



The impact of growth mindset training on entrepreneurial action among necessity entrepreneurs: Evidence from a randomized control trial

Shad Morris¹  | Chad Carlos¹ | Geoffrey M. Kistruck² | Robert B. Lount Jr³ | Tumsifu Elly Thomas⁴

¹Marriott School of Business, Brigham Young University, Provo, Utah, USA

²Social Innovation & Impact, Schulich School of Business, York University, Toronto, Ontario, Canada

³Fisher College of Business, The Ohio State University, Columbus, Ohio, USA

⁴University of Dar es Salaam, Dar es Salaam, Tanzania

Correspondence

Shad Morris, Department of Management, Brigham Young University, Provo, UT, USA.
Email: [moris@byu.edu](mailto:morris@byu.edu)

Funding information

Ballard Center for Social Impact at Brigham Young University; International Labor Organization; Social Sciences and Humanities Research Council of Canada Partnership Development Grant, Grant/Award Number: 890-2014-0059; Tanzania Social Action Fund

Abstract

Research Summary: Although entrepreneurship training programs are designed to help necessity entrepreneurs acquire skills and capabilities to take entrepreneurial action, participants in these programs often fail to do so. In partnership with a local government agency, we conducted a randomized field experiment involving 165 entrepreneurs in rural Tanzania where in addition to providing technical-skills training, approximately half of the participants also received “growth mindset” psychological training. Those who received the growth mindset training displayed more entrepreneurial action in their business than those in the control group. Importantly, higher levels of entrepreneurial self-efficacy mediated the positive impact on entrepreneurial action displayed by participants who received the growth mindset training. We discuss how complementing traditional technical-based training with growth mindset training can improve the efficacy of entrepreneurship training programs.

Managerial Summary: Entrepreneurship training programs often fall short in translating knowledge into action. To address this issue, we conducted an experiment with 165 entrepreneurs in rural Tanzania. All participants

This is an open access article under the terms of the [Creative Commons Attribution](https://creativecommons.org/licenses/by/4.0/) License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited.

© 2023 The Authors. *Strategic Entrepreneurship Journal* published by John Wiley & Sons Ltd on behalf of Strategic Management Society.

received technical-skills training, but half were also exposed to “growth mindset” training. Those who received the growth mindset training displayed greater initiative in business growth. The newfound confidence and grit they gained empowered them to apply learned principles effectively, ultimately enhancing the effectiveness of entrepreneurship training programs.

KEYWORDS

emerging economies, human capital, learning, opportunity, organizational behavior

1 | INTRODUCTION

Necessity entrepreneurs, prevalent in developing economies, engage in small subsistence businesses due to a lack of formal employment opportunities. Unlike opportunity entrepreneurs who pursue ventures based on identified opportunities, necessity entrepreneurs often operate for survival, constrained in their ability to identify and seize new prospects (Chilova et al., 2015; Nikiforou et al., 2019). Consequently, prevailing theories of entrepreneurial action that characterize opportunity entrepreneurs in developed markets may not fully apply to necessity entrepreneurs in developing economies (Alvarez & Barney, 2013; Busch & Barkema, 2021).

To address this, specialized training programs have been designed to equip necessity entrepreneurs with the skills necessary for entrepreneurial action (Anderson et al., 2018; Gielnik et al., 2014). While some studies have demonstrated the effectiveness of such programs (Alzua et al., 2020; Bandiera et al., 2018), limitations persist, demanding a deeper understanding of the most impactful training approaches (Bae et al., 2014; Bardasi et al., 2021; Berge & Pires, 2020; Quinn & Woodruff, 2019).

Rather than solely focusing on the usefulness or delivery of technical skills training, we propose considering the influence of “fixed mindsets” among necessity entrepreneurs - the belief that their abilities are unchangeable—which may impede their application of newly acquired skills. Given the profound effect of persistent poverty on mindset (Shah et al., 2012), individuals in necessity entrepreneurship situations may lack confidence in experimenting with business practices acquired through technical training compared with those not living in poverty (Wuepper & Lybbert, 2017). This lack of self-belief aligns with the concept of entrepreneurial self-efficacy, defined as the belief in one's capacity to succeed as an entrepreneur (McGee et al., 2009).

To address this psychological barrier, we hypothesize that integrating “growth mindset” training—the perception that abilities can improve through experimentation and failure (Dweck, 2006)—with existing entrepreneurship training can enhance entrepreneurial self-efficacy and subsequent entrepreneurial actions. By instilling the value of persistence and the growth potential of continuous effort, entrepreneurs may cultivate confidence in their abilities, leading to increased willingness to act on identified entrepreneurial opportunities. Our field experiment, conducted in rural Tanzania in collaboration with a local government organization, examines the impact of supplementing standard technical-based training with a growth mindset focus. Our findings shed light on the early stages of opportunity recognition and the entrepreneurial journey in emerging markets, urging scholars to expand on these insights to empower and enhance necessity entrepreneurs' businesses.



2 | THEORETICAL FOUNDATIONS

2.1 | Entrepreneurial training programs in the developing world

Research on entrepreneurship training in developing countries has proliferated in recent years (Foo et al., 2020), with much emphasis on the African context (e.g., Alzua et al., 2020; Anderson et al., 2021; Bandiera et al., 2020; Berge & Pires, 2020; Bischoff et al., 2020). The efficacy of these training programs has been a source of much debate (Martin et al., 2013). Some studies have observed positive effects of training on entrepreneurial outcomes (Galloway & Brown, 2002; Kolvereid & Moen, 1997; Zhao et al., 2005), whereas others have observed the opposite (Cox et al., 2002; Honig & Karlsson, 2004; Zampetakis et al., 2015). For example, Bardasi et al. (2021) found that training and coaching programs focused on entrepreneurs in urban Tanzania were not effective for less-experienced entrepreneurs who had less belief in their ability to succeed as entrepreneurs. A conclusion they draw from their research is that training programs should target more experienced entrepreneurs who already have confidence in their ability to experiment with new ideas received from their trainings. Likewise, Berge and Pires (2020) found that training programs in Tanzania were not as effective for entrepreneurs who had less time due to household responsibilities and resources to commit to their business. Such individuals may be unlikely to possess the belief in their ability to succeed as entrepreneurs.

In Uganda, Anderson et al. (2021) found that entrepreneurs were more likely to benefit from learning from international business professionals who focused on helping them experiment with new product differentiations. They also found that these effects tended to be strongest for entrepreneurs with greater experience, suggesting that training programs designed for opportunity entrepreneurs may not always translate effectively to necessity entrepreneurs. In a randomized experiment among entrepreneurs in Uganda, Alzua et al. (2020) found that in addition to giving access to credit, entrepreneurs require the skills that help them to appreciate the importance of personal responsibility and initiative in making business decisions. Young entrepreneurs who received this additional training were more likely to explore multiple forms of business finance such as supplier credit, grants, and loans from family and friends, rather than just relying upon microcredit agencies.

Studies in other African contexts have found similar results among necessity entrepreneurs, pointing to the need for training tailored to the needs of necessity entrepreneurs, who may lack the experience, knowledge, confidence, and personal initiative needed to benefit from traditional skills-based training programs and financing models (Bandiera et al., 2018; Fiala, 2018). For training programs to be successful, necessity entrepreneurs need to possess the belief, or entrepreneurial self-efficacy to actually implement the skills acquired from training programs and engage in what is known as entrepreneurial action. As described by McMullen and Shepherd (2006), entrepreneurial action involves, “a behavior in response to a judgmental decision under uncertainty” (p. 134) and requires entrepreneurs to move away from what has proven successful in their past operations and experiment with alternatives. One major obstacle to the effectiveness of training programs in Africa, as well as other emerging market contexts, seems to be the inability of training programs to help necessity entrepreneurs break out of habitual routines and engage in new activities to aid their business (Alvarez & Barney, 2013; Shantz et al., 2018).

2.2 | Psychological training for necessity entrepreneurs

To better evaluate the effectiveness of training programs for necessity entrepreneurs, scholars have called for deeper insights into the interplay between environmental, social, and psychological dimensions (Bischoff et al., 2020). Although still in its early stages, research on psychological dimensions provides promising results that motivate further research. For example, Bischoff et al. (2020) found that training individuals about financial mental models helped overcome the capital constraints faced by entrepreneurs in Uganda. Similarly, Campos et al. (2017) found that a training program that included personal initiative training was more effective than traditional training focused on technical dimensions.¹ Collectively, these studies emphasize that technical training alone may be

insufficient without some type of enhancement to the training that allows people to apply the skills and knowledge obtained from training programs (Campos et al., 2017; Gollwitzer et al., 1990).

We build directly on this line of research by introducing the concept of growth mindset to entrepreneurship training programs for necessity entrepreneurs. People with a growth mindset see failure as an opportunity to grow or improve in their knowledge and skills (Dweck, 2006). Although the psychological concept of growth mindset has been studied extensively in educational settings (Yeager & Dweck, 2020), it has received little attention from scholars of entrepreneurship, and even less so from scholars interested in necessity entrepreneurs in developing countries. As we explain below, a growth mindset framework is particularly relevant given the evidence of psychological challenges faced by necessity entrepreneurs.

