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The Impact of Contingencies on Entrepreneurship Education Outcomes

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Abstract

The results of Entrepreneurship Education (EE) impact research have been equivocal, and one suggested explanation is the influence of contingencies such as the types of learning experiences, gender, and field of study. In this paper we aim to answer the question of which contingencies shape the outcome of EE by examining the outcome variables of entrepreneurial intentions (EI) and creative self-efficacy (CSE). Utilizing a quasi-experimental pre-post survey design, we surveyed 209 students from three universities who were exposed to three different learning experiences: writing a business plan, achieving proof-of-concept, and achieving proof-of-business. Through multi-value qualitative comparative analysis, we found six unique combinations associated with high levels of EI and CSE, respectively, after a learning experience. High EI and CSE are both associated with developing proof-of-concept and proof-of-business, but not with writing a business plan. Also, students' fields of study play a role in high levels of EI regardless of the learning experience, while students' prior work experience seems to play a role in EI and CSE.

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Introduction

Entrepreneurship education (EE) in universities has grown significantly during the past 40 years, and the speed of growth seems to be accelerating (Kuratko & Morris, 2018). In fact, this field of research has identified multiple outcomes of EE. Entrepreneurial intentions (EI) and self-efficacy are two such indicators of entrepreneurial education programs' impact (Nabi et al., 2017). Although some have questioned EIs as measurable outcomes for EE (Nabi et al., 2017), or in general (Krueger, 2017), it has been shown that EIs are good predictors of subsequent entrepreneurial behavior (Kautonen, van Gelderen & Flink, 2015). Additionally, while there is support for the positive effects of EE on EI (Bae et al., 2014; Rauch & Hulsink, 2015), others have found no influence (Fayolle & Gailly, 2015; Franco et al., 2010) or negative influence (Lima et al., 2015; Oosterbeek, van Praag & Ijsselstein, 2010). According to Piperopuolos and Dimov (2015), one reason for the equivocality could be differences in the types of EE programs, whether theoretically or practically oriented. Extant research has found positive effects of self-efficacy on the likelihood of being an entrepreneur (Chen et al., 1998; DeNoble et al., 1999; Zhao, Siebert & Hills, 2005). The creative self-efficacy (CSE) construct is a domain-specific form of general self-efficacy theory applied to employees' creative performance. CSE specifically targets the ability to be creative in one's work (Tierney & Farmer, 2002) and has also been examined as an outcome of EE (Laguía et al., 2019; Puente-Díaz & Cavazos-Arroyo, 2017).

There is a growing body of evidence in support of entrepreneurial pedagogies emphasizing learning by doing when developing entrepreneurial capacities including EI and CSE (Kuratko & Morris, 2018; Lindberg et al., 2017). For example, learning through experiences, such as learning by doing, applying theories and critical reflection, problem solving through experimentation, and other real-life situations show greater impact on students' perceptions and EI than traditional forms of learning (Costa et al., 2018; Liñan et al., 2011; Mandel & Noyes, 2016; Pittaway & Cope, 2007; Roy et al., 2019). Additionally, prior research has also shown that the level of EI and CSE are affected by factors such as prior work experience, entrepreneurial experience, discipline, and gender (Liñán & Chen, 2009; Karwowski et al., 2013), thus suggesting a causally complex situation. Following the configuration approach, this means that not only a single contingency factor explains the level of CSE and EI, but rather, a combination or several combinations of these contingency factors. However, there seems to be limited evidence in the literature as to what is meant by these learning by doing pedagogies (Fayolle, 2013). Furthermore, there is a need to compare different

types of EE programs and their influence on different outcomes of teaching (Fayolle & Liñán, 2014; Morris & Liguori, 2016).

This study aims to tackle the above-mentioned issues by examining the impact of entrepreneurial learning experiences on the EE outcomes of EI and CSE. Specifically, we aim to answer the following research questions: 1) How do the three learning experiences of writing a business plan, proof-of-concept, and proof-of-business shape the EE learning outcomes of EI and CSE, and 2) How do the contingencies of learning experience, gender, work experience, entrepreneurial experience, and field of study shape EI and CSE? We utilize a multi-value qualitative comparative analysis (mvQCA) approach with data from students in three countries (United States, Finland, and Denmark). The configuration approach has been suggested to provide new insights about entrepreneurship (Douglas et al., 2020; Short et al., 2008), and, given that university students have various backgrounds, a QCA allows us to examine entrepreneurial learning experience together with contingencies to provide new insights and explanations about the effect of EE (Nabi et al., 2017). Overall, we make two main contributions. First, we contribute to entrepreneurship research by comparing three different, yet complementary learning experiences. Second, we contribute to EE in practice by introducing a taxonomy by combining the effect of different learning experiences and heterogeneous entrepreneurship students.

