



**NASCENT ENTREPRENEURS' CHOICE TO ATTEND
ENTREPRENEURSHIP TRAINING AND ITS IMPACT ON THEIR
NEW VENTURES' PERFORMANCE**

Journal:	<i>Entrepreneurship Theory and Practice</i>
Manuscript ID	Draft
Manuscript type:	Original Article
Keywords:	human capital investment, entrepreneurship training, nascent entrepreneur, Venture Performance < Manuscripts: Specialty Areas, conservation of resources
Abstract:	In this study, we adopted the conservation of resources theory to explain the antecedents of nascent entrepreneurs' choice to attend entrepreneurship training. Our findings, based on analysis of data from the Panel Study of Entrepreneurial Dynamics (PSED I), suggest better-educated and growth-seeking founders are more likely to invest in their human capital by attending entrepreneurship training, whereas those who perceive the environment to be more uncertain are less likely to do so. In addition, we used a propensity score matching analysis and, unexpectedly, found attending entrepreneurship training does not have a significant effect on the performance of nascent entrepreneurs' ventures.

NASCENT ENTREPRENEURS' CHOICE TO ATTEND ENTREPRENEURSHIP TRAINING AND ITS IMPACT ON THEIR NEW VENTURES' PERFORMANCE

For several decades, a major stream of research has focused on entrepreneurship education (Kuratko, 2005) and created knowledge that helps educators train individuals to develop the competencies required for accomplishing entrepreneurial tasks (Morris et al., 2013). Scholars have primarily examined the supply side of entrepreneurship education to improve the quality and effectiveness of educational programs and training (Pittaway & Cope, 2007). For instance, the content of training programs (González-López et al., 2019), pedagogy and methods of delivery (Debarliev et al., 2022; Mukesh et al., 2020), providers and stakeholders (Galvão et al., 2020), training contexts (Shirokova et al., 2017), and entrepreneurship education policies (Mok, 2005; O'Connor, 2013) are among major topics investigated in prior research.

Herein, we sought to add to this body of knowledge in two key ways: First, in contrast with the literature's focus on the supply side of entrepreneurship education (Matlay, 2008), we aimed to shed light on the demand side by examining the factors that affect individual choice to attend entrepreneurship training (Rideout & Gray, 2013). Specifically, we focused on nascent entrepreneurs (NEs) who are in the early stages of transforming a new idea into a viable business (Reynolds et al., 2004) and yet often have very limited resources to do so (Bischoff et al., 2020; Crook et al., 2011; Moroz & Hindle, 2012). We conceptualized NE choice to attend entrepreneurship training as a resource investment decision to acquire specific human capital, given the importance of entrepreneurship training as one of the most pervasive forms of human capital investment (Arthur et al., 2003; Bischoff et al., 2020; Martin et al., 2013) has been widely emphasized (Debarliev et al., 2022; González-López et al., 2019; Mukesh et al., 2020). We employed the conservation of resources (COR) theoretical foundations that explain individuals

acquire resources to protect their businesses against future resource losses (Hobfoll, 1989). The COR theory suggests the decision to acquire new resources is affected by individuals' perceptions of whether additional resources are worth pursuing, given their existing resources and signals they receive from their environment (Halbesleben et al., 2014). NEs are challenged with limited resources and are prone to resource losses in their quest to develop a viable business model (Lanivich, 2015; Xu & Jin, 2022). Thus, they tend to invest only in new resources if they feel they can protect their existing resources and acquire new ones that help them accomplish their goals. In other words, not all NEs decide to allocate their limited resources to investment in their human capital by attending entrepreneurship training. Accordingly, we investigated the impact of NEs' existing resources (i.e., education and experience) and perceived resource signals (i.e., perceptions of ventures' resource requirements, reflected in growth aspiration, environmental uncertainty, availability of resources) on their choice to attend entrepreneurship training (Chung et al., 2022; Halbesleben et al., 2014; Kyrö, 2015).

Second, we examined whether the choice to attend entrepreneurship training can make a difference in the performance of NEs' ventures in the emergence stage. Given the central role of NEs at this stage (Dimov, 2010), their human capital seems to be critical for their venture performance (Linder et al., 2020). However, new venture performance at the early emergence stage has not received much attention from the human capital (Marvel et al., 2016; McMullen & Dimov, 2013) and entrepreneurship education (Nabi et al., 2017) perspectives. Additionally, in general, there is no consensus on whether entrepreneurship training can improve venture performance along different stages of the entrepreneurship process (Åstebro & Hoos, 2021; Coad et al., 2016; Henry et al., 2004; Martin et al., 2013; Matlay, 2008; Unger et al., 2011). To address these important gaps, we employed a matching technique (Rideout & Gray, 2013) to investigate

whether attending entrepreneurship training matters for new venture performance at the emergence phase. Specifically, we used propensity score matching that can address selection biases and causality concerns by adopting a quasi-experimental approach in which two groups, that except for entrepreneurship training participation are identical, can be identified and studied (Coad et al., 2016; Nikolaev et al., 2020). We used this method to analyze the Panel Study of Entrepreneurial Dynamics (PSED I, 1998-2003), which provides a longitudinal survey of 830 NEs over 40 months in four sequential waves (Chen et al., 2018; Vilanova & Vitanova, 2020).

This study offers several major contributions. First, we contributed to existing knowledge about entrepreneurship education by highlighting the need to consider the factors that affect individual demand for entrepreneurship training. We conceptualized the decision to participate in entrepreneurship education as a human capital investment decision and explained why some NEs may be more prone to make such investment decisions compared to others. Moreover, we shed light on contradictory findings of prior research about the effectiveness of entrepreneurship training (Martin et al., 2013; Nabi et al., 2017; Rideout & Gray, 2013; Unger et al., 2011) by focusing on certain audiences (NEs) and stages in the entrepreneurship process (emergence stage), thereby suggesting that development, offering, and assessment of entrepreneurship education vary for different audiences and at different stages of the entrepreneurship process (Lyons & Zhang, 2018). Additionally, by utilizing the matching technique, we overcame the self-selection bias that is one of the main limitations of previous research on the effectiveness of entrepreneurship education (Grégoire et al., 2019; Marvel et al., 2016; Yi & Duval-Couetil, 2022). Finally, our research contributes to the COR theory by responding to the calls for investigating the resource signals that influence resource investment decisions (Halbesleben et

al., 2014; Lanivich, 2015). We offer several practical implications for entrepreneurs and educators based on our findings and suggest directions for future research.

RESEARCH BACKGROUND

Entrepreneurship training has always been a central topic of research because of its effects on developing individuals' entrepreneurial characteristics (Bae et al., 2014; Fairlie et al., 2015). Scholars have attempted to improve the quality of entrepreneurship training by considering both the content and delivery methods. For example, prior research has highlighted how “growth-catalyst tools” (Kotha et al., 2023, p. 1) or scientific decision-making (Camuffo et al., 2020) can enrich the content of entrepreneurship trainings. Likewise, prior studies have suggested peer advice (Chatterjee, 2017) or assigning experienced entrepreneurs as mentors (Lyons & Zhang, 2018) can be effective delivery modes. Although major progress has been made in understanding the supply side of the entrepreneurship training, relatively less scholarly attention has been paid to the demand side—that is who attends the training programs and why. Research on training effectiveness is the only major line of inquiry that examines the attributes of participant entrepreneurs, such as their experience (Lyons & Zhang, 2018), growth aspiration (Kotha et al., 2023), and coachability (Bryan et al., 2017). However, these studies primarily have focused on samples that have (self-)selected to attend entrepreneurship training (Yi & Duval-Couetil, 2022), and, consequently, our knowledge is biased and quite limited about the entrepreneurs who choose not to attend training. Given that attending entrepreneurship training is mostly a voluntary choice, the questions regarding which entrepreneurs choose to attend entrepreneurship training and why have remained fairly understudied.

Entrepreneurship Training and COR Theory

Entrepreneurship training is a major way to obtain entrepreneurial human capital (González-López et al., 2019; Martin et al., 2013). Entrepreneurs who choose to develop their human capital by participating in training programs need to spend time and money (and possibly other types of tangible and intangible resources). Thus, NE choice to attend entrepreneurship training can be conceptualized as a resource investment decision. Individual—in general, and specifically here—NEs have limited resources (e.g., time, energy); are sensitive to resource losses; strive to retain, protect, and foster their limited resources; and are eager to acquire additional resources (Hobfoll, 1989). The COR theory explains that individuals invest in new resources to protect or acquire resources or recover from resource losses (Hobfoll et al., 2018).

Individual choice to invest in the acquisition of a new resource depends on the value of that resource and resource signals that those individuals receive from their environment (Halbesleben et al., 2014; Halbesleben & Wheeler, 2015). The value of a particular resource is determined by “one’s estimation of the extent to which a resource will facilitate progress toward meeting one’s goals” (Halbesleben et al., 2014, p. 1345). Individuals estimate higher values for a resource when they (a) expect the resource will help them reach a goal, (b) currently have some of that resource, and/or (c) possess other resources that complement that resource (Halbesleben et al., 2014; Schmidt & Keil, 2013). Resource signals are cues that suggest the investment in a resource is an effective endeavor for realizing one’s goals (Halbesleben et al., 2014). For instance, indicators of environmental munificence or worthiness of a resource investment are highlighted as resource signals (Campbell et al., 2013; Halbesleben et al., 2014; Halbesleben & Wheeler, 2015; Sirmon et al., 2007). The stronger the resource signals support the availability of a resource and its potential value, the more the individuals tend to invest in its acquisition.

RESEARCH MODEL

Entrepreneurship is an uncertain process through which entrepreneurs leverage, recombine, and accumulate various types of resources (e.g., physical, human, social, financial) to accomplish their goals. It is critical for entrepreneurs to be strategic about how they invest their limited resources, especially at the early stages where NEs deal with absolute uncertainties and liabilities of newness (Packard et al., 2017). The choice to attend entrepreneurship training is an important resource investment decision. Building upon the foundations of COR theory, we posit that NEs' existing resources and perceived resource signals can influence their choices to invest in their human capital by attending entrepreneurship training.

Participation in entrepreneurship trainings is an investment for acquiring specific human capital. According to COR theory, NEs perceive higher values for such a resource when they already have some specific human capitals or when they have complementary resources. Thus, we focus on NEs' initial specific human capital (i.e., entrepreneurial experience) and general human capital (i.e., education), which are complementary to specific human capital, to examine the antecedents of the choice to attend entrepreneurship training (Linder et al., 2020). In addition, we consider the role of NEs' growth aspirations, perceived environmental uncertainty, and perceived resource availability as resource signals that can influence NE choice. Growth aspiration, which can reflect the potential of market opportunities (Hermans et al., 2015), is a signal to NEs about the wide range of skills and capabilities they need to possess to successfully navigate the growth journey and manage larger firms. Environmental uncertainty (Lanivich, 2015) and resource availability (Campbell et al., 2013; Sirmon et al., 2007) are signals that influence any resource investment decisions. Furthermore, we examined the outcomes of the choice to attend entrepreneurship training by studying whether NEs who attend training can achieve better new venture performance. Figure 1 presents our research model and hypotheses.

*** Insert Figure 1 Around Here***

Antecedents of the Choice to Attend Entrepreneurship Training

Entrepreneurial Experience

Experience is a major way to develop one's specific human capital in a context (Baptista et al., 2014). Thus, entrepreneurial experience is a form of specific human capital (Gimmon & Levie, 2010; Martin et al., 2013; Unger et al., 2011), and, according to the COR theory (Hobfoll et al., 2018), experienced NEs value entrepreneurial knowledge and skills because they already have some of that resource and see additional resources complementary to what they already have. Although experienced NEs recognize the value of specific human capital in achieving their goals (Rauch & Rijdsdijk, 2013; Zhang & White, 2016), we posit they do not perceive entrepreneurship training participation as an effective means for the acquisition of specific human capital in the entrepreneurship context, and, consequently, they are less likely to choose to attend entrepreneurship training because they are concerned about resource loss.