Whereas scholars have sought to explain the unique challenges of individuals living in poverty by focusing on issues such as lack of proper education, housing, or healthcare (Bernheim et al., 2001), more recently scholars have focused on *how* the experience of poverty impacts psychological states and decision making (Hall et al., 2014; Mani et al., 2013; Mullainathan & Shafir, 2013). For example, researchers have begun to examine how a persistent lack of basic resources ultimately shapes “mindset” (Haushofer & Fehr, 2014). In explaining this link between socioeconomic status and mindset, Destin and colleagues argue that the “complex combination of a family’s financial resources, neighborhood surroundings, life experiences, social networks, and other aspects of daily life...appear to systematically shape the lens through which people navigate and understand their place in the world.” (Destin et al., 2019, p. 2). As a result, evidence suggests that marginalized and less experienced individuals living in persistent poverty are more likely to possess a “fixed-mindset,” which is a tendency to view their own set of knowledge and skills as relatively inflexible (Claro et al., 2016; Dweck, 2015; Sisk et al., 2018; Wuepper & Lybbert, 2017).

A fixed mindset presents a barrier for necessity entrepreneurs who must be able to act in challenging environments that require flexibility and experimentation to survive. Thus, for necessity entrepreneurs who experience a persistent lack of resources, and who tend to be marginalized in the world of business, a fixed mindset may limit the likelihood that they will possess sufficient entrepreneurial self-efficacy that would aid in the willingness to try new ways of doing things that can be seen as difficult or not guaranteed to work (Dencker et al., 2009). Growth mindset, on the other hand, emphasizes opportunities for growth and development through concepts such as “abilities are malleable” and “failure is a learning opportunity”. Training programs that help participants to develop a growth mindset may provide them with more confidence (i.e., entrepreneurial self-efficacy) in their ability to engage in new business practices (i.e., entrepreneurial action).

Entrepreneurial self-efficacy is a person’s belief in their ability to successfully start and improve a business (McGee et al., 2009). Entrepreneurial self-efficacy may be a result of an entrepreneur who is able to change their mindset about their ability to learn and differs from growth mindset in that it is directly tied to an entrepreneur’s belief in their ability to do something specific to running a successful business. Entrepreneurial self-efficacy has received a significant amount of attention within the training literature as a potentially important mechanism for linking the acquisition of entrepreneurial knowledge to subsequent changes in entrepreneurial behavior (Florin et al., 2007; McGee et al., 2009). This research sheds light on how a psychological intervention focused on learning and growth might alter an individual’s way of thinking about themselves in relation to their entrepreneurial abilities and how that may be a valuable type of human capital asset.

3 | HYPOTHESES

Instead of assuming that the issue with conventional technical skills training lies in the practicality of the skills being taught (e.g., McKenzie & Woodruff, 2014) or the method of instruction (e.g., Bischoff et al., 2020), we highlight the possibility that the “fixed mindsets” of necessity entrepreneurs may be an important factor in hindering their confidence in applying the newly learned skills effectively. This perspective considers the importance of examining how entrepreneurs’ mindsets can impact their belief in their ability to succeed.



This approach to training differs from traditional models focused on technical skills or even cognitive skills, like personal initiative. We propose that the variance in successful outcomes from training programs may have more to do with the existing fixed mindset of necessity entrepreneurs, leaving open the possibility that supplementing a skills training with “growth mindset” training that focuses on experimentation and breaking free of habitual routines, even amidst failure, may help necessity entrepreneurs make a cognitive leap to increased entrepreneurial self-efficacy, which can improve their ability to engage in entrepreneurial actions.

Training individuals to have more of a “growth” rather than “fixed” mindset has been shown to help people change long-held biases, and to alter habitual behavior. For example, growth mindset interventions have been shown to help students alter their fixed mindset in a way that allows them to take a longer term perspective (Cassidy, 2015; Rhew et al., 2018; Yeager et al., 2019). With respect to entrepreneurship, Reid and Ferguson (2011) conducted a study of university engineering students and found that students who exhibited a growth mindset were more likely to express a greater tolerance for ambiguity and to be more likely to recognize future opportunities.

We expect that a training intervention on growth mindset that augments existing training (i.e., financial literacy, analyzing market opportunities, and building the capacity to grow a business) should help to improve the number entrepreneurial action undertaken. Because the concept of growth mindset portrays action (even failures) as opportunities for growth, we expect that necessity entrepreneurs who receive growth mindset training, coupled with technical training, will be more likely to experiment with new business activities than those who receive only regular technical training.

Furthermore, we expect that that a training intervention on “growth-mindset” that augments existing training should help to improve entrepreneurial self-efficacy. These higher levels of entrepreneurial self-efficacy should there-in-turn help predict downstream entrepreneurial action as entrepreneurial self-efficacy plays a crucial role in determining whether individuals engage in entrepreneurial behaviors (Newman et al., 2019). Scholars have shown that entrepreneurial self-efficacy can lead to opportunity recognition (Tumasjan & Braun, 2012), goal commitment and task effort (Trevelyan, 2011), persistence (Cardon & Kirk, 2015), and innovation (Cumberland et al., 2015). Moreover, in a study of 243 entrepreneurs in Uganda, Nsereko et al. (2021) found entrepreneurial self-efficacy to be linked to new venture creation. Individuals who possess a belief that their capabilities can be improved, as encouraged by growth mindset training, may be more likely to come up with and initiate entrepreneurial activity.

Taken together, we argue that the introduction of growth-mindset training will provide participants with more confidence in their ability to engage in new business practices (i.e., entrepreneurial self-efficacy). Comparatively, necessity entrepreneurs who receive only technical training will be more likely to continue to possess a fixed mindset whereby they comprehend but fail to act on the technical training they receive because of a lack of confidence in their ability to apply those new skills. These higher levels of entrepreneurial self-efficacy will help account for the greater number of entrepreneurial actions displayed by necessity entrepreneurs who received growth-mindset training (i.e., through a mediated indirect effect). More formally, we hypothesize:

Hypothesis 1. Necessity entrepreneurs receiving growth mindset training will engage in more entrepreneurial actions as compared with entrepreneurs who only receive technical training.

Hypothesis 2. The positive impact of growth mindset training on entrepreneurial actions will be mediated by entrepreneurial self-efficacy.

4 | MATERIALS AND METHODS

4.1 | Study context and background

We collaborated with a local government agency in Tanzania whose mission is to reduce poverty by providing training and resources to help individuals start and improve their businesses. One of this organization's specific objectives

is to reduce poverty by training necessity entrepreneurs to make changes in their business activities as a means of differentiating from what already exists in the local market. The organization identified necessity entrepreneurs through an initial screening done throughout the entire country. For several years, this agency had been using a 5-day technical training called *Start and Improve Your Business* that was designed by the International Labor Organization (ILO). The primary target of the training program is young adult entrepreneurs (typically between 18 and 35 years old) who opted into a comprehensive poverty alleviation program at the village level. This entrepreneurship training program has been used in over 100 countries worldwide and is recognized as one of the most commonly used entrepreneurship training programs.

The *Start and Improve Your Business* training program implemented by the Tanzanian organization covers the following topics: (1) goal planning and achievement, (2) what it means to be an entrepreneur, (3) generating business ideas, (4) preparing a business plan, (5) growing a business, and (6) business record keeping. Within each session, entrepreneurs are given instruction and activities to help them learn and practice these technical skills. For example, in the “growing a business” module, knowledge and skills developed include (1) “ways of improving your business”, (2) “methods of improving your business”, and (3) “collective market strategy.” This module “focuses [entrepreneurs] on how to grow their business and enhance their capacity in making market research, designing market strategy in order to sell more and win competitions.” This module provides information and action-oriented exercises to help entrepreneurs identify new markets and new products by presenting a framework for ways to expand a business (Trainers Guide for Basic Skills Training on Economic Activities, Learning Session 5).

4.1.1 | Preliminary interviews

As a first step, we undertook a series of interviews with individuals who had been associated with previous ILO entrepreneurship training programs including executives and managers within the organization providing training, facilitators, participants, and local government leaders. We started with the Tanzanian government organization in charge of delivering the training. We interviewed the leads and three members of the research team. These were informal, exploratory interviews to understand the history of the program and what data they had gathered to determine success or failure of a training. Next, we interviewed the executive director of the organization to understand the organization's general pain points and requests for understanding of the training program they had implemented.

After these administrative interviews, we spent 2 days interviewing entrepreneurs in the field. We met with four different village groups in Northern Tanzania that had already received the entrepreneurship training within that last year. On average, two villages had been seen as successful in their entrepreneurial efforts and the other two had been seen as less successful. In each village, we met with the local leaders, and they introduced us to the individual entrepreneurs. We told them the purpose of our visit was to learn about their experience in the training program. After the meeting, our team of researchers met with each of the entrepreneurs and conducted a semistructured interview that began with questions about what obstacles they faced as entrepreneurs and what things helped them as entrepreneurs. Each interview lasted between 15 and 30 min. Interviews were not recorded, but copious notes were taken by the research team. We interviewed 10–15 entrepreneurs per village (totaling roughly 50 interviews). The entrepreneurs consisted of an even mix of men and women between 18 and 40 years old. After these field interviews, we interviewed roughly 10 additional field workers of the Tanzanian government organization to verify and triangulate our findings. The information we received from the field staff highly correlated with the information we received from the entrepreneurs in the four villages.

