional intensity of negative future scenarios imagined or in the frequency of imagery used.

There are other three important differences in the reaction to treatment by trauma.

The difference-in-difference between high and low trauma people in the imagery versus traditional groups is statistically significant for one of the components of the imagery index, which is positive vividness (Column (5) of Table 6). The treatment effects on the emotional intensity of positive future scenarios are similarly very different between the high and low trauma sample (DID coeff = 0.15 SD), but they fail to be statistically significantly different from each other ($p = 0.32$). The imagery training thus unlocks positive images of the future for vulnerable populations with strong trauma symptoms, which is aligned with our original goal. Positive imagery does not significantly improve for people with weaker trauma symptoms, and indeed this group was not lacking positive images in the first place.

[35]Relative to the general population, our sample's experience of trauma is high. For example, Hunt and Evans (2004) randomly sample 414 individuals (298 happen to report experience of a traumatic event) and find a mean IES-R score of 22.3. In the context of studies which deliberately target those with known trauma experience, our sample mean IES-R remains moderately high. Ohtani, Iwanami, Kasai, *et al.* (2004) survey victims, of the 1995 Sarin gas attack in Tokyo subway, five years after the attack finding a mean IES-R score of 16.4. For a sample exclusively characterised by motor vehicle accident experience, Beck, Grant, Read, *et al.* (2008) report sample mean IES-R scores of 34.98 - above the threshold for common PTSD diagnosis.

Still looking at positive imagery, we also notice another result: the traditional training significantly reduces the vividness of positive scenarios in the high-trauma sample compared to the pure control group, but not in the low-trauma sample (DID coefficient $p = 0.07$). This indicates that traditional business training further worsens the quality of positive imagery for people with past traumatic experiences, a negative effect which is fully compensated by our imagery training.

A last result is related to the portability of imagery learning outside the business domain. When comparing high trauma and low trauma participants in our imagery training, we see that the former scores higher in non-business imagery ($p = 0.039$), while a similar difference is not observed in the traditional training group. This suggests that people with strong trauma symptoms are better able to generalize the skills learnt in the curriculum and bring them into other dimensions of their lives.

Not only do high-trauma individuals report higher quality positive imagery, but they also appear to have better economic outcomes in the pre-Covid period. Figure 8 plots the linear prediction of the effect of the imagery treatment relative to the placebo training on the condensed economic indices before and after the Covid-19-induced lockdown, by baseline level of trauma. We observe that high-trauma individuals have on average 0.30 standard deviations higher economic outcomes in the imagery treatment, relative to the placebo training in the pre-Covid period. However, we cannot reject the hypothesis that there is no difference between the imagery and placebo training, except for individuals with moderate levels of trauma symptoms. During the Covid-19 pandemic, we cannot reject the hypothesis that the imagery treatment had a differential impact on the condensed economic index compared to the placebo training. Appendix Table A11 reports the results of our main specification by trauma and for all the economic indexes sub-components as well. For high trauma individuals, we observe a 0.36 standard deviation improvement in pre-Covid earnings, which is marginally not statistically significant ($p = 0.13$), and 0.1030 standard deviations higher rate of business survival during Covid-19 ($p = 0.090$) in the imagery group relative to the placebo group. The results for business survival and earnings during Covid are qualitatively consistent in their direction, pointing towards a stronger effect for those participants with higher baseline trauma, but these effects are noisier and imprecisely estimated. Moreover, these effects for high-trauma individuals are larger than for low-trauma individuals within the imagery treatment, but we cannot reject the hypothesis that there is no difference across the two sub-groups. The results for all other outcomes for high-trauma individuals in the imagery treatment are imprecisely estimated and statistically insignificant.

8.3.2 Heterogeneity by gender

We also present heterogeneous treatment effects of the imagery training for women relative to men. As discussed in section 3, women tend to have higher levels of trauma and psychological distress, consistently with other studies (Holbrook, Hoyt, Stein, *et al.*, 2002). In our sample, we identify 27% of women with trauma levels above the clinically worrying threshold of 33 in the IES-R test, compared to 19% of men. Women score around 0.2 SD higher than men on the Depression and Anxiety Kessler scale (Figure 4). Low levels of psychological welfare may hinder women's working memory and attention, so that alternative teaching methods tailored to fragile populations may improve women's learning.

Other larger differences by gender are observed in business experience, in line with a rich literature on gender gaps in entrepreneurship (Ashraf, Delfino, and Glaeser, 2019). All over the world, women are less likely to become entrepreneurs and have fewer opportunities to practice business skills or have mentorship. In our sample, indeed, 52% of women at baseline own a business compared to 55.6% of men (difference>0 with $p = 0.0443$). Of those with only a business idea, women took 0.24 fewer steps towards starting a business than men ($p = 0.002$). We hypothesize that mental simulation can be a good substitute in absence of opportunities for gaining business experience in reality. The lack of networks that support female entry into entrepreneurship can also lead to strong emotional demands, especially in countries with traditional gender norms where women face greater barriers (Ashraf, Delfino, and Glaeser, 2019). As a result, being able to tolerate negative emotions and, at the same time, keeping hopes up by generating positive emotions seems very important for women.

For all these reasons, we hypothesize that all the components of our training - mental simulations, emotional regulation and memory consolidation - can be particularly effective for women's learning and economic outcomes.

To assess this hypothesis, we present whether the effect on imagery differs between men and women in Table 7. In Columns (1) to (3), we show that the impact of the imagery training on the overall, business-specific and non-business specific imagery index is larger for women than for men. We observe a 0.14 standard deviation improvement in the overall imagery index for women in the imagery treatment relative to the traditional arm ($p < 0.10$), while there is no improvement for men in the imagery training relative to the traditional training (coeff = -0.09, $p > 0.10$). For women in the imagery training, the improvement is concentrated in business-related imagery, where we see an increase of 0.34SD relative to the traditional training ($p < 0.01$). Nevertheless, we also see an improvement of non-business imagery among women in the imagery group relative to men in the same training ($p = 0.014$). This generalizes the results we saw for the high-trauma sample: vulnerable populations seem to be able to apply imagery even outside the domain in which it was taught.

Similar to the results for the overall sample, female improvements in imagery come from the joint decline of imagery in the traditional training as well as from an increase in imagery in the imagery training. Compared to women in the pure control group, women assigned to the traditional training decrease their business imagery by 0.28 SD ($p < 0.05$) and their non-business imagery by 0.095 SD ($p > 0.10$). The difference in difference coefficient between men and women in the traditional vs pure control groups is statistically significant ($p = 0.056$), confirming that the traditional training has a disproportionate negative effect on women's mental images than men's.

Looking more closely at the sub-components of the imagery index, we observe that women in the imagery treatment are not changing their propensity to use imagery, as measured by the SUIS scale. However, measures proxying for imagery quality are all improving among women in the imagery training with respect to the traditional training, with similar magnitudes of the coefficients. Two of the four components from the PIT scale have statistically significant coefficients: positive and negative emotions. These are areas in which women score higher than men even in the pure control group, suggesting that the imagery treatment is able to leverage women's stronger baseline emotions and use them for productive purposes.

We then move to measures of economic performance and find that the imagery treatment has indeed stronger positive effects on downstream outcomes for women compared to men, as shown in Table 8. On average, women in the placebo group have worse outcomes than men in the placebo group on most measures, as shown in the Summary Statistics at the bottom of the table.

In the pre-Covid-19 period (Columns 1, 2 and 3), we observe that women who receive the imagery treatment have 0.38 SD higher earnings on average ($p = 0.000$) compared to women in the traditional group. In contrast, men who received the imagery treatment see roughly the same earnings as those in the traditional group. The difference in difference coefficient is positive and highly significant ($p = 0.007$). We observe a similar result during the Covid-19 pandemic: women earn 0.20 standard deviations more than men in the imagery compared to the traditional training ($p = 0.009$).

Beyond earnings, we see that women in the imagery treatment also experience better safety nets relative to men (difference in difference of 0.31 SD; $p = 0.01$). While gender differences are not significant on business survival rates either before or during Covid-19, women in the imagery treatment are more likely to have a business open than women in the traditional training (0.06 SD; $p = 0.13$ and $p = 0.080$).

Importantly, women benefit significantly more from the imagery training in boosting their psychological resilience relative to men, with a 0.31 standard deviation difference be-

tween the two genders ($p = 0.012$).[36] However, difference across men and women is mainly created by a fall in psychological resilience for men, while we cannot reject the hypothesis that imagery-trained women do not see an increase in psychological resilience with respect to other women.

9 Exploratory evidence on mechanisms

How could teaching imagery correct for drawbacks in standard business training? On the one hand, imagery may stimulate participants' engagement with and attention to the content taught, leading to more effective learning. According to this view, imagery simply enhances the effectiveness of standard courses. On the other hand, imagery can be seen to appeal to completely different brain areas compared to standard teaching modes based on cognitive activation. The use of "as-if" experiences that activate all perceptions has an emotional effect on participants which is absent in structured programs based on planning or logical thinking. This is important given the high levels of trauma in our sample. Telling a depressed person logical reasons for why they need to do something will likely still make them feel depressed, unless there is also a way to act on their emotions through images. According to this latter view, imagery could unlock behavioral change in a completely different way compared to standard programs. For instance, imagery enables users to develop concrete plans and imagine the consequences of present behaviour, thereby ensuring that these plans are realistic and desirable. This may have been a critical component missing in the placebo training, leading to entrepreneurs set unrealistic goals and taking ill-informed risky decisions.

These two views are not necessarily in contrast, and indeed we make three main hypothesis on the way in which imagery can improve upon standard training.

First, *mental simulations* should facilitate skill development, goal attainment and overcoming of obstacles (Driskell, Copper, and Moran, 1994; Munroe, Giacobbi Jr., Hall, *et al.*, 2000). Like in sports, a musician mentally rehearses to avoid physical injury from overpractising and reduces performance anxiety (Braden, Osborne, and Wilson, 2015). A military officer uses imagery to understand a highly stressful situation, envisage a desired end and select the best steps to achieve that goal (Fitzwater, Arthur, and Hardy, 2018). Mental rehearsing of actions is useful for entrenching habit and avoid the cost of real-life trial and error.

Second, imagery is an *emotional amplifier*, recruiting emotions for behavioral activation. Both positive and negative emotions can become motivators for actions, but need to

[36] The improvements in psychological resilience is partly driven by an increase in generalised self-efficacy: a difference of 0.26 standard deviations ($p = 0.036$) relative to men.

be regulated. Excessive negative emotion may lead to shut-down, avoidant behaviors and helplessness, thus learning how to control and face negative emotions can improve people's economic lives (E. A. Holmes and Mathews, 2005).[37] In our imagery training, more positive images are introduced, and participants are guided through the arising of negative images and emotions (for example, not getting a bank loan or not having enough savings when a health shock hits). This can be disproportionately good for traumatized and depressed participants.

Third, imagery can lead to memory consolidation and better learning. Scenario simulation through mental imagery enables the brain to more easily store in memory the simulated scenarios, making them available for retrieval when needed. The idea is that imagery may improve learning by making business content more easily available in one's mind eye.

9.1 Secondary outcomes

To make progress on which of these channels may explain the effectiveness of the imagery training, we first conduct an exploratory analysis to shed light on which behaviours might be driving the increase in earnings. Table 4 reports difference-in-means results for a range of secondary outcomes when comparing the imagery to the placebo training. We first observe that imagery participants are better at accessing financial resources for their business in the pre-Covid-19 period.[38] For instance, we note that, relative to the placebo group, imagery participants are 6% more likely to obtain credit ($p = 0.043$) and conditional on obtaining credit, acquire 0.13 standard deviations higher amounts ($p = 0.036$). However, imagery-trained respondents do not believe that it would be "easy to find 200,000 pesos" if they need to. This suggests that the imagery training encourages participants to try out entrepreneurial actions which they know are difficult and can lead to negative answers (e.g., applying for loan), but they have learned how to deal with such negative emotions instead of avoiding them. The avoidance of negative feedback is consistent with the behavior of participants in the traditional training, who are significantly less likely to have asked for funding or having obtained high amounts.

Table 4 further shows that imagery participants were 4.7% more likely to have sufficient savings for their family at the beginning of the pandemic ($p = 0.094$), but they were not significantly more likely to save before the pandemic started ($p = 0.185$). Similarly, imagery

[37] Clinical psychologists use imagery for its powerful effect on emotions by re-scripting traumatic memories and building a repertoire of positive images, thereby enabling individuals to envisage a (realistic) positive future they want to invest in (E. A. Holmes, Arntz, and Smucker, 2007).

[38] We asked participants about their access to credit for the business only, not for consumption or household assets. We only measured access to financial resources for the period before the start of the national lockdown and not during the lockdown itself.

participants appear to be more resourceful with their time. Consistent with the observed higher rates of business survival, we see that the imagery group worked 2.1 fewer hours for a wage ($p = 0.066$), although hours spent in the business do not change. These results support the notion that the increase in earnings could have been driven by business improvements. We do not observe statistically significant differences in other behaviours or outcomes of interest, including hiring more employees.

To provide further evidence on the channels of the imagery-training effectiveness, the next Section reports some evidence from a booster session.

9.2 Booster session

To shed more light on the differences across our three experimental groups, we collected additional outcomes through a booster session implemented between July and September 2021 with our experimental participants. A total of 802 people participated in the session, representing 40% of the original sample. Appendix Table A13 shows that participants in the booster session have similar characteristics across the three treatment groups. However, selection into the booster session is related to income, business status, age and gender (Table A12), such that the sample who participated tends to be poorer, more likely to have a business and with more women than the experimental sample.

With this caveat in mind, we use some of the survey measures collected during the booster session to provide evidence on the mechanisms at play in the experiment. Table 9 shows all the different types of business practices that we asked about in the booster session. There are three main results.

First, participants assigned to the imagery training are more likely to engage in marketing practices, such as seeking clients' feedback or checking a competitor's products. For instance, 78% of imagery-trained business owners have checked a competitor's products, compared to 70% of placebo-trained owners.

Second, participants assigned to the traditional training are more likely to engage in written record keeping and financial planning, such as having a target for their sales or making a budget. These are dimensions in which both the imagery training and the pure control score quite low.

Third, there is no difference in business knowledge between the imagery or traditional groups, as well as in innovative activities such as introducing a new product or process.