Entrepreneurship Education and Entrepreneurial Learning Experiences

The main effect of EE on individual characteristics associated with successful entrepreneurial ventures is well supported in the literature. For example, individual entrepreneurial characteristics, such as intentions, self-efficacy, general and specific human capital, and competencies have all been associated with firm performance (Bird, 2019; Martin et al., 2013). This line of research implies that characteristics that enhance the performance of an entrepreneurial firm can be inculcated in current and prospective entrepreneurs, particularly through EE (Bae et al., 2014; Baron & Markman, 2003; Krueger, Rilley & Carsud, 2000; Walter et al., 2013). EE research has demonstrated that these characteristics are learnable and that entrepreneurial learning has a direct impact on the development of entrepreneurial characteristics, thus allowing for intervention through EE (Baron & Markman, 2000; Bird, 2019; Fisher et al., 2008; Lans, Hulsink, Beart & Mulder, 2008; Timmons, 1995). Fisher et al. (2008) defined EE as "the process of providing individuals with the concepts and skills to recognize opportunities that others have overlooked, and to have the insight, self-esteem, and knowledge to act where others have hesitated" (p. 315). Thus, EE can transfer entrepreneurship-specific human capital that can foster opportunity recognition and development.

Entrepreneurs are active learners and learn from discrete and concrete experiences, and research on learning has identified the need for active learning techniques that help people take control of their own learning (Hmelo-Silver, 2004). Various active learning techniques have been classified under "metacognition." Metacognitive approaches have been shown to increase learners' abilities to transfer what they have learned to new

settings and events (Bransford et al., 2000; Wiggins & McTighe, 2001). In response to calls for educational experiences that expose would-be entrepreneurs to real venture problems (Bird, 2019; Sánchez, 2011), EE has shifted from more programed instruction to metacognitive approaches, such as experiential learning or "learn by doing" (Fisher et al., 2008; Mandel & Noyes, 2016).

Entrepreneurship education at universities can be dichotomized into educating "about" or "for" enterprise (Piperopuolos & Dimov, 2015). Educating "about" enterprise utilizes theoretical pedagogical methods, such as lectures and the development of business plans to teach learners about enterprise. Educating "for" enterprise employs more experiential pedagogies, including interaction with practice, such as networking with entrepreneurs and pitching ideas to investors, and starting and running a "real" business with the aim of teaching learners the skills needed for new venture creation. Different entrepreneurial learning experiences have been shown to have different effects on entrepreneurial outcomes (Henry & Lewis, 2018; Samwel Mwasalwiba, 2010; Nabi et al., 2017).

In this paper, we distinguish three types of learning experiences: developing a business plan, proof-of-concept, and proof-of-business. In the context of EE, developing a business plan typically consists of generating a document where several business-relevant elements are addressed. For example, the business model canvas (Osterwalder & Pigneur, 2010) is a tool that helps students reflect on nine elements (including revenue streams, key partners, value proposition, etc.) that are essential when doing business. The proof-of-concept is a learning experience where students develop the business idea/plan into a working prototype (Goldsby et al., 2017). The purpose of this learning experience is to help students address the technical feasibility, customer desirability, and venture viability of their design prototype (Brown, 2009). Finally, the proof-of-business is a learning experience where students prove the financial viability of their business plan and prototype; during proof-of-business, students focus on sales and profitability.

Entrepreneurial Intentions as an Outcome of Entrepreneurial Education

According to the theory of planned behavior, the intention to perform a behavior is the immediate determinant of that behavior (Ajzen, 1985), and the antecedents of behavioral intention are attitudes towards the behavior, subjective norms, and perceived behavioral control, which includes entrepreneurial self-efficacy (ESE) (Ajzen, 1991). Intention has been proven the single best predictor of planned behavior, especially of behavior that occurs infrequently, which is difficult to observe and involves unpredictable time lags (Ajzen, 1985; Krueger et al., 2000; Krueger & Brazeal, 1994). Entrepreneurship is an intentional, planned behavior (Kim & Hunter, 1993; Krueger & Brazeal, 1994). EI is the cognitive state that precedes a decision to act (i.e., form a new venture [Baron & Ward, 2004; Sánchez, 2012]), and offers a means to better predict entrepreneurship. EI depicts an individual's devotion and effort towards becoming an entrepreneur. In other words, EIs—defined as individuals' propensities

to act over a risky opportunity—are a powerful predictor of entrepreneurial entry (Krueger et al., 2000) and entrepreneurial behavior (Kautonen et al., 2015).

Prior literature has connected EE and EI, but the evidence is mixed. While some have argued that entrepreneurship cannot be taught, many studies have provided evidence of a positive relationship between EE and the fostering of opportunity recognition (Bae et al., 2014; Baron & Markman, 2000; Fisher et al., 2008; Pittaway & Cope, 2007; Sánchez, 2012; Walter et al., 2013). However, while some have not detected whether EIs are impacted by EE programs (Fayolle & Gailly, 2015), others have noticed a negative impact (Oosterbeek et al., 2010). One explanation that the prior literature may not have taken into account is the level of EI before EE, which has been shown to make the connection between EI and EE insignificant (Bae et al., 2014). Still, others have found differential impacts of EE based on student characteristics (Shneor et al., 2020). More recently, it has been proposed that these mixed results might be due to pedagogical differences in approaches to entrepreneurial education. Piperopuolos and Dimov (2015) showed that the connection between self-efficacy and EI differs according to the type of EE, whether it is practically or theoretically oriented. Theoretically oriented entrepreneurial education focuses on creating an image of what entrepreneurship should look like and what entrepreneurs should do (Fiet, 2001), while practically oriented courses focus on what entrepreneurs can do and what entrepreneurship could look like (Gibb, 2002).