4.1.2 | Preliminary findings

From our interviews, we identified successful entrepreneurs based on those entrepreneurs who were able to spot needs in the local market. Sometimes these opportunities were arbitrage opportunities. For example, no one in their



village grows green vegetables, so all villagers have to travel to a nearby village. Recognizing an arbitrage opportunity would consist of recognizing the need to grow green vegetables in their own village or to buy a small truck to bring these vegetables to their local village. Other opportunities consisted of new market opportunities. For example, pregnant women in the village do not know about prenatal vitamins. Recognizing a new market opportunity would consist of educating women on the need for prenatal vitamins and selling these vitamins. Another village recognized that they were limited in selling fish because they were located too far away from cities where there were more potential buyers. Entrepreneurs purchased a freezer and started a company to produce ice so that fish could be transported over longer distances to reach the bigger markets.

We found that successful entrepreneurs were those who had developed a willingness to experiment with different business opportunities and use these experiences to improve their condition. These entrepreneurs were most likely to experiment with different business opportunities and while recognizing that they are unlikely to get it right the first (or even second or third) attempt. Entrepreneurs told us that the key to success was to start with small wins and then build from there. For example, we heard four different people say that the most important piece of advice was to start by buying “one chicken.” Doing so helps one to build confidence that they can succeed in business. Below are some examples:

Entrepreneur: “most poor people think they can't do better. They need some effort and encouragement to build the confidence that they can do it.”

Entrepreneur: “They need confidence that they can start working. That they can build [something].”

Field Staff: “Unless you can train people to change their mindset and have confidence in business, then skills-based training is not much use.”

Field Staff: “The poor lack confidence... [some] don't even want to come to meetings because they don't have clothes.”

Field Staff: “this is a process that starts with attitude change.”

Overall, unsuccessful entrepreneurs tended to lack belief in themselves and were afraid to change. For example, one senior entrepreneur said “The youth just want to ride motorcycles around to make money. They don't know that there are many other ways to make money.” Such a fixed mindset was proving to be damaging to the young and marginalized individuals' entrepreneurial self-efficacy and their ability to take action. Supporting this possibility, our qualitative data indicated that the participants in prior training programs generally returned to operating their businesses without applying the concepts learned in the program and commonly expressed a lack of confidence in the belief that they could identify and execute new business opportunities. They also appeared hesitant to apply the lessons from their training and remained reluctant to experiment with new approaches.

4.1.3 | Training intervention

Upon concluding these preliminary interviews, we began to outline a culturally appropriate half-day training with the aim of instilling a growth mindset. The growth-mindset training we conducted closely followed the interventions done in a formal educational setting (Dweck, 2016), where training interventions were originally geared toward K-12 and college students. These trainings focus on helping students develop a belief that through experimentation and failure they can develop the skills needed to be successful. These training interventions all include stories of the brain being a muscle and how intelligence works. They then describe how the brain grows and develops new connections when people practice and learn new things.

To customize the training to the entrepreneurial environment in Tanzania, we worked with the ILO training director in Tanzania to deliver a similar type of training approach as was used during the week-long ILO training. We worked with the lead trainers in charge of training the instructors to develop and customize the growth mindset

content to ensure the approach was like the approach used by the ILO. The ILO training included group activities and real-life cases that exemplify the concepts. This action-oriented training approach has been found to be generally more effective in promoting entrepreneurship behaviors than other training approaches (Campos et al., 2017; Nabi et al., 2017; Varamäki et al., 2015).

Consistent with the ILO training methodology, the training intervention on growth mindset for necessity entrepreneurs included three learning modules. The first module introduced the concept of growth mindset and featured an example of an entrepreneur role-model who embodied this mindset. The second module was a game where participants practiced applying the principles of growth mindset to a project that required repeated failure. Finally, the third module included additional material and another role-model example of an entrepreneur who exhibited growth mindset by not giving up when things did not work out and used those failures as opportunities to learn and grow.

The examples we used were adapted from examples used by Dweck (2016) in other growth mindset trainings and customized for this context based on common business models familiar to the entrepreneurs in our training program. The business innovations discussed in the training were commonly available resources that could be easily accessed by the trainees. For instance, we discuss one entrepreneur who had a clothing store and decided to start selling complimentary products like shoes and hats in the store. It also showed how some of these new product introductions failed, but that the investments in trying them were not significantly stifling to her business and provided learning opportunities that eventually helped her identify successful new products. The conclusion of the growth-mindset training module emphasized the importance of adopting this growth mindset approach in their thinking. For example, the concluding statement made by trainers read:

You all have the potential to do great things, but potential and belief in yourself is not enough. You must have a growth mindset. In other words, you must be willing to embrace your failures as a way to learn and improve your business. As we shared with you today, new research is showing how all people can grow and learn new things if they continue to work hard and try new things. Just like your brain becomes stronger by working on challenging problems, you can improve your business skills and overcome the challenges you face in running a business by accepting those challenges as learning opportunities.

After completing these draft materials, we met with different small business owners in Tanzania to garner their initial feedback, and to confirm details for effective delivery the intervention in Tanzania. We also met with ILO staff (who delivered the technical training program) to ensure training materials met ILO objectives and were not redundant, or somehow contrary to, the ILO technical training. Finally, we met with our research partner's entrepreneurship trainers to further customize the content to ensure the growth mindset training module would be impactful and resonate with entrepreneurs in rural Tanzania.

To effectively conduct the workshops in the local language, all final training materials were translated into Swahili. Subsequently, the "trainers of the trainers" received detailed instructions from three of the coauthors over a 2-day period about overseeing the growth mindset training.² Such training included multiple rehearsals of each of the exercises and a thorough understanding of the procedure to follow. Procedural scripts were also developed to ensure that the facilitators used the correct and consistent messaging and exercises across the different growth mindset training workshops (see Appendix A for an overview of the final materials for the treatment group).

4.2 | Field experiment

4.2.1 | Participants and design

We partnered with the Tanzanian government agency to identify rural entrepreneurs who were scheduled to receive the ILO technical training at one of four village locations in May 2018. Participation required entrepreneurs to



complete the 5 days of training, fill out a brief survey at the completion of their training, and meet with a field supervisor a month later to report their entrepreneurial actions. One hundred and sixty-five entrepreneurs who attended the training were randomly assigned to either the growth mindset training ($N = 85$) or the control condition ($N = 80$). Randomization was also done within each of the four village locations. For the full sample that completed the training program ($N = 165$), no statistical differences existed for any of the demographic control measures, supporting the effectiveness of randomization: Gender ($t[163] = 0.81, p = 0.42$), age ($t[163] = 0.30, p = 0.77$), and number of businesses ($t[163] = 0.14, p = 0.89$). Sixty-eight percent of these entrepreneurs were able to be located and met with the field supervisor a month later, yielding complete data from 113 entrepreneurs ($M_{\text{age}} = 23.05$, 61% female): *Growth mindset condition* ($N = 57$) and *Control condition* ($N = 56$). The attrition was due to logistical challenges in tracking down participants 1 month after training; a logistic regression did not show any differences in attrition rates between the two conditions: $B = -0.136, SE = 0.336, p = 0.69$.

All entrepreneurs received the exact same 5 days of technical based training but were randomized after the last day of the technical training to either the treatment or control group. Participants in the treatment group received the growth mindset training module as their supplemental half-day training on the sixth day. Comparatively, participants in the control condition received a supplemental half-day training reviewing technical material from the general ILO program to help keep the time of training constant for both control and treatment groups on the sixth day. The schedule for both groups consisted of a welcome and introduction of an additional half-day of training. Then, the treatment and control groups both received a training. Once both control and treatments were done with their additional training, both groups then received an assessment of their entrepreneurial self-efficacy. After the assessment, both groups received instructions on how to complete their business activity logbooks over the next month. The instructions for both groups on how to use the logbooks to record actions were monitored by the authors to ensure consistency of instruction (see Appendix B for training schedule and assessment measures used).

All the trainers were trained on how to deliver the growth mindset training, but the day before training we randomly selected half of the trainers to deliver the control training and half of the trainers to deliver the treatment training. We decided that a randomized assignment of trainers to deliver the growth mindset or control condition training would minimize potential bias in trainer selection effects. One of the authors randomly selected names from a list and this process made it easier for the trainers to not feel favored or disfavored. We did not disclose any expectations with regards to expected results from the different trainings to the trainers.

4.3 | Measures

4.3.1 | Entrepreneurial self-efficacy

Following the completion of their respective supplemental half-day sessions, each entrepreneur's self-efficacy was assessed. Both the control and treatment participants were assessed at the same time. Participants individually completed the four-item entrepreneurial self-efficacy scale from Zhao et al. (2005), which was translated into Swahili. Specifically, participants rated their level of confidence in their ability to: (1) Identify new business opportunities, (2) Create new products, (3) Think creatively, and (4) Commercialize a new idea. Questions were answered on a 5-point Likert scale ($\alpha = 0.79$) ranging from 1 (*Not at All Confident*) to 5 (*Extremely Confident*).

4.3.2 | Entrepreneurial action

Building upon previous measures of entrepreneurial action that look at self-reported "venture organizing activities" (Autio et al., 2013; Delmar & Shane, 2003), we had entrepreneurs report any new business improvement or

TABLE 1 Correlation and descriptive statistics.