Entrepreneurial experience equips individuals with stronger entrepreneurial cognition for recognizing opportunities (Cassar, 2014; Gruber et al., 2008), enhances their tolerance of uncertainty, improves their performance in contexts with limited information (Dimov, 2010), and helps them better acquire resources and overcome difficulties (Delmar & Shane, 2006). Prior research has suggested even business failures equip founders with valuable knowledge and skills that facilitate new learning (Boso et al., 2019; Cope, 2011; Eggers & Song, 2015). Thus, experienced NEs have already developed some tacit knowledge for entrepreneurial task comprehension (Haynie et al., 2009), realistic beliefs about their entrepreneurial capabilities (Parker, 2006), and confidence regarding learning and obtaining knowledge through experience and transferring their learning to other settings (Delmar & Shane, 2006).

The COR theory highlights that resource loss is psychologically more salient for individuals than resource gain (Hobfoll et al., 2018). Given that experienced NEs have already acquired and conserved specific human capital through experience, they may view entrepreneurship training participation as a resource-consuming (e.g., time and energy) effort, and its outcomes can be gained more securely and with lower opportunity costs through experience. These NEs have experienced the unique and uncertain nature of entrepreneurial journeys first handedly and may doubt whether the knowledge gained through general entrepreneurship training can effectively be applied to their specific situation. Prior studies have also suggested experienced founders decide mainly by trial and error, whereas novice entrepreneurs who are launching their first venture (Shirokova et al., 2017) have a tendency to go by the textbook procedures (Dew et al., 2009) and benefit more from entrepreneurship training (Lyons & Zhang, 2018). Therefore, we hypothesize the following:

Hypothesis 1. *NEs with higher levels of entrepreneurial experience are less likely to invest in their specific human capital by attending entrepreneurship training compared to NEs with lower levels of entrepreneurial experience.*

Education

NE education is an indicator of their general human capital (Cao & Im, 2018; Capelleras et al., 2019). General human capital is useful in different situations and not directly related to certain tasks (Baptista et al., 2014; Gimmon & Levie, 2010; Unger et al., 2011; Wiklund & Shepherd, 2003). Specific human capital refers to the knowledge suitable for a particular task (Crook et al., 2011) and cannot be simply transferred to different situations (Shepherd & Wiklund, 2006). Prior research has shown both forms of human capital (general and specific) must be combined to support new ventures' survival (Linder et al., 2020). Therefore, educated

NEs who have accumulated general human capital need to complement their resources by acquiring specific human capital.

Educated NEs appreciate learning and know that specific human capital can help them make decisions strategically (Colombo & Grilli, 2005), overcome limitations of access to key resources (Zhang & White, 2016), improve their entrepreneurial judgment, reduce probability of failure (Rauch & Rijsdijk, 2013), and support their firms' survival and success (Bosma et al., 2004; Crook et al., 2011; Unger et al., 2011). Because educated NEs often have higher cognitive ability, conscientiousness (Ng & Feldman, 2010), and mental health (Bracke et al., 2014), they can form new knowledge easier by making connections with their previous knowledge (Davidsson & Honig, 2003), and absorb, assimilate, and implement entrepreneurial knowledge more effectively (Cohen & Levinthal, 1990; Zahra & George, 2002). Thus, based on the COR theory, they are likely to assess gaining specific human capital as more valuable compared to others because they believe specific entrepreneurial knowledge and skills are complementary to their general human capital and help them reach their goals (Morris et al., 2017).

Entrepreneurship education's primary goal is to develop individuals' entrepreneurial competencies (e.g., opportunity recognition [Costa et al., 2018], entrepreneurial self-efficacy [Gielnik et al., 2015; Mukesh et al., 2020], entrepreneurial intention [Bae et al., 2014], and venture creation [Åstebro & Hoos, 2021]) and a major way to acquire specific human capital (Arthur et al., 2003; Bischoff et al., 2020; Martin et al., 2013). Educated NEs have more learning experience and feel more confident in learning (Maurer et al., 2008). Educated NEs perceive the choice to attend entrepreneurship training to be a valuable resource investment because they can explore the environment, collect information, build supportive networks, and assess the value of information (Bracke et al., 2014; Cohen & Levinthal, 1990; Zahra & George, 2002), which helps

them better realize, identify, and evaluate appropriate entrepreneurship training programs that fit their needs (Albort-Morant & Oghazi, 2016). These abilities and their successful educational experience give them the efficacy to identify appropriate training programs and acquire needed knowledge and skills through training participation. Lack of such abilities makes it harder and more costly for less educated NEs to identify and process external information. As a result, they might be more reluctant to invest in acquiring specific knowledge by participating in training and prefer to focus on their tasks (Greco et al., 2019). Hence, we hypothesize the following:

Hypothesis 2. *NEs with higher levels of education are more likely to invest in their specific human capital by attending entrepreneurship training compared to NEs with lower levels of education.*

Growth Aspiration

Growth aspiration or NEs' intended growth trajectory for their ventures (Edelman et al., 2010; Gartner & Liao, 2012) has both individual and contextual determinants (Efendic et al., 2015; Estrin et al., 2013). Contextual determinants of NEs' growth aspiration are related to both the demand side and the supply side of the environment (Hermans et al., 2015). Aside from their personal characteristics, NEs form and modify their growth aspirations based on the opportunities in their target market and their access to resources (Dutta & Thornhill, 2008; Hermans et al., 2015). NEs with certain characteristics can have varied levels of growth aspirations in different ventures; NEs' growth aspirations suggest they have various resource needs for achieving their goals. Thus, growth aspiration is not a founder's resource (Greene & Hopp, 2017) but a resource signal according to the COR theory (Halbesleben et al., 2014).

NEs with high growth aspiration require extensive business planning (Greene & Hopp, 2017) and resource allocation (Brush et al., 2001) to achieve their visions (Capelleras et al., 2019; Dutta & Thornhill, 2008). These NEs need to acquire more resources in preparation for the

venture's growth stage, including the organizational, managerial, and administrative knowledge required for navigating the ventures' growth journey and managing bigger firms (Gartner & Liao, 2012). The success and rate of achieving growth depend on NEs' specific human capital resources that enable them to deliver on the tasks and responsibilities involved with their ventures' growth (Wiklund & Shepherd, 2003). Therefore, growth seekers need specific human capital as a critical resource to realize their goals and, based on the COR theory, they consider specific human capital as more valuable and will be more likely to invest in its acquisition.

NEs with high-growth aspiration tend to pursue entrepreneurial careers and fulfill the tasks necessary for success (Zhao et al., 2005). Training participation is a common way for acquiring specific human capital and developing entrepreneurial competencies, which growth-aspired NEs perceive to be valuable resources. Therefore, they will be interested in attending entrepreneurship training and persistent in spending time and putting in hard work for that (Burnette et al., 2020). Moreover, growth seekers perceive that opportunities have great potential and necessary resources to exploit those opportunities can be obtained. Perception of such signals has roots in growth seekers' optimism about the existence of cooperative norms in the environment, trust in the institutions, and effectiveness of organizations (Efendic et al., 2015). Thus, NEs' trust in educational institutions and established organizational knowledge helps them rely on the support of educational programs and believe in the effectiveness of entrepreneurship training (Fleuren et al., 2020; Welter, 2012). Accordingly, we hypothesize the following:

Hypothesis 3. *NEs with higher levels of growth aspiration are more likely to invest in their specific human capital by attending entrepreneurship training compared to NEs with lower levels of growth aspiration.*

Environmental Uncertainty

Environmental uncertainty refers to a lack of knowledge about future events, cause-effect relationships in the environment, or appropriate responses to environmental events (Milliken, 1987). Uncertainties generally influence decision-making and investment processes (Covin et al., 2001; Dutta & Thornhill, 2008; Packard et al., 2017) and, more specifically here, resource investment strategies (Lanivich, 2015; Wibbens, 2023). Entrepreneurs deal with various forms of uncertainties throughout the entrepreneurship process—and especially at the earlier stages where they often have unlimited options with unknown outcomes (Packard et al., 2017). Given that uncertainties result from NEs' understanding of environmental cues, perceived environmental uncertainty can be considered a major resource signal for NEs (Liao & Gartner, 2006).

Environmental uncertainty is a source of strain that can potentially lead to a loss of time, energy, and other resources (Lanivich, 2015). According to the COR theory (Hobfoll et al., 2018), avoiding resource loss has a stronger effect on people's behavior compared to striving for resource gain. People prefer to invest their resources to protect against resource loss rather than acquire new resources (Halbesleben, 2006; Hobfoll et al., 2018). In uncertain circumstances, identifying cause-and-effect relationships is somewhat impossible (Carpenter & Fredrickson, 2001). Thus, NEs are not sure which resources they must acquire (Storey, 2002), as well as whether acquired resources guarantee success (Greco et al., 2019). In these uncertain and resource loss conditions, NEs estimate the net gain of specific human capital investment less compared to certain situations because they prioritize preventing the loss of time and energy as resources that are required for implementing ideas over spending those resources for acquiring specific human capital that has less clear causal links to achieving favorable results in uncertain conditions. Thus, they might consider investment in human capital less valuable.

Furthermore, NEs who perceive the environment as uncertain and still want to invest in their human capital may not find attending entrepreneurship training an effective way to do so. The market demands and dynamics in uncertain environments are unknown and volatile, and training providers mostly lack specific knowledge to accommodate NEs' uncertain conditions, unless they can learn about the market and strategies of the specific ventures, which is time consuming and costly (Heitor & Horta, 2016). Thus, NEs question whether attending entrepreneurship training can effectively and efficiently equip them with helpful knowledge and skills (Castleman et al., 2021). Hence, we hypothesize the following:

Hypothesis 4. *NEs with higher levels of perceived environmental uncertainty are less likely to invest in their specific human capital by attending entrepreneurship training compared to NEs with lower levels of perceived environmental uncertainty.*

Resource Availability

An abundance of resources influences ventures' resource management (Baker & Nelson, 2005; Sirmon et al., 2007) and NEs' resource investment decisions (Sung & Choi, 2018). Entrepreneurs have heterogeneous expectations and evaluations (Shane & Venkataraman, 2000) and perform based on their perception about the amount and value of available resources (Edelman & Yli-Renko, 2010). Utilizing the COR theory, we posit perceived resource availability is an important resource signal (Campbell et al., 2013; Halbesleben et al., 2014; Halbesleben & Wheeler, 2015; Sirmon et al., 2007) that can affect training participation.

NEs perceive higher levels of resource availability when there is environmental support from the government, financiers, and other local groups (Edelman et al., 2010; Hopp & Stephan, 2012). An availability of resources assures NEs they can reach their goals, and resource constraints are less likely to hinder their progress (Hermans et al., 2015). Thus, they are more prone to invest in acquiring new resources in the hope of future returns (Halbesleben & Wheeler,

2015; Hopp & Stephan, 2012), which includes investment in the acquisition of new knowledge and skills (Rauch & Rijdsdijk, 2013; Zhang & White, 2016) through entrepreneurship training.

In contrast, lower perceived availability of resources means NEs perceive it is difficult to secure the resources needed for the completion of related and critical tasks for new venture creation (Bae & Yu, 2005; Davidsson & Honig, 2003). Resource scarcity heightens the significance of effective resource management (Sirmon et al., 2007) and cost-benefit analysis for new resource investment (Sung & Choi, 2018). According to COR, when individuals' resources are exhausted or limited, they enter a defensive mode (Hobfoll et al., 2018) in which they prefer to apply scarce resources to immediate and clear needs (Greco et al., 2019) and invest their resources to avoid resource loss instead of resource gain. Thus, the acquisition of specific human capital through entrepreneurship training participation will not be a priority—and thus not as valuable—in scarcity conditions. Therefore, we hypothesize the following:

Hypothesis 5. *NEs with higher levels of perceived resource availability are more likely to invest in their specific human capital by attending entrepreneurship training compared to NEs with lower levels of perceived resource availability.*

Outcomes of the Choice to Attend Entrepreneurship Trainings

Resource investment strategies affect venture outcomes (Sirmon et al., 2007). Although the positive effect of specific human capital on entrepreneurial outcomes is well-recognized (Canavati et al., 2021; Jiao et al., 2021; Nabi et al., 2017; Unger et al., 2011), researchers investigating the impact of attendance in entrepreneurship training on venture performance in the emergence phase have found mixed evidence (Coad et al., 2016; Fairlie et al., 2015; Lyons & Zhang, 2018). We expect NEs who invest in their specific human capital by attending entrepreneurship trainings enjoy higher new venture performance for several reasons: Attending entrepreneurship training enriches NEs' skills and knowledge (Davidsson & Honig, 2003),

equips them with the mindset required for successful growth, helps them build the required capabilities, and improves their confidence (Henry et al., 2004). Entrepreneurship training also teaches NEs how to manage their business (Gielnik et al., 2015; Honig, 2004), adapt to their environment (Ribeiro-Soriano & Urbano, 2010), regulate their emotions (Haddoud et al., 2022), and deal with difficulties (Brinckmann et al., 2010). Furthermore, entrepreneurship training introduces and facilitates the adoption of helpful tools (Edelman et al., 2008; Honig, 2004) that can benefit venture performance (Brinckmann et al., 2019) and viability (Greene & Hopp, 2017). Acquiring human capital even helps NEs get back on track and make decisions for easier post-failure transitions in the case of a failure (Allen et al., 2021).