All in all, this evidence is aligned with the idea that the imagery training increases personal initiative and engages people into activities that may give them bad news, such

as clients' and competitor's feedback. The emotional component of imagery, which enables participants to moderate bad emotions and generate positive ones, seem to be particularly important for these types of practices. The decline in imagery skills in the traditional training, on the other hand, leads to a substitution of creative activities with more cognitive word-based activities.

The absence of differences in business knowledge between treatment groups does not support the idea that imagery helps with memory consolidation in our program. Similarly, the fact that imagery-trained participants are not more likely to innovate suggests that mental simulation of future novel scenarios - e.g., the introduction a new product in the market - is not the main driver of the increased outcomes observed in the paper.

10 Robustness checks

10.1 Dealing with attrition

Attrition in our midline and endline surveys is high, even if respondents are balanced on several observables as well as treatment assignment (see Appendix Tables A9 and A10). Nevertheless, one may worry that high attrition masks selection on unobservable characteristics which could be driving part of our results.

To address this concern, Table 5 reports Lee bounds on the main imagery and economic results (Lee, 2009). This method relies on the monotonicity assumption that the likelihood of non-response is monotonically related to receiving the treatment. In our case, given that attrition is higher in the no-intervention group, the assumption implies that the treated observations who did not respond in the follow-up survey would also not have responded if they were in the no-intervention group. With this caveat in mind, we present lower and upper bounds for each pairwise comparison between experimental groups. The bounds are computed such that the additional percentiles of non-respondents in the relevant control group correspond to, respectively, the best and worst respective percentiles of observed outcomes in the treatment group. Table 5 shows that the treatment effects of the imagery training compared to the placebo arm are bounded away from zero, providing reassuring evidence that there is a positive impact of our imagery training compared to a traditional business training.

Columns (4) and (6) of Table 5 tell a different story regarding the comparison between each training arm and the no-intervention group. For both sets of comparisons, the Lee bounds encompass zero for the great majority of outcomes. This implies that the negative results on earnings when comparing the placebo training with the no-intervention group is not

robust to making weak assumptions on the non-respondent outcomes. These findings suggest that there could be differential attrition based on unobservables among the respondents in the no-intervention group. This implies that the observed negative impact of the placebo training may be mitigated (towards zero) in a less selected sample.

10.2 Demand bias in survey measures

Our paper relies on self-reported measures of imagery quality and use, as well as of economic outcomes. One concern may be related to demand bias: participants to the training may be more likely to report better outcomes because they feel that's what the surveyors expect to hear. However, this type of bias should equally affect the traditional and imagery training, because the contents covered were exactly the same. For instance, both these groups went through a session on credit, and thus both may want to inflate their fund-raising ability. We find very different outcomes in the two groups, which allows us to exclude that demand bias is the main driver of the results.

A second concern is specific to the imagery questions. One may worry that imagery-trained participants learnt how to best reply to the imagery questions, as if it was a test. There are two pieces of evidence against this concern. First, imagery-trained people should also report higher scores in the non-business related scenarios, but we do not find evidence for this. Secondly, we were very careful in distinguishing the language used in the training materials from that of imagery scales (e.g., vividness or emotional intensity).

11 Concluding remarks

The ability to imagine the future is not just an innate trait, but it is also a skill that can be trained and invested in. Using data on nearly 2,000 micro-entrepreneurs in Colombia, we show that there is heterogeneity in how well and how often people use imagery in their economic decision making. Those who invest the effort to imagine the future also have better economic outcomes in the short and medium term.

We conjecture that the ability to imagine the future is malleable and can be taught. To explore this hypothesis further, we design an entrepreneurship training programme that teaches would-be micro-entrepreneurs the ability to imagine the future with vividness and leverage emotions constructively. Through a randomised control trial, we observe results that are strongly supportive of our theory. We show that the imagery training increases the use and quality of business imagery when compared to a placebo entrepreneurship training. Moreover, those who increase their imagery skills also have better earnings than participants

who learn similar concepts in more abstract or verbal thinking. However, we find little evidence in favour of business training in general. When we compare the imagery training to a group who receives no training, we find small to no results across all outcomes of interest. When we turn to the placebo training group, we find that placebo participants report significantly lower earnings relative to the no-intervention group, as well as significantly lower imagery skills in the business domain.

Our results also suggest that imagery training is particularly beneficial in addressing distortions about the way in which future scenarios are imagined. Several neuroscientific and psychology studies show that traumatic experiences can significantly impede the ability to imagine the future, by increasing the cost of using imagery and inducing overly negative future imagery. Indeed, we find that individuals with high levels of trauma symptoms have significantly more powerful negative imagery on average. We further conjecture that the programme focused on promoting positive imagery would be more effective for those exposed to significant past trauma. Consistent with this hypothesis, we find that those trained in imagery and who have experienced high baseline trauma have significantly more vivid positive future imagery, compared to the placebo group. High trauma individuals also experience larger improvements in pre-Covid earnings compared to participants with similarly high levels of trauma in the placebo group. The results for the economic outcomes during Covid are again noisier and imprecisely estimated, but remain qualitatively consistent in terms of their direction, pointing towards a stronger effect for those participants who had experienced higher trauma. With higher baseline trauma and lower business experience, women are also more likely to benefit disproportionately from the imagery training, with significantly higher earnings both before and after the start of the Covid-19 pandemic.

Imagining the future is foundational for making important economic decisions, ranging from human capital development to savings and investment. This is especially true in uncertain and risky domains, such as entrepreneurship. Our findings provide a strong proof of concept that investing the effort in imagining the future is a worthwhile endeavour and can be taught through public policies that can be scaled.

12 Tables

Table 1: Baseline Balance Table

	(1) Imagery Treatment		(2) Placebo Treatment		(3) Pure Control		T-test Difference			F-test for joint
Variable	N	Mean/SE	N	Mean/SE	N	Mean/SE	(1)-(2)	(1)-(3)	(2)-(3)	orthogonality
Female	906	0.578	531	0.580	415	0.571	-0.002	0.007	0.009	0.043
		(0.016)		(0.021)		(0.024)				
Age (18-28)	906	0.604	531	0.571	415	0.629	0.033	-0.025	-0.058*	1.704
		(0.016)		(0.022)		(0.024)				
Age (29-45)	906	0.240	531	0.250	415	0.272	-0.011	-0.033	-0.022	0.815
		(0.014)		(0.019)		(0.022)				
Age (46-59)	906	0.092	531	0.113	415	0.094	-0.021	-0.002	0.019	0.919
		(0.010)		(0.014)		(0.014)				
Years Education	720	13.132	429	13.046	327	13.366	0.086	-0.234	-0.320	0.869
		(0.125)		(0.177)		(0.173)				
Only Business Owner	906	0.242	531	0.245	415	0.236	-0.003	0.006	0.009	0.048
		(0.014)		(0.019)		(0.021)				
Only Have a Business Idea	906	0.491	531	0.488	415	0.494	0.003	-0.003	-0.006	0.018
		(0.017)		(0.022)		(0.025)				
Have Business and Business Idea	906	0.267	531	0.266	415	0.270	0.002	-0.003	-0.004	0.011
		(0.015)		(0.019)		(0.022)				
Income Strat: Sales $\leq$ 1 month salary	906	0.667	531	0.663	415	0.641	0.004	0.026	0.022	0.434
		(0.016)		(0.021)		(0.024)				
Income Strat: Sales $>$ 1 month salary	906	0.240	531	0.230	415	0.248	0.010	-0.009	-0.018	0.221
		(0.014)		(0.018)		(0.021)				
Refused to Provide Income	906	0.094	531	0.107	415	0.111	-0.014	-0.017	-0.003	0.590
		(0.010)		(0.013)		(0.015)				
Assets Owned	720	11.681	429	11.794	327	11.835	-0.114	-0.155	-0.041	0.225
		(0.144)		(0.189)		(0.209)				
Household Size	719	3.484	428	3.579	326	3.650	-0.095	-0.165	-0.070	1.303
		(0.058)		(0.077)		(0.095)				
Save Monthly Y/N	716	0.552	429	0.531	326	0.580	0.020	-0.028	-0.048	0.873
		(0.019)		(0.024)		(0.027)				
Had Access to Credit	716	0.156	428	0.143	326	0.138	0.014	0.018	0.004	0.379
		(0.014)		(0.017)		(0.019)				
No. of Traumatic Events	906	2.123	531	2.295	415	2.308	-0.172	-0.185	-0.013	1.279
		(0.076)		(0.105)		(0.125)				
Reported Experiencing Trauma (Y/N)	719	0.828	429	0.837	326	0.844	-0.009	-0.016	-0.007	0.228
		(0.014)		(0.018)		(0.020)				
Impact Event Score	710	17.945	428	17.650	324	17.785	0.295	0.159	-0.136	0.024
		(0.842)		(1.092)		(1.164)				
Kessler Score	719	13.170	429	13.232	326	13.138	-0.062	0.032	0.094	0.054
		(0.157)		(0.194)		(0.220)				
Wave 1 Participant	906	0.294	531	0.392	415	0.304	-0.098***	-0.010	0.088***	7.918***
		(0.015)		(0.021)		(0.023)				

Notes: The table presents a balance test at baseline for all three treatment arms. Columns 1, 2, and 3 show the sample size, mean, and standard errors for the imagery treatment, traditional treatment, and no-intervention groups, respectively. The following 3 columns show the differences between treatment arms and the significance of the t-tests. The final column presents an F-test across all three treatment arms. * p<0.10, ** p<0.05, *** p<0.01

Table 2: Effects on Imagery

	Combined imagery index			Imagery sub-components					Perceived likelihood	
	(1) Imagery (overall)	(2) Imagery (business)	(3) Imagery (non-business)	(4) SUIS	(5) Positive PIT Vivid	(6) Postive PIT Emotions	(7) Negative PIT Vivid	(8) Negative PIT Emotions	(9) Positive PIT Likelihood	(10) Negative PIT Likelihood
Panel A: Imagery vs traditional training										
Imagery treat	0.0265	0.1776**	-0.0058	-0.0719	0.0210	0.0238	0.0564	0.0982*	-0.0328	0.0403
	(0.0632)	(0.0742)	(0.0613)	(0.0614)	(0.0631)	(0.0601)	(0.0591)	(0.0590)	(0.0558)	(0.0626)
FDR q-value				1.000	1.000	1.000	1.000	1.000	1.000	1.000
Panel B: Traditional training vs pure control										
Traditional treat	-0.0689	-0.1571*	-0.0494	-0.0203	-0.0335	-0.0512	-0.0240	-0.1059	0.0278	-0.0022
	(0.0752)	(0.0893)	(0.0738)	(0.0727)	(0.0745)	(0.0708)	(0.0684)	(0.0711)	(0.0672)	(0.0703)
FDR q-value				1.000	1.000	1.000	1.000	1.000	1.000	1.000
Summary statistics										
Mean DV in PC	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Mean DV in Traditional treat	0.000	-0.100	0.000	0.000	0.000	0.000	0.000	-0.100	0.000	0.000
Number of observations										
N in PC	550	390	550	550	547	547	547	547	547	547
N in Traditional treat	656	456	656	656	653	653	654	654	653	654
N in Imagery treat	1140	839	1140	1139	1135	1135	1136	1136	1135	1136
Controls										
Strata Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Survey Wave FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Wave-Subpop FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Notes: The table presents the main results on imagery outcomes. Panel A presents the comparison of the imagery treatment with respect to the traditional training, and Panel B the comparison of the traditional treatment with respect to the pure control. Columns 1, 2 and 3 present results for overall, business specific and non-business specific imagery. The three indexes include the SUIS measure and the PIT measures of vividness and emotional intensity. Differences in observation numbers between columns 1 and 2 reflect that business scenarios were presented only to participants with a business. Columns 4 to 8 decompose the overall business imagery index into its constituent parts: Column 4 presents the standardised SUIS index, which captures the frequency with which people use imagery, Columns 5 to 8 present results on the self-reported quality of scenarios imagined using the PIT scale, with columns 5 and 6 focusing on positive future scenarios and columns 7 and 8 on negative future scenarios. The last two Columns present the perceived likelihood of positive and negative scenarios from the PIT scale. Data include the two follow-up surveys and control for survey wave, so the number of observations includes repeated observations for each participant. We collapse the data to household level in the case where more than one household member participated in the training, and standard errors clustered at the household level are presented in parenthesis. Strata control include stratification variables (gender, income brackets, business status and age) and subdivision-wave fixed effects. The sample consists of people who confirmed participation in the training prior to knowing their treatment status. Rows "FDR q-value" calculate the false discovery rate q-values within each panel and across columns 4 to 8 following the sharpened two-stage procedure of Benjamini, Krieger, and Yekutieli (2006). * p<0.10, ** p<0.05, *** p<0.01

Table 3: Effects on Downstream Outcomes

	Pre-COVID			COVID								
	(1) Combined	(2) Earnings	(3) Business survival	(4) Combined	(5) Earnings	(6) Business survival	(7) Safety nets	(8) Business behavior	(9) Investment	(10) Psych resilience (combined)	(11) Kessler	(12) Psych resilience
Panel A: Imagery vs traditional training												
Imagery treat	0.1336**	0.1905**	0.0198	0.1393**	0.1406**	0.0475*	0.0244	0.0838	0.0659	0.0036	0.0173	-0.0351
	(0.0661)	(0.0828)	(0.0265)	(0.0592)	(0.0603)	(0.0250)	(0.0571)	(0.0578)	(0.0534)	(0.0581)	(0.0572)	(0.0633)
FDR q-value		0.082	0.349		0.082	0.107	0.402	0.174	0.212		0.646	0.646
Panel B: Traditional training vs pure control												
Traditional treat	-0.1565**	-0.2224**	0.0007	-0.0903	-0.1441**	-0.0221	0.0141	-0.0738	-0.0476	-0.0161	-0.0118	-0.0522
	(0.0784)	(0.0957)	(0.0323)	(0.0695)	(0.0710)	(0.0309)	(0.0679)	(0.0672)	(0.0659)	(0.0703)	(0.0699)	(0.0721)
FDR q-value		0.226	1.000		0.226	1.000	1.000	1.000	1.000		1.000	1.000
Summary statistics												
Mean DV in PC	0.000	0.000	0.700	0.000	0.000	0.700	0.000	0.000	0.000	0.000	0.000	0.000
Mean DV in Traditional treat	-0.100	-0.200	0.700	-0.100	-0.100	0.600	0.000	-0.100	-0.100	0.000	0.000	0.000
Number of observations												
N in PC	346	323	333	552	539	552	546	551	564	545	545	545
N in Traditional treat	407	380	392	660	642	659	650	657	667	649	647	649
N in Imagery treat	704	665	679	1147	1115	1145	1134	1142	1159	1134	1133	1134
Controls												
Strata Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Survey Wave FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Wave-Subpop FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