Differences in EI also emerge based on fields of study. Students in different fields (e.g., business, and Science, Technology, Engineering, and Mathematics—STEM) benefit from EE in terms of increased EI. However, only STEM students' EI is negatively affected by subjective norms – a core element in the theory of planned behavior (Maresch et al., 2016). Indeed, "the term 'subjective norms' relates to a person's perception of the opinions of social reference groups (such as family and friends) on whether the person should perform a certain behavior. The better the reference group's opinion, the more encouragement for starting a business a person receives from this reference group; and the higher the person's motivation to comply with the opinion, the stronger the person's intention to start a business should be (Maresch et al., 2016, p. 173). Furthermore, inspiration, defined as "a change of hearts (emotion) and minds (motivation) evoked by events or inputs from the program and directed towards considering becoming an entrepreneur" (Souitaris et al., 2007, p. 573), locus of control, and the need for achievement (Mat et al., 2015) are also found to positively influence EI for engineering students.

Creative Self-Efficacy as an Outcome of Entrepreneurship Education

Creative self-efficacy refers to employees' beliefs that they have the ability to produce creative outcomes in their work roles (Tierney & Farmer, 2002) and is derived from the concept of self-efficacy (SE), a central construct in Social Cognitive Theory (Bandura, 1977, 1982). SE is an individual's conviction that they can perform a specific task at a specific level of expertise (Chen et al., 1998). It is the most effective predictor of future

performance. According to self-efficacy theory, SE and performance operate in a circle of mutual reinforcement in which SE affects performance through interest, motivation, and perseverance, and performance provides feedback on the basis of which SE is further evaluated and modified. SE is gradually accumulated through prior cognitive, social, and physical experiences. Prior successful enactment of a task can change one's expectation and help further SE. SE can be developed and further enhanced through a mastery of experience, modeling, social persuasion, and physiological states (Bandura, 1977). Based on social cognitive theory, SE is measured in the context of the specific task being assessed, thus enabling the development of self-efficacy measures in the context of creative work (Bandura, 1982; Tierney & Farmer, 2002; Wood & Bandura, 1989). The CSE construct is a domain-specific form of general self-efficacy theory applied to employees' creative performance. CSE specifically targets the ability to be creative in one's work, and the construct has been shown to positively relate to creative performance at work (Akbari, Bagheri, & Asadnezhad, 2021; Brazeal et al., 2014; Choi, 2004; Tierney & Farmer, 2011).

There has been growing interest in CSE in relation to EE. For example, CSE has been examined as both an antecedent and a moderator of entrepreneurship constructs (Puente-Díaz & Cavazos-Arroyo, 2017; Tantawy et al., 2021). However, there is insufficient evidence of CSE as an outcome of EE. Sawyerr et al. (2016) reported an increase in CSE for students participating in a practically oriented entrepreneurship program vis á vis students in a control group. Puente-Díaz and Cavazos-Arroyo (2017) found CSE to have a positive influence on college students' productive and creative imagination and originality. They also found that professors' curiosity and perceived encouragement for creativity can predict CSE. Laguia et al. (2019) found in their study of university students that past participation in a creativity-related course (entrepreneurship and creativity courses) tended to produce higher CSE. Furthermore, creative problem-solving and creativity have been proposed as key competences to be taught via EE (Kuratko & Morris, 2018; Morris et al., 2013), and EE has been found to increase university students' individual creativity (Wang et al., forthcoming).

Moreover, differences in CSE have been noted based on gender. Men tend to perceive their creativity at a higher level and overestimate their creativity, while women underestimate their creativity (Beghetto, 2006; Karwowski et al., 2015). Karwowski et al. (2013) found statistically significant but weak gender effects, with men displaying higher CSE levels. Education has also been found to be positively related to CSE. Waterwall et al. (2017), in their meta-analytic review of the CSE literature, found a weak, but positive association between education and CSE, suggesting that higher levels of education produce increases in creative capability beliefs.

Configurational Enablers and Barriers of Entrepreneurship Education

A configurational approach is based on causal complexity, which suggests that a specific outcome is generated by multiple different causal conditions (Ragin, 2008). Conjunction, equifinality, and asymmetry form the basis for causal complexity.