	Mean	SD	1	2	3	4	5
1. Growth mindset training	0.50	0.50	–				
2. Entrepreneurial self-efficacy	3.52	0.70	0.21*	–			
3. Entrepreneurial actions	2.62	2.77	0.20*	0.22*	–		
4. Age	23.05	4.24	–0.10	0.02	0.10	–	
5. Gender	0.39	0.49	0.17	0.23*	0.16	–0.20*	–
6. Number of businesses	1.33	1.05	–0.06	0.18	0.07	0.17	0.01

Note: $N = 113$. Growth Mindset Training (1 = Growth Mindset Training; 0 = Control), Gender (1 = Male; 0 = Female).
* $p < 0.05$.

reorganizing activity in a logbook. This approach is consistent with prior studies that have used personal diaries as a means to track and understand entrepreneurial action (e.g., Kato & Wiklund, 2011; McKelvie et al., 2020; Van Burg & Karlsson, 2020). Prior to leaving the training workshop, all participants were given a personal logbook to record any changes that they attempted to improve their business. These could be actions like experimenting with a new marketing tactic or making modifications to differentiate their product or service offering. Both participants in the control and treatment conditions were given the same instructions of what types of changes they should record in their logbooks. They were given many examples that would qualify as entrepreneurial actions and were informed that they needed to keep track of these actions for the next month. They were informed that keeping this logbook was for their own benefit and there would be no withdrawal of support from the partner organization if they chose to not to do so. However, they were also told that if they completed the logbook that they would get additional feedback from the field supervisors.³ After a month elapsed, participants met with the field supervisor from the partner organization and shared their recorded entrepreneurial actions. During this meeting, the field supervisor reviewed the logbook with the entrepreneur, recorded the number of entrepreneurial actions taken, and then returned the logbook back to the entrepreneur. The number of actions taken was used as the primary outcome variable in our analyses.

The types of actions engaged in by entrepreneurs included testing new product lines to improve their product portfolio (e.g., selling two different types of the flashlights—solar powered and battery powered—to see which one would sell better), capturing more of the value from the value chain (e.g., instead of just selling chickens that they raise, keeping some of the chickens to lay eggs and selling chickens and eggs), and changing the way they were marketing their products (e.g., providing referral bonuses or putting up signs in neighboring villages). While the changes tended to be small, they were consistent with the types of business experimentations they learned about in the technical side of their traditional business training.

4.3.3 | Controls

We also collected demographic data at the end of their training to assess participants age, gender, and the number of businesses they had started. These variables were collected given their potential association with entrepreneurial self-efficacy and entrepreneurial actions. Highlighting the success of randomizing participants to the treatment and control conditions, there were no significant differences with respect to any of these variables (see Tables 1 and 2). That said, we include gender, age, and number of businesses as controls in our models to provide greater precision on our effects. Although participants were randomized to conditions within each of the four different villages, we also included fixed-effect dummies to account for possible effects attributable to the different village locations (McNeish & Kelley, 2019).

**TABLE 2** Balance table providing *N*, means, and *t*-tests.

	<i>N</i>	Mean	<i>t</i> -Value
Control variables (full sample)			
Age			
Control	80	22.95	
Treatment	85	22.75	0.30
Gender			
Control	80	0.35	
Treatment	85	0.41	0.81
Number of businesses			
Control	80	1.38	
Treatment	85	1.35	0.14
Control variables (final sample)			
Age			
Control	56	23.46	
Treatment	57	22.65	1.02
Gender			
Control	56	0.30	
Treatment	57	0.47	1.87
Number of businesses			
Control	56	1.39	
Treatment	57	1.26	0.66

Note: *t*-Values are from basic *t*-tests that do not control for other variables.

5 | RESULTS

See Tables 1 and 2 for a summary of descriptive statistics.

5.1 | Main effects

We conducted an OLS regression with robust standard errors to test our expectation that growth mindset training would positively affect entrepreneurial self-efficacy. Results showed that following their training, entrepreneurs who received the growth mindset training reported significantly higher levels of entrepreneurial self-efficacy as did entrepreneurs in the control training condition ($M = 3.67$ vs. $M = 3.38$), $B = 0.28$, $SE = 0.12$, $p = 0.027$ (see Figure 1 and Models 2 and 3 in Table 3 show the effect remains significant in the absence of demographic controls). The Cohen's *d* effect size measure (i.e., a standardized mean difference between conditions) was 0.43, indicating a moderate effect size for our treatment on entrepreneurial self-efficacy.⁴

We next examined if the number of entrepreneurial actions differed across treatment and control conditions. To account for non-normal distributions common to count data, we conducted a negative binomial regression with robust standard errors (Gardner et al., 1995). Supporting Hypothesis 1, entrepreneurs who received the growth mindset training took significantly more entrepreneurial actions than entrepreneurs in the control training condition, ($M = 3.16$ vs. $M = 2.07$), $B = 0.36$, $SE = 0.15$, $p = 0.017$ (see Figure 2 and Models 2 and 3 in Table 4 show the effect remains significant without demographic controls). The Cohen's *d* effect size was 0.40, indicating a moderate

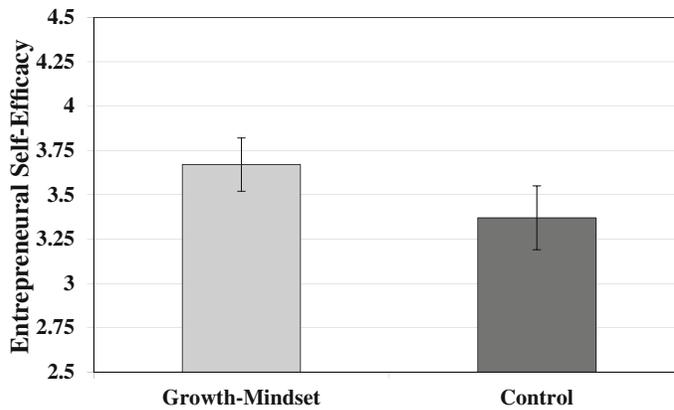


FIGURE 1 Treatment effect on entrepreneurial self-efficacy (95% confidence intervals shown).

TABLE 3 Results for entrepreneurial self-efficacy.

Predictors	Entrepreneurial self-efficacy		
	Model 1	Model 2	Model 3
Intercept	3.16 (0.40)**	3.19 (0.39)**	3.95(0.08)**
Age	0.01 (0.02)	0.02 (0.02)	
Gender	0.32 (0.12)**	0.29 (0.11)*	
Number of businesses	0.10 (0.05)	0.10 (0.05)	
Growth mindset training		0.28 (0.12)*	0.28(0.13)*
R ²	0.16	0.19	0.13

Note: $N = 113$. Unstandardized regression coefficients with robust standard errors in parentheses. Village fixed effect dummies included in all models. Growth Mindset Training (1 = Growth Mindset Training; 0 = Control), Gender (1 = Male; 0 = Female).

* $p < 0.05$; ** $p < 0.01$.

effect size for our treatment on entrepreneurial action. Put another way, entrepreneurs who receive the standard training displayed one-third fewer entrepreneurial actions in the month that followed the training than entrepreneurs who received the growth mindset training.

5.2 | Mediation analysis

To test for mediation, a structural equation model (SEM; using Mplus 8.3; Muthén & Muthén, 2017) was conducted where condition was modeled as the predictor variable (1 = Treatment; 0 = Control), entrepreneurial self-efficacy as the mediator, and number of entrepreneurial actions as the DV (using a negative binomial distribution for this count outcome). Entrepreneurial self-efficacy was modeled as a latent variable to provide greater precision by accounting for measurement error (Hoyle & Kenny, 1999). We used a maximum likelihood estimator with standard errors robust to violations of normality and included demographic controls and fixed-effect dummy codes as covariates to account for village training.

The analysis showed that the relationship between training condition and self-efficacy was significant: $B = 0.27$, $SE = 0.12$, $p = 0.020$. Importantly, the SEM also showed entrepreneurial self-efficacy to positively predict the

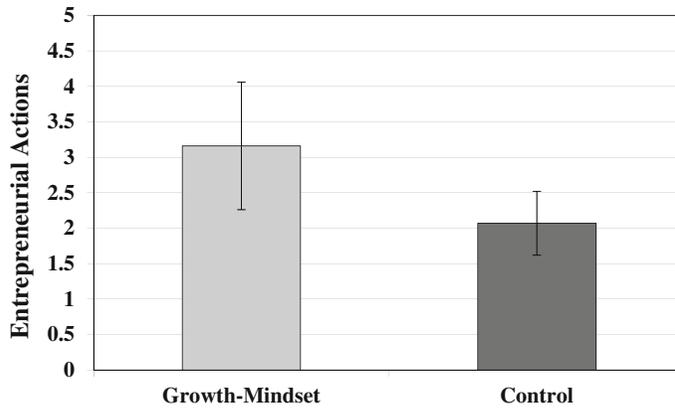


FIGURE 2 Treatment effect on entrepreneurial actions (95% confidence intervals shown).

TABLE 4 Results for entrepreneurial actions.

Predictors	Entrepreneurial actions		
	Model 1	Model 2	Model 3
Intercept	0.38 (0.48)	0.38 (0.46)	1.18 (0.14)**
Age	0.02 (0.02)	0.02 (0.02)	
Gender	0.31 (0.18)	0.25 (0.17)	
Number of businesses	0.06 (0.05)	0.07 (0.05)	
Growth mindset training		0.36 (0.15)*	0.37 (0.17)*
Log likelihood	-224.06	-221.70	-223.62
AIC	464.12	461.41	459.23

Note: $N = 113$. Unstandardized regression coefficients with robust standard errors in parentheses. Village fixed effect dummies included in all models. Growth Mindset Training (1 = Growth Mindset Training; 0 = Control), Gender (1 = Male; 0 = Female).

* $p < 0.05$; ** $p < 0.01$.