In addition, by participating in entrepreneurship training, NEs can develop networks of other NEs and professionals (Gordon et al., 2012; Henry et al., 2004). These (often informal) networks can help NEs solve business problems and facilitate the development of their ventures (Galvão et al., 2020; Gordon et al., 2012; Henry et al., 2004). Moreover, by attending entrepreneurship training to develop their competencies, NEs send a strong signal to potential investors that they have the essential capabilities, determination, and dedication to turn their ideas into profitable ventures (Brush et al., 2001; Ko & McKelvie, 2018). This signal can remove investors' doubts and enhance the probability of securing external investments for NEs' new ventures (Piva & Rossi-Lamastra, 2018). In sum, attending entrepreneurship training can help NEs' new venture performance not only because of its direct effects on improving NEs' specific human capital but also due to its indirect benefits for enriching NEs' support network.

Accordingly, we hypothesize the following:

Hypothesis 6. *NEs' investment in their specific human capital by attending entrepreneurship training has a positive effect on their new venture performance.*

METHOD

Data

We used PSED I to test our hypotheses. The PSED I is a longitudinal dataset (from 1998 to 2003) and free of recall biases. Individuals who participated in this study were involved in the process of starting a business and were selected from a population of 64,622 adults in the United States through a random telephone survey (Reynolds et al., 2004; Vilanova & Vitanova, 2020). In this dataset, NEs are defined as individuals who said yes to one of these questions: (1) “Are you, alone or with others, now trying to start a new business?” and (2) “Are you, alone or with others, now trying to start a new business or a new venture for your employer?” (Chen et al., 2018; Newbert et al., 2013; Vilanova & Vitanova, 2020).

Of the 3,592 people identified as NEs, 86% of them agreed to continue participating in interviews over a 40-month period. Moreover, two thirds of these people, due to frugality and population constraints, were selected for detailed interviews. After the initial screening, the first wave of data gathering was conducted, and entrepreneurs who had at least three-month cash flows that covered all expenses and manager/owner salaries were omitted from further interviews. Thus, about 27% of the selected people left the process due to having an infant business. Another 27% were dropped due to a loss of contact or not completing the phone interview (Dimov, 2010). At the end, 830 NEs from this target sample participated in another three comprehensive interviews that consisted of more than 150 questions. These three interviews were administered 14, 27, and 40 months after the initial wave (Chen et al., 2018).

Prior research has suggested people who spent more than 10 years on starting a new business are not enthusiastic enough about creating ventures (Greene & Hopp, 2017). Accordingly, we only included entrepreneurs who had begun their initial activities 10 years or less before the screening interview were in the analysis (Yang & Aldrich, 2014). After applying

these criteria, our sample decreased from 830 to 731. Finally, because not all respondents answered every question in the PSED, 234 observation data remained for our analysis.¹

Measurement

Dependent Variables

Human Capital Investment. The longitudinal design of PSED I allows us to study entrepreneurs' participation in any classes or workshops on starting a business during their entrepreneurial process (Townsend et al., 2010). We operationalized specific human capital investment by measuring whether NEs participated in any courses, classes, seminars, or workshops on starting a business (Starr et al., 2018). Given that it was not possible to measure or compare the quality of classes, we used a dummy variable to assess whether NEs have participated in business classes during the waves of data collection (Bischoff et al., 2020; Davidsson & Honig, 2003).

Reynolds (2011) recognized gestation activities in PSED II. We matched these activities in PSED I and found the earliest of these activities for all NEs. Because we asked entrepreneurs in all four waves the year of first entrepreneurial class they had, if the year of their first class was more than the year of the earliest gestation activity, the human capital investment variable took "1" and "0" for people who did not participate in any classes and answered the question in all waves with "no." For entrepreneurs where the year of their first class was before the year of the earliest gestation activity, we checked another question ("Last year, you told us you had taken courses, classes, workshops, or seminars on starting a business. Since that time, how many different courses, classes, workshops, or seminars have you taken on starting a business?"). If

¹ A one-sample *t*-test examination indicated no significant difference between the variables' means for the selected cases and the entire sample.

they answered the question in any of waves by a number more than zero, the human capital investment variable took the value of “1,” otherwise “0.”

New Venture Performance. We used viability, persistence, and emergence of the firm at the end of the fourth wave to measure venture performance (Liao & Gartner, 2006; Newbert et al., 2013). We operationalized viability as a binary variable that was “1” if the answer to the question (“Does the monthly revenue now exceed the monthly expenses?”) was yes, and “0” if the answer was no (Kim et al., 2015; Newbert et al., 2013). Venture emergence and persistence were based on the subjective assessment of founders (Greene & Hopp, 2017; Liao & Gartner, 2006). Emergence has a value of “0” if the answer to the question (“How would you describe the current status of this start-up effort? Is it now an operating business, still in an active start-up phase, still a start-up but currently inactive, no longer being worked on by anyone, or something else?”) was everything except “operating” (Gartner & Shaver, 2012) and persistence took the value of “1” if the answer to the question was “operating” or “still in an active start-up phase”—and the value of “0” otherwise.

Independent Variables

Human Capital. To address general and specific human capital, we used years of schooling recoded from the PSED screening survey (“What is the highest level of education you have completed so far?”; Colombo & Grilli, 2005; Greene & Hopp, 2017) and entrepreneurial experience (“How many other businesses have you helped to start?”) coded as the number of other businesses (Davidsson & Honig, 2003; Gartner & Liao, 2012).

Growth Aspiration. We measured growth aspiration using the question (“Describe your preference for the future size of this business”) and coded it as 1 if an NE aspired to create a business as large as possible and 0 otherwise (Kim et al., 2015).

Environmental Uncertainty. We measured the perception of NEs' ability to foresee the state of the environment considering uncertainties by averaging reversed code items (Liao & Gartner, 2006; Vilanova & Vitanova, 2020) using a 5-point Likert scale from the PSED survey (Dimov, 2010). As shown in Appendix A and following Pallant (2007), we measured perceived environmental uncertainty through 10 questions and found a Cronbach's alpha value of 0.733.

Resource Availability. We measured NEs' perceptions of environmental munificence using a 5-point Likert scale (Edelman et al., 2010, please see Appendix A). The Cronbach's alpha value was 0.654, which is consistent with prior studies (e.g., Hopp & Stephan, 2012).

Control Variables

We controlled for age and gender because they are related to human capital investment, training motivation, and entrepreneur success (Davidsson & Honig, 2003; Tharenou, 2001; Zhao et al., 2021). In general, older people are less interested in learning (Chung et al., 2022), and women can better determine and put in the effort needed to learn than men (Bembenutty, 2007). Moreover, having entrepreneur parents or being a member of a business family can shape individuals' entrepreneurial characteristics (Soleimanof et al., 2021; Zellweger et al., 2011). Accordingly, we controlled for the effects of family business background because it can influence the decision to participate in business classes (Bonesso et al., 2018). We also controlled for NEs' other resources, which can affect training participation. Founders' amount of time spent on their ventures can affect their decisions to engage in entrepreneurial actions, such as business planning (Greene & Hopp, 2017) and training participation (Fleuren et al., 2020). Likewise, startup commitment (Campbell et al., 2013) and self-efficacy (Schmitt et al., 2018; Vancouver & Kendall, 2006) are other personal resources that not only influence training motivation (Chung et al., 2022; Colquitt et al., 2000) but also, according to the COR theory's

applications, can influence resource acquisition processes (Xanthopoulou et al., 2009). We measured startup commitment using a two-item scale, as shown in Appendix A (Honig & Hopp, 2019; Townsend et al., 2010). The Cronbach's alpha was 0.708. In line with Dimov (2010), we measured entrepreneurial self-efficacy using a six-item scale. The Cronbach's alpha value was 0.775, which satisfies the recommended reliability thresholds.

Analysis

We conducted two separate analyses: First, to investigate the antecedents of NEs' choice to invest in their human capital by attending entrepreneurship training, we used a logistic regression. Next, to assess the effect of entrepreneurship training participation on the performance of NEs' ventures, we used propensity score matching (Antonakis et al., 2010; Greene & Hopp, 2017; Nikolaev et al., 2020). Matching is a quasi-experimental technique that creates a control group and a treatment group from observational data.

Entrepreneurship training participation is mostly a voluntary choice. NEs who decide to participate in entrepreneurship training may be systematically different from NEs who do not choose to do so. Therefore, to examine the effect of entrepreneurship training participation on new venture performance, we compared the venture performance of NEs who participated in entrepreneurship trainings (treatment group) with the venture performance of the same NEs who did not participate in entrepreneurship trainings (control group). However, we could not observe the venture performance of the same NE who simultaneously participated and did not participate in entrepreneurship trainings, thus propensity score matching enables us to find a control group that closely resembles treatment group, except for training participation. By our logistic regression, we found observed characteristics of participants of entrepreneurship trainings (treatment group). Table 3 shows there are differences between the treatment and control groups

in terms of NEs’ characteristics before matching. Because there is little difference between matching models, we performed nearest neighbor propensity score one-to-one matching without replacement (if we saw significant differences in the venture performance of the treatment and control group, we would check radius and kernel matching). In other words, we estimated the probability of choosing entrepreneurship training for NEs and matched NEs in the treatment group with NEs in the control group who have the same propensity score. After matching, there was no difference between the treatment and control group in terms of NEs’ characteristics. Subsequently, we compared the venture performance of the treatment group with the control group (Antonakis et al., 2010), and, without concerns about selection biases, attributed the difference to entrepreneurship training participation rather than NEs’ characteristics.

RESULTS

Table 1 shows the descriptive statistics and correlations of all the study variables. Entrepreneurship training participation has a positive correlation with education ($\beta = 0.15; p < 0.01$) and growth aspiration ($\beta = 0.16; p < 0.05$) and a negative correlation with perceived environmental uncertainty ($\beta = -0.16; p < 0.05$) and gender ($\beta = -0.08; p < 0.05$). Additionally, similar to other studies (Greene & Hopp, 2017; Reynolds, 2011), 23% of NEs after 40 months launched a viable venture (97 observations).

*** Please insert Table 1 around here ***

For our binary logistic regression models, we entered control variables in the first step of the regression analysis. Next, to evaluate the hypotheses, we added independent variables. Table 2 shows the results of the logit analysis explaining the entrepreneurship training participation decision. Model 1 indicates the coefficients for the logistic model of human capital investment, without our main independent variables. As illustrated in model 1, control variables alone cannot

predict training participation. Models 2 and 3 represent the model with resources and resource signal factors, respectively. In line with the COR theory, models 2 and 3 show that both resources and resource signals influence training participation. The results indicate women are more likely to invest in their human capital by attending entrepreneurship training ($\beta = -0.65$; $p < 0.05$). Other control variables do not have a significant effect on training participation.

*** Please insert Table 2 about here***

H1 stated NEs' experience would increase the likelihood of their entrepreneurship training participation. However, as shown in model 4 of Table 2, NE experience does not affect the odds of training participation ($\beta = 0.03$, n.s.), which fails to support H1. H2 stated there would be a positive relationship between NEs' education and their entrepreneurship training participation. As shown in model 4 of Table 2, education has a positive and significant impact on training participation ($\beta = 0.20$, $p < 0.01$, odds ratio = 1.22), providing support for H2.

The results also show growth aspiration has a positive link with training participation ($\beta = 1.21$, $p < 0.01$, odds ratio = 0.352), which supports H3. Perceived environmental uncertainty has a negative link with training participation ($\beta = -0.34$, $p < 0.01$, odds ratio = 0.623), providing support for H4 and indicating NEs will be more inclined to attend entrepreneurship training when they perceive the environment more certainly. Finally, the results do not support H5, which suggests NEs with higher levels of perceived resource availability are more likely to attend training compared to NEs with lower levels of perceived resource availability ($\beta = 0.22$, n.s.).