*N*otes: The table presents treatment effects for downstream economic and psychological outcomes when comparing the imagery to the traditional training arm (Panel A) and traditional with pure control (Panel B). Columns (1) and (4) contain overall indexes of economic outcomes. The index in Column (1) include earnings and business survival, while the index in Column (2) includes earnings, business survival, safety nets, business behavior and investment. In Columns (2) and (5) the outcome is an earnings index, which include both income and business sales and it is standardised to be mean zero and unitary standard deviation in the no-intervention control group. In Columns (3) and (6), the outcome is a dummy equal to one if the person has an operating business. The outcome in Column (7) is an index of "safety nets", which includes savings in the pre-Covid period and respondents' perceptions of informal support networks during the pandemic. Column (8) shows results for an index of "business behavior", which averages answers to a list of thirteen business behaviours, ranging from setting up a safe work environments to identifying alternative supply chains to diversifying their products. We combine the index of behaviours with a sub-index of reverse-coded "unsafe" working hours, defined as the proportion of total hours worked "unsafely" in which social distancing, frequent hand washing, the use of face masks or home working were not adhered to (the government Covid-19 guidelines of the day). Column (9) shows results for an "investment" index, which averages answers to a series of yes/no questions on investment for the business. Column (11) shows the results for on the Kessler anxiety and depression scale, which is reverse-coded to that higher values correspond to better psychological welfare. Column (12) shows results for an index of psychological resilience, which includes a scale of self-efficacy and one for resilience. Column (10) aggregates the last two indexes in a combined index. For more detail on the construction of the different indexes, see Section 6. False discovery rate q-values over the family of economic outcomes and, separately, the family of psychological outcomes are calculated following the sharpened two-stage procedure of Benjamini, Krieger, and Yekutieli (2006).Data include the two follow-up surveys and control for survey wave, so the number of observations includes repeated observations for each participant. Standard errors clustered at the household level are presented in parenthesis. Differences in number of observations between columns come from the fact that Pre-Covid outcomes were asked only in the midline survey, while outcomes during Covid were asked in both survey waves. We collapse the data to household level (the unit of randomisation) in the case where more than one household member participated in the training. Strata control include stratification variables (gender, income brackets, business status and age) and subdivision-wave fixed effects. The sample consists of people who confirmed participation in the training prior to knowing their treatment status. * p<0.10, ** p<0.05, *** p<0.01

Table 4: Effects on Secondary Outcomes

	(1) Funding > 0	(2) Funding (cont)	(3) Saving > 0	(4) Saving (cont)	(5) Easy to find credit	(6) Enough cash for week	(7) Enough savings for 2 months	(8) Working hours (tot)	(9) Working hours (bus)	(10) Working hours (wage)	(11) Any wage work	(12) Workers
Panel A: Imagery vs traditional training												
Imagery treat	0.0609**	0.1307**	0.0309	-1.92e+05	-0.0359	0.0130	0.0475*	-0.4133	0.7397	-2.0835*	-0.0155	0.0253
	(0.0301)	(0.0622)	(0.0233)	(2.36e+05)	(0.0270)	(0.0256)	(0.0284)	(1.4826)	(1.5878)	(1.1497)	(0.0274)	(0.0266)
FDR q-value	0.352	0.352	0.391	0.589	0.391	0.589	0.352	0.640	0.589	0.352	0.589	0.589
Panel B: Traditional training vs pure control												
Traditional treat	-0.0642*	-0.1475*	0.0129	-1.16e+05	0.0399	0.0037	-0.0746**	2.1816	2.9917	1.2952	0.0248	-0.0203
	(0.0367)	(0.0761)	(0.0292)	(3.21e+05)	(0.0333)	(0.0307)	(0.0335)	(1.8065)	(1.9316)	(1.4108)	(0.0327)	(0.0313)
FDR q-value	0.457	0.457	0.863	0.863	0.533	0.863	0.457	0.533	0.469	0.696	0.813	0.853
Summary statistics												
Mean DV in PC	0.300	0.000	0.800	2.61e+06	0.500	0.600	0.500	30.000	23.600	14.500	0.500	0.600
Mean DV in Traditional treat	0.300	-0.100	0.800	2.41e+06	0.600	0.600	0.500	31.200	25.700	14.800	0.500	0.500
Number of observations												
N in PC	327	327	318	318	544	544	519	548	359	547	547	498
N in Traditional treat	382	382	384	384	648	646	623	653	421	647	647	561
N in Imagery treat	669	669	648	648	1131	1128	1074	1135	782	1131	1131	1018
Controls												
Strata Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Survey Wave FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Wave-Subpop FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

*N*otes: Panel A presents the comparison of the imagery treatment with respect to the traditional training, and Panel B the comparison of the traditional treatment with respect to the pure control. We measure the secondary outcomes as follows. Funding > 0 (column 1) is a dummy variable indicating whether the household borrowed money from any formal or informal contacts to start or grow their business in the six months prior to the Covid-19 pandemic. The credit amount obtained is standardised and reported in column 2. Savings > 0 (column 3) is a dummy variable indicating whether a household saved in the six months prior to the start of the pandemic-induced lockdown, and the outcome in Column (4) reports the saved amount (standardized). Participants were also asked to reflect on whether they could easily borrow 200,000 pesos should they need to (column 5), whether they had enough cash at hand for the week (column 6) and whether they had an adequate amount of personal savings to ensure their safety for the first two months of the lockdown (column 7). Variables in Columns (5) to (7) indicate an above-median response on a 5-point Likert agreement scale for these three perception-related variables. Columns (8) to (10) look at total hours worked, hours worked in the business or for a wage respectively, winsorised at the 99th percentile. Column (11) shows results on a dummy variable indicating whether the business has hired any employee post-intervention, and Column (12) on the number of employees. Data include the two follow-up surveys and control for survey wave, so the number of observations includes repeated observations for each participant. We collapse the data to household level in the case where more than one household member participated in the training, and standard errors clustered at the household level are presented in parenthesis. Strata control include stratification variables (gender, income brackets, business status and age) and subdivision-wave fixed effects. The sample consists of people who confirmed participation in the training prior to knowing their treatment status. Rows "FDR q-value" calculate the false discovery rate q-values within each panel and across all columns following the sharpened two-stage procedure of Benjamini, Krieger, and Yekutieli (2006). * p<0.10, ** p<0.05, ***

Table 5: Lee bounds to correct for differential non-response

	Imagery-Placebo		**Imagery-Control**		**Placebo-Control**	
	Standardised Mean Treatment Eff. [N]	Diff. Attrition Δ n-r = 0.8% [N]	Standardised Mean Treatment Eff. [N]	Diff. Attrition Δ n-r = 4.5% [N]	Standardised Mean Treatment Eff. [N]	Diff. Attrition Δ n-r = 5.4% [N]
Imagery (overall)	0.031	0.017/0.064	0.012	-0.081/0.125**	-0.062	-0.153**/0.096
	[1985]	[1976/1974]	[1805]	[1749/1750]	[1280]	[1241/1237]
Business Imagery	0.181**	0.181**/0.207***	0.057	0.009/0.178**	-0.140	-0.216**/0.045
	[1403]	[1403/1398]	[1290]	[1265/1252]	[893]	[870/863]
Non-Business Imagery	0.000	-0.012/0.036	-0.001	-0.083/0.130**	-0.046	-0.131*/0.124*
	[1985]	[1977/1973]	[1805]	[1751/1743]	[1280]	[1243/1232]
Earnings pre-COVID	0.208**	0.198**/0.208**	-0.010	-0.060/0.126**	-0.218**	-0.286***/0.125**
	[1157]	[1152/1157]	[1057]	[1028/1031]	[746]	[724/718]
Business pre-COVID	0.011	0.011/0.011	0.018	0.018/0.018	0.003	0.003/0.003
	[1187]	[1187/1187]	[1084]	[1084/1084]	[769]	[769/769]
Earnings during COVID	0.164***	0.158***/0.164***	0.036	0.002/0.138***	-0.141**	-0.185***/0.090
	[1942]	[1933/1942]	[1765]	[1716/1731]	[1255]	[1223/1211]
Business during COVID	0.033	0.033/0.033	0.016	0.016/0.016	-0.018	-0.018/-0.018
	[1993]	[1993/1993]	[1812]	[1812/1812]	[1285]	[1285/1285]
Safety Index	0.048	0.030/0.073	0.063	-0.003/0.169***	0.013	-0.056/0.120*
	[1971]	[1958/1963]	[1793]	[1737/1739]	[1270]	[1237/1232]
Business Response	0.082	0.037/0.121**	-0.016	-0.177***/0.134**	-0.081	-0.223***/0.094
	[1988]	[1978/1978]	[1808]	[1753/1749]	[1282]	[1248/1236]
Investment	0.036	0.022/0.036	0.030	-0.068/0.030	-0.037	-0.125**/-0.037
	[2020]	[2014/2020]	[1840]	[1793/1840]	[1308]	[1287/1308]
Kessler	0.004	0.004/0.031	-0.011	-0.046/0.094	-0.006	-0.069/0.106*
	[1967]	[1967/1956]	[1791]	[1760/1741]	[1266]	[1235/1231]
Psych. Resilience	-0.019	-0.019/0.028	-0.036	-0.102/0.110*	-0.046	-0.102/0.096
	[1970]	[1970/1957]	[1792]	[1742/1730]	[1268]	[1240/1226]

Notes: Lee (2009) bounds (lower/upper) for estimated treatment effects are shown for each pairwise comparisons across treatment arms. The number of observations included when calculating high and low bounds are shown in square brackets. * p<0.10, ** p<0.05, *** p<0.01

Table 6: Treatment effects on imagery by trauma

	Combined imagery index			Imagery sub-components					Perceived likelihood	
	(1) Imagery (overall)	(2) Imagery (business)	(3) Imagery (non-business)	(4) SUIS	(5) Positive PIT Vivid	(6) Postive PIT Emotions	(7) Negative PIT Vivid	(8) Negative PIT Emotions	(9) Positive PIT Likelihood	(10) Negative PIT Likelihood
High-Trauma										
Panel A - HT: Imagery vs traditional training										
Imagery treat	0.1198	0.3917**	0.1114	-0.0237	0.2657*	0.1520	0.0609	0.0633	0.0060	0.0179
	(0.1449)	(0.1675)	(0.1413)	(0.1437)	(0.1401)	(0.1291)	(0.1258)	(0.1226)	(0.1331)	(0.1380)
Panel B - HT: Traditional training vs pure control										
Traditional treat	-0.1377	-0.2137	-0.1410	-0.1052	-0.3077*	-0.0367	0.0450	-0.0998	-0.1470	0.0114
	(0.1561)	(0.1873)	(0.1601)	(0.1630)	(0.1689)	(0.1537)	(0.1430)	(0.1470)	(0.1669)	(0.1576)
Low Trauma										
Panel A - LT: Imagery vs traditional training										
Imagery treat	0.0284	0.1703*	-0.0225	-0.0591	-0.0499	0.0079	0.1116	0.0931	-0.0631	0.0840
	(0.0757)	(0.0927)	(0.0733)	(0.0758)	(0.0750)	(0.0726)	(0.0726)	(0.0726)	(0.0671)	(0.0756)
Panel B - LT: Traditional training vs pure control										
Traditional treat	-0.0778	-0.2004*	-0.0560	0.0014	0.0239	-0.0584	-0.0854	-0.1413	0.0820	-0.0209
	(0.0941)	(0.1173)	(0.0917)	(0.0902)	(0.0895)	(0.0892)	(0.0862)	(0.0897)	(0.0822)	(0.0851)
F-tests of equality of coefficients										
H=L in Imagery treat	0.042	0.010	0.039	0.842	0.649	0.231	0.073	0.000	0.668	0.000
H=L in Traditional treat	0.370	0.569	0.587	0.745	0.081	0.962	0.024	0.002	0.521	0.000
DID: [H_imag-H_trad]-[L_imag-L_trad]	0.567	0.231	0.389	0.823	0.042	0.319	0.721	0.830	0.635	0.667
DID: [H_trad-H_pc]-[L_trad-L_pc]	0.734	0.950	0.633	0.553	0.072	0.899	0.418	0.803	0.201	0.852
Summary statistics										
Mean DV in PC and High Trauma	0.200	0.200	0.100	0.100	0.100	0.000	0.100	0.300	0.100	0.300
Mean DV in PC and Low Trauma	0.000	0.100	0.000	0.000	0.000	0.000	0.000	-0.100	0.000	-0.100
Mean DV in Traditional treat and High Trauma	0.100	0.000	0.100	0.000	-0.200	0.000	0.200	0.300	0.000	0.400
Mean DV in Traditional treat and Low Trauma	-0.100	-0.100	0.000	0.000	0.100	0.000	-0.100	-0.100	0.100	-0.100
Number of observations										
N in PC	550	390	550	550	547	547	547	547	547	547
N in Traditional treat	656	456	656	656	653	653	654	654	653	654
N in Imagery treat	1140	839	1140	1139	1135	1135	1136	1136	1135	1136
Controls										
Strata Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Survey Wave FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Wave-Subpop FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Notes: The table presents the main results on imagery outcomes splitting the sample by level of trauma. Panel A presents the comparison of the imagery treatment with respect to the traditional training, and Panel B the comparison of the traditional treatment with respect to the pure control. Columns 1, 2 and 3 present results for overall, business specific and non-business specific imagery. The three indexes include the SUIS measure and the PIT measures of vividness and emotional intensity. Differences in observation numbers between columns 1 and 2 reflect that business scenarios were presented only to participants with a business. Columns 4 to 8 decompose the overall business imagery index into its constituent parts: Column 4 presents the standardised SUIS index, which captures the frequency with which people use imagery, Columns 5 to 8 present results on the self-reported quality of scenarios imagined using the PIT scale, with columns 5 and 6 focusing on positive future scenarios and columns 7 and 8 on negative future scenarios. The last two Columns present the perceived likelihood of positive and negative scenarios from the PIT scale. Data include the two follow-up surveys and control for survey wave, so the number of observations includes repeated observations for each participant. We collapse the data to household level in the case where more than one household member participated in the training, and standard errors clustered at the household level are presented in parenthesis. Strata control include stratification variables (gender, income brackets, business status and age) and subdivision-wave fixed effects. The sample consists of people who confirmed participation in the training prior to knowing their treatment status. Rows "FDR q-value" calculate the false discovery rate q-values within each panel and across columns 4 to 8 following the sharpened two-stage procedure of Benjamini, Krieger, and Yekutieli (2006). * p<0.10, ** p<0.05, *** p<0.01