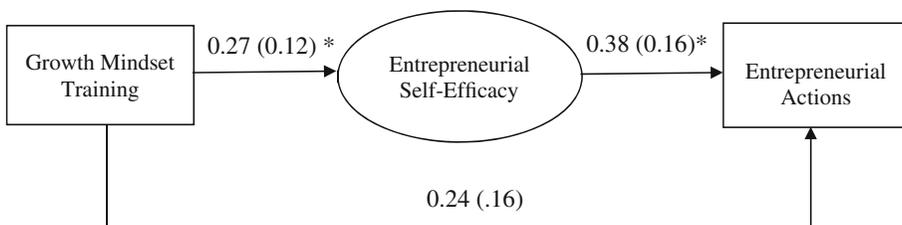


FIGURE 3 Structural equation model mediation paths. Growth mindset training (1 = Growth Mindset Training; 0 = Control). Beta weights are unstandardized. Standard errors are in parentheses. * $p < 0.05$.

number of entrepreneurial actions taken: $B = 0.38$, $SE = 0.16$, $p = 0.019$. Moreover, with entrepreneurial self-efficacy modeled as the mediator, growth-mindset training no longer had a significant effect upon entrepreneurial action: $B = 0.24$, $SE = 0.16$, $p = 0.125$ (see Figure 3).

To test for mediation, we computed 95% confidence intervals of the indirect effect using the Monte Carlo resampling method (Preacher & Selig, 2012). Supporting the significance of the indirect effect, the confidence

intervals did not contain zero (indirect effect = 0.10: Lower CI = 0.002; Upper CI = 0.261). These results provide support for our expectation that entrepreneurial self-efficacy would mediate the relationship between growth-mindset training and entrepreneurial action (Hypothesis 2).⁵

6 | DISCUSSION

Although training programs are often implemented in an effort to help necessity entrepreneurs acquire skills and capabilities to take entrepreneurial action, participants in these programs often fail to put these skills into action. We conducted a randomized controlled trial to examine the effects of implementing a growth mindset component in addition to a traditional skills-based training approach. Given the positive effects of growth mindset training that have been found in other learning contexts, we expected that training programs augmented with growth mindset skills would help necessity entrepreneurs overcome cognitive barriers to entrepreneurship that arise from a fixed mindset. The results of our randomized controlled trial indicate that growth mindset training may indeed be an effective tool in helping entrepreneurs overcome these limitations. As our findings suggest, including a growth mindset component in training programs can lead to an increase in entrepreneurial self-efficacy and greater entrepreneurial action for necessity entrepreneurs, with those who received the growth-mind set training displaying (on average) one additional entrepreneurial action in the month after their training over entrepreneurs who just received the standard training. Given the positive outcomes expected to follow from greater entrepreneurial action, one may expect that this additional action to increase their chances of making a product offering or process change that will increase revenues and the overall success of their business.

In summary, this research contributes to existing research by (1) specifying how entrepreneurial action is a key construct to determining success for necessity entrepreneurs traditionally stuck in a fixed mindset of habitual business routines, (2) identifying a growth mindset as an important psychological component that can augment technical entrepreneurship training programs, and (3) increasing our understanding of entrepreneurship in the African context.

6.1 | The need to examine entrepreneurial action among necessity entrepreneurs

Prior research has suggested that differences within the motivation for getting into entrepreneurship is likely to be a significant predictor for entrepreneurial behavior (Krueger Jr et al., 2000; Pittaway & Cope, 2007). Because necessity entrepreneurs are pushed into entrepreneurship and often must focus on their “basic needs” (Maslow, 1943), they are more prone to experience a fixed mindset and demonstrate a common set of behaviors in running their business. Unlike opportunity entrepreneurs, who are pulled into entrepreneurship by the prospects of new opportunities that allow them to experiment with new business models and products, necessity entrepreneurs are likely to engage in a limited set of behaviors and routines to ensure they can continue to meet their basic needs (Dencker et al., 2021). As a result, it is important to measure deviation from these routines as a way to determine entrepreneurial success.

Examining entrepreneurial action as a specific behavioral outcome of training also helps to create a more parsimonious understanding of the mixed findings on the effectiveness of technical training programs. Prior studies often use inconsistent measures of entrepreneurial success, examining factors such as entrepreneurial intentions (Krueger Jr et al., 2000; Zhao et al., 2005) and entrepreneurial start-ups (Gorman et al., 1997; Katz, 2007; Pittaway & Cope, 2007). While these measures represent types of success, scholars recommend that future research should focus on success factors related to entrepreneurial action at the individual level, as it ties more directly to measures of human capital (McMullen & Shepherd, 2006; Unger et al., 2011). Moreover, human capital in the context of entrepreneurship tends to be measured in terms of knowledge and skills, examining factors like experience and education as predictors of entrepreneurial success. Such decontextualized human capital (as a predictor) and “entrepreneurial success” (as an outcome) could be a significant reason for mixed findings about the efficacy of training programs.



By focusing on entrepreneurial action as an individual measure of success for necessity entrepreneurs, we are able to clarify the linkage between different types of human capital and different types of entrepreneurial outcomes in a poverty context. Such contextuality addresses prior criticisms that despite decades of research, we still have limited insight into exactly how training effectively promotes entrepreneurship (Gielnik et al., 2015).

6.2 | The synergies of growth mindset training coupled with technical training

From a practical perspective, millions of dollars are spent each year by multilateral institutions such as the ILO and IFC in an effort to help leverage entrepreneurship as a tool for poverty alleviation (Cho & Honorati, 2014). Yet, these training programs have not fully achieved their desired results (McKenzie & Woodruff, 2014), and our results suggest that adding a cognitive component—specific to growth mindset—may help better achieve the intended goals. While some scholars have begun to separate “psychological training” from ‘technical training’, their findings have been mixed, with some studies finding a more positive impact from personal initiative or values-based training versus technical training (e.g., Campos et al., 2017), and others finding no significant differences between values-based training and technical training (Dyer et al., 2016; Glaub & Frese, 2011; Premand et al., 2012).

Our results point out that perhaps some of these differences might be explained by how we categorize necessity entrepreneurs. Because necessity entrepreneurs are not a completely homogeneous group of individuals in terms of their proclivity to engage in entrepreneurial activity, it is likely that some necessity entrepreneurs possess less of a fixed mindset due to higher levels of experience and education (Dencker et al., 2021). Perhaps this heterogeneity among necessity entrepreneurs could be an important factor in reconciling why sometimes technical training is “motivating” and at other times “demotivating” with respect to the level of entrepreneurial self-efficacy observed in prior studies (McGee et al., 2009), leading to mixed entrepreneurial outcomes. While it was not the intent of our research, we find that growth mindset interventions, coupled with technical training, are not likely to have a less (or more) powerful effect on women entrepreneurs and less experienced entrepreneurs. Hence, growth mindset may provide a supplement to existing programs in helping those with less confidence in their ability to take entrepreneurial action.

This study informs research on the effectiveness of entrepreneurship training programs by augmenting existing technical training programs with an additional growth mindset training and then testing how this intervention affects a person's entrepreneurial self-efficacy as a result. By examining this mediated relationship, we move beyond existing research that fails to control for technical training programs, arguing that perhaps the problem is not in the content of technical training programs and how they are taught, but rather the self-efficacy of the individuals within the training programs and how self-efficacy can be altered to improve entrepreneurial action for all necessity entrepreneurs, not just those who are male and possess higher levels of experience and education. In this way, we help to unpack the mediating mechanism from psychological training and contribute to nascent research on psychological training for necessity entrepreneurs by examining growth mindset as a supplement, not a substitute, to training programs. Our hope is that policy makers and training program leaders will see the potential of “growth mindset” training to improve the efficacy of their efforts rather than look to scrap existing training programs that may indeed be teaching the right skills.

6.3 | Increased understanding of necessity entrepreneurship in the African context

Although we see our results as generalizable to other developing contexts, they specially add to a growing body of work focused on entrepreneurship in Africa. Africa is a critical part of the global economy to study, especially when considering its exponential population growth that is estimated to reach nearly 2.5 billion by 2050, which will account for 26% of the world's population (United Nations Department of Economic and Social Affairs, 2019).

Despite significant resources devoted to training entrepreneurs in Africa, the impact of such programs has been modest, leading scholars, policy makers, and non-government organizations searching for insights into how to enhance training to be more impactful. Recent studies suggest a better match between the type of training and entrepreneur experience (Anderson et al., 2021; Bardasi et al., 2021; Berge & Pires, 2020) and gender (Bandiera et al., 2020; McKenzie & Puerto, 2021) may enhance the effectiveness of training programs. Other studies argue for better integration between training and ongoing mentoring (Bardasi et al., 2021), financial assistance (Berge et al., 2015), and psychological training (Bischoff et al., 2020; Campos et al., 2017). Our study builds on this work by introducing growth mindset training as a previously unstudied psychological mindset that may represent a critical support to technical training in Africa. During our interviews, we repeatedly heard that business failure is a stigmatized outcome in these rural villages. As such, we see this psychological training as particularly relevant in contexts where the stigma of failure represents a meaningful barrier to entrepreneurship.

This research also contributes to the mindset learning literature (Dweck, 2006, 2015) in the African context, by examining growth mindset in the context of practicing entrepreneurs in Africa and not just students. While scholars have examined growth mindset in both a poverty context (e.g., Burnette et al., 2018; Yeager et al., 2019) and an entrepreneurship context (e.g., Burnette et al., 2019), to the best of our knowledge none of these studies have examined both of these contexts together, nor have they been studied outside of the context of formal education settings. We show that growth mindset training is not just something that can be valuable to economically disadvantaged students, but that it can be valuable outside of the educational setting as well. This is important to expanding the theoretical and practical applications of growth mindset training.