Conjunction explains how and why a configuration of different causal conditions (input variables) generate the outcome, whereas equifinality explains how several different configurations consisting of different causal conditions can result in the same outcome (Furnari et al., 2020); asymmetry suggests that those configurations that produce the presence of an outcome differ from those that produce the absence of an outcome (Fiss, 2011; Ragin, 2008). In the context of EE, conjunction suggests that the type of learning experience is not the only thing that matters, but that other causal conditions, such as prior experience (particularly for students with limited exposure to entrepreneurship, see Fayolle & Gailly, 2015), gender (Joensuu et al., 2013), and discipline (Petridou & Sarri, 2011) are likely to play a role. The same outcome, the level of EI, can result from different entrepreneurial experiences depending on a student's prior experience and the field of study. Asymmetry suggests that a low level of post-EI is likely to result from a different combination of factors than high levels of post-EI. Learning experiences in EE target a wide group of people whose heterogeneous characteristics have been the subject of prior research (for a review, see Nabi et al., 2017).

Entrepreneurs have been shown to heavily rely on one's own beliefs, even in the face of adverse market signals and new information (Parker, 2006); this is particularly evident for older (vs. younger) entrepreneurs, who show little change in expectations and a lack of decision-making adaptability in the face of a changing environment. Young entrepreneurs tend to rely on their prior work experience when crafting initial venture strategies, as they possess less diverse experiences (Fern et al., 2012). Entrepreneurial experience is another important configurational enabler, as individuals without (vs. with) prior entrepreneurial experience benefit from EE in terms of increased EI (van Ewijk et al., 2020), attitudes, and self-efficacy (Fayolle & Gailly, 2015; Sánchez, 2011). These differences are interesting in contexts such as incubators, where participants' heterogeneity in age and personal and professional experience may explain EI (Bignotti & Le Roux, 2020) and adaptability over the different stages of the learning experience (proof of idea, proof-of-concept, and proof-of-business).

The three types of learning experiences are, at the same time, configurational enablers and barriers to EE. This is because they represent pedagogical models—namely supply, demand, and competence (Nabi et al., 2017)—that challenge students' business opportunities differently overtime. Writing a business plan is an example of a supply model, where knowledge and tools are presented by educators to students. Writing a business plan enables students to reproduce methods they have seen in lectures or readings by organizing elements of their business idea (e.g., via a business model canvas) in a coherent way. In this sense, such methods allow students to have a "proof of idea." However, supply models are considered to have the lowest impact on entrepreneurship indicators such as interests, awareness, and intentions (Nabi et al., 2017). Simulations and prototyping are examples of a demand model that focuses on providing students personalized, participative experiences. Prototyping enables students to prove their business concept through product/service development. For

example, once a prototype is ready, students may ask peers to interact with the product/service by organizing a focus group. Prototyping, however, may not always be possible, and may require substantial investments over time. Finally, incorporating and selling to first customers are examples of a competence model, which focuses on real-life entrepreneurial situations. Selling to customers provides an initial proof-of-business by showing the existence of a market and generating cash flow; however, it is often beyond the scope of entrepreneurship programs in higher education to follow students up to this phase.

Gender is also an important factor associated with heterogeneity in decision making across entrepreneurs. Research has shown that there are differences in drivers of EI among female and male students (Nikou et al., 2019). In particular, the decision to start a new business presents some differences between individuals of different genders. Male and female entrepreneurs differ in terms of the extent of the entrepreneurial network they possess, their alertness to opportunities, fear of failure, and subjective beliefs in the adequacy of their skills (Langowitz & Minniti, 2007). Furthermore, several other family-related factors influence a gender gap in entrepreneurship, such as family background, structure, demands, support, attitudes, and the interdependencies of work and family (Powell & Greenhaus, 2010). With respect to the latter, women are heterogeneous in their female identity, the equity they hold in their businesses, and their beliefs about gender obstacles (Engle et al., 2011; Morris et al., 2006). Differences also arise among women depending on whether they are satisfaction seekers or security seekers (Shabbir & Di Gregorio, 1996), and whether their business is in a traditional or non-traditional industry for women (Anna et al., 2000).

Finally, students' discipline affects EE outcomes. In this paper, we distinguish between business and non-business students; however, prior literature looking at the effect of EE on EI based on discipline is mixed. Petridou and Sarri (2011) found that EE programs in a generalist university increased entrepreneurial attitudes and intentions, while the opposite was observed in technology institutes. Similarly, Maresch et al. (2016) suggest that business students may benefit more from EE than science and engineering students. Conversely, Zhang et al. (2014) found that EE has a greater impact on EI among technology majors than other majors. Moreover, Sawyerr et al. (2012) and Sawyerr et al. (2016) found that STEM entrepreneurship programs increased different types of self-efficacy (creative and entrepreneurial) and competences, but had no effect on EI.