Table 7: Treatment effects on imagery by gender

	Combined imagery index			Imagery sub-components					Perceived likelihood	
	(1) Imagery (overall)	(2) Imagery (business)	(3) Imagery (non-business)	(4) SUIS	(5) Positive PIT Vivid	(6) Postive PIT Emotions	(7) Negative PIT Vivid	(8) Negative PIT Emotions	(9) Positive PIT Likelihood	(10) Negative PIT Likelihood
Female										
Panel A - F: Imagery vs traditional training										
Imagery treat	0.1411*	0.3412***	0.0925	0.0169	0.0910	0.1527*	0.1133	0.1505*	0.0436	0.0940
	(0.0851)	(0.0995)	(0.0824)	(0.0816)	(0.0825)	(0.0806)	(0.0796)	(0.0794)	(0.0741)	(0.0826)
Panel B - F: Traditional training vs pure control										
Traditional treat	-0.1600	-0.2820**	-0.0953	-0.1267	-0.0724	-0.1154	-0.0626	-0.1511	0.0144	-0.0901
	(0.1027)	(0.1200)	(0.1001)	(0.0963)	(0.0978)	(0.0957)	(0.0939)	(0.0949)	(0.0855)	(0.0935)
Male										
Panel A - M: Imagery vs traditional training										
Imagery treat	-0.0902	0.0243	-0.0955	-0.1663*	-0.0578	-0.1124	-0.0029	0.0574	-0.1494*	-0.0399
	(0.0960)	(0.1122)	(0.0932)	(0.0949)	(0.0941)	(0.0902)	(0.0910)	(0.0926)	(0.0861)	(0.0988)
Panel B - M : Traditional training vs pure control										
Traditional treat	0.0494	0.0434	-0.0039	0.1400	0.0606	0.0258	-0.0024	-0.0802	0.0866	0.0752
	(0.1110)	(0.1266)	(0.1116)	(0.1131)	(0.1164)	(0.1078)	(0.0978)	(0.1061)	(0.1113)	(0.1081)
F-tests of equality of coefficients										
F=M in Imagery treat	0.034	0.002	0.014	0.516	0.576	0.003	0.230	0.000	0.479	0.000
F=M in Traditional treat	0.539	0.547	0.697	0.236	0.073	0.520	0.205	0.000	0.081	0.001
DID: [Female_imag - Female_trad] -[Male_imag-Male_trad]	0.068	0.032	0.126	0.139	0.229	0.027	0.331	0.440	0.086	0.293
DID: [Female_trad - Female_pc] -[Male_trad-Male_pc]	0.159	0.056	0.535	0.068	0.373	0.319	0.652	0.612	0.600	0.239
Summary statistics										
Mean DV in PC and Female	0.000	0.100	0.000	0.000	0.000	0.100	0.000	0.100	0.000	0.100
Mean DV in PC and Male	-0.100	-0.100	0.000	0.000	0.000	-0.100	0.000	-0.100	0.100	-0.100
Mean DV in Traditional treat and Female	-0.100	-0.100	0.000	-0.100	0.000	0.000	0.000	0.000	0.000	0.000
Mean DV in Traditional treat and Male	0.000	-0.100	0.000	0.100	0.000	0.000	0.100	-0.100	0.100	0.000
Number of observations										
N in PC	550	390	550	550	547	547	547	547	547	547
N in Traditional treat	656	456	656	656	653	653	654	654	653	654
N in Imagery treat	1140	839	1140	1139	1135	1135	1136	1136	1135	1136
Controls										
Strata Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Survey Wave FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Wave-Subpop FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Notes: The table presents the main results on imagery outcomes by gender. Panel A presents the comparison of the imagery treatment with respect to the traditional training, and Panel B the comparison of the traditional treatment with respect to the pure control. Columns 1, 2 and 3 present results for overall, business specific and non-business specific imagery. The three indexes include the SUIS measure and the PIT measures of vividness and emotional intensity. Differences in observation numbers between columns 1 and 2 reflect that business scenarios were presented only to participants with a business. Columns 4 to 8 decompose the overall business imagery index into its constituent parts: Column 4 presents the standardised SUIS index, which captures the frequency with which people use imagery, Columns 5 to 8 present results on the self-reported quality of scenarios imagined using the PIT scale, with columns 5 and 6 focusing on positive future scenarios and columns 7 and 8 on negative future scenarios. The last two Columns present the perceived likelihood of positive and negative scenarios from the PIT scale. Data include the two follow-up surveys and control for survey wave, so the number of observations includes repeated observations for each participant. We collapse the data to household level in the case where more than one household member participated in the training, and standard errors clustered at the household level are presented in parenthesis. Strata control include stratification variables (gender, income brackets, business status and age) and subdivision-wave fixed effects. The sample consists of people who confirmed participation in the training prior to knowing their treatment status. Rows "FDR q-value" calculate the false discovery rate q-values within each panel and across columns 4 to 8 following the sharpened two-stage procedure of Benjamini, Krieger, and Yekutieli (2006). * p<0.10, ** p<0.05, *** p<0.01

Table 8: Effect on downstream outcomes, by gender

	Pre-COVID			COVID								
	(1) Combined	(2) Earnings	(3) Business survival	(4) Combined	(5) Earnings	(6) Business survival	(7) Safety nets	(8) Business behavior	(9) Investment	(10) Psych resilience (combined)	(11) Kessler	(12) Psych resilience
Female												
Panel A - F: Imagery vs traditional training												
Imagery treat	0.2726***	0.3810***	0.0569	0.2482***	0.2559***	0.0618*	0.1400*	0.0896	0.0713	0.0560	0.0512	0.1164
	(0.0902)	(0.1207)	(0.0368)	(0.0788)	(0.0847)	(0.0338)	(0.0772)	(0.0684)	(0.0651)	(0.0792)	(0.0780)	(0.0838)
Panel B - F: Traditional training vs pure control												
Traditional treat	-0.3363***	-0.4212***	-0.0980**	-0.1967**	-0.2296**	-0.0691*	-0.0467	-0.1289*	-0.0506	-0.0826	-0.0665	-0.1484
	(0.1058)	(0.1404)	(0.0428)	(0.0901)	(0.1025)	(0.0404)	(0.0901)	(0.0752)	(0.0797)	(0.0965)	(0.0960)	(0.0978)
Male												
Panel A - M: Imagery vs traditional training												
Imagery treat	-0.0737	-0.0759	-0.0216	-0.0222	-0.0473	0.0260	-0.1577*	0.1046	0.0390	-0.0896	-0.0604	-0.1977**
	(0.1002)	(0.1066)	(0.0398)	(0.0922)	(0.0819)	(0.0377)	(0.0871)	(0.1049)	(0.0946)	(0.0854)	(0.0837)	(0.0951)
Panel B-M: Traditional training vs pure control												
Traditional treat	0.1045	0.0844	0.1325***	0.0976	0.0082	0.0527	0.1374	0.0146	-0.0235	0.1101	0.1059	0.0546
	(0.1219)	(0.1330)	(0.0493)	(0.1112)	(0.0970)	(0.0477)	(0.1029)	(0.1269)	(0.1165)	(0.1017)	(0.1003)	(0.1070)
F-tests of equality of coefficients												
F=M in Imagery treat	0.047	0.134	0.674	0.001	0.008	0.441	0.000	0.812	0.005	0.000	0.000	0.131
F=M in Traditional treat	0.037	0.091	0.680	0.011	0.004	0.499	0.000	0.079	0.055	0.000	0.000	0.118
DID: [Female_imag - Female_trad] -[Male_imag-Male_trad]	0.009	0.004	0.140	0.024	0.009	0.474	0.010	0.903	0.776	0.206	0.324	0.012
DID: [Female_trad - Female_pc] -[Male_trad-Male_pc]	0.005	0.007	0.000	0.036	0.087	0.047	0.171	0.322	0.845	0.162	0.207	0.154
Summary statistics												
Mean DV in PC and Female	-0.100	0.000	0.700	-0.100	-0.100	0.700	-0.100	0.100	-0.100	-0.100	-0.100	0.000
Mean DV in PC and Male	0.100	0.000	0.700	0.100	0.100	0.600	0.100	-0.100	0.200	0.100	0.100	0.100
Mean DV in Traditional treat and Female	-0.300	-0.400	0.700	-0.200	-0.300	0.600	-0.200	0.000	-0.100	-0.100	-0.100	-0.200
Mean DV in Traditional treat and Male	0.100	0.100	0.800	0.100	0.100	0.700	0.200	-0.100	0.100	0.200	0.200	0.200
Number of observations												
N in PC	346	323	333	552	539	552	546	551	564	545	545	545
N in Traditional treat	407	380	392	660	642	659	650	657	667	649	647	649
N in Imaginary treat	704	665	679	1147	1115	1145	1134	1142	1159	1134	1133	1134
Controls												
Strata Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Survey Wave FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Wave-Subpop FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Notes: The table presents treatment effects for downstream economic and psychological outcomes by gender. Here we compare the imagery to the traditional training arm (Panel A) and traditional with pure control (Panel B) for both males and females. Columns (1) and (4) contain overall indexes of economic outcomes. The index in Column (1) include earnings and business survival, while the index in Column (2) includes earnings, business survival, safety nets, business behavior and investment. In Columns (2) and (5) the outcome is an earnings index, which include both income and business sales and it is standardised to be mean zero and unitary standard deviation in the no-intervention control group. In Columns (3) and (6), the outcome is a dummy equal to one if the person has an operating business. The outcome in Column (7) is an index of "safety nets", which includes savings in the pre-Covid period and respondents' perceptions of informal support networks during the pandemic. Column (8) shows results for an index of "business behavior", which averages answers to a list of thirteen business behaviours, ranging from setting up a safe work environments to identifying alternative supply chains to diversifying their products. We combine the index of behaviours with a sub-index of reverse-coded "unsafe" working hours, defined as the proportion of total hours worked "unsafely" in which social distancing, frequent hand washing, the use of face masks or home working were not adhered to (the government Covid-19 guidelines of the day). Column (9) shows results for an "investment" index, which averages answers to a series of yes/no questions on investment for the business. Column (11) shows the results for on the Kessler anxiety and depression scale, which is reverse-coded to that higher values correspond to better psychological welfare. Column (12) shows results for an index of psychological resilience, which includes a scale of self-efficacy and one for resilience. Column (10) aggregates the last two indexes in a combined index. For more detail on the construction of the different indexes, see Section 6. False discovery rate q-values over the family of economic outcomes and, separately, the family of psychological outcomes are calculated following the sharpened two-stage procedure of Benjamini, Krieger, and Yekutieli (2006).Data include the two follow-up surveys and control for survey wave, so the number of observations includes repeated observations for each participant. Standard errors clustered at the household level are presented in parenthesis. Differences in number of observations between columns come from the fact that Pre-Covid outcomes were asked only in the midline survey, while outcomes during Covid were asked in both survey waves. We collapse the data to household level (the unit of randomisation) in the case where more than one household member participated in the training. Strata control include stratification variables (gender, income brackets, business status and age) and subdivision-wave fixed effects. The sample consists of people who confirmed participation in the training prior to knowing their treatment status. * p<0.10, ** p<0.05, *** p<0.01

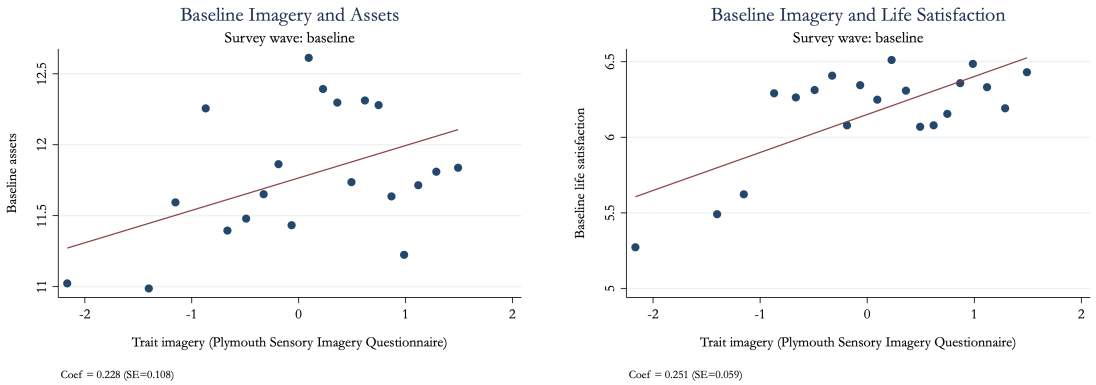
Table 9: Effect on business practices, booster sub-sample

	Imagery Treat		Traditional Treat		Pure Control		Imag vs Trad t-test
	mean	sd	mean	sd	mean	sd	p
Marketing Practices:							
Examined A Competitor's Prices	70.90	45.51	65.33	47.75	71.30	45.43	0.25
Examined A Competitor's Products	78.69	41.03	70.00	45.98	78.26	41.43	0.06*
Asked For Consumer Feedback On New Products	59.84	49.12	50.67	50.16	58.26	49.53	0.08*
Asked A Former Consumer Why They Stopped Buying	43.57	49.69	34.67	47.75	40.87	49.37	0.08*
Asked A Supplier About Product Sales	60.00	49.09	61.07	48.92	57.89	49.59	0.83
Introduced A Special Offer	72.13	44.93	69.33	46.27	68.70	46.58	0.56
Advertised	81.15	39.19	79.33	40.63	77.39	42.01	0.66
Costing and Record-Keeping Practices:							
Keep Written Business Records	48.36	50.08	57.33	49.62	49.12	50.21	0.08*
Record Every Purchase And Sales	70.08	45.88	66.67	47.30	69.57	46.21	0.48
Use Records To Examine Cash Balance At Any Time	61.73	48.71	64.43	48.03	63.16	48.45	0.59
Financial Planning Practices:							
Set A Sales Target For The Next Year	50.82	50.10	66.67	47.30	52.17	50.17	0.00**
Compares Sales To Target Monthly	64.34	48.00	70.47	45.77	63.48	48.36	0.21
Budgets Likely Costs	38.93	48.86	48.67	50.15	44.74	49.94	0.06*
HR practices:							
Training Provision Exists	34.02	47.47	35.57	48.03	29.82	45.95	0.75
Evaluated Employee Performance	36.89	48.35	39.60	49.07	40.35	49.28	0.59
Provides Employees Feedback	40.98	49.28	42.95	49.67	45.61	50.03	0.70
Innovation:							
New Products In The Past 6 Months	57.96	49.46	61.33	48.86	56.52	49.79	0.51
New Processes In The Past 6 Months	52.24	50.05	51.68	50.14	49.57	50.22	0.91
Business Registration	34.29	47.56	36.00	48.16	40.00	49.20	0.73
Business Knowledge Index:							
Business Knowledge - % of correct answers	62.23	26.89	61.99	28.82	65.25	25.57	0.92
Observations	244		150		115		509

Notes: The table shows business practices, knowledge and behavior among participants to the 2021 booster session who have a business or had a business operating in the previous six months. The survey asked whether a person enacted each of the listed behaviors in the previous six months. The index of business knowledge shows the percentage of correct answers that a person gave on 5 knowledge questions, such as "It is a good idea to have a business that is quite similar to your competitors".