6.4 | Limitations and future research

Our study is not without limitations. While research has shown that successful entrepreneurship relies upon taking calculated risks and experimenting with new business ideas, our study does not capture whether increased entrepreneurial actions necessarily lead to improved economic outcomes. While it is likely that the entrepreneurs are learning from their entrepreneurial actions, given that the entrepreneurs received a full week's worth of technical training, future research should examine how these actions might lead to economic impact.

While our growth mindset intervention followed previously validated growth mindset training interventions, we recognize that a training intervention can deliver multiple mechanisms that might influence a person's motivation to engage in entrepreneurial activity. First, by providing role-models from the examples of other entrepreneurs in our growth-mindset training program, it could be that these stories created additional motivation (e.g., Del Carpio & Guadalupe, 2022). However, given that the technical training that all entrepreneurs received also had examples of other possible role-models, that could also increase motivation, we do not anticipate that the inclusion of role-models in the growth-mindset training was likely to be on its own particularly impactful. In addition, it could also be the case that the extra group activity (outlined in the intervention in Appendix A) could help entrepreneurs feel more supported and create stronger networks that would boost their confidence (e.g., Dimitriadis & Koning, 2022). However, we do not believe this would be a major factor, as both groups had been involved in multiple group activities the 5 days prior to the sixth day of growth mindset training.

There is also concern that perhaps the trainers for the growth mindset intervention were more motivational and provided more encouragement than the control group trainers, creating an experimenter demand effect. While we cannot fully rule out this possibility, we first made sure that the experimenters did not know which intervention (the treatment or control) was being tested as the "better" intervention. Moreover, the author team observed the trainers during each intervention, and we perceived that the trainers provided equal levels of encouragement and support across both groups.

It is also worth noting that although efforts were made to track down all participants a month after the study began, roughly 30% attrition occurred as we were unable to follow up with all entrepreneurs. Although this attrition



occurred equally across both conditions, caution is warranted as attrition has the potential to impact the strength of an observed affect. Additionally, although care was taken to limit contact between participants during the training, we are unable to account for the possibility that after the training was completed, spillover effects may have occurred as a result of contact between entrepreneurs in the following month. Such spillover effects could have either positively impacted those in the control condition (i.e., through a motivating upward comparison effect) or possibly demotivated them if they saw a growth-mindset trained entrepreneur taking more actions than themselves. Although we do not have data to speak to or statistically account for such potential spillover effects, we raise it as a potential limitation.

While our study took place within the country of Tanzania and we see the context as being largely representative of impoverished settings where necessity entrepreneurs operate, we acknowledge that different social and cultural factors may lead to different outcomes in other settings. Similarly, necessity entrepreneurs also exist within developed contexts (Block & Wagner, 2010), where the institutional conditions differ significantly as well as the ratio of necessity entrepreneurs to “opportunity entrepreneurs.” Future research that explores the comparative efficacy of growth mindset training in alternative contexts may not only explore the boundary conditions of our theorizing, but also the prevalence of alternative mediating mechanisms.

Our analysis is also limited in observing the potential long-term effects of our intervention. Although we observe a relationship between growth mindset training and increased entrepreneurial action up to a month after receiving training, we anticipate that these effects may remain durable after longer periods of time, given that such findings have been established in other settings where mindset trainings have been implemented (Lewis et al., 2020; Yeager et al., 2019). Nevertheless, we see promise in future studies that examine the persistent impact of such training over longer periods of time.

Additionally, we anticipate that the link between increased entrepreneurial self-efficacy and entrepreneurial action are likely to be self-reinforcing, over time. For example, many studies have shown that experimental behaviors among entrepreneurs lead to greater innovation, which leads to greater economic growth (e.g., Hasan & Tucci, 2010; Wong et al., 2005). Entrepreneurship is fundamentally about experimentation because the knowledge required to be successful cannot entirely be known in advance (Kerr et al., 2014). Romer (1990, p. 72) pointed out that the cost of experimentation goes down the more one engages in experimentation, as they have developed a set of heuristics and techniques that can be used repeatedly. The reverse of this is also true and potentially problematic—the less entrepreneurs engage in experimentation, the less likely they will be to engage in future experimentation, creating a “Matthew effect” where those entrepreneurs who engage in entrepreneurial action exponentially increase their ability to experiment (Callander & Matouschek, 2019). While we were unable to examine this potential reinforcing link in this study, future work may benefit from explicitly examining this potential reinforcing effect.

Finally, to help eliminate self-report bias, we ensured that training for both groups was the same in terms of encouraging entrepreneurs to keep their logbooks and both trainings encouraged the entrepreneurs to take personal action. Additionally, because the trainers were not privy to what to expect from the study, all trainers were equally enthusiastic in training the groups on completing their logbooks. Finally, field staff agents in charge of recording the number of counted actions was blind to the entrepreneur's identity and assigned condition, which also helps reduce potential concern about biased reporting.

7 | CONCLUSION

In conclusion, we find that providing necessity entrepreneurs with growth mindset training coupled with technical training may help to overcome the largely ignored cognitive barriers preventing them from taking entrepreneurial action. Our study contributes both to scholarly and practical knowledge by leveraging the construct of growth mindset to design and rigorously test a new intervention that, combined with existing technical training programs, positively affects key entrepreneurial outcomes such as entrepreneurial self-efficacy and entrepreneurial action. We are

cautiously optimistic that such insights will generate new avenues of inquiry for entrepreneurship scholars, as well as significant modifications to prominent entrepreneurship training programs that are in need of improvement to achieve their intended goals of poverty alleviation.

ACKNOWLEDGMENTS

We acknowledge the financial support of the Social Sciences and Humanities Research Council of Canada Partnership Development Grant (grant no. 890-2014-0059), the Ballard Center for Social Impact at Brigham Young University, the International Labor Organization, and the Tanzania Social Action Fund for making this research possible.

ORCID

Shad Morris  <https://orcid.org/0000-0001-5796-6453>

ENDNOTES

- ¹ Personal initiative is an action-oriented approach to training that helps entrepreneurs learn through action and action principles, while receiving feedback from the trainers along the way (Campos et al., 2017; Gielnik et al., 2015). Action-regulation theory suggests that performing real actions during a training and receiving feedback allows necessity entrepreneurs to be more efficient in applying what they have learned in the training (Bischoff et al., 2020; Frese, 2009; Zacher & Frese, 2018).
- ² The same trainers in the *Start and Improve Your Business* program were also used to deliver the growth mindset training. The trainers were former or current entrepreneurs from Tanzania who implemented the training program for the Tanzanian organization. These trainers had significant experience both in entrepreneurship and training. After spending multiple days training the trainers, we felt very confident in their ability to deliver the material effectively and consistently.
- ³ Because trainers were not from the local region, field supervisors from the local office reviewed the logbook with the participant and recorded the number of entrepreneurial actions. The field supervisors were blind to participant condition. The participants were also told that the field supervisors would not be communicating their number of actions to the trainers.
- ⁴ We conducted a supplemental identical OLS analysis for the full sample at the conclusion of training ($N = 165$). As expected, growth-mindset entrepreneurs reporting higher self-efficacy following their training than those in the control condition $B = 0.28$, $SE = 0.10$, $p = 0.006$. The Cohen's d for this full sample comparison of entrepreneurial self-efficacy was 0.44, which is almost identical to the effect documented in the final sample. This supplemental analysis helps alleviate concerns that attrition may have uniquely impacted the strength of the difference between conditions on entrepreneurial self-efficacy.
- ⁵ A supplemental analysis shows that the mediation effect remains significant when conducting the SEM without demographic controls: indirect effect = 0.12 (LCI = 0.007; UCI = 0.282).

REFERENCES

- Alvarez, S. A., & Barney, J. B. (2013). Epistemology, opportunities, and entrepreneurship: Comments on Venkataraman et al. (2012) and Shane (2012). *Academy of Management Review*, 38(1), 154–166.
- Alzua, M. L., Baez, M. J., Galiwango, S., Joloba, D., Kachero, B., Lopera, M. A., Ssekandi, J., & Zigiti, Z. (2020). Beyond technical skills training: The impact of credit counseling on the entrepreneurial behavior of Ugandan youth. *Review of Development Economics*, 24(3), 750–765.
- Anderson, S. J., Chandy, R., & Zia, B. (2018). Pathways to profits: The impact of marketing vs. finance skills on business performance. *Management Science*, 64(12), 5559–5583.
- Anderson, S. J., Chintagunta, P., Germann, F., & Vilcassim, N. (2021). Do marketers matter for entrepreneurs? Evidence from a field experiment in Uganda. *Journal of Marketing*, 85(3), 78–96.
- Autio, E., Dahlander, L., & Frederiksen, L. (2013). Information exposure, opportunity evaluation, and entrepreneurial action: An investigation of an online user community. *Academy of Management Journal*, 56(5), 1348–1371.
- Bae, T. J., Qian, S., Miao, C., & Fiet, J. O. (2014). The relationship between entrepreneurship education and entrepreneurial intentions: A meta-analytic review. *Entrepreneurship Theory and Practice*, 38(2), 217–254.
- Bandiera, O., Buehren, N., Burgess, R., Goldstein, M., Gulesci, S., Rasul, I., & Sulaiman, M. (2020). Women's empowerment in action: Evidence from a randomized control trial in Africa. *American Economic Journal: Applied Economics*, 12(1), 210–259.