To investigate the consequences of NEs' choice to attend entrepreneurship training, we performed a propensity score matching analysis, as shown in Table 3. In columns 1 and 2, we report mean and distribution differences of variables before matching. As can be seen, education, perceived environmental uncertainty, and gender are different among those who participated in

classes and those who did not. Subsequently, we executed the propensity score analysis (Greene & Hopp, 2017). Columns 3 and 4 of Table 3 report the mean and distribution differences of variables after matching. These manifest that the mean values of variables in the treatment and control groups have no difference, similar to an experiment. Our analysis shows there is no significant difference in new venture performance (viability, emergence, persistence) among the control and treatment groups. Thus, our results do not support H6, suggesting that, for NEs, attending entrepreneurship training does not improve their venture’s performance significantly.

*** Insert Table 3 about here please ***

Robustness Checks

We collected PSED I dataset in four waves, and, for our main analysis, we measured investment in human capital during these waves and assessed the performance of the venture at the end of the fourth wave. To check the robustness of the model, we measured human capital investment during three waves and assessed the performance of the firm at the third wave. Simply put, we included only three waves in our robustness analysis. Table 4 includes the descriptive statistics and correlations of variables, and Table 5 shows the logistic regression of our full model. The results of the robustness analysis are consistent with our main analysis.

*** Please insert Tables 4 and 5 about here***

Table 6 presents the mean differences of viability in wave three and other variables after propensity score matching. As shown, investing in human capital did not make any considerable change in venture performance, providing additional support for our main results.

*** Please insert Table 6 about here ***

DISCUSSION

Educational entrepreneurship programs and training have attracted considerable scholarly attention over the past few decades (Gabrielsson et al., 2020). Here, we aimed to shed light on the antecedents and outcomes of the choice to attend entrepreneurship training for NEs. Building upon the foundations of the COR theory, we examined the factors that can explain NEs' choice to attend entrepreneurship training as a human capital investment. We found that, in line with COR theory, NEs' existing resources (education) and perceived resource signals (growth aspiration and environmental uncertainty) affect the likelihood of training participation. Moreover, and, interestingly, we found no evidence suggesting there is a significant difference in new venture performance (viability, persistence, and emergence) for NEs who participated in entrepreneurship training and those who did not.

Our research has several contributions: First, we highlighted the need for understanding the demand side of entrepreneurship education by examining the antecedents of the choice to attend entrepreneurship training. Previous research has mostly focused on the effectiveness of the supply side of entrepreneurship (Castleman et al., 2021; Haddoud et al., 2022). However, the demand for entrepreneurship education (i.e., who chooses to participate in entrepreneurship education and why) has remained understudied. Entrepreneurship education aims to support individuals with launching and growing a business (Kotha et al., 2023). Thus, it is critical to extend our knowledge about the audience of the educational programs so we can address their needs more effectively. For instance, our findings that founders who are more educated, growth aspiring, and certain about their environment are more likely to attend entrepreneurship training can be used by entrepreneurship educators to enrich and customize training programs developed and offered to entrepreneurs at the earlier stage of the entrepreneurship process. Educators may promote the attractiveness of their training programs by adding more growth-oriented content

that can satisfy the needs of the growth seekers who tend to attend training. Additionally, policy makers may adopt certain policies to decrease the opportunity cost of attending entrepreneurship training for less educated NEs or those in more uncertain environments to promote NEs' willingness to invest in their human capital through entrepreneurship training participation.

Our study also extends the COR theory in two ways: First, we are among the first to apply and confirm the explanatory potential of COR theory in the entrepreneurship education context. Scholars may adopt this theory to understand other entrepreneur resource investment or preservation decisions, such as developing and maintaining social or intellectual capital in different contexts or stages of the entrepreneurship process. Likewise, scholars may conceptualize the entrepreneurial failure or exit process as a resource loss situation that can be better understood using the COR theory. Second, we responded to the calls for studies on the resource signals that influence resource investment decisions (Halbesleben et al., 2014; Lanivich, 2015). Specifically, we introduced NEs' growth aspiration as an important resource signal. Our observation that growth aspiration reinforces, and perceived environmental uncertainty mitigates the likelihood of attending entrepreneurship training extends the COR theory by highlighting the role of resource signals for resource investment decisions. It is critical to develop our understanding of resource signals because they can help with theorizing the role of others and environments in individuals' resource investment decisions. Resource signals can help us understand how, for example, policy makers, educators, media, or institutions influence entrepreneurs' resource investment decisions.

Finally, our novel research design allows us to use an observational data set to run a quasi-experiment and investigate the impact of entrepreneurship training on new venture performance. One major limitation of prior research on the effectiveness of entrepreneurship

training, which has resulted in contradictory findings, is research methods that neglect self-selection bias (Yi & Duval-Couetil, 2022). Despite scholars' concerns about the selection bias in this area, to the best of our knowledge, only Henry et al. (2004) highlighted that founders who apply for entrepreneurship training have similarities such as similar personal profiles. An emergent stream of research has also examined the role of trainees' characteristics on the effectiveness of training (Albort-Morant & Oghazi, 2016; Kotha et al., 2023; Lafortune et al., 2018; Lyons & Zhang, 2018) and concluded that accounting for the characteristics of the participants is necessary for realizing the goals of entrepreneurship training (Bullough et al., 2015). Accordingly, to avoid an upward bias in estimating the training participation-venture performance link, we used propensity score matching (Antonakis et al., 2010). Specifically, we first matched NEs who were similar, except for training participation, and then compared their venture performance and estimated what would have happened if the founder had decided not to participate in entrepreneurship training. Interestingly, our analysis failed to find a significant difference between the new venture performance of NEs who attend entrepreneurship training and those who do not. Simply put, NEs whose ventures are in the emerging phase may not benefit from investing their resources in acquiring human capital through participation in entrepreneurship training. This may imply that founders need to consider the stage of their venture (Storey, 2002), in addition to their various investment options, when they decide whether to attend entrepreneurship training (Del Sarto et al., 2021).

Limitations and Directions for Future Research

This study has a number of limitations that highlight opportunities for future research. To explore antecedents of entrepreneurship training participation, we included years of education and a dummy variable for growth aspiration in our analysis and could not control for the

discipline of education and the levels of growth expectations. In addition, although previous researchers have suggested entrepreneurship training is more effective for less experienced entrepreneurs (Lafortune et al., 2018; Lyons & Zhang, 2018), and resource availability can influence resource portfolio structuring (Sirmon et al., 2007), we did not find any link between experience and perceived availability of resources with training participation. Future researchers could thus explore the role of entrepreneurs' education discipline, their years of experience in their previously founded ventures, and/or other types of resources they possess (e.g., social, intellectual, psychological capitals) in making their choice to attend entrepreneurship training. Additionally, future researchers could adopt different measures for resource availability that directly consider founders' perceptions of social support for entrepreneurship training participation or their trust in the eligibility of entrepreneurship training providers. Furthermore, our analysis suggests female entrepreneurs are more likely to participate in entrepreneurship training. Future research could build upon this finding to probe the role of gender in resource investment decisions, in general, and, more specifically, in entrepreneurship training participation. Our focus in probing the demand side of entrepreneurship training is on NEs. Future studies could replicate our research for other stages of the venture creation process or for other types of entrepreneurs (e.g., tech entrepreneurs, poverty entrepreneurs, social entrepreneurs). Future research on the demand side of entrepreneurship education could help with better realizing the goals of entrepreneurship education and training programs.

Our finding that entrepreneurship training participation does not pay off during the emerging phase of the venture creation process underscores a need for probing alternative explanations. We did not have access to information about contents, delivery methods, and educators' characteristics, which all can change the effects of training participation on venture

performance. In addition, the development and provision of customized training for NEs at the emerging phase of new venture development have attracted less scholarly attention (Cabrer-Borrás & Rico Belda, 2018; Davidsson & Honig, 2003; Edelman et al., 2008). Such shortcomings might be due to the greater focus of entrepreneurship programs on university students rather than entrepreneurs (Martin et al., 2013; Nabi et al., 2017). Moreover, those entrepreneurs who do not attend entrepreneurship training may allocate their resources to other value-added activities that can compensate for lack of formal training—or NEs who attend training may just see that as an activity in their to-do list without certainly selecting or accomplishing any learning goals. Consequently, attending entrepreneurship training may not necessarily be a differentiating factor.

Moreover, we could not account for the effects of other resources that NEs possess. Those who have identified a promising opportunity and own the resources they need (e.g., via cofounders, partners, mentors) may perceive no need for training— while having at the same time *ex ante* higher chances for success. In contrast, those who do not have such favorable circumstances (and who have *ex ante* lower chances of success) may be more likely to take entrepreneurship training. In such cases, the ultimate empirical observation that both groups (treatment and control) exhibit similar success would actually reflect a positive impact of training because those who have *ex ante* more difficult circumstances and lower success chances can manage to be on par with those who have *ex ante* more favorable conditions and thus do not need training. Even further, the fast failing of low-quality ideas with the help of knowledge gained through training can be considered a form of success because it saves entrepreneurs' and societies' resources. Therefore, future researchers could examine the quality, type, and other characteristics of entrepreneurship training, as well as participants' resources, to suggest

effective human capital investment strategies for NEs. This line of research can help educational institutions diagnose the shortcomings of the training programs at earlier stages of the entrepreneurship process and improve the quality of training programs based on the needs of NEs. Finally, because PSED I was gathered from 1998 to 2003, and there have been major developments in the quality and availability of entrepreneurship training programs since then, replicating this study with more recent data could be informative.

REFERENCES

- Albort-Morant, G., and Oghazi, P. (2016). How useful are incubators for new entrepreneurs? *Journal of Business Research*, 69(6), 2125–2129. <https://doi.org/10.1016/j.jbusres.2015.12.019>
- Allen, J., Stevenson, R., and Wang, T. (2021). Creative and resourceful: How human, social, and psychological resources affect creative workers' ability to rebound after failure. *Small Business Economics*, 57(2), 705–719. <https://doi.org/10.1007/s11187-020-00422-z>
- Antonakis, J., Bendahan, S., Jacquart, P., and Lalive, R. (2010). On making causal claims: A review and recommendations. *Leadership Quarterly*, 21(6), 1086–1120. <https://doi.org/10.1016/j.leaqua.2010.10.010>
- Arthur, W., Bennett, W., Edens, P. S., and Bell, S. T. (2003). Effectiveness of training in organizations: A meta-analysis of design and evaluation features. *Journal of Applied Psychology*, 88(2), 234–245. <https://doi.org/10/dgwh7m>
- Åstebro, T., and Hoos, F. (2021). Impact measurement based on repeated randomized control trials: The case of a training program to encourage social entrepreneurship. *Strategic Entrepreneurship Journal*, 15(2), 254–278. <https://doi.org/10.1002/sej.1391>
- Bae, J., and Yu, G.-C. (2005). HRM configurations in Korean venture firms: Resource availability, institutional force and strategic choice perspectives. *The International Journal of Human Resource Management*, 16(9), 1759–1782. <https://doi.org/10.1080/09585190500239499>
- Bae, T. J., Qian, S., Miao, C., and Fiet, J. O. (2014). The relationship between entrepreneurship education and entrepreneurial intentions: A meta-analytic review. *Entrepreneurship: Theory and Practice*, 38(2), 217–254. <https://doi.org/10.1111/etap.12095>
- Baker, T., and Nelson, R. E. (2005). Creating something from nothing: Resource construction through entrepreneurial bricolage. *Administrative Science Quarterly*, 50(3), 329–366. <https://doi.org/10.2189/asqu.2005.50.3.329>
- Baptista, R., Karaöz, M., and Mendonça, J. (2014). The impact of human capital on the early success of necessity versus opportunity-based entrepreneurs. *Small Business Economics*, 42(4), 831–847. <https://doi.org/10.1007/s11187-013-9502-z>
- Bembenuatty, H. (2007). Self-regulation of learning and academic delay of gratification: Gender and ethnic differences among college students. *Journal of Advanced Academics*, 18(4), 586–616. <https://doi.org/10.4219/jaa-2007-553>