Methodology and Data Collection

The paper follows a quasi-experimental research design with pre- and post-surveys, which were used in prior EE studies (e.g., Costa et al., 2018). The data utilized in this study were collected between 2016–2017 and 2017–2018, and are comprised of 209 university students (both bachelor and master students) from three countries: the United States (N = 49), Denmark (N = 139), and Finland (N = 21). Out of the 209 students, 24 (US) participated in a learning experience, wherein their task was to

develop a business plan, 122 (Finland [21] and Denmark [101]) students had to write a business plan and demonstrate proof-of-concept through prototyping and pitching to investors, and 63 (US [25] and Denmark [38]) students were asked to demonstrate proof-of-business through sales in addition to writing a business plan and pitching the business concept. The average age of respondents was 26 years (for US 22.9 years, for Finland 22.7 years, and for Denmark 27.6 years). More than half of the respondents were female (59.6%), while 40.4% were male. Similarly, more than half of the respondents were business students (70.2%), while 29.2% were non-business students.

Measures and Descriptive Analysis

The outcome variables of the study are EI and CSE. EIs were measured via a seven-point Likert-scale adopted from Liñán and Chen (2009), and one item ("I'm going to start my own business within 1 year of graduation") from Davidsson (1995), and Autio et al. (2001). To minimize common method bias, the scale was reversed. CSE was measured via a seven-point Likert-scale adopted from Tierney and Farmer (2002). Then, the averaged summated scales for EI and CSE were formed based on factor analysis. Due to a poor fit to a factor, two items for CSE ("I am okay with my ideas being rejected" and "I develop new ideas by looking at it from the customer or end-user's point-of-view") were dropped. Based on Cronbach Alpha values (above 0.80), the measures can be deemed reliable (see Table 1). Both EI and CSE have been suggested to be influenced by EE (e.g., Bae et al., 2014; Laguia et al., 2019); thus, these were chosen as the outcome variables. The following factors were included as input variables: sex (0 = male, 1 = female), discipline (0 = non-business, 1 = business), learning experience (0 = business plan, 1 = proof-of-concept, 2 = proof-of-business), entrepreneurial experience (consisting of multiple items ranging from 1 = no experience to 5 = active for several years), and work experience (ranging from 1 = no experience to 5 = active for several years). Entrepreneurial experience was measured via four different aspects of entrepreneurial experience: family business experience, experience in a business owned by a close relative or friend, experience in a start-up firm or small business owned by someone else, and founder experience in one' own firm. The entrepreneurial experience measure reflects an average score across these four dimensions.

Multi-Value Qualitative Comparative Analysis

The qualitative comparative analysis (QCA) is an analysis method that enables the examination of a configuration of input variables to a certain outcome variable. The QCA permits the use of categorical variables to indicate membership in a specific category (Thiem, 2015). Regardless of the type, the process for the QCA is as follows: 1) dataset is calibrated, 2) necessity and sufficiency of conditions are examined, 3) truth

Table 1. Descriptive Analysis and Cut-Off Values for Calibration.

	CA	Med	Mean	St.d	Low	M	High	1	2	3	4	5	6	7	8
1. preEI	0.95	5.83	5.31	1.75	1–2	3–5	6–7	-							
2. postEI	0.96	6.00	5.24	1.82	1–5.99	-	6–7	0.72*	-						
3. preCSE	0.84	6.00	5.79	0.97	2–3	4–5	6–7	0.24*	0.30*	-					
4. postCSE	0.84	6.00	5.78	0.93	1–5.99	-	6–7	0.21*	0.32*	0.53*	-				
5. Ent. exp	-	2.00	2.15	0.96	1–2	-	2–5	0.21*	0.08	0.19*	0.09	-			
6.Work exp	-	4.00	4.11	1.05	1–4	-	4–5	0.16*	0.09	0.12	0.09	0.18*	-		
7. Sex	-	0.00	0.59	0.49				0.24*	0.13	-0.02	-0.10	0.06	0.08	-	
8. Discipline	-	1.00	0.70	0.46				0.26*	0.18*	0.05	0.08	0.25*	0.27*	0.29*	-
9. Lear. exp	-	2.00	1.19	0.62				0.13	0.10	0.10	0.23*	-0.01	-0.01	-0.10	-0.04

Pre = before learning experience, post= after learning experience, EI = entrepreneurial intentions, CSE = creative self-efficacy, Ent. exp. = entrepreneurial experience, Work exp. = work experience, Lear.exp. = learning experience, CA = Cronbach's alpha, Med = median, St.d. = standard deviation; Low indicates the non-membership calibration for calibrated variables (not high EI or CSE), M indicates the medium level calibration for preEI and preCSE (between high and low EI or CSE); High indicates the membership calibration for calibrated variables (high EI or CSE).

* = $p < .05$.

Paired t-test was used to compere mean differences across the sample. There are no significant mean differences between pre- and post-EI ($p = .49$), and pre- and post-CSE ($p = .73$). The mean pre- and post-EI values significantly differ between three learning experiences ($p < .05$), and countries ($p < 0.05$). The mean pre- and post-CSE values significantly differ between three learning experiences ($p < .1$, $p < .05$) and countries ($p < .05$).

table is formed, and 4) systematic minimization is run to find configurations for a given outcome (Leppänen et al., 2019).