- Bandiera, O., Buehren, N., Goldstein, M., Rasul, I., & Smurra, A. (2018). The economic lives of young women in the time of Ebola: Lessons from an empowerment program. Working paper, World Bank, Washington, DC. <http://localhost:14773//entities/publication/a3626b35-e125-5eba-a70a-7704ec72730c>.
- Barbasi, E., Gassier, M., Goldstein, M., & Holla, A. (2021). The profits of wisdom: The impact of a business support program in Tanzania. *The World Bank Economic Review*, 35(2), 328–347.
- Berge, L. I. O., Bjorvatn, K., & Tungodden, B. (2015). Human and financial capital for microenterprise development: Evidence from a field and lab experiment. *Management Science*, 61(4), 707–722.
- Berge, L. I. O., & Pires, A. J. G. (2020). Gender, formality, and entrepreneurial success. *Small Business Economics*, 55, 881–900. <https://doi.org/10.1007/s11187-019-00163-8>
- Bernheim, B. D., Garrett, D. M., & Maki, D. M. (2001). Education and saving: The long-term effects of high school financial curriculum mandates. *Journal of Public Economics*, 80(3), 435–465.
- Bischoff, K. M., Gielnik, M. M., & Frese, M. (2020). When capital does not matter: How entrepreneurship training buffers the negative effect of capital constraints on business creation. *Strategic Entrepreneurship Journal*, 14(3), 369–395.
- Block, J. H., & Wagner, M. (2010). Necessity and opportunity entrepreneurs in Germany: Characteristics and earnings differentials. *Schmalenbach Business Review*, 62(2), 154–174.
- Burnette, J. L., Pollack, J. M., Forsyth, R. B., Hoyt, C. L., Babji, A. D., Thomas, F. N., & Coy, A. E. (2019). A growth mindset intervention: Enhancing students' entrepreneurial self-efficacy and career development. *Entrepreneurship Theory and Practice*, 44(5), 878–908.
- Burnette, J. L., Russell, M. V., Hoyt, C. L., Orvidas, K., & Widman, L. (2018). An online growth mindset intervention in a sample of rural adolescent girls. *British Journal of Educational Psychology*, 88(3), 428–445.
- Busch, C., & Barkema, H. (2021). From necessity to opportunity: Scaling bricolage across resource-constrained environments. *Strategic Management Journal*, 42(4), 741–773.
- Callander, S., & Matouschek, N. (2019). The risk of failure: Trial and error learning and long-run performance. *American Economic Journal: Microeconomics*, 11(1), 44–78.
- Campos, F., Frese, M., Goldstein, M., Iacovone, L., Johnson, H. C., McKenzie, D., & Mensmann, M. (2017). Teaching personal initiative beats traditional training in boosting small business in West Africa. *Science*, 357(6357), 1287–1290.
- Cardon, M. S., & Kirk, C. P. (2015). Entrepreneurial passion as mediator of the self-efficacy to persistence relationship. *Entrepreneurship Theory and Practice*, 39(5), 1027–1050.
- Cassidy, S. (2015). Resilience building in students: The role of academic self-efficacy. *Frontiers in Psychology*, 6, 1781.
- Chilova, M., Brinkmann, J., & Rosenbusch, N. (2015). Is microcredit a blessing for the poor? A meta-analysis examining development outcomes and contextual considerations. *Journal of Business Venturing*, 30(3), 467–487.
- Cho, Y., & Honorati, M. (2014). Entrepreneurship programs around the developing world: A meta-analysis. *Labour Economics*, 28, 110–130.
- Claro, S., Paunesku, D., & Dweck, C. (2016). Growth mindset tempers the effects of poverty on academic achievement. *Proceedings of the National Academy of Sciences of the United States of America*, 113(31), 8664–8668.
- Cox, L. W., Mueller, S. L., & Moss, S. E. (2002). The impact of entrepreneurship education on entrepreneurial self-efficacy. *International Journal of Entrepreneurship Education*, 1(2), 229–245.
- Cumberland, D. M., Meek, W. R., & Germain, R. (2015). Entrepreneurial self-efficacy and firm performance in challenging environments: Evidence from the franchise context. *Journal of Developmental Entrepreneurship*, 20(1), 1550004.
- Del Carpio, L., & Guadalupe, M. (2022). More women in tech? Evidence from a field experiment addressing social identity. *Management Science*, 68(5), 3196–3218.
- Delmar, F., & Shane, S. (2003). Does business planning facilitate the development of new ventures? *Strategic Management Journal*, 24(12), 1165–1185.
- Dencker, J. C., Bacq, S., Gruber, M., & Haas, M. (2021). Reconceptualizing necessity entrepreneurship: A contextualized framework of entrepreneurial processes under the condition of basic needs. *Academy of Management Review*, 46(1), 60–79.
- Dencker, J. C., Gruber, M., & Shah, S. K. (2009). Pre-entry knowledge, learning, and the survival of new firms. *Organization Science*, 20(3), 516–537.
- Destin, M., Hanselman, P., Buontempo, J., Tipton, E., & Yeager, D. S. (2019). Do student mindsets differ by socioeconomic status and explain disparities in academic achievement in the United States? *AERA Open*, 5(3), 2332858419857706.
- Dimitriadis, S., & Koning, R. (2022). Social skills improve business performance: Evidence from a randomized control trial with entrepreneurs in Togo. *Management Science*, 68(12), 8635–8657.
- Dweck, C. S. (2006). *Mindset: The new psychology of success*. Random House, Inc.
- Dweck, C. S. (2015). Carol Dweck revisits the growth mindset. *Education Week*, 35(5), 20–24.
- Dweck, C. S. (2016). The remarkable reach of growth mind-sets. *Scientific American Mind*, 27(1), 36–41.
- Dyer, W. G., West, B., Peacock, I., Yamada, S., & Dyer, J. (2016). Can the poor be trained to be entrepreneurs? The case of the academy for creating enterprise in Mexico. *Journal of Developmental Entrepreneurship*, 21(2), 1650008.

- Fiala, N. (2018). Returns to microcredit, cash grants and training for male and female microentrepreneurs in Uganda. *World Development*, 105, 189–200.
- Florin, J., Karri, R., & Rossiter, N. (2007). Fostering entrepreneurial drive in business education: An attitudinal approach. *Journal of Management Education*, 31(1), 17–42.
- Foo, M. D., Vissa, B., & Wu, B. (2020). Entrepreneurship in emerging economies. *Strategic Entrepreneurship Journal*, 14(3), 289–301.
- Frese, M. (2009). Towards a psychology of entrepreneurship—An action theory perspective. *Foundations and Trends® in Entrepreneurship*, 5(6), 437–496.
- Galloway, L., & Brown, W. (2002). Entrepreneurship education at university: A driver in the creation of high growth firms? *Education+ Training*, 44(8/9), 398–405.
- Gardner, W., Mulvey, E. P., & Shaw, E. C. (1995). Regression analyses of counts and rates: Poisson, overdispersed Poisson, and negative binomial models. *Psychological Bulletin*, 118(3), 392–404.
- Gielnik, M. M., Frese, M., Kahara-Kawuki, A., Wasswa Katono, I., Kyejusa, S., Ngoma, M., Munene, J., Namatovu-Dawa, R., Nansubuga, F., Orobia, L., Oyugi, J., Sejjaaka, S., Sserwanga, A., Walter, T., Bischoff, K. M., & Dlugosch, T. J. (2015). Action and action-regulation in entrepreneurship: Evaluating a student training for promoting entrepreneurship. *Academy of Management Learning & Education*, 14(1), 69–94.
- Gielnik, M. M., Krämer, A. C., Kappel, B., & Frese, M. (2014). Antecedents of business opportunity identification and innovation: Investigating the interplay of information processing and information acquisition. *Applied Psychology*, 63(2), 344–381.
- Glaub, M., & Frese, M. (2011). A critical review of the effects of entrepreneurship training in developing countries. *Enterprise Development and Microfinance*, 22(4), 335–353.
- Gollwitzer, P. M., Heckhausen, H., & Steller, B. (1990). Deliberative and implemental mind-sets: Cognitive tuning toward congruous thoughts and information. *Journal of Personality and Social Psychology*, 59(6), 1119–1127.
- Gorman, G., Hanlon, D., & King, W. (1997). Some research perspectives on entrepreneurship education, enterprise education and education for small business management: A ten-year literature review. *International Small Business Journal*, 15(3), 56–77.
- Hall, C. C., Zhao, J., & Shafir, E. (2014). Self-affirmation among the poor: Cognitive and behavioral implications. *Psychological Science*, 25(2), 619–625.
- Hasan, I., & Tucci, C. L. (2010). The innovation–economic growth nexus: Global evidence. *Research Policy*, 39(10), 1264–1276.
- Haushofer, J., & Fehr, E. (2014). On the psychology of poverty. *Science*, 344(6186), 862–867.
- Honig, B., & Karlsson, T. (2004). Institutional forces and the written business plan. *Journal of Management*, 30(1), 29–48.
- Hoyle, R. H., & Kenny, D. A. (1999). Sample size, reliability, and tests of statistical mediation. In R. H. Hoyle (Ed.), *Statistical strategies for small sample research* (pp. 195–222). Sage.
- Kato, S., & Wiklund, J. (2011). Doing good to feel good—a theory of entrepreneurial action based in hedonic psychology. *Frontiers of Entrepreneurship Research*, 31(4), 1.
- Katz, J. A. (2007). Education and training in entrepreneurship. In J. R. Baum, M. Frese, & R. A. Baron (Eds.), *The psychology of entrepreneurship* (pp. 209–235). Lawrence Erlbaum Associates Publishers.
- Kerr, W. R., Nanda, R., & Rhodes-Kropf, M. (2014). Entrepreneurship as experimentation. *Journal of Economic Perspectives*, 28(3), 25–48.
- Kolvereid, L., & Moen, Ø. (1997). Entrepreneurship among business graduates: Does a major in entrepreneurship make a difference? *Journal of European Industrial Training*, 21(4), 154–160.
- Krueger, N. F., Jr., Reilly, M. D., & Carsrud, A. L. (2000). Competing models of entrepreneurial intentions. *Journal of Business Venturing*, 15(5–6), 411–432.
- Lewis, L. S., Williams, C. A., & Dawson, S. D. (2020). Growth mindset training and effective learning strategies in community college registered nursing students. *Teaching and Learning in Nursing*, 15(2), 123–127.
- Mani, A., Mullainathan, S., Shafir, E., & Zhao, J. (2013). Poverty impedes cognitive function. *Science*, 341(6149), 976–980.
- Martin, B. C., McNally, J. J., & Kay, M. J. (2013). Examining the formation of human capital in entrepreneurship: A meta-analysis of entrepreneurship education outcomes. *Journal of Business Venturing*, 28(2), 211–224.
- Maslow, A. (1943). A theory of human motivation. *Psychological Review*, 50, 370–396.
- McGee, J. E., Peterson, M., Mueller, S. L., & Sequeira, J. M. (2009). Entrepreneurial self-efficacy: Refining the measure. *Entrepreneurship Theory and Practice*, 33(4), 965–988.
- McKelvie, A., Wiklund, J., McMullen, J. S., & Palubinskas, A. P. (2020). A dynamic model of entrepreneurial opportunity: Integrating Kirzner's and Mises's approaches to entrepreneurial action. *Quarterly Journal of Austrian Economics*, 23(3–4), 499–541.
- McKenzie, D., & Puerto, S. (2021). Growing markets through business training for female entrepreneurs: A market-level randomized experiment in Kenya. *American Economic Journal: Applied Economics*, 13(2), 297–332.