- Bischoff, K. M., Gielnik, M. M., and 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. <https://doi.org/10.1002/sej.1364>
- Bonesso, S., Gerli, F., Pizzi, C., and Cortellazzo, L. (2018). Students' entrepreneurial intentions: The role of prior learning experiences and emotional, social, and cognitive competencies. *Journal of Small Business Management*, 56(S1), 215–242. <https://doi.org/10.1111/jsbm.12399>
- Bosma, N., Van Praag, M., Thurik, R., and De Wit, G. (2004). The value of human and social capital investments for the business performance of startups. *Small Business Economics*, 23(3), 227–236. <https://doi.org/10.1023/B:SBEJ.0000032032.21192.72>
- Boso, N., Adeleye, I., Donbesuur, F., and Gyensare, M. (2019). Do entrepreneurs always benefit from business failure experience? *Journal of Business Research*, 98, 370–379. <https://doi.org/10/gvzt>
- Bracke, P., van de Straat, V., and Missinne, S. (2014). Education, mental health, and education–labor market misfit. *Journal of Health and Social Behavior*, 55(4), 442–459. <https://doi.org/10.1177/0022146514557332>
- Brinckmann, J., Dew, N., Read, S., Mayer-Haug, K., and Grichnik, D. (2019). Of those who plan: A meta-analysis of the relationship between human capital and business planning. *Long Range Planning*, 52(2), 173–188. <https://doi.org/10.1016/j.lrp.2018.01.003>
- Brinckmann, J., Grichnik, D., and Kapsa, D. (2010). Should entrepreneurs plan or just storm the castle? A meta-analysis on contextual factors impacting the business planning–performance relationship in small firms. *Journal of Business Venturing*, 25(1), 24–40. <https://doi.org/10.1016/J.JBUSVENT.2008.10.007>
- Brush, C. G., Greene, P. G., and Hart, M. M. (2001). From initial idea to unique advantage: The entrepreneurial challenge of constructing a resource base. *Academy of Management Perspectives*, 15(1), 64–78. <https://doi.org/10.5465/ame.2001.4251394>
- Bryan, K. A., Tilcsik, A., and Zhu, B. (2017). Which entrepreneurs are coachable and why? *American Economic Review*, 107(5), 312–316. <https://doi.org/10.1257/aer.p.20171010>
- Bullough, A., de Luque, M. S., Abdelzaher, D., and Heim, W. (2015). Developing women leaders through entrepreneurship education and training. *Academy of Management Perspectives*, 29(2), 250–270. <https://doi.org/10.5465/amp.2012.0169>
- Burnette, J. L., Pollack, J. M., Forsyth, R. B., Hoyt, C. L., Babij, A. D., Thomas, F. N., and Coy, A. E. (2020). A growth mindset intervention: Enhancing students' entrepreneurial self-efficacy and career development. *Entrepreneurship Theory and Practice*, 44(5), 878–908. <https://doi.org/10.1177/1042258719864293>
- Cabrer-Borrás, B., and Rico Belda, P. (2018). Survival of entrepreneurship in Spain. *Small Business Economics*, 51(1), 265–278. <https://doi.org/10/gm85qh>
- Campbell, N. S., Perry, S. J., Maertz, C. P., Allen, D. G., and Griffeth, R. W. (2013). All you need is ... resources: The effects of justice and support on burnout and turnover. *Human Relations*, 66(6), 759–782. <https://doi.org/10/9dt>
- Camuffo, A., Cordova, A., Gambardella, A., and Spina, C. (2020). A scientific approach to entrepreneurial decision making: Evidence from a randomized control trial. *Management Science*, 66(2), 564–586. <https://doi.org/10.1287/mnsc.2018.3249>

- Canavati, S., Libaers, D., Wang, T., Hooshangi, S., and Sarooghi, H. (2021). Relationship between human capital, new venture ideas, and opportunity beliefs: A meta-analysis. *Strategic Entrepreneurship Journal*, 15(3), 454–477. <https://doi.org/10/gjtr5>
- Cao, X., and Im, J. (2018). Founder human capital and new technology venture R&D search intensity: The moderating role of an environmental jolt. *Small Business Economics*, 50(3), 625–642. <https://doi.org/10/gm9mh5>
- Capelleras, J.-L., Contin-Pilart, I., Larraza-Kintana, M., and Martin-Sanchez, V. (2019). Entrepreneurs' human capital and growth aspirations: The moderating role of regional entrepreneurial culture. *Small Business Economics*, 52(1), 3–25. <https://doi.org/10.1007/s11187-017-9985-0>
- Carpenter, M. A., and Fredrickson, J. W. (2001). Top management teams, global strategic posture, and the moderating role of uncertainty. *Academy of Management Journal*, 44(3), 533–545. <https://doi.org/10.2307/3069368>
- Cassar, G. (2014). Industry and startup experience on entrepreneur forecast performance in new firms. *Journal of Business Venturing*, 29(1), 137–151. <https://doi.org/10.1016/j.jbusvent.2012.10.002>
- Castleman, B. L., Murphy, F. X., Patterson, R. W., and Skimmyhorn, W. L. (2021). Nudges don't work when the benefits are ambiguous: Evidence from a high-stakes education program. *Journal of Policy Analysis and Management*, 40(4), 1230–1248. <https://doi.org/10.1002/pam.22303>
- Chatterjee, J. (2017). Strategy, human capital investments, business-domain capabilities, and performance: A study in the global software services industry. *Strategic Management Journal*, 38(3), 588–608. <https://doi.org/10.1002/smj.2505>
- Chen, H. S., Mitchell, R. K., Brigham, K. H., Howell, R., and Steinbauer, R. (2018). Perceived psychological distance, construal processes, and abstractness of entrepreneurial action. *Journal of Business Venturing*, 33(3), 296–314. <https://doi.org/10/gngt22>
- Chung, S., Zhan, Y., Noe, R. A., and Jiang, K. (2022). Is it time to update and expand training motivation theory? A meta-analytic review of training motivation research in the 21st century. *Journal of Applied Psychology*, 107(7), 1150–1179. <https://doi.org/10.1037/apl0000901>
- Coad, A., Frankish, J. S., Roberts, R. G., and Storey, D. J. (2016). Why should banks provide entrepreneurship training seminars? *International Small Business Journal: Researching Entrepreneurship*, 34(6), 733–759. <https://doi.org/10/f829g7>
- Cohen, W. M., and Levinthal, D. A. (1990). Absorptive capacity: A new perspective on learning and innovation. *Administrative Science Quarterly*, 35(1), 128–152. <https://doi.org/10.2307/2393553>
- Colombo, M. G., and Grilli, L. (2005). Founders' human capital and the growth of new technology-based firms: A competence-based view. *Research Policy*, 34(6), 795–816. <https://doi.org/10/bbpzpb>
- Colquitt, J. A., LePine, J. A., and Noe, R. A. (2000). Toward an integrative theory of training motivation: A meta-analytic path analysis of 20 years of research. *Journal of Applied Psychology*, 85(5), 678–707. <https://doi.org/10.1037/0021-9010.85.5.678>
- Cope, J. (2011). Entrepreneurial learning from failure: An interpretative phenomenological analysis. *Journal of Business Venturing*, 26(6), 604–623. <https://doi.org/10.1016/j.jbusvent.2010.06.002>

- Costa, S. F., Santos, S. C., Wach, D., and Caetano, A. (2018). Recognizing opportunities across campus: The effects of cognitive training and entrepreneurial passion on the business opportunity prototype. *Journal of Small Business Management*, 56(1), 51–75. <https://doi.org/10.1111/jsbm.12348>
- Covin, J. G., Slevin, D. P., and Heeley, M. B. (2001). Strategic decision making in an intuitive vs. technocratic mode: Structural and environmental considerations. *Journal of Business Research*, 52(1), 51–67. <https://doi.org/10/ccjqd3>
- Crook, T. R., Todd, S. Y., Combs, J. G., Woehr, D. J., and Ketchen, D. J. (2011). Does human capital matter? A meta-analysis of the relationship between human capital and firm performance. *The Journal of Applied Psychology*, 96(3), 443–456. <https://doi.org/10/d3fbg7>
- Davidsson, P., and Honig, B. (2003). The role of social and human capital among nascent entrepreneurs. *Journal of Business Venturing*, 18(3), 301–331. [https://doi.org/10.1016/S0883-9026\(02\)00097-6](https://doi.org/10.1016/S0883-9026(02)00097-6)
- Debarliev, S., Janeska-Iliev, A., Stripeikis, O., and Zupan, B. (2022). What can education bring to entrepreneurship? Formal versus non-formal education. *Journal of Small Business Management*, 60(1), 219–252. <https://doi.org/10.1080/00472778.2019.1700691>
- Del Sarto, N., Di Minin, A., Ferrigno, G., and Piccaluga, A. (2021). Born global and well educated: Start-up survival through fuzzy set analysis. *Small Business Economics*, 56(4), 1405–1423. <https://doi.org/10.1007/s11187-019-00238-6>
- Delmar, F., and Shane, S. (2006). Does experience matter? The effect of founding team experience on the survival and sales of newly founded ventures. *Strategic Organization*, 4(3), 215–247. <https://doi.org/10.1177/1476127006066596>
- Dew, N., Read, S., Sarasvathy, S. D., and Wiltbank, R. (2009). Effectual versus predictive logics in entrepreneurial decision-making: Differences between experts and novices. *Journal of Business Venturing*, 24(4), 287–309. <https://doi.org/10.1016/j.jbusvent.2008.02.002>
- Dimov, D. (2010). Nascent entrepreneurs and venture emergence: Opportunity confidence, human capital, and early planning. *Journal of Management Studies*, 47(6), 1123–1153. <https://doi.org/10.1111/j.1467-6486.2009.00874.x>
- Dutta, D. K., and Thornhill, S. (2008). The evolution of growth intentions: Toward a cognition-based model. *Journal of Business Venturing*, 23(3), 307–332. <https://doi.org/10/ccbbrv>
- Edelman, L. F., Brush, C. G., Manolova, T. S., and Greene, P. G. (2010). Start-up motivations and growth intentions of minority nascent entrepreneurs. *Journal of Small Business Management*, 48(2), 174–196. <https://doi.org/10.1111/j.1540-627X.2010.00291.x>
- Edelman, L. F., Manolova, T. S., and Brush, C. G. (2008). Entrepreneurship education: Correspondence between practices of nascent entrepreneurs and textbook prescriptions for success. *Academy of Management Learning & Education*, 7(1), 56–70. <https://doi.org/10.5465/amle.2008.31413862>
- Edelman, L. F., and Yli-Renko, H. (2010). The impact of environment and entrepreneurial perceptions on venture-creation efforts: Bridging the discovery and creation views of entrepreneurship. *Entrepreneurship Theory and Practice*, 34(5), 833–856. <https://doi.org/10.1111/j.1540-6520.2010.00395.x>
- Efendic, A., Mickiewicz, T., and Rebmann, A. (2015). Growth aspirations and social capital: Young firms in a post-conflict environment. *International Small Business Journal*:

- Researching Entrepreneurship*, 33(5), 537–561.
<https://doi.org/10.1177/0266242613516987>
- Eggers, J. P., and Song, L. (2015). Dealing with failure: Serial entrepreneurs and the costs of changing industries between ventures. *Academy of Management Journal*, 58(6), 1785–1803. <https://doi.org/10.5465/amj.2014.0050>
- Estrin, S., Korosteleva, J., and Mickiewicz, T. (2013). Which institutions encourage entrepreneurial growth aspirations? *Journal of Business Venturing*, 28(4), 564–580. <https://doi.org/10.1016/j.jbusvent.2012.05.001>
- Fairlie, R. W., Karlan, D., and Zinman, J. (2015). Behind the GATE experiment: Evidence on effects of and rationales for subsidized entrepreneurship training. *American Economic Journal: Economic Policy*, 7(2), 125–161. <https://doi.org/10.1257/pol.20120337>
- Fleuren, B. P. I., de Grip, A., Kant, Ij., and Zijlstra, F. R. H. (2020). Time equals money?: A randomized controlled field experiment on the effects of four types of training vouchers on training participation. *Journal of Vocational Behavior*, 118, 103403. <https://doi.org/10/ggnv6s>
- Gabrielsson, J., Hägg, G., Landström, H., and Politis, D. (2020). Connecting the past with the present: The development of research on pedagogy in entrepreneurial education. *Education + Training*, 62(9), 1061–1086. <https://doi.org/10.1108/ET-11-2019-0265>
- Galvão, A. R., Marques, C. S. E., Ferreira, J. J., and Braga, V. (2020). Stakeholders' role in entrepreneurship education and training programmes with impacts on regional development. *Journal of Rural Studies*, 74, 169–179. <https://doi.org/10.1016/j.jrurstud.2020.01.013>
- Gartner, W. B., and Shaver, K. G. (2012). Nascent entrepreneurship panel studies: Progress and challenges. *Small Business Economics*, 39(3), Article 3. <https://doi.org/10.1007/s11187-011-9353-4>
- Gartner, W., and Liao, J. (2012). The effects of perceptions of risk, environmental uncertainty, and growth aspirations on new venture creation success. *Small Business Economics*, 39(3), 703–712. <https://doi.org/10/cxfdqq>
- Gelderen, M., Frese, M., and Thurik, R. (2000). Strategies, uncertainty and performance of small business startups. *Small Business Economics*, 15(3), 165–181. <https://doi.org/10.1023/A:1008113613597>
- Gielnik, M. M., Frese, M., Kahara-Kawuki, A., Wasswa Katono, I., Kyejjusa, S., Ngoma, M., Munene, J., Namatovu-Dawa, R., Nansubuga, F., Orobias, L., Oyugi, J., Sejjaaka, S., Sserwanga, A., Walter, T., Bischoff, K. M., and 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. <https://doi.org/10.5465/amle.2012.0107>
- Gimmon, E., and Levie, J. (2010). Founder's human capital, external investment, and the survival of new high-technology ventures. *Research Policy*, 39(9), 1214–1226. <https://doi.org/10/fkn8c5>
- González-López, M. J., Pérez-López, M. C., and Rodríguez-Ariza, L. (2019). Clearing the hurdles in the entrepreneurial race: The role of resilience in entrepreneurship education. *Academy of Management Learning and Education*, 18(3), 457–483. <https://doi.org/10.5465/amle.2016.0377>

- Gordon, I., Hamilton, E., and Jack, S. (2012). A study of a university-led entrepreneurship education programme for small business owner/managers. *Entrepreneurship and Regional Development*, 24(9–10), 767–805. <https://doi.org/10.1080/08985626.2011.566377>
- Greco, L. M., Charlier, S. D., and Brown, K. G. (2019). Trading off learning and performance: Exploration and exploitation at work. *Human Resource Management Review*, 29(2), 179–195. <https://doi.org/10.1016/j.hrmr.2018.06.001>
- Greene, F. J., and Hopp, C. (2017). Are formal planners more likely to achieve new venture viability?: A counterfactual model and analysis. *Strategic Entrepreneurship Journal*, 11(1), 36–60. <https://doi.org/10.1111/sej.1245>
- Grégoire, D. A., Binder, J. K., and Rauch, A. (2019). Navigating the validity tradeoffs of entrepreneurship research experiments: A systematic review and best-practice suggestions. *Journal of Business Venturing*, 34(2), 284–310. <https://doi.org/10/ggpz4h>
- Gruber, M., MacMillan, I. C., and Thompson, J. D. (2008). Look before you leap: Market opportunity identification in emerging technology firms. *Management Science*, 54(9), 1652–1665. <https://doi.org/10.1287/mnsc.1080.0877>
- Haddoud, M. Y., Onjewu, A.-K. E., Nowinski, W., and Alammari, K. (2022). Assessing the role of entrepreneurship education in regulating emotions and fostering implementation intention: Evidence from Nigerian universities. *Studies in Higher Education*, 47(2), 450–468. <https://doi.org/10.1080/03075079.2020.1758652>
- Halbesleben, J. R. B. (2006). Sources of social support and burnout: A meta-analytic test of the conservation of resources model. *Journal of Applied Psychology*, 91(5), 1134–1145. <https://doi.org/10.1037/0021-9010.91.5.1134>
- Halbesleben, J. R. B., Neveu, J.-P., Paustian-Underdahl, S. C., and Westman, M. (2014). Getting to the “COR”: Understanding the role of resources in conservation of resources theory. *Journal of Management*, 40(5), 1334–1364. <https://doi.org/10.1177/0149206314527130>
- Halbesleben, J. R. B., and Wheeler, A. R. (2015). To invest or not? The role of coworker support and trust in daily reciprocal gain spirals of helping behavior. *Journal of Management*, 41(6), 1628–1650. <https://doi.org/10.1177/0149206312455246>
- Haynie, J. M., Shepherd, D. A., and McMullen, J. S. (2009). An opportunity for me? The role of resources in opportunity evaluation decisions. *Journal of Management Studies*, 46(3), 337–361. <https://doi.org/10.1111/j.1467-6486.2009.00824.x>
- Heitor, M., and Horta, H. (2016). Reforming higher education in Portugal in times of uncertainty: The importance of illities, as non-functional requirements. *Technological Forecasting and Social Change*, 113, 146–156. <https://doi.org/10.1016/j.techfore.2015.09.027>
- Henry, C., Hill, F. M., and Leitch, C. M. (2004). The effectiveness of training for new business creation: A longitudinal study. *International Small Business Journal*, 22(3), 249–271. <https://doi.org/10.1177/0266242604042378>
- Hermans, J., Vanderstraeten, J., van Witteloostuijn, A., Dejardin, M., Ramdani, D., and Stam, E. (2015). Ambitious Entrepreneurship: A Review of Growth Aspirations, Intentions, and Expectations. In A. C. Corbett, J. A. Katz, and A. Mckelvie (Eds.), *Advances in Entrepreneurship, Firm Emergence and Growth* (Vol. 17, pp. 127–160). Emerald Group Publishing Limited. <https://doi.org/10.1108/S1074-754020150000017011>

- Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist*, 44(3), 513–524. <https://doi.org/10/czr>
- Hobfoll, S. E., Halbesleben, J., Neveu, J.-P., and Westman, M. (2018). Conservation of resources in the organizational context: The reality of resources and their consequences. *Annual Review of Organizational Psychology and Organizational Behavior*, 5(1), 103–128. <https://doi.org/10.1146/annurev-orgpsych-032117-104640>
- Honig, B. (2004). Entrepreneurship education: Toward a model of contingency-based business planning. *Academy of Management Learning & Education*, 3(3), 258–273. <https://doi.org/10.5465/amle.2004.14242112>
- Honig, B., and Hopp, C. (2019). Learning orientations and learning dynamics: Understanding heterogeneous approaches and comparative success in nascent entrepreneurship. *Journal of Business Research*, 94(1), 28–41. <https://doi.org/10.1016/j.jbusres.2018.09.014>
- Hopp, C., and Stephan, U. (2012). The influence of socio-cultural environments on the performance of nascent entrepreneurs: Community culture, motivation, self-efficacy and start-up success. *Entrepreneurship & Regional Development*, 24(9–10), 917–945. <https://doi.org/10/gcsmd7>
- Jiao, K., Ling, Y., and Kellermanns, F. W. (2021). Does prior experience matter? A meta-analysis of the relationship between prior experience of entrepreneurs and firm performance. *Journal of Small Business Management*, 0(0), 1–48. <https://doi.org/10/gm7dhh>
- Kim, P. H., Longest, K. C., and Lippmann, S. (2015). The tortoise versus the hare: Progress and business viability differences between conventional and leisure-based founders. *Journal of Business Venturing*, 30(2), 185–204. <https://doi.org/10.1016/j.jbusvent.2014.02.005>
- Ko, E.-J., and McKelvie, A. (2018). Signaling for more money: The roles of founders' human capital and investor prominence in resource acquisition across different stages of firm development. *Journal of Business Venturing*, 33(4), 438–454. <https://doi.org/10/gdvp5g>
- Kotha, R., Vissa, B. (Bala), Lin, Y., and Corboz, A. (2023). Do ambitious entrepreneurs benefit more from training? *Strategic Management Journal*, 44(2), 549–575. <https://doi.org/10.1002/smj.3438>
- Kuratko, D. F. (2005). The emergence of entrepreneurship education: Development, trends, and challenges. *Entrepreneurship Theory and Practice*, 29(5), 577–597. <https://doi.org/10.1111/j.1540-6520.2005.00099.x>
- Kyrö, P. (2015). The conceptual contribution of education to research on entrepreneurship education. *Entrepreneurship and Regional Development*, 27(9–10), 599–618. <https://doi.org/10.1080/08985626.2015.1085726>
- Lafortune, J., Riutort, J., and Tessada, J. (2018). Role models or individual consulting: The impact of personalizing micro-entrepreneurship training. *American Economic Journal: Applied Economics*, 10(4), 222–245. <https://doi.org/10.1257/app.20170077>
- Lanivich, S. E. (2015). The RICH entrepreneur: Using conservation of resources theory in contexts of uncertainty. *Entrepreneurship Theory and Practice*, 39(4), 863–894. <https://doi.org/10.1111/etap.12082>
- Liao, J., and Gartner, W. B. (2006). The effects of pre-venture plan timing and perceived environmental uncertainty on the persistence of emerging firms. *Small Business Economics*, 27(1), 23–40. <https://doi.org/10.1007/s11187-006-0020-0>

- Linder, C., Lechner, C., and Pelzel, F. (2020). Many Roads Lead to Rome: How Human, Social, and Financial Capital Are Related to New Venture Survival. *Entrepreneurship Theory and Practice*, 44(5), 909–932. <https://doi.org/10/ggfcq4>
- Lyons, E., and Zhang, L. (2018). Who does (not) benefit from entrepreneurship programs? *Strategic Management Journal*, 39(1), 85–112. <https://doi.org/10.1002/smj.2704>
- Martin, B. C., McNally, J. J., and 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. <https://doi.org/10/f3s9jp>
- Marvel, M. R., Davis, J. L., and Sproul, C. R. (2016). Human Capital and Entrepreneurship Research: A Critical Review and Future Directions. *Entrepreneurship Theory and Practice*, 40(3), 599–626. <https://doi.org/10/gf8g43>
- Matlay, H. (2008). The impact of entrepreneurship education on entrepreneurial outcomes. *Journal of Small Business and Enterprise Development*, 15(2), 382–396. <https://doi.org/10.1108/14626000810871745>
- Mcmullen, J. S., and Dimov, D. (2013). Time and the entrepreneurial journey: The problems and promise of studying entrepreneurship as a process. *Journal of Management Studies*, 50(8), 1481–1512. <https://doi.org/10.1111/joms.12049>
- Milliken, F. J. (1987). Three types of perceived uncertainty about the environment: State, effect, and response uncertainty. *Academy of Management Review*, 12(1), 133–143. <https://doi.org/10.5465/amr.1987.4306502>
- Mok, K. H. (2005). Fostering entrepreneurship: Changing role of government and higher education governance in Hong Kong. *Research Policy*, 34(4), 537–554. <https://doi.org/10.1016/j.respol.2005.03.003>
- Moroz, P. W., and Hindle, K. (2012). Entrepreneurship as a process: Toward harmonizing multiple perspectives. *Entrepreneurship Theory and Practice*, 36(4), 781–818. <https://doi.org/10.1111/j.1540-6520.2011.00452.x>
- Morris, M. H., Webb, J. W., Fu, J., and Singhal, S. (2013). A competency-based perspective on entrepreneurship education: Conceptual and empirical insights. *Journal of Small Business Management*, 51(3), 352–369. <https://doi.org/10.1111/jsbm.12023>
- Morris, S. S., Alvarez, S. A., Barney, J. B., and Molloy, J. C. (2017). Firm-specific human capital investments as a signal of general value: Revisiting assumptions about human capital and how it is managed. *Strategic Management Journal*, 38(4), 912–919. <https://doi.org/10.1002/smj.2521>
- Mukesh, H. V., Pillai, K. R., and Mamman, J. (2020). Action-embedded pedagogy in entrepreneurship education: An experimental enquiry. *Studies in Higher Education*, 45(8), 1679–1693. <https://doi.org/10.1080/03075079.2019.1599848>
- Nabi, G., Liñán, F., Fayolle, A., Krueger, N., and 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. <https://doi.org/10.5465/amle.2015.0026>
- Newbert, S. L., Tornikoski, E. T., and Quigley, N. R. (2013). Exploring the evolution of supporter networks in the creation of new organizations. *Journal of Business Venturing*, 28(2), 281–298. <https://doi.org/10/gnnqwk>
- Ng, T. W. H., and Feldman, D. C. (2010). Human capital and objective indicators of career success: The mediating effects of cognitive ability and conscientiousness. *Journal of*