To conduct a calibration, the researcher sets thresholds for raw data scores to determine which respondents belong to the "fully in" or "fully out" membership class of a given condition (Douglas et al., 2020). Median values were used as a baseline for calibration in the case of post-EI, post-CSE, prior entrepreneurial experience, and prior work experience (see Table 1 above). The median was chosen because the data was skewed. Pre-EI and pre-CSE were calibrated into three categories (low, medium, and high) based on the scale. Other variables, namely sex, discipline, (dichotomous) and learning experience (3-levels), were categorical (see previous section).

The truth table was formed, and following Douglas et al. (2020) and Leppänen et al. (2019), a consistency threshold of 0.80 was used to solve contradictions in the truth table. Consistency describes "the acceptable level of dissimilarity" within a configuration that is associated with the outcome (Douglas et al., 2020, p. 5). The frequency cut-off was set to two cases for a configuration, and proportional reduction in inconsistency cut-off was set to 0.6, following Douglas et al. (2020) and Greckhamer et al. (2018).

The literature recognizes three types of solutions in QCA: complex, parsimonious, and intermediate solutions (Ragin & Sonnett, 2005). Complex solutions are based only on empirical configurations of the observed data (Schneider & Wagemann, 2012). Parsimonious solutions include logical reminders, which are theoretically possible configurations in the form of simplifying assumptions that generate the simplest possible solution (Thiem, 2015). Intermediate solutions utilize both complex and parsimonious solutions by relying only on easy counterfactuals as simplifying assumptions through directional expectations (i.e., hypothesizing about the way in which a condition is associated with the outcome) (Thiem, 2015). To mitigate the risk of including untenable simplifying assumptions, contradictory simplifying assumptions were identified and excluded from the creation of the intermediate solution.

Results

The necessity of conditions was analysed. A condition is defined to be necessary for the outcome to exist if the consistency score is equal to or above 0.9 (Ragin, 2000). There is no single necessary condition for post-EI based on necessary condition analysis; instead, mvQCA shows that a combination of multiple conditions is needed. However, none of them reach the threshold values for necessity. For CSE, the necessary condition analysis shows that pre-CSE is a necessary condition for post-CSE (effect size = 0.50); however, mvQCA shows that a combination of conditions is needed, though none of them meet the necessity threshold.

The sufficiency of conditions associated with high levels of post-EI is examined. The results show that there are six distinctive configurations that are associated with high levels of EI after a learning experience (see Table 2). These configurations cover 45% of cases in the sample (solution coverage), which implies that the remaining

students exhibited a variety of less-consistent configurations. Solution coverage corresponds to the coefficient of determination in regression analysis (Douglas et al., 2020). The solution consistency is 0.98, which exceeds the threshold value of 0.80.

Entrepreneurial Intentions

Pathway 1a (n = 17) is labelled *confirmation gainers.* These students are business students who have already accumulated prior work experience, displayed a high level of pre-EI, and went through a proof-of business learning experience. These students are already interested in entrepreneurship as a career option, they seek confirmation for their already high EI, and build their entrepreneurial competences. Pathway 1b (n = 2) is called *entrepreneurship experiencers.* This pathway includes male non-business students who have limited to no prior entrepreneurial or work experience, a medium level of pre-EI, and went through a proof-of business learning experience. The learning experience may slightly increase or maintain their level of EI as they gain experience from entrepreneurship and build their entrepreneurial competences.

Pathway 2a to 2d are labelled *entrepreneurship explorers*; however, within this taxonomy class, we can separate four subclasses: *general explorers, business explorers, female business explorers,* and *non-business explorers. Entrepreneurship explorers* seem to seek confirmation for their EI but due to their lack of experience, they seem to want to explore and experiment with entrepreneurship.

Pathway 2a (n = 4) comprises *general explorers,* who are students who have limited to no prior entrepreneurial or work experience, high levels of pre-EI, and have participated in a proof-of-concept learning experience. Pathways 2b (n = 17) is labelled *business explorers,* which include business students who lack prior entrepreneurial experience, have high levels of pre-EI, and have participated in a proof-of-concept learning experience. Pathway 2c (n = 7) comprises *non-business explorers,* who are male non-business students with high levels of pre-EI and have participated in a proof-of-concept learning experience.

Pathway 2d (n = 8) is labelled *female business explorers,* which includes female business students with limited prior work experience and high levels of pre-EI, and who went through a proof-of-concept learning experience.

Counterfactual analysis was used to examine the configurations associated with not high post-EI. The results show nine distinctive configurations that are associated with not high levels of post-EI, suggesting that these students did not benefit from their learning experience and seem unlikely to pursue entrepreneurship as a career. These configurations cover 27% of cases in the sample (solution coverage), which implies that the remaining students exhibited a variety of less-consistent configurations for not high post-EI; and the solution consistency is 0.96.