- McKenzie, D., & Woodruff, C. (2014). What are we learning from business training and entrepreneurship evaluations around the developing world? *The World Bank Research Observer*, 29(1), 48–82.
- McMullen, J. S., & Shepherd, D. A. (2006). Entrepreneurial action and the role of uncertainty in the theory of the entrepreneur. *Academy of Management Review*, 31(1), 132–152.
- McNeish, D., & Kelley, K. (2019). Fixed effects models versus mixed effects models for clustered data: Reviewing the approaches, disentangling the differences, and making recommendations. *Psychological Methods*, 24(1), 20–35.
- Mullainathan, S., & Shafir, E. (2013). *Scarcity: Why having too little means so much*. Henry Holt and Co.
- Muthén, L. K., & Muthén, B. O. (2017). *Mplus User's Guide* (8th ed.). Muthén & Muthén.
- Nabi, G., Liñán, F., Fayolle, A., Krueger, N., & Walmsley, A. (2017). The impact of entrepreneurship education in higher education: A systematic review and research agenda. *Academy of Management Learning & Education*, 16(2), 277–299.
- Newman, A., Obschonka, M., Schwarz, S., Cohen, M., & Nielsen, I. (2019). Entrepreneurial self-efficacy: A systematic review of the literature on its theoretical foundations, measurement, antecedents, and outcomes, and an agenda for future research. *Journal of Vocational Behavior*, 110, 403–419.
- Nikiforou, A., Dencker, J. C., & Gruber, M. (2019). Necessity entrepreneurship and industry choice in new firm creation. *Strategic Management Journal*, 40(13), 2165–2190.
- Nsereko, I., Balunywa, W. J., Ntamu, D. N., Munene, J., & Babirye, H. (2021). Personal initiative, entrepreneurial self-efficacy and social entrepreneurial venture creation. *Small Enterprise Research*, 28(3), 329–349.
- Pittaway, L., & Cope, J. (2007). Entrepreneurship education: A systematic review of the evidence. *International Small Business Journal*, 25(5), 479–510.
- Preacher, K. J., & Selig, J. P. (2012). Advantages of Monte Carlo confidence intervals for indirect effects. *Communication Methods and Measures*, 6, 77–98.
- Premand, P., Brodmann, S., Almeida, R., Grun, R., & Barouni, M. (2012). Entrepreneurship training and self-employment among university graduates: Evidence from a randomized trial in Tunisia. The World Bank policy research working paper 6285, The World Bank, Washington, DC. <https://ssrn.com/abstract=2184653>.
- Quinn, S., & Woodruff, C. (2019). Experiments and entrepreneurship in developing countries. *Annual Review of Economics*, 11, 225–248.
- Reid, K., & Ferguson, D. M. (2011). Enhancing the entrepreneurial mindset of freshman engineers. Paper presented at the ASEE Annual Conference & Exposition, Vancouver, BC.
- Rhew, E., Piro, J. S., Goolkasian, P., & Cosentino, P. (2018). The effects of a growth mindset on self-efficacy and motivation. *Cogent Education*, 5(1), 1492337.
- Romer, P. M. (1990). Endogenous technological change. *Journal of Political Economy*, 98(5, Part 2), S71–S102.
- Shah, A. K., Mullainathan, S., & Shafir, E. (2012). Some consequences of having too little. *Science*, 338(6107), 682–685.
- Shantz, A. S., Kistruck, G., & Zietsma, C. (2018). The opportunity not taken: The occupational identity of entrepreneurs in contexts of poverty. *Journal of Business Venturing*, 33(4), 416–437.
- Sisk, V. F., Burgoyne, A. P., Sun, J., Butler, J. L., & Macnamara, B. N. (2018). To what extent and under which circumstances are growth mind-sets important to academic achievement? Two meta-analyses. *Psychological Science*, 29(4), 549–571.
- Trevelyan, R. (2011). Self-regulation and effort in entrepreneurial tasks. *International Journal of Entrepreneurial Behavior & Research*, 17(1), 39–63.
- Tumasjan, A., & Braun, R. (2012). In the eye of the beholder: How regulatory focus and self-efficacy interact in influencing opportunity recognition. *Journal of Business Venturing*, 27(6), 622–636.
- Unger, J. M., Rauch, A., Frese, M., & Rosenbusch, N. (2011). Human capital and entrepreneurial success: A meta-analytical review. *Journal of Business Venturing*, 26(3), 341–358.
- United Nations Department of Economic and Social Affairs. (2019). World population prospects. Retrieved from <https://www.un.org/development/desa/pd/news/world-population-prospects-2019-0>.
- Van Burg, E., & Karlsson, T. (2020). Capturing action from within: The use of personal diaries. In *Research handbook on entrepreneurial behavior, practice and process* (pp. 182–198). Edward Elgar Publishing.
- Varamäki, E., Joensuu, S., Tornikoski, E., & Viljamaa, A. (2015). The development of entrepreneurial potential among higher education students. *Journal of Small Business and Enterprise Development*, 22(3), 563–589.
- Wong, P. K., Ho, Y. P., & Autio, E. (2005). Entrepreneurship, innovation and economic growth: Evidence from GEM data. *Small Business Economics*, 24(3), 335–350.
- Wuepper, D., & Lybbert, T. J. (2017). Perceived self-efficacy, poverty, and economic development. *Annual Review of Resource Economics*, 9, 383–404.
- Yeager, D. S., & Dweck, C. S. (2020). What can be learned from growth mindset controversies? *American Psychologist*, 75(9), 1269–1284.
- Yeager, D. S., Hanselman, P., Walton, G. M., Murray, J. S., Crosnoe, R., Muller, C., Tipton, E., Schneider, B., Hulleman, C. S., Hinojosa, C. P., Paunesku, D., Romero, C., Flint, K., Roberts, A., Trott, J., Iachan, R., Buontempo, J., Yang, S. M.,



- Carvalho, C. M., ... Dweck, C. S. (2019). A national experiment reveals where a growth mindset improves achievement. *Nature*, 573(7774), 364–369.
- Zacher, H., & Frese, M. (2018). Action regulation theory: Foundations, current knowledge and future directions. In D. S. Ones, N. Anderson, C. Viswesvaran, & H. K. Sinangil (Eds.), *The SAGE handbook of industrial, work & organizational psychology: Organizational psychology* (pp. 122–144). Sage Reference.
- Zampetakis, L. A., Lerakis, M., Kafetsios, K., & Moustakis, V. (2015). Investigating the emotional impact of entrepreneurship programs. *Journal of Business Venturing Insights*, 4, 38–41.
- Zhao, H., Seibert, S. E., & Hills, G. E. (2005). The mediating role of self-efficacy in the development of entrepreneurial intentions. *Journal of Applied Psychology*, 90(6), 1265–1272.

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

How to cite this article: Morris, S., Carlos, C., Kistruck, G. M., Lount, R. B. Jr., & Thomas, T. E. (2023). The impact of growth mindset training on entrepreneurial action among necessity entrepreneurs: Evidence from a randomized control trial. *Strategic Entrepreneurship Journal*, 17(3), 671–692. <https://doi.org/10.1002/sej.1472>