- Occupational and Organizational Psychology*, 83(1), 207–235.
<https://doi.org/10.1348/096317909X414584>
- Nikolaev, B., Boudreaux, C., and Wood, M. (2020). Entrepreneurship and subjective well-being: The mediating role of psychological functioning. *Entrepreneurship Theory and Practice*, 44(3), 557–586. <https://doi.org/10.1177/1042258719830314>
- O'Connor, A. (2013). A conceptual framework for entrepreneurship education policy: Meeting government and economic purposes. *Journal of Business Venturing*, 28(4), 546–563. <https://doi.org/10.1016/j.jbusvent.2012.07.003>
- Packard, M. D., Clark, B. B., and Klein, P. G. (2017). Uncertainty types and transitions in the entrepreneurial process. *Organization Science*, 28(5), 840–856. <https://doi.org/10.1287/orsc.2017.1143>
- Pallant, J. (2007). *SPSS Survival Manual: A step by step guide to data analysis using SPSS* (third). Open University Press.
- Parker, S. C. (2006). Learning about the unknown: How fast do entrepreneurs adjust their beliefs? *Journal of Business Venturing*, 21(1), 1–26. <https://doi.org/10.1016/j.jbusvent.2005.12.003>
- Pittaway, L., and Cope, J. (2007). Entrepreneurship education: A systematic review of the evidence. *International Small Business Journal*, 25(5), 479–510. <https://doi.org/10.1177/0266242607080656>
- Piva, E., and Rossi-Lamastra, C. (2018). Human capital signals and entrepreneurs' success in equity crowdfunding. *Small Business Economics*, 51(3), 667–686. <https://doi.org/10.1007/s11187-017-9950-y>
- Rauch, A., and Rijsdijk, S. A. (2013). The effects of general and specific human capital on long-term growth and failure of newly founded businesses. *Entrepreneurship Theory and Practice*, 37(4), 923–941. <https://doi.org/10.1111/j.1540-6520.2011.00487.x>
- Reynolds, P. (2011). Informal and early formal financial support in the business creation process: Exploration with PSED II data Set. *Journal of Small Business Management*, 49(1), 27–54. <https://doi.org/10.1111/j.1540-627X.2010.00313.x>
- Reynolds, P., Carter, N., Gartner, W., and Greene, P. (2004). The prevalence of nascent entrepreneurs in the United States: Evidence from the panel study of entrepreneurial dynamics. *Small Business Economics*, 23, 263–284. <https://doi.org/10.1023/B:SBEJ.0000032046.59790.45>
- Ribeiro-Soriano, D., and Urbano, D. (2010). Employee-organization relationship in collective entrepreneurship: An overview. *Journal of Organizational Change Management*, 23(4), 349–359. <https://doi.org/10.1108/09534811011055368>
- Rideout, E. C., and Gray, D. O. (2013). Does entrepreneurship education really work? A review and methodological critique of the empirical literature on the effects of university-based entrepreneurship education. *Journal of Small Business Management*, 51(3), 329–351. <https://doi.org/10.1111/jsbm.12021>
- Schmidt, J., and Keil, T. (2013). What makes a resource valuable? Identifying the drivers of firm-idiosyncratic resource value. *The Academy of Management Review*, 38, 206–228. <https://doi.org/10.2307/414584>
- Schmitt, A., Rosing, K., Zhang, S. X., and Leatherbee, M. (2018). A dynamic model of entrepreneurial uncertainty and business opportunity identification: Exploration as a mediator and entrepreneurial self-efficacy as a moderator. *Entrepreneurship Theory and Practice*, 42(6), 835–859. <https://doi.org/10.1177/1042258717721482>

- Shane, S., and Venkataraman, S. (2000). The promise of entrepreneurship as a field of research. *The Academy of Management Review*, 25(1), 217–226. <https://doi.org/10.2307/259271>
- Shirokova, G., Osiyevskyy, O., Morris, M. H., and Bogatyreva, K. (2017). Expertise, university infrastructure and approaches to new venture creation: Assessing students who start businesses. *Entrepreneurship and Regional Development*, 29(9–10), 912–944. <https://doi.org/10.1080/08985626.2017.1376516>
- Sirmon, D. G., Hitt, M. A., and Ireland, R. D. (2007). Managing firm resources in dynamic environments to create value: Looking inside the black box. *Academy of Management Review*, 32(1), 273–292. <https://doi.org/10.5465/amr.2007.23466005>
- Soleimanof, S., Morris, M. H., and Jang, Y. (2021). Following the footsteps that inspire: Parental passion, family communication, and children's entrepreneurial attitudes. *Journal of Business Research*, 128, 450–461. <https://doi.org/10.1016/j.jbusres.2021.02.018>
- Starr, E., Ganco, M., and Campbell, B. A. (2018). Strategic human capital management in the context of cross-industry and within-industry mobility frictions. *Strategic Management Journal*, 39(8), 2226–2254. <https://doi.org/10.1002/smj.2906>
- Storey, D. J. J. (2002). Education, training and development policies and practices in medium-sized companies in the UK: Do they really influence firm performance? *Omega*, 30(4), 249–264. [https://doi.org/10.1016/S0305-0483\(02\)00035-X](https://doi.org/10.1016/S0305-0483(02)00035-X)
- Sung, S. Y., and Choi, J. N. (2018). Effects of training and development on employee outcomes and firm innovative performance: Moderating roles of voluntary participation and evaluation. *Human Resource Management*, 57(6), 1339–1353. <https://doi.org/10.1002/hrm.21909>
- Tharenou, P. (2001). The relationship of training motivation to participation in training and development. *Journal of Occupational and Organizational Psychology*, 74(5), 599–621. <https://doi.org/10.1348/096317901167541>
- Townsend, D. M., Busenitz, L. W., and Arthurs, J. D. (2010). To start or not to start: Outcome and ability expectations in the decision to start a new venture. *Journal of Business Venturing*, 25(2), 192–202. <https://doi.org/10.1016/j.jbusvent.2008.05.003>
- Unger, J. M., Rauch, A., Frese, M., and Rosenbusch, N. (2011). Human capital and entrepreneurial success: A meta-analytical review. *Journal of Business Venturing*, 26(3), 341–358. <https://doi.org/10.1016/j.jbusvent.2009.09.004>
- Vancouver, J. B., and Kendall, L. N. (2006). When self-efficacy negatively relates to motivation and performance in a learning context. *Journal of Applied Psychology*, 91(5), 1146–1153. <https://doi.org/10.1037/0021-9010.91.5.1146>
- Vilanova, L., and Vitanova, I. (2020). Unwrapping opportunity confidence: How do different types of feasibility beliefs affect venture emergence? *Small Business Economics*, 55(1), 215–236. <https://doi.org/10/gngtzip>
- Welter, F. (2012). All you need is trust? A critical review of the trust and entrepreneurship literature. *International Small Business Journal*, 30(3), 193–212. <https://doi.org/10.1177/0266242612439588>
- Wibbens, P. D. (2023). A formal framework for the RBV: Resource dynamics as a Markov process. *Strategic Management Journal*, 44(6), 1562–1586. <https://doi.org/10.1002/smj.3339>

- Wiklund, J., and Shepherd, D. (2003). Aspiring for, and achieving growth: The moderating role of resources and opportunities. *Journal of Management Studies*, 40(8), 1919–1941. <https://doi.org/10.1046/j.1467-6486.2003.00406.x>
- Xanthopoulou, D., Bakker, A. B., Demerouti, E., and Schaufeli, W. B. (2009). Reciprocal relationships between job resources, personal resources, and work engagement. *Journal of Vocational Behavior*, 74(3), 235–244. <https://doi.org/10.1016/j.jvb.2008.11.003>
- Xu, F., and Jin, L. (2022). Impact of daily entrepreneurial stressors on long-term transformational leader behaviors and well-being: Differences in experienced and nascent entrepreneurs. *Journal of Business Research*, 139, 280–291. <https://doi.org/10/gpfmvh>
- Yang, T., and Aldrich, H. E. (2014). Who's the boss? Explaining gender inequality in entrepreneurial teams. *American Sociological Review*, 79(2), 303–327. <https://doi.org/10.1177/0003122414524207>
- Yi, S., and Duval-Couetil, N. (2022). Standards for evaluating impact in entrepreneurship education research: Using a descriptive validity framework to enhance methodological rigor and transparency. *Entrepreneurship Theory and Practice*, 46(6), 1685–1716. <https://doi.org/10.1177/10422587211018184>
- Zahra, S. A., and George, G. (2002). Absorptive capacity: A review, reconceptualization, and extension. *Academy of Management Review*, 27(2), 185–203. <https://doi.org/10.5465/AMR.2002.6587995>
- Zellweger, T., Sieger, P., and Halter, F. (2011). Should I stay or should I go? Career choice intentions of students with family business background. *Journal of Business Venturing*, 26(5), 521–536. <https://doi.org/10.1016/j.jbusvent.2010.04.001>
- Zhang, W., and White, S. (2016). Overcoming the liability of newness: Entrepreneurial action and the emergence of China's private solar photovoltaic firms. *Research Policy*, 45(3), 604–617. <https://doi.org/10.1016/j.respol.2015.11.005>
- Zhao, H., O'Connor, G., Wu, J., and Lumpkin, G. T. (2021). Age and entrepreneurial career success: A review and a meta-analysis. *Journal of Business Venturing*, 36(1), 106007. <https://doi.org/10/ghrppc>
- Zhao, H., Seibert, S. E., and Hills, G. E. (2005). The mediating role of self-efficacy in the development of entrepreneurial intentions. *Journal of Applied Psychology*, 90(6), 1265–1272. <https://doi.org/10.1037/0021-9010.90.6.1265>