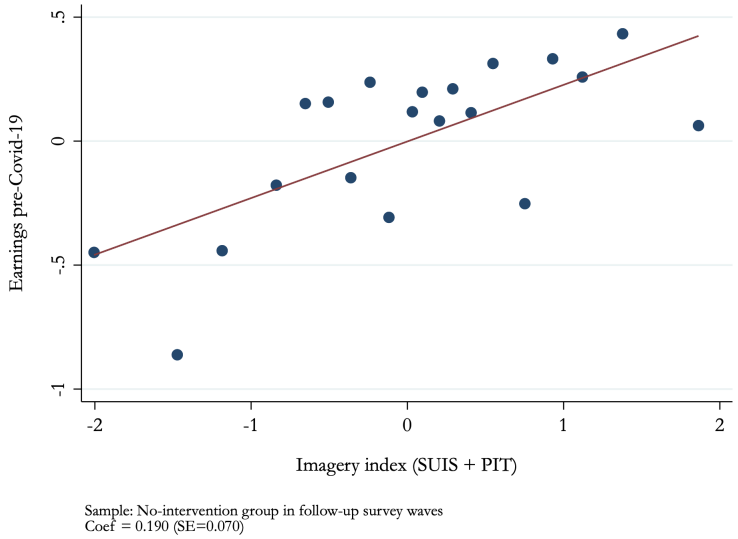
13 Figures

Figure 1: Baseline imagery, assets and life satisfaction



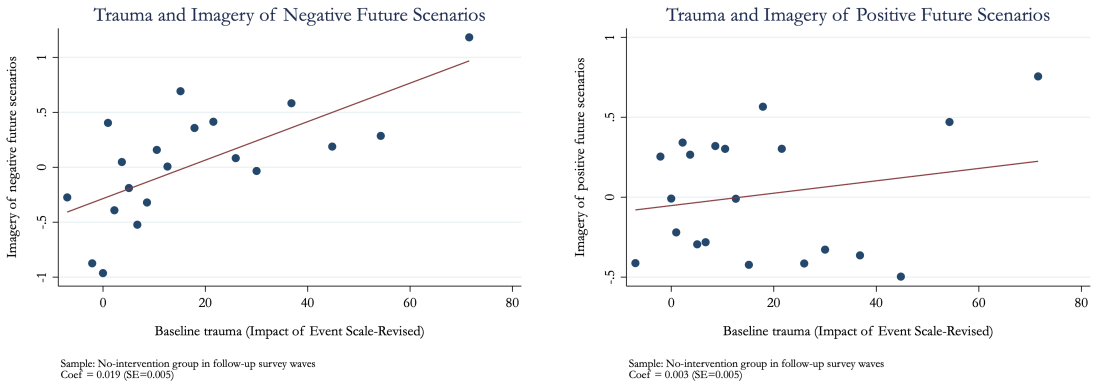
Notes: The figure shows the correlation between trait mental imagery and total count of household assets (left panel) and life satisfaction (right panel). Trait imagery is measured using the Plymouth Imagery Scale Questionnaire and life satisfaction using a Cantril Ladder with ten steps. Asset count is the total number of assets owned by a respondent's household out of a list of different asset types (e.g., TV, computer). All these measures are collected in our baseline survey prior to the intervention. The imagery index is standardised to be mean zero and unitary standard deviation in the no-intervention group. Regressions control for gender, age, business status and income category at baseline, and subdivision-wave interaction fixed effects.

Figure 2: Imagery and earnings pre-Covid-19



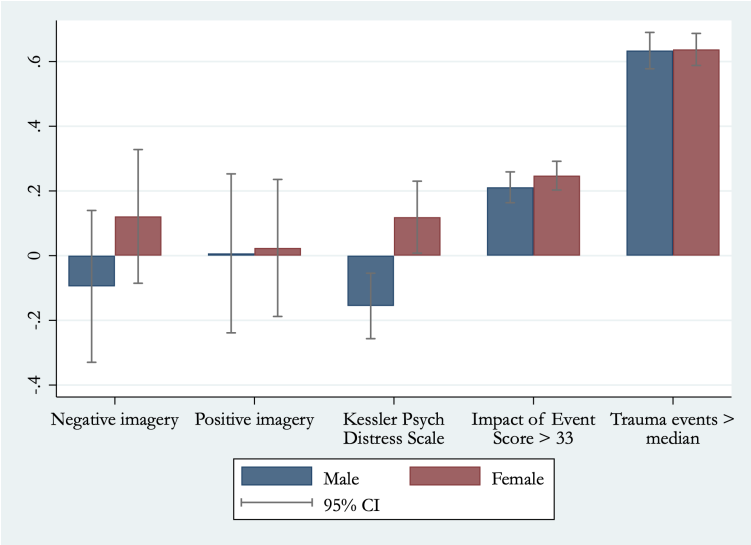
Notes: The figure shows the correlation between imagery and an index of earnings in the six months prior to the first national lockdown in response the Covid-19 pandemic. The imagery index combines the Prospective Imagery Task (PIT) and the Spontaneous Use of Imagery Scale (SUIS) for general scenarios. The index of earnings pre-Covid-19 combines business sales and take-home income of the respondent. Both measures are collected in our first follow-up survey and are standardised to be mean zero and unitary standard deviation in the no-intervention group. We restrict the sample to respondents that received no training. Regressions control for gender, age, business status and income category at baseline, and subdivision-wave interaction fixed effects.

Figure 3: Quality of negative and positive imagery by baseline trauma



Notes: The figure shows the relationship between imagery quality and baseline level of trauma for given negative and positive future scenarios. Baseline trauma is measured using the Impact of Event Scale-Revised, which is a 22-item self-reported measure that assesses subjective distress caused by past traumatic events. Imagery quality is represented by an index that combines vividness, emotional intensity and likelihood of the imagined scenario occurring in real-life from the PIT scale. Both measures are collected in two follow-up surveys. They are standardised to be mean zero and unitary standard deviation in the no-intervention group. We restrict the sample to respondents that received no training. Regressions control for gender, age, business status and income category at baseline, and subdivision-wave interaction fixed effects.

Figure 4: Gender differences in imagery quality, depression and trauma



Notes: The figure shows gender differences in imagery (in the pure control) and psychological outcomes (at baseline). Negative and positive imagery are represented by an index that combines vividness, emotional intensity and likelihood of the imagined scenario occurring in real-life from the PIT scale. Both measures are collected in two follow-up surveys, and here averages are limited to the pure control group. They are standardised to be mean zero and unitary standard deviation in the no-intervention group. The measures of psychological welfare are instead collected at baseline and include all the treatment groups. Baseline trauma is measured using the Impact of Event Scale-Revised, which is a 22-item self-reported measure that assesses subjective distress caused by past traumatic event, as well as a trauma checklist.

Figure 5: Timeline of implementation and data collection

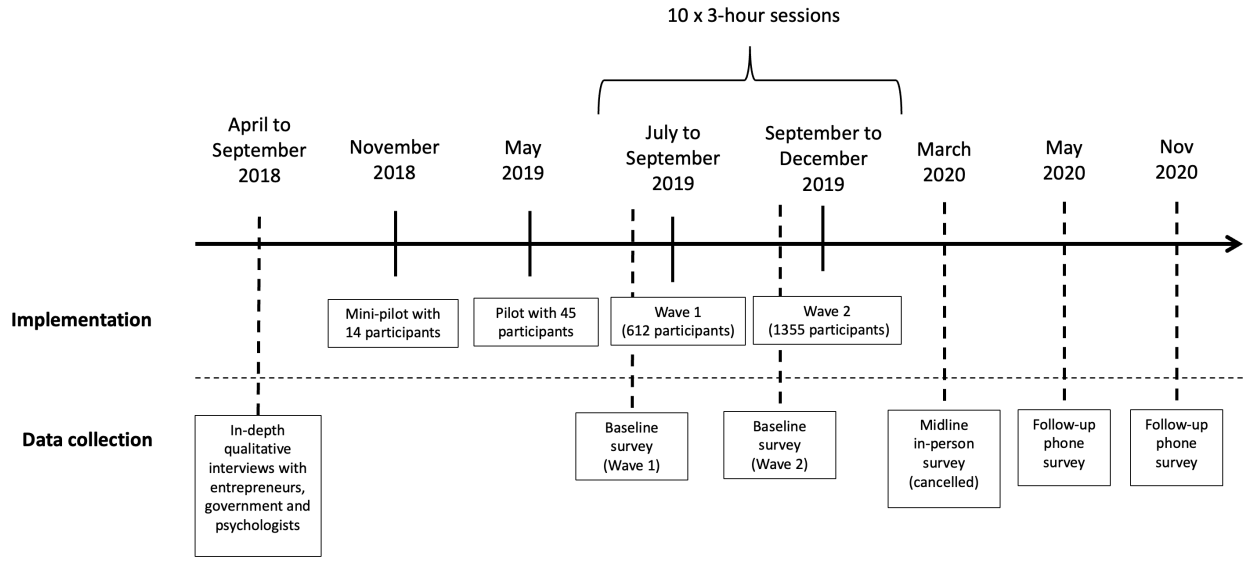
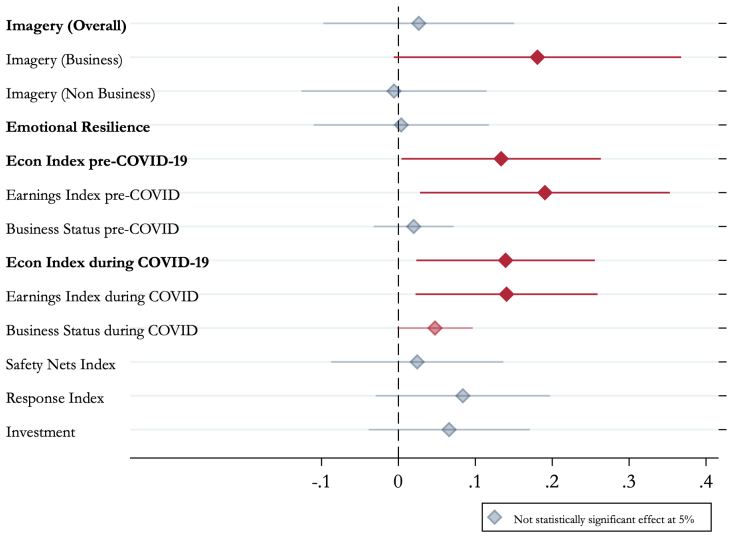
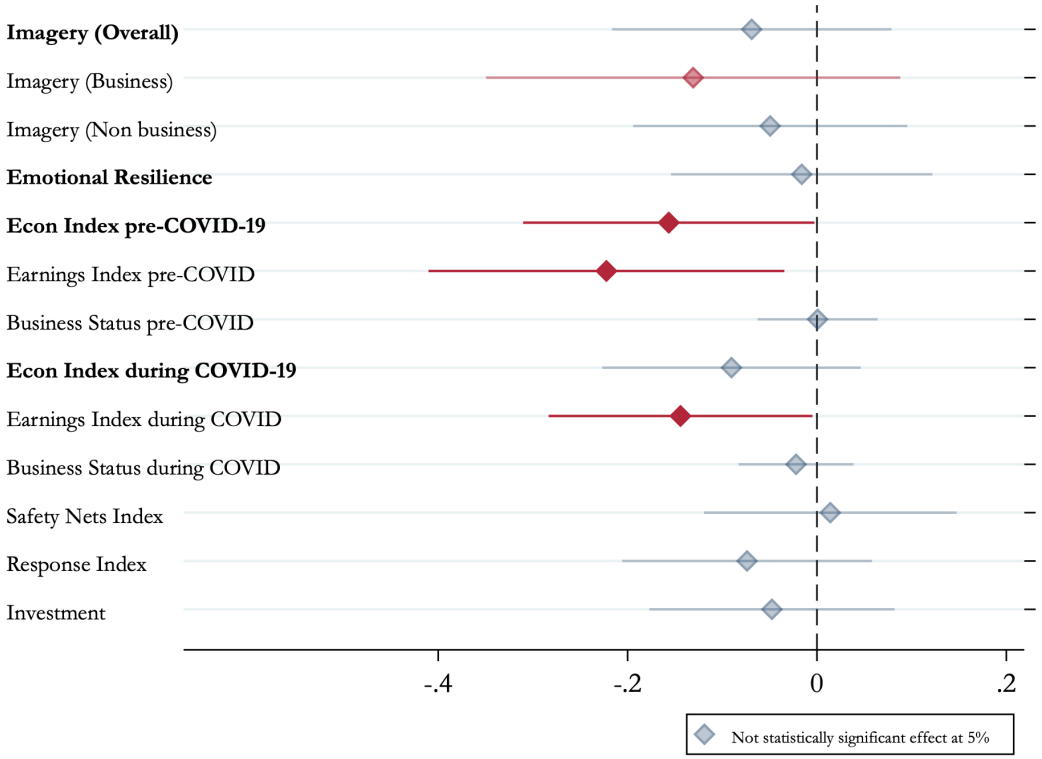