Pathway 3a (n = 2) is labelled *information seekers,* who are female business students with limited to no prior work experience and a medium level of pre-EI, who participated in a business plan learning experience. These students seem to be somewhat interested in entrepreneurship, but it seems that increasing their awareness and providing

Table 2. Analysis Results for Entrepreneurial Intentions (outcome=post intentions).

	High post-EI						Not high post-EI								
	1a	1b	2a	2b	2c	2d	3a	3b	3c	3d	4a	4b	5a	5b	5c
TLE	❷	❷	❶	❶	❶	❶	⓿	⓿	⓿	⓿	❶	❶	❷	❷	❷
PEE		○	○	○					○	●		●		●	○
PWE	●	○	○			○	○	●	●	●		●		●	●
Female		○			○	●	●	○	○	●	○	○	○	○	○
Business major	●	○		●	○	●	●	●	●	●	○	○	○		○
Pre-EI	❷	❶	❷	❷	❷	❷	❶	⓿	⓿	⓿	⓿	❶	⓿	⓿	❶
Cases	17	2	4	17	7	8	2	3	2	2	5	2	2	2	2
Consistency	0.94	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.83	1.00	1.00	1.00	1.00
Raw coverage	0.14	0.02	0.05	0.15	0.07	0.07	0.02	0.04	0.02	0.02	0.05	0.02	0.05	0.03	0.02
Unique coverage	0.14	0.02	0.02	0.12	0.06	0.05	0.02	0.04	0.02	0.02	0.05	0.02	0.04	0.02	0.02
S. consistency	0.98						0.96								
S. coverage	0.45						0.27								

TLE = type of learning experience, PEE. = prior entrepreneurial experience, PWE = prior work experience, Pre-EI = level of entrepreneurial intentions before a learning experience, S. = Solution.

Black circle denotes the presence of a condition. For type learning experience: 2= proof-of-business, 1 = proof-of-concept, 0 = business plan. For pre-intentions: 2 = high, 1 = medium, 0 = low. The size of the circle does not have any meaning. White circle denotes absence (or negation) of a condition. Blank space denotes that the condition is unimportant to a given configuration.

information about entrepreneurship does not increase their level of post-EI. Pathways 3b ($n = 3$), 3c ($n = 2$), and 3d ($n = 2$) are called *convinced non-entrepreneurs;* however, within this taxonomy class, we can separate two subclasses, *inexperienced* and *experienced non-entrepreneurs.* These business students have low levels of pre-EI and prior work experience, and they participated in a business plan learning experience; they differ in terms of gender and prior entrepreneurial experience. These students have already accumulated work experience and, as a result, seem to be convinced that entrepreneurship is not a path for them, although they seem to have wanted to know more about this career option. Pathways 3b and 3c include male students, while Pathway 3d consists of female students. Additionally, students in Pathway 3c are labelled *inexperienced non-entrepreneurs* due to their lack of prior entrepreneurial experience, while students in Pathway 3d are called *experienced non-entrepreneurs* due to having prior entrepreneurial experience.

Pathways 4a ($n = 5$) and 5a ($n = 2$) include *not-interested confirmation seekers,* who are male non-business students with low pre-EI levels and who went through either a proof-of-concept or proof-of-business learning experience. These students are not interested in entrepreneurship as a career option, and enabling them to experience entrepreneurship does not seem to change their disposition. Pathways 4b ($n = 2$) and 5b ($n = 2$) are called *experienced confirmation seekers*; this group includes male students with prior entrepreneurial and work experience, and medium to low levels of pre-EI. Students in Pathway 4b went through a proof-of-concept learning experience, while students in Pathway 5b went through a proof-of-business learning experience. These pathways also differ regarding discipline: Pathway 4b includes non-business students. Pathway 5c is labelled *inexperienced confirmation seekers* and includes male non-business students with work experience who have a lack of entrepreneurial experience and medium levels of pre-EI. These students participated in a proof-of-business learning experience; however, the experience seems to further reenforce their disposition towards entrepreneurship as a career option. The full taxonomy is summarized in Table 3 below.

Creative Self-Efficacy

Six distinctive configurations are associated with high levels of CSE after a learning experience (Table 4). These configurations cover 21% of cases in the sample (solution coverage), which implies that the remaining students exhibited a variety of less-consistent configurations; the solution consistency is 1.00, which exceeds the threshold value of 0.80.

Pathways 6a ($n = 4$), 6b ($n = 3$), and 7a ($n = 7$) are labelled *creativity appliers.* Students belonging to this group are male students with prior work experience and high levels of pre-CSE, and have participated in a proof-of-concept or proof-of-business learning experience. These pathways differ in terms of discipline and entrepreneurial experience. Pathways 6a and 7a include non-business students, while Pathway 6b includes business students. Additionally, students in Pathways 6 and 6b lack prior

Table 3. Taxonomy of the Entrepreneurship Intentions of Entrepreneurship Education Learners.