Fig. 1. Research Model

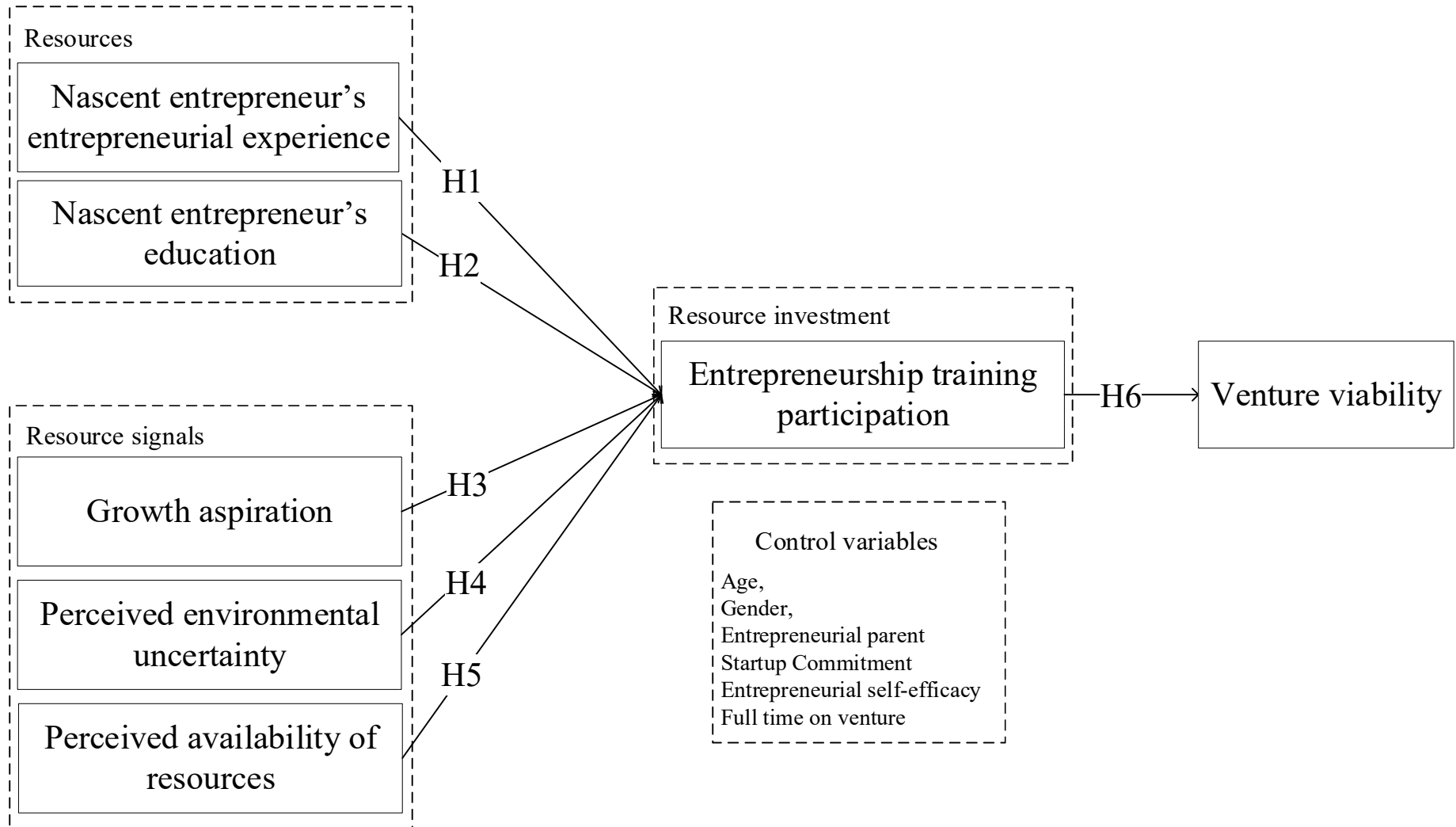


Table 1. Descriptive Statistics and Correlation Matrix

Variables		Mean	SD	n	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Entrepreneurship training participation (d)	0.53	0.50	234														
2	Education	14.71	2.70	234	0.15**													
3	Entrepreneurial experience	1.32	2.34	234	0.05	0.10												
4	Growth aspiration (d)	0.17	0.38	234	0.16*	-0.10	0.13											
5	Perceived environmental uncertainty	3.18	0.911	234	-0.16*	0.06	-0.18**	-0.08										
6	Perceived availability of resources	2.66	0.73	234	0.09	-0.06	0.03	-0.06	-0.08									
7	Entrepreneur age	39.70	10.10	234	-0.07	0.14*	0.19**	-0.05	0.11	0.00								
8	Entrepreneur gender (d)	0.42	0.50	234	-0.08*	-0.14	0.15*	0.17*	-0.18**	-0.04	-0.11							
9	Having entrepreneurial parent (d)	0.53	0.50	234	0.00	0.13*	0.14*	-0.01	-0.03	0.00	0.01	-0.16*						
10	Startup commitment	3.73	0.94	234	0.03	-0.09	0.06	0.2**	-0.06	0.01	0.02	-0.10	0.07					
11	Entrepreneurial self-efficacy	4.23	0.56	234	0.08	0.01	.04	0.13*	-0.07	0.12	0.05	-0.10	0.25**	0.49**				
12	Full time on venture (d)	0.30	0.46	234	0.05	-0.002	0.11	0.002	0.09	-0.08	0.15*	0.02	-0.02	0.12	0.11			
13	Viability (d)	0.23	0.42	97	-0.01	0.09	0.05	-0.03	0.135	-0.15	0.29**	-0.19	0.25*	-0.05	0.20*	0.17		
14	Persistence (d)	0.31	0.46	91	0.10	0.31	0.84	-0.5	-0.088	-0.16	0.21*	-0.023	-0.12	0.02	-0.02	0.21*	0.21	
15	Emergence (d)	0.14	0.35	91	0.16	0.004	-0.08	-0.05	0.09	-0.15	0.06	0.01	-0.21*	-0.08	-0.15	0.26*	0.28*	0.61**

** . Correlation is significant at the 0.01 level (two-tailed). * . Correlation is significant at the 0.05 level (two-tailed). Variables denoted with (d) are dummy variables.

Table 2. Results of Logistic Regression of Entrepreneurship Training Participation^a

		Entrepreneurship Training Participation as Human Capital Investment							
Variables		Model 1 (Control)		Model 2 (Human capital)		Model 3 (Resource signals)		Model 4	
Resources									
H1	Entrepreneurial experience			0.07	(0.06)			0.03	(0.07)
H2	Education			0.16*	(0.07)			0.20***	(0.07)
Resource signals									
H3	Growth aspiration (d)					1.13***	(0.41)	1.21***	(0.42)
H4	Perceived environmental uncertainty					-0.33***	(0.19)	-0.34***	(0.13)
H5	Perceived availability of resources					0.19	(0.19)	0.22	(0.20)
Control variables									
	Entrepreneur age	0.02	(0.01)	-0.02*	0.01	-0.14	(0.01)	-0.02	(0.01)
	Entrepreneur gender (d)	-0.36	(0.28)	-0.36	0.28	-0.70**	(0.30)	-0.65**	(0.31)
	Having an entrepreneurial parent (d)	-0.11	(0.28)	-0.25	(0.28)	-0.12	(0.29)	-0.22	(0.30)
	Startup commitment	-0.05	(0.16)	-0.02	(0.16)	-0.15	(0.17)	-0.11	(0.17)
	Entrepreneurial self-efficacy	0.32	(0.28)	0.33	(0.28)	0.21	(0.29)	0.19	(0.30)
	Full time on venture (d)	0.26	(0.29)	0.24	(0.30)	0.41	(0.31)	0.43	(0.32)
	Intercept	-0.25	(1.13)	-2.49	(1.52)	1.15	(1.37)	-1.619	(1.73)
-2 log likelihood		318.533		311.099		302.630		294.250	
Model chi-square		5.244		12.679		21.147*		29.528***	
Pseudo-R2		0.030		0.070		0.115		0.158	
N		234		234		234		234	

^a The standard error is reported in parentheses. *p < 0.1; **p < 0.05; ***p < 0.01 two-tailed tests. Variables denoted with (d) are dummy variables.

Table 3. Differences in Mean and Distribution Before and After Matching

Variables	Before Matching		After Matching	
	Mean Differences	Distribution Differences (p-values)	Mean Differences	Distribution Differences (p-values)
H6: Venture viability	0.01	1.00	-0.01	1.00
Venture persistence	-0.09	0.99	-0.04	1.00
Venture emergence	-0.12	0.93	-0.09	1.00
Resources				
Education	-0.63**	0.39	0.16	1.00
Entrepreneurial experience	-0.26	0.80	0.17	0.97
Resource signals				
Growth aspiration (d)	-0.13**	0.38	-0.01	1.00
Perceived environmental uncertainty	0.37**	0.016**	-0.08	0.90
Perceived availability of resources	-0.12	0.36	0.04	0.79
Control variables				
Entrepreneur age	1.5	0.25	1.65	0.40
Entrepreneur gender (d)	0.08	0.88	0.00	1.00
Having an entrepreneurial parent (d)	-0.01	1.00	0.03	1.00
Startup commitment	-0.06	0.99	0.11	1.00
Entrepreneurial self-efficacy	-0.09	0.53	0.06	0.66
Full time on venture (d)	-0.05	1.00	0.00	1.00
Treatment group	123	123	76	76
Control group	111	111	76	76

* $p < 0.1$, ** $p < .05$, *** $p < .01$;

Variables represented with (d) are dummy variables

Columns 1 and 3 show the mean differences among the control and treatment group. Columns 2 and 4 report the p-values from the Kolmogorov-Smirnov tests.

Table 4. Descriptive Statistics and Correlation Matrices in Three Waves

Variables		Mean	SD	n	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Entrepreneurship training participation (d)	0.53	0.50	234														
2	Education	14.71	2.70	234	0.09													
3	Entrepreneurial experience	1.32	2.34	234	0.08	0.12												
4	Growth aspiration (d)	0.17	0.38	234	0.14**	-0.09	0.12											
5	Perceived environmental uncertainty	3.86	1.18	234	-0.20**	0.08	-0.17**	-0.10										
6	Perceived availability of resources	2.66	0.73	234	0.09	-0.03	-5.05	-0.05	-0.06									
7	Entrepreneur age	39.70	10.10	234	-0.06	0.18**	0.23**	-0.04	0.11	0.01								
8	Entrepreneur gender (d)	0.42	0.50	234	-0.08	-0.13	0.06	0.16*	-0.22**	-0.05	-0.12							
9	Having entrepreneurial parent (d)	0.53	0.50	234	0.05	0.08	0.20**	-0.00	-0.00	0.01	0.03	-0.14*						
10	Startup commitment	3.73	0.94	234	0.05	-0.11	0.09	0.20**	-0.14*	-0.03	0.03	-0.12	0.04					
11	Entrepreneurial self-efficacy	4.23	0.56	234	0.09	0.00	0.19**	0.10	-0.25**	0.12	0.11	-0.14*	0.24**	0.51**				
12	Full time on venture (d)	0.30	0.46	234	0.06	0.01	0.06	-0.00	-0.04	-0.08	0.16*	0.03	-0.02	0.12	0.14*			
13	Viability (d)	0.23	0.42	46	0.02	-0.19	-0.03	-0.14	-0.25	0.17	-0.12	0.23	-0.11	0.09	0.09	-0.10		
14	Persistence (d)	0.31	0.46	113	0.20	0.16	0.08	-0.05	-0.16	0.13	0.19*	0.05	-0.04	0.07	0.08	0.24**	.	
15	Emergence (d)	0.14	0.35	113	0.20	0.06	0.11	-0.06	-0.09	0.06	0.03	-0.06	0.14	0.25**	0.24*	0.06	0.28	0.45**

** . Correlation is significant at the 0.01 level (two-tailed). * . Correlation is significant at the 0.05 level (two-tailed). Variables denoted with (d) are dummy variables.

Table 5. Results of Logistic Regression of Human Capital Investment in Three Waves^a

Variables	Entrepreneurship Training Participation	
Resources		
H1 Entrepreneurial experience	0.03	(0.07)
H2 Education	0.20***	(0.07)
Resource signals		
H3 Growth aspiration (d)	1.21***	(0.42)
H4 Perceived environmental uncertainty	-0.34***	(0.13)
H5 Perceived availability of resources	0.22	(0.20)
Control variables		
Entrepreneur age	-0.02	(0.01)
Entrepreneur gender (d)	-0.65**	(0.31)
Having an entrepreneurial parent (d)	-0.22	(0.30)
Startup commitment	-0.11	(0.17)
Entrepreneurial self-efficacy	0.19	(0.30)
Full time on venture (d)	0.43	(0.32)
Intercept	-1.619	(1.73)
-2 log likelihood	294.250	
Model chi-square	29.528***	
Pseudo-R2	0.158	
N	234	

^a Standard errors are reported in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$ two-tailed tests. Variables denoted with (d) are dummy variables.

Table 6. Differences in Mean After Matching During Three Waves

Variables	Before Matching		After Matching	
	Mean Differences	Distribution Differences (P-values)	Mean Differences	Distribution Differences (P-values)
H6: Venture viability	-0.006	0.964	0.18	0.97
Venture persistence	-0.16**	0.024**	-0.17	0.87
Venture emergence	-0.21**	0.03**	-0.14	0.68
Resources				
Education	-0.48*	0.116	0.08	1.00
Entrepreneurial experience	-0.38	0.234	-0.23	0.99
Resource signals				
Growth aspiration (d)	-0.1***	0.046**	-0.03	1.00
Perceived environmental uncertainty	0.36***	0.001***	-0.09	0.99
Perceived availability of resources	-0.40	0.194	-0.00	1.00
Control variables				
Entrepreneur age	1.38	0.191	-0.68	0.99
Entrepreneur gender (d)	0.08	0.204	-0.01	1.00
Having an entrepreneurial parent (d)	-0.04	0.504	0.00	1.00
Startup commitment	-0.20	0.489	-0.30	1.00
Entrepreneurial self-efficacy	-0.51	0.130	-0.11	0.64
Full time on venture (d)	-0.07	1.00	-0.05	1.00
Treatment group	113	113	74	74
Control group	121	121	74	74

* $p < 0.1$, ** $p < .05$, *** $p < .01$;

Variables represented with (d) are dummy variables.

Columns 1 and 3 show the mean differences among the control and treatment groups. Columns 2 and 4 report the p-values from the Kolmogorov-Smirnov tests.