Figure 6: Effect of receiving the imagery relative to the traditional training



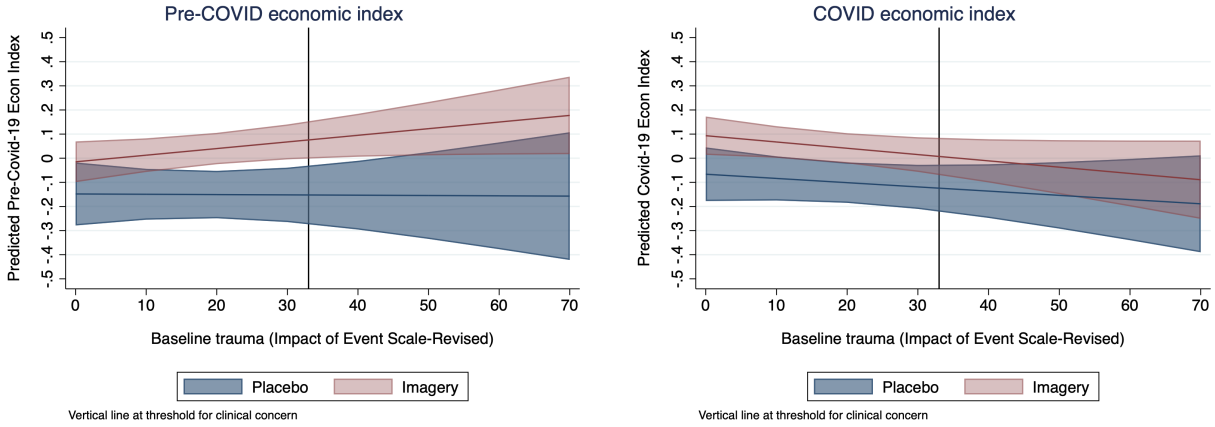
Notes: Markers indicate the difference-in-means on our standardised outcome measures between the imagery and placebo training, with 95% confidence intervals. Red markers indicate statistical significance at the 5% level, and light red markers significance at the 10% level. We combine our psychological outcomes into a single index measuring emotional resilience, and combine our economic outcomes to create two indices: pre-Covid-19 economic outcomes and economic outcomes during the Covid-19 pandemic. Higher values of all variables indicates better outcomes. The sample consists of people who confirmed participation in the training. We average across our two follow-up surveys and collapse the data to the household level, the unit of randomisation. Standard errors are clustered at the household level and we control for survey wave and subdivision-wave interaction fixed effects. Monetary variables are winsorised at the 99th percentile

Figure 7: Effect of receiving the placebo training relative to the no-intervention group



Notes: Markers indicate the difference-in-means on our standardised outcome measures between the traditional training and pure control, with 95% confidence intervals. Cranberry markers indicate significance at the 5% level, whereas light red markers indicate significance at the 10% level. Blue markers indicate that the result is not statistically significant at conventional levels. Higher values of all variables indicates better outcomes. We use the panel dataset, collapsed to the household level. Standard errors are clustered at the household level. Sample consists of people who confirmed participation in the training. Monetary variables are winsorised at the 99th percentile

Figure 8: Linear prediction of imagery training on economic outcomes, by baseline trauma



Notes: This figure plots the linear prediction of the effect of the imagery treatment on economic outcomes, by baseline trauma. The figure on the left plots the predicted condensed pre-Covid economic index for the imagery treatment (in pink) and placebo group (in blue) by baseline trauma, measured using the Impact of Event Scale-Revised score. The figure on the right plots the predicted condensed economic index during the Covid-19 pandemic for both treatment arms. The vertical line at the score of 33 indicates the level above which trauma symptoms become a clinical concern.

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Appendix figures and tables

Table A1: Breakdown of sample by subdivision and treatment status

Subdivision	Imagery training	Placebo training	No-intervention group	Total
Youth	557	300	264	1121
Territorial	234	136	131	501
LGBT	12	12	12	36
Disabilities	59	41	17	117
Formerly homeless	39	35	29	103
Elderly	55	34	0	89
Total	956	558	453	1967

Notes: The "Territorial" subdivision includes victims of conflict and Venezuelan migrants. SDIS were unable to recruit enough participants for the smaller sub-divisions in some waves to construct a no-intervention group. Hence, we include wave-subdivision fixed effects in all our analysis.

Table A2: Measurement: Imagery

Family 1: Imagery	
Index	**Question(s)**
a. Spontaneous Use of Imagery Scale (SUIS)	Respondents were asked "On a scale of 1 to 5, how much do you agree with this statement?", where numbers 1 to 5 meant respectively: Strongly disagree; Disagree; Neither agree nor disagree; Agree; Strongly agree. The statements used were as follows: • When I need to go to a meeting, I picture the route in my mind before going. • When I think about a customer using my product or service, I imagine the customer's experience through pictures and sensations in my mind. • When I think about the day ahead, I create mental pictures of all the tasks I must do. • When I am faced with difficult situations, I mentally experience the actions I could take and the consequences of those actions before reacting. • When I think about the type of business I want to have, I live the experience of running that business in my mind. • When I feel overwhelmed, I find a mental place or time where I feel safe and calm. • When someone is upset with me, I live that person's experience in my mind to understand what might have caused the situation. • When I buy an asset for my business, an image of owning the asset pops up in my mind before buying it.
b. Adapted Prospective Imagery Task (PIT) Positive Emotional Valence	**Adapted Prospective Imagery Task (PIT) – positive statements and questions on emotional valence.** What is the intensity of the emotion produced in you by this image, using a scale from 1 to 5 where 1 means "no emotion at all", 2 "little, but weak emotions", 3 "moderate emotions", 4 "strong emotions" and 5 "extremely strong emotions"? • I first want you to imagine that the COVID-19 pandemic is over, and you save enough money to buy an asset you really want. • Now I want you to imagine the COVID-19 pandemic is over and you spend quality time with your family and friends. • Now I want you to imagine that the COVID-19 pandemic is over, and your business is doing well.
PIT Negative Emotional Valence	**Adapted Prospective Imagery Task (PIT) – negative statements and questions on emotional valence.** What is the intensity of the emotion produced in you by this image, using a scale from 1 to 5 where 1 means "no emotion at all", 2 "little, but weak emotions", 3 "moderate emotions", 4 "strong emotions" and 5 "extremely strong emotions"? • In the first scenario, I want you to imagine that the COVID-19 pandemic is over, and you are struggling to make ends meet. • Now I want you to imagine that the COVID-19 pandemic is over, and you have had a serious disagreement with someone close to you. • Now, I want you to imagine that the COVID-19 pandemic is over and your business closes
PIT Positive Vividness	**Adapted Prospective Imagery Task (PIT) – positive statements and questions on vividness of image.** Using a scale for the mental image where 1 means "no image at all", 2 means "vague and dim", 3 means "moderately clear and vivid", 4 means "reasonably clear and vivid" and 5 means "perfectly clear and vivid", how detailed is this image from 1 to 5? • I first want you to imagine that the COVID-19 pandemic is over, and you save enough money to buy an asset you really want. • Now I want you to imagine the COVID-19 pandemic is over and you spend quality time with your family and friends. • Now I want you to imagine that the COVID-19 pandemic is over, and your business is doing well.
e. PIT Negative Vividness	**Adapted Prospective Imagery Task (PIT) – negative statements and questions on vividness of image.** Using a scale for the mental image where 1 means "no image at all", 2 means "vague and dim", 3 means "moderately clear and vivid", 4 means "reasonably clear and vivid" and 5 means "perfectly clear and vivid", how detailed is this image from 1 to 5? • In the first scenario, I want you to imagine that the COVID-19 pandemic is over, and you are struggling to make ends meet. • Now I want you to imagine that the COVID-19 pandemic is over, and you have had a serious disagreement with someone close to you. • Now, I want you to imagine that the COVID-19 pandemic is over and your business closes.

Table A3: Measurement: Psychological resilience

Family 2: Psychological Resilience	
Index	**Question(s)**
a. Psychological Resilience	On a scale of 1 to 5, how much do you agree with the following statements? We will use the same scale as before, where 1 means "I strongly disagree" and 5 means "I strongly agree". **Brief Resilient Coping Scale (Sinclair and Wallston, 2004)** • I am looking for creative ways to alter difficult situations. • Regardless of what happens to me, I am controlling my reaction to it. • I am growing in positive ways by dealing with difficult situations. • I am actively looking for ways to replace the losses I am encountering in life. **Brief Resilience Scale (adapted subset) (Smith et al., 2008)** • I believe that I will bounce back quickly after the COVID pandemic. **Self-efficacy (Chen et al., 2004)** • I will be able to achieve most of the goals that I have set for myself. • When facing difficult tasks, I am certain that I will accomplish them. • In general, I think that I can obtain outcomes that are important to me. • I believe I can succeed at any endeavor to which I set my mind. • I will be able to successfully overcome many challenges. • I am confident that I can perform effectively on many different tasks. • Compared to other people, I can do most tasks very well. • Even when things are tough, I can perform quite well.
b. Anxiety and Depression Scale	**Kessler Scale (Kessler et al. (2002)-** Consider how often you have felt the following emotions over the past 30 days on a scale from 1 to 5, where 1 means "never", 2 means "rarely", 3 means "sometime", 4 means "almost always" and 5 means "always": • About how often during the past 30 days did you feel nervous? • About how often during the past 30 days did you feel hopeless? • About how often during the past 30 days did you feel restless or fidgety? • About how often during the past 30 days did you feel so depressed that nothing could cheer you up? • About how often during the past 30 days did you feel that everything was difficult? • About how often during the past 30 days did you feel worthless?

Table A4: Measurement: Economic Outcomes Pre-Covid

Family 3a: Economic Outcomes Pre-Covid	
Index	**Question(s)**
a. Business Status Pre-Covid	• Dummy equal to 1 if the person had a business pre-COVID, 0 otherwise
b. Index constructed as: (Sales + Income) if business + Income if no business	• Please reflect on your best month of sales in the six months prior to the start of the lockdown. How much revenue did your main business receive from sales in total that month? Revenues mean every peso received in the business in exchange for a product or service sold to a customer. • How much income did you take home during a typical week in February this year?
c. Investment Pre-Covid	In the past nine months, since September 2019, did you invest in the following categories for your business, to acquire a new asset or significantly improve an existing asset? (yes/no answers) A. Tools and utensils for manual work B. Machinery and equipment for production C. Vehicles used in your business D. Land, space in a shop or building E. Other physical assets F. Training for yourself G. Software or computer programs

Table A5: Measurement: Economic Outcomes During Covid

Family 3b: Economic Outcomes During Covid	
Index	**Question(s)**
a. Business Status During Covid	• Dummy equal to 1 if the person has a business which is NOT permanently closed, 0 if the person has no business or the business has permanently closed during COVID (since March 2020)
b. Earnings	Index constructed as: (Sales + Income) if business (currently open or temporarily closed) + Incomes if no business (permanently closed and/or no business pre-COVID) • In the last 30 days, how much revenue did your main business receive from sales? Revenues mean every peso received the business in exchange for a product or service sold to a customer. • In total, how much income did you personally take home last week?
c. Actual and perceived safety nets during COVID-19	Please tell us how much you agree with the following statements using the same scale as before from 1 to 5, where 1 means that "I strongly disagree" and 5 means that "I strongly agree". • I had an adequate amount of personal savings to ensure my safety for the first two months of the lockdown (scale 1-5) • I have enough cash to cover my ongoing expenses for the next week (scale 1-5) • If I had to find $200,000 pesos in the next month, I would be able to obtain them with ease (scale 1-5) *Savings* • Please reflect on your best savings week in the six months prior the lockdown. How much did you save during that week, from all your income-generating activities?
d. Business behavioural response to COVID-19	I am now going to ask you questions about your business response to the COVID- 19 pandemic. Please respond yes, no or doesn't apply, if the question does not apply to you. (yes/no answers) • Have you rearranged for yourself or workers to work from home? • Have you adapted your main business to meet the social distance criteria and adopt safety and sanitation measures so that your customers and workers are less exposed to COVID-19? • Have you identified alternative ways to access raw materials or alternate suppliers, should there be disruptions in your supply chain? • Do you consult your suppliers and customers more regularly to assess their situations? • Do you work out your operational costs more frequently than before the lockdown (such as rent, supplies, among others)? • Have you identified new business opportunities for your main business that could increase sales, which still adhere with government regulations? • Has your main business begun or increased the use of the Internet, online social networks, apps or digital platforms to sell your products or services? • Have you had conversations with the people or institutions who have lent your credit to assess flexibility on loan requirements? • Have you collaborated or talked with other entrepreneurs like you to share health and safety practices, stock or equipment, among others? • Has your main business requested (or is benefiting from) any government measure, either local or national, issued in response to the COVID-19 outbreak? • If open: Have you started selling new products or services in your main business, since March 24, 2020? • If closed temporarily: Do you plan to make changes to your business before reopening, such as changing your products or services or the way in which you produce or distribute? • Have you opened a new business since the lockdown started that is still operating, in other words, since March 24, 2020? **"Safe" working hours sub-index** *Sub-index of "safe" working hours constructed as the sum of total hours worked, multiplied by the share of hours worked in safety* • How many hours did you work specifically on your main business last week? • How many hours did you work specifically on your new business last week? • How many hours did you work in total last week for someone else, for a wage? • Of the hours you said you worked last week, how many hours did you work following social distancing, frequent handwashing, use of face mask and working from home if possible? (0, 1/4, 1/2, 3/4, 1)

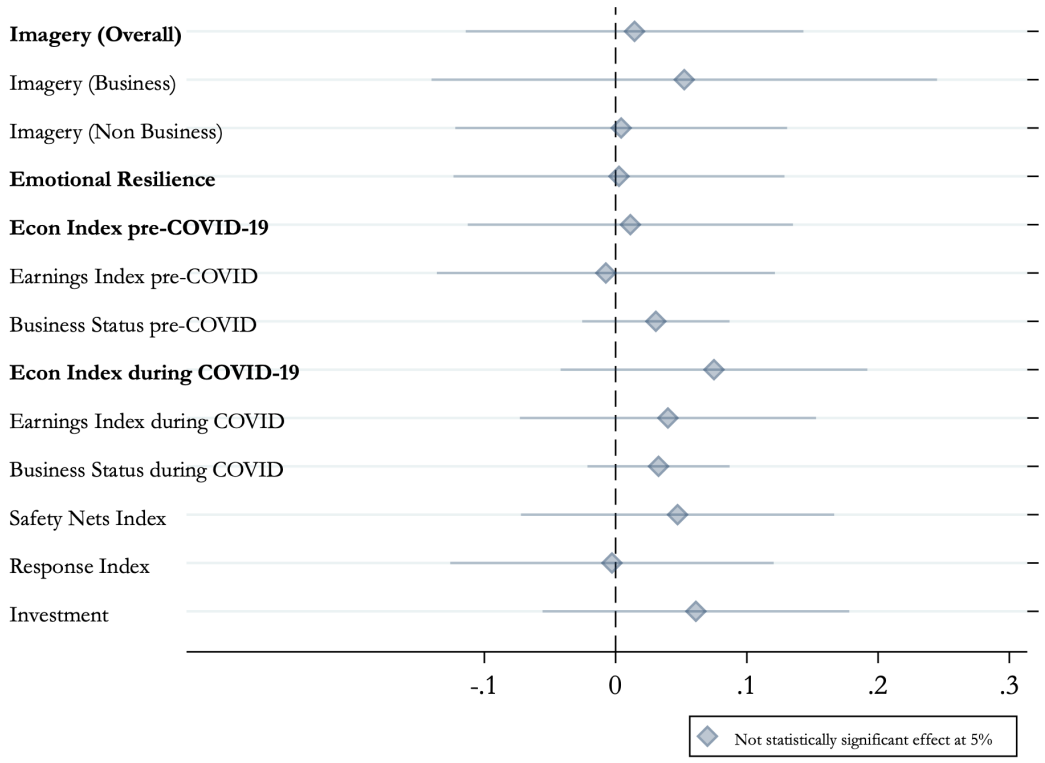
Table A6: Business imagery in sub-sample with business at baseline

	Combined imagery index	Imagery sub-components					Perceived likelihood	
	(1) Imagery (business)	(2) SUIS	(3) Positive PIT Vivid	(4) Postive PIT Emotions	(5) Negative PIT Vivid	(6) Negative PIT Emotions	(7) Positive Likelihood	(8) Negative Likelihood
Panel A: Imagery vs traditional training								
Imagery treat	0.1746*	0.0831	0.0570	0.0422	0.1543*	0.1618*	0.0218	0.0382
	(0.0946)	(0.0900)	(0.0931)	(0.0873)	(0.0853)	(0.0834)	(0.0810)	(0.0849)
FDR q-value		1.000	1.000	1.000	0.332	0.332	1.000	1.000
Panel B: Traditional training vs pure control								
Traditional treat	-0.1050	-0.0320	-0.0894	-0.0477	-0.0865	-0.0504	-0.0467	0.0000
	(0.1098)	(0.1095)	(0.1128)	(0.1004)	(0.0980)	(0.1013)	(0.0975)	(0.0984)
FDR q-value		1.000	1.000	1.000	1.000	1.000	1.000	1.000
Summary statistics								
Mean DV in PC	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Mean DV in Traditional treat	-0.100	0.000	0.000	-0.100	-0.100	0.000	0.000	0.000
Number of observations								
N in PC	246	246	246	246	245	246	246	246
N in Traditional treat	290	290	288	288	287	286	288	287
N in Imagery treat	520	519	516	516	514	515	515	515
Controls								
Strata Controls	✓	✓	✓	✓	✓	✓	✓	✓
Survey Wave FE	✓	✓	✓	✓	✓	✓	✓	✓
Wave-Subpop FE	✓	✓	✓	✓	✓	✓	✓	✓

Notes: The table presents the main results on imagery outcomes, for the sample of people with business at baseline and business-imagery only. Panel A presents the comparison of the imagery treatment with respect to the traditional training, and Panel B the comparison of the traditional treatment with respect to the pure control. Column 1 presents results for business specific imagery. The index include the SUIS measure and the PIT measures of vividness and emotional intensity, for business-scenarios only. Columns 2 to 6 decompose the overall business imagery index into its constituent parts: Column 2 presents the standardised SUIS index, which captures the frequency with which people use imagery, Columns 3 to 6 present results on the self-reported quality of scenarios imagined using the PIT scale, with columns 3 and 4 focusing on positive future scenarios and columns 5 and 6 on negative future scenarios. The last two Columns present the perceived likelihood of positive and negative scenarios from the PIT scale. Data include the two follow-up surveys and control for survey wave, so the number of observations includes repeated observations for each participant. We collapse the data to household level in the case where more than one household member participated in the training, and standard errors clustered at the household level are presented in parenthesis. Strata control include stratification variables (gender, income brackets, business status and age) and subdivision-wave fixed effects. The sample consists of people who confirmed participation in the training prior to knowing their treatment status. Rows "FDR q-value" calculate the false discovery rate q-values within each panel and across columns 2 to 6 following the sharpened two-stage procedure of Benjamini, Krieger, and Yekutieli (2006). * p<0.10, ** p<0.05, *** p<0.01

* p<0.10, ** p<0.05, *** p<0.01

Figure A1: Effect of receiving the imagery training relative to the no-intervention group



Notes: Markers indicate the standardised mean treatment effect of receiving the imagery training on pre-specified outcomes (bold) and sub-indices (normal), with 95% confidence intervals shown. Solid markers indicate significance at the 5% level. Higher values of all variables indicates better outcomes. We use the panel dataset, collapsed to the household level. Standard errors are clustered at the household level. Sample consists of people who confirmed participation in the training. Monetary variables are winsorised at the 99th percentile.

Table A7: Imagery vs No-intervention: Effect on Downstream Outcomes

			Pre-COVID		COVID					COVID	
	(1) Imagery non-business	(2) Imagery business	(3) Earnings	(4) Business survival	(5) Earnings	(6) Business survival	(7) Safety nets	(8) Business behaviour	(9) Investment	(10) Kessler	(11) Psych resilience
Imagery training	-0.013	0.052	-0.007	0.031	0.040	0.033	0.047	-0.003	0.061	0.011	-0.049
	(0.093)	(0.098)	(0.066)	(0.029)	(0.057)	(0.028)	(0.061)	(0.063)	(0.060)	(0.064)	(0.066)
Strata Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Survey Wave FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Wave-Subpop FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mean DV (No-int)	0	0	0	0.69	0	0.65	0	0	0	0	0
R-squared	0.042	0.056	0.056	0.187	0.031	0.098	0.030	0.020	0.054	0.037	0.016
Total N	873	753	988	1,012	1,654	1,697	1,680	1,693	1,723	1,678	1,679
N in No-int	278	241	323	333	539	552	546	551	564	545	545
N in Imagery	595	513	665	679	1,115	1,145	1,134	1,142	1,159	1,133	1,134

Notes: The table presents standardised mean treatment effects of receiving the imagery training relative to the no-intervention group. Standard errors clustered at the household level are presented in parenthesis. False discovery rate q-values over the family of economic outcomes and the family of psychological outcomes are calculated following the sharpened two-stage procedure of Benjamini, Krieger, and Yekutieli (2006). We pool the two follow-up surveys and collapse the data to household level in the case where more than one household member participated in the training. The sample consists of people who confirmed participation in the training prior to knowing their treatment status.
* p<0.10, ** p<0.05, *** p<0.01

Table A8: Attrition Acceptance

Variable	(1) Imagery Treatment N	Mean/SE	(2) Placebo Treatment N	Mean/SE	(3) Pure Control N	Mean/SE	T-test Difference (1)-(2)	(1)-(3)	(2)-(3)	F-test for joint orthogonality
Female	795	0.574	461	0.579	415	0.571	-0.006	0.003	0.008	0.032
		(0.018)		(0.023)		(0.024)				
Age (18-28)	795	0.591	461	0.573	415	0.629	0.019	-0.038	-0.056*	1.491
		(0.017)		(0.023)		(0.024)				
Age (29-45)	795	0.245	461	0.249	415	0.272	-0.004	-0.027	-0.023	0.548
		(0.015)		(0.020)		(0.022)				
Age (46-59)	795	0.096	461	0.119	415	0.094	-0.024	0.002	0.025	1.079
		(0.010)		(0.015)		(0.014)				
Years Education	657	13.157	387	13.035	327	13.366	0.122	-0.209	-0.331	0.877
		(0.129)		(0.182)		(0.173)				
Only Business Owner	795	0.245	461	0.245	415	0.236	0.000	0.009	0.009	0.070
		(0.015)		(0.020)		(0.021)				
Only Have a Business Idea	795	0.477	461	0.477	415	0.494	-0.000	-0.017	-0.017	0.182
		(0.018)		(0.023)		(0.025)				
Have Business and Business Idea	795	0.278	461	0.275	415	0.270	0.002	0.008	0.006	0.045
		(0.016)		(0.021)		(0.022)				
Income Strat: Sales $\leq$ 1 month salary	795	0.665	461	0.677	415	0.641	-0.011	0.024	0.036	0.655
		(0.017)		(0.022)		(0.024)				
Income Strat: Sales $>$ 1 month salary	795	0.238	461	0.221	415	0.248	0.016	-0.010	-0.027	0.455
		(0.015)		(0.019)		(0.021)				
Refused to Provide Income	795	0.097	461	0.102	415	0.111	-0.005	-0.014	-0.009	0.292
		(0.010)		(0.014)		(0.015)				
Assets Owned	657	11.661	387	11.894	327	11.835	-0.233	-0.175	0.058	0.508
		(0.150)		(0.201)		(0.209)				
Household size	657	3.452	386	3.609	326	3.650	-0.157	-0.197*	-0.041	2.143
		(0.059)		(0.082)		(0.095)				
Save Monthly Y/N	654	0.549	387	0.535	326	0.580	0.014	-0.031	-0.045	0.748
		(0.019)		(0.025)		(0.027)				
Had Access to Credit	654	0.153	386	0.150	326	0.138	0.003	0.015	0.012	0.195
		(0.014)		(0.018)		(0.019)				
No. of Traumatic Events	795	2.247	461	2.342	415	2.308	-0.095	-0.061	0.034	0.249
		(0.083)		(0.110)		(0.125)				
Reported Experiencing Trauma (Y/N)	657	0.826	387	0.837	326	0.844	-0.011	-0.017	-0.006	0.254
		(0.015)		(0.019)		(0.020)				
Impact of Event Score	649	17.645	386	17.142	324	17.785	0.503	-0.140	-0.643	0.091
		(0.874)		(1.120)		(1.164)				
Kessler Score	657	13.098	387	13.187	326	13.138	-0.090	-0.040	0.050	0.061
		(0.160)		(0.202)		(0.220)				
Wave 1 Participant	795	0.307	461	0.384	415	0.304	-0.077***	0.003	0.080**	4.655***
		(0.016)		(0.023)		(0.023)				

Notes: The table presents a balance test at acceptance of the training for all three treatment arms. Columns 1, 2, and 3 show the sample size, mean, and standard errors for the imagery treatment, placebo treatment, and no-intervention groups, respectively. The following 3 columns show the differences between treatment arms and p-values for t-tests measuring differences between treatment arms. The final column presents an F-test across all three treatment arms. * p<0.10, ** p<0.05, *** p<0.01

Table A9: Attrition in the first follow-up survey

	(1) Imagery Treatment		(2) Placebo Treatment		(3) Pure Control		T-test Difference			F-test for joint
Variable	N	Mean/SE	N	Mean/SE	N	Mean/SE	(1)-(2)	(1)-(3)	(2)-(3)	orthogonality
Female	681	0.567	392	0.602	304	0.569	-0.035	-0.002	0.033	0.686
		(0.019)		(0.025)		(0.028)				
Age (18-28)	681	0.608	392	0.569	304	0.605	0.039	0.003	-0.036	0.853
		(0.019)		(0.025)		(0.028)				
Age (29-45)	681	0.223	392	0.258	304	0.276	-0.034	-0.053*	-0.019	1.852
		(0.016)		(0.022)		(0.026)				
Age (46-59)	681	0.103	392	0.133	304	0.115	-0.030	-0.012	0.018	1.100
		(0.012)		(0.017)		(0.018)				
Years Education	581	12.917	338	13.015	257	13.126	-0.098	-0.209	-0.112	0.354
		(0.137)		(0.198)		(0.198)				
Only Business Owner	681	0.253	392	0.255	304	0.240	-0.003	0.012	0.015	0.117
		(0.017)		(0.022)		(0.025)				
Only Have a Business Idea	681	0.493	392	0.485	304	0.500	0.009	-0.007	-0.015	0.083
		(0.019)		(0.025)		(0.029)				
Have Business and Business Idea	681	0.254	392	0.258	304	0.260	-0.004	-0.006	-0.002	0.021
		(0.017)		(0.022)		(0.025)				
Income Strat: Sales $\leq$ 1 month salary	681	0.687	392	0.696	304	0.674	-0.009	0.013	0.022	0.194
		(0.018)		(0.023)		(0.027)				
Income Strat: Sales $>$ 1 month salary	681	0.229	392	0.202	304	0.220	0.028	0.009	-0.019	0.552
		(0.016)		(0.020)		(0.024)				
Refused to Provide Income	681	0.084	392	0.102	304	0.105	-0.018	-0.022	-0.003	0.800
		(0.011)		(0.015)		(0.018)				
Assets Owned	581	11.482	338	11.695	257	11.705	-0.213	-0.223	-0.010	0.474
		(0.159)		(0.211)		(0.234)				
Household Size	580	3.536	337	3.641	256	3.749	-0.105	-0.213*	-0.108	1.641
		(0.065)		(0.086)		(0.110)				
Save Monthly Y/N	578	0.559	338	0.536	256	0.559	0.023	0.000	-0.023	0.262
		(0.021)		(0.027)		(0.031)				
Had Access to Credit	578	0.152	337	0.139	256	0.137	0.013	0.016	0.003	0.234
		(0.015)		(0.019)		(0.022)				
No. of Traumatic Events	681	2.360	392	2.583	304	2.550	-0.223	-0.190	0.033	1.261
		(0.091)		(0.126)		(0.148)				
Reported Experiencing Trauma (Y/N)	580	0.833	338	0.861	256	0.855	-0.028	-0.023	0.005	0.766
		(0.016)		(0.019)		(0.022)				
Impact of Event Score	573	18.348	337	18.539	254	18.385	-0.190	-0.036	0.154	0.008
		(0.935)		(1.252)		(1.339)				
Kessler Score	580	13.073	338	13.376	256	13.121	-0.302	-0.048	0.254	0.608
		(0.172)		(0.221)		(0.250)				
Wave 1 Participant	681	0.300	392	0.362	304	0.296	-0.063**	0.004	0.066*	2.645*
		(0.018)		(0.024)		(0.026)				

Notes: The table presents a balance test at the first follow up survey for all three treatment arms. Columns 1, 2, and 3 show the sample size, mean, and standard errors for the imagery treatment, placebo treatment, and no-intervention groups, respectively. The following 3 columns show the differences between treatment arms and p-values for t-tests measuring differences between treatment arms. The final column presents an F-test across all three treatment arms. * p<0.10, ** p<0.05, *** p<0.01

Table A10: Endline Attrition Table

	(1) Imagery Treatment		(2) Placebo Treatment		(3) Pure Control		T-test Difference			F-test for joint
Variable	N	Mean/SE	N	Mean/SE	N	Mean/SE	(1)-(2)	(1)-(3)	(2)-(3)	orthogonality
Female	579	0.573	341	0.610	251	0.594	-0.037	-0.020	0.016	0.610
		(0.021)		(0.026)		(0.031)				
Age (18-28)	579	0.604	341	0.540	251	0.610	0.065*	-0.005	-0.070*	2.212
		(0.020)		(0.027)		(0.031)				
Age (29-45)	579	0.237	341	0.258	251	0.291	-0.021	-0.054*	-0.033	1.373
		(0.018)		(0.024)		(0.029)				
Age (46-59)	579	0.100	341	0.147	251	0.092	-0.046**	0.009	0.055**	2.997*
		(0.012)		(0.019)		(0.018)				
Years Education	497	12.949	294	12.885	216	13.216	0.063	-0.267	-0.331	0.658
		(0.148)		(0.210)		(0.222)				
Only Business Owner	579	0.254	341	0.258	251	0.239	-0.004	0.015	0.019	0.150
		(0.018)		(0.024)		(0.027)				
Only Have a Business Idea	579	0.491	341	0.504	251	0.490	-0.014	0.000	0.014	0.095
		(0.021)		(0.027)		(0.032)				
Have Business and Business Idea	579	0.256	341	0.235	251	0.271	0.021	-0.015	-0.036	0.528
		(0.018)		(0.023)		(0.028)				
Income Strat: Sales $\leq$ 1 month salary	579	0.705	341	0.674	251	0.689	0.030	0.015	-0.015	0.466
		(0.019)		(0.025)		(0.029)				
Income Strat: Sales $>$ 1 month salary	579	0.211	341	0.220	251	0.207	-0.009	0.004	0.013	0.083
		(0.017)		(0.022)		(0.026)				
Refused to Provide Income	579	0.085	341	0.106	251	0.104	-0.021	-0.019	0.002	0.692
		(0.012)		(0.017)		(0.019)				
Assets Owned	497	11.468	294	11.532	216	11.634	-0.065	-0.166	-0.102	0.147
		(0.170)		(0.225)		(0.249)				
Household Size	496	3.504	293	3.635	215	3.715	-0.130	-0.211	-0.080	1.536
		(0.068)		(0.090)		(0.120)				
Save Monthly Y/N	494	0.559	294	0.527	215	0.563	0.031	-0.004	-0.036	0.454
		(0.022)		(0.029)		(0.034)				
Had Access to Credit	494	0.160	294	0.156	215	0.149	0.003	0.011	0.008	0.069
		(0.017)		(0.021)		(0.024)				
No. of Traumatic Events	579	2.389	341	2.567	251	2.597	-0.179	-0.208	-0.029	0.897
		(0.099)		(0.134)		(0.165)				
Reported Experiencing Trauma (Y/N)	496	0.837	294	0.864	215	0.842	-0.027	-0.005	0.022	0.540
		(0.017)		(0.020)		(0.025)				
Impact of Event Score	490	18.320	294	18.459	215	18.276	-0.139	0.043	0.183	0.005
		(1.023)		(1.339)		(1.442)				
Kessler Score	496	13.149	294	13.287	215	13.093	-0.138	0.056	0.194	0.162
		(0.188)		(0.231)		(0.280)				
Wave 1 Participant	579	0.306	341	0.370	251	0.319	-0.064**	-0.013	0.051	2.037
		(0.019)		(0.026)		(0.029)				

Notes: The table presents a balance test at the second follow up survey for all three treatment arms. Columns 1, 2, and 3 show the sample size, mean, and standard errors for the imagery treatment, placebo treatment, and no-intervention groups, respectively. The following 3 columns show the differences between treatment arm[In results or discussion?– Entrepreneurship and business activity as a woman can be particularly emotionally demanding, especially in countries with traditional gender norms where women face greater barriers (Ashraf, Delfino, and Glaeser, 2019). [In results or discussion?– Entrepreneurship and business activity as a woman can be particularly emotionally demanding, especially in countries with traditional gender norms where women face greater barriers (Ashraf, Delfino, and Glaeser, 2019). s and p-values for t-tests measuring differences between treatment arms. The final column presents an F-test across all three treatment arms. * p<0.10, ** p<0.05, *** p<0.01

Table A11: Effect on downstream outcomes, by trauma

	Pre-COVID			COVID								
	(1) Combined	(2) Earnings	(3) Business survival	(4) Combined	(5) Earnings	(6) Business survival	(7) Safety nets	(8) Business behavior	(9) Investment	(10) Psych resilience (combined)	(11) Kessler	(12) Psych resilience
High-Trauma												
Panel A - HT: Imagery vs traditional training												
Imagery treat	0.2560	0.3283	0.0804	0.1251	0.1572	0.1030*	-0.0003	0.0015	0.0815	0.0700	0.0827	-0.0514
	(0.1559)	(0.2158)	(0.0614)	(0.1238)	(0.1255)	(0.0579)	(0.1217)	(0.1189)	(0.1207)	(0.1331)	(0.1325)	(0.1399)
Panel B - HT: Traditional training vs pure control												
Traditional treat	-0.3500**	-0.5050**	-0.0301	-0.1206	-0.2337*	-0.0345	0.0298	-0.0148	-0.1612	0.0599	0.0776	-0.0697
	(0.1767)	(0.2274)	(0.0742)	(0.1389)	(0.1351)	(0.0690)	(0.1460)	(0.1327)	(0.1424)	(0.1612)	(0.1578)	(0.1661)
Low-Trauma												
Panel A - LT: Imagery vs traditional training												
Imagery treat	0.1475*	0.2018*	0.0132	0.1454*	0.1107	0.0664**	0.0418	0.0663	0.1012	-0.0078	0.0021	-0.0268
	(0.0838)	(0.1060)	(0.0327)	(0.0747)	(0.0753)	(0.0310)	(0.0704)	(0.0700)	(0.0660)	(0.0667)	(0.0657)	(0.0760)
Panel B - LT: Traditional training vs pure control												
Traditional treat	-0.1447	-0.2123*	-0.0089	-0.0771	-0.1094	-0.0324	0.0104	-0.0689	-0.0037	-0.0555	-0.0634	-0.0180
	(0.0984)	(0.1227)	(0.0404)	(0.0872)	(0.0898)	(0.0390)	(0.0834)	(0.0842)	(0.0831)	(0.0819)	(0.0814)	(0.0900)
F-tests of equality of coefficients												
H=L in Imagery Treat	0.471	0.956	0.106	0.082	0.464	0.784	0.017	0.581	0.920	0.000	0.000	0.483
H=L in Traditional Treat	0.705	0.620	0.908	0.343	0.289	0.778	0.189	0.742	0.963	0.000	0.000	0.956
DID: [H_imag-H_trad]-[L_imag-L_trad]	0.524	0.583	0.314	0.886	0.745	0.568	0.759	0.631	0.883	0.592	0.576	0.874
DID: [H_trad-H_pc]-[L_trad-L_pc]	0.284	0.230	0.790	0.784	0.428	0.978	0.905	0.722	0.323	0.508	0.410	0.776
Summary statistics												
Mean DV in PC and HT	0.000	0.000	0.700	-0.100	-0.100	0.700	-0.200	0.000	0.100	-0.500	-0.500	0.000
Mean DV in PC and LT	0.000	0.000	0.700	0.000	0.000	0.600	0.100	0.000	0.000	0.200	0.200	0.000
Mean DV in Traditional treat and HT	-0.300	-0.400	0.700	-0.300	-0.300	0.600	-0.200	0.000	-0.100	-0.400	-0.400	0.000
Mean DV in Traditional treat and LT	-0.100	-0.200	0.700	-0.100	-0.100	0.700	0.000	-0.100	0.000	0.100	0.100	0.000
Number of observations												
N in PC	346	323	333	552	539	552	546	551	564	545	545	545
N in Traditional treat	407	380	392	660	642	659	650	657	667	649	647	649
N in Imagery treat	704	665	679	1147	1115	1145	1134	1142	1159	1134	1133	1134
Controls												
Strata Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Survey Wave FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Wave-Subpop FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Notes: The table presents treatment effects for downstream economic and psychological outcomes by gender. Here we compare the imagery to the traditional training arm (Panel A) and traditional with pure control (Panel B) for both males and females. Columns (1) and (4) contain overall indexes of economic outcomes. The index in Column (1) include earnings and business survival, while the index in Column (2) includes earnings, business survival, safety nets, business behavior and investment. In Columns (2) and (5) the outcome is an earnings index, which include both income and business sales and it is standardised to be mean zero and unitary standard deviation in the no-intervention control group. In Columns (3) and (6), the outcome is a dummy equal to one if the person has an operating business. The outcome in Column (7) is an index of "safety nets", which includes savings in the pre-Covid period and respondents' perceptions of informal support networks during the pandemic. Column (8) shows results for an index of "business behavior", which averages answers to a list of thirteen business behaviours, ranging from setting up a safe work environments to identifying alternative supply chains to diversifying their products. We combine the index of behaviours with a sub-index of reverse-coded "unsafe" working hours, defined as the proportion of total hours worked "unsafely" in which social distancing, frequent hand washing, the use of face masks or home working were not adhered to (the government Covid-19 guidelines of the day). Column (9) shows results for an "investment" index, which averages answers to a series of yes/no questions on investment for the business. Column (11) shows the results for on the Kessler anxiety and depression scale, which is reverse-coded to that higher values correspond to better psychological welfare. Column (12) shows results for an index of psychological resilience, which includes a scale of self-efficacy and one for resilience. Column (10) aggregates the last two indexes in a combined index. For more detail on the construction of the different indexes, see Section 6. False discovery rate q-values over the family of economic outcomes and, separately, the family of psychological outcomes are calculated following the sharpened two-stage procedure of Benjamini, Krieger, and Yekutieli (2006).Data include the two follow-up surveys and control for survey wave, so the number of observations includes repeated observations for each participant. Standard errors clustered at the household level are presented in parenthesis. Differences in number of observations between columns come from the fact that Pre-Covid outcomes were asked only in the midline survey, while outcomes during Covid were asked in both survey waves. We collapse the data to household level (the unit of randomisation) in the case where more than one household member participated in the training. Strata control include stratification variables (gender, income brackets, business status and age) and subdivision-wave fixed effects. The sample consists of people who confirmed participation in the training prior to knowing their treatment status. * p<0.10, ** p<0.05, *** p<0.01

Table A12: Attrition Booster

Variable	(1) No Reply N	(1) No Reply Mean/SE	(2) Reply N	(2) Reply Mean/SE	T-test Difference (1)-(2)
Female	1157	0.544	802	0.587	-0.044*
		(0.015)		(0.017)	
Age (18-28)	1157	0.599	802	0.557	0.042*
		(0.014)		(0.018)	
Age (29-45)	1157	0.251	802	0.264	-0.014
		(0.013)		(0.016)	
Age (46-59)	1157	0.097	802	0.127	-0.030**
		(0.009)		(0.012)	
Only Business Owner	1157	0.220	802	0.254	-0.035*
		(0.012)		(0.015)	
Only Have a Business Idea	1157	0.493	802	0.507	-0.015
		(0.015)		(0.018)	
Have Business and Business Idea	1157	0.287	802	0.238	0.049**
		(0.013)		(0.015)	
Income Strat: Sales $\leq$ 1 month salary	1157	0.640	802	0.717	-0.077***
		(0.014)		(0.016)	
Income Strat: Sales $>$ 1 month salary	1157	0.255	802	0.195	0.060***
		(0.013)		(0.014)	
Income Strat: Sales Answer Refusal	1157	0.105	802	0.089	0.016
		(0.009)		(0.010)	
Imagery	1157	0.498	802	0.469	0.029
		(0.015)		(0.018)	
Business	1157	0.269	802	0.304	-0.035*
		(0.013)		(0.016)	
Control	1157	0.233	802	0.227	0.006
		(0.012)		(0.015)	

Notes: The table shows differences along baseline variables between participants and non-participants to the 2021 Booster session.

Table A13: Balance Booster

	(1) Imagery Treatment		(2) Traditional Treatment		(3) Pure Control		T-test Difference		
Variable	N	Mean/SE	N	Mean/SE	N	Mean/SE	(1)-(2)	(1)-(3)	(2)-(3)
Female	376	0.588	244	0.598	182	0.571	-0.011	0.016	0.027
		(0.025)		(0.031)		(0.037)			
Age (18-28)	376	0.566	244	0.512	182	0.599	0.054	-0.032	-0.087*
		(0.026)		(0.032)		(0.036)			
Age (29-45)	376	0.250	244	0.275	182	0.280	-0.025	-0.030	-0.006
		(0.022)		(0.029)		(0.033)			
Age (46-59)	376	0.117	244	0.152	182	0.115	-0.035	0.002	0.036
		(0.017)		(0.023)		(0.024)			
Only Business Owner	376	0.261	244	0.258	182	0.236	0.002	0.024	0.022
		(0.023)		(0.028)		(0.032)			
Only Have a Business Idea	376	0.513	244	0.500	182	0.505	0.013	0.008	-0.005
		(0.026)		(0.032)		(0.037)			
Have Business and Business Idea	376	0.226	244	0.242	182	0.258	-0.016	-0.032	-0.016
		(0.022)		(0.027)		(0.033)			
Income Strat: Sales $\leq$ 1 month salary	376	0.734	244	0.709	182	0.692	0.025	0.042	0.017
		(0.023)		(0.029)		(0.034)			
Income Strat: Sales $>$ 1 month salary	376	0.191	244	0.189	182	0.209	0.003	-0.017	-0.020
		(0.020)		(0.025)		(0.030)			
Income Strat: Sales Answer Refusal	376	0.074	244	0.102	182	0.099	-0.028	-0.024	0.004
		(0.014)		(0.019)		(0.022)			

*Notes:*The table shows differences along baseline variables between treatment groups among participants to the 2021 Booster session.