Pathway	Description	Subclass	Taxonomy
1a	Business students Work experience High level of pre-EI High level of post-EI Proof-of-business		confirmation gainers
1b	Male non-business student Limited or no work experience Limited or no entrepreneurial experience Medium level of pre-EI High level of post-EI Proof-of-business		**Entrepreneurship** experiencers
2a	Limited or no work experience Limited or no entrepreneurial experience High level of pre-EI High level of post-EI Proof-of-concept	*general explorers*	entrepreneurship explorers
2b	Business student Limited or no entrepreneurial experience High level of pre-EI High level of post-EI Proof-of-concept	*business explorers*	
2c	Male non-business student High level of pre-EI High level of post-EI Proof-of-concept	*non-business explorers*	
2d	Female business student Limited or no work experience High level of pre-EI Proof-of-concept High level of post-EI	*female business explorers*	
3a	Female business students Limited or no work experience Medium level of pre-EI Not-high level of post-EI Business plan		Information seekers

(continued)

Table 3. (continued)

Pathway	Description	Subclass	Taxonomy
3b	Male business students Work experience Low level of pre-EI Not-high level of post-EI Business plan	Non-entrepreneurs	Convinced non-entrepreneurs
3c	Male business students Limited or no entrepreneurial experience Work experience Low level of pre-EI Not-high level of post-EI Business plan	Inexperienced non-entrepreneurs	
3d	Female business students Entrepreneurial experience Work experience Low level of pre-EI Not-high level of post-EI Business plan	Experienced non-entrepreneurs	
4a	Male non-business students Low level of pre-EI Not high level of post-EI Proof-of-concept	Not-interested confirmation seekers	Confirmation seekers
5a	Male non-business students Low level of pre-EI Not-high level of post-EI Proof-of-business		
4b	Male non-business students Entrepreneurial experience Work experience Medium level of pre-EI Not-high level of post-EI Proof-of-concept	Experienced confirmation seekers	
5b	Male students Entrepreneurial experience Work experience Low level of pre-EI Not-high level of post-EI Proof-of-business	Inexperienced confirmation seekers	
5c	Male non-business students Limited or no entrepreneurial experience Work experience Medium level of pre-EI Not-high level of post-EI Proof-of-business		

entrepreneurial experience. These students seem to already have confidence in their creative capabilities, but lack entrepreneurial experience, which they get a taste of by participating in experience oriented entrepreneurial courses, thus further reenforcing their CSE. Pathways 6c (n = 2), 7b (n = 2), and 7c (n = 8) are labelled *confident experience accumulators. Confident experience accumulators* lack prior work experience, or both prior work and entrepreneurial experience, although they have high levels of pre-CSE. They participated in either a proof-of-concept or proof-of-business learning experience. These pathways, however, differ in terms of gender and discipline: Pathways 6c and 7b include female non-business students, while Pathway 7c consists of business students. These students believe in their creative abilities, and they use the entrepreneurial education to apply their creative skills.

Counterfactual analysis was used to examine the configurations associated with not high post-CSE. There are seven distinctive configurations associated with not high levels of CSE (negation) after a learning experience. These configurations cover 29% of cases in the sample (solution coverage), which implies that the remaining students exhibited a variety of less-consistent configurations, and the solution consistency is 0.94 (See Table 4 below).

Pathways 8a (n = 6) and 8b (n = 2) are called *experienced information seekers*, which includes female students with either prior work or entrepreneurial experience and a medium level of pre-CSE; these students have participated in a business plan learning experience. These students differ in terms of discipline: Pathway 8b includes non-business students, while discipline does not matter in Pathway 8a. *Information seekers* have already accumulated some experience, and thus, level of CSE does not seem to be shaped by the learning experience. Pathways 9a (n = 5) and 10 (n = 2) are labelled *entrepreneurial creativity testers.* These pathways include non-business students who have prior entrepreneurial experience and a medium level of pre-CSE, but lack prior work experience. These students participated in a proof-of-concept and proof-of-business learning experience. These two pathways also differ in terms of gender: Pathway 10 includes male students, while in Pathway 9a, gender does not play a role. *Entrepreneurial creativity testers* may already have accumulated creative abilities via prior entrepreneurial experience, and thus, participating in these two learning experiences does not seem to have shaped their level of CSE.

Pathway 9b (n = 5) is labelled *experienced non-innovators,* and is made up of male students with prior work and entrepreneurial experience, as well as a medium level of pre-CSE; these students have participated in a proof-of-concept learning experience. These students already have prior experience, which may have shaped their level of CSE, and it seems that due to that experience, EE shapes their level of CSE only a little, if at all.

Pathway 9c (n = 5) is called *creativity experience seekers.* This group includes male non-business students with limited or no work experience, a medium level of pre-CSE, and consists of those who have participated in a proof-of-concept learning experience. It seems that despite their lack of work experience, EE has not shaped these students' perceptions of their creative abilities.

Table 4. Analysis Results for Creative Self-Efficacy (outcome=post-CSE).

	High post-CSE						Not high post-CSE						
	6a	6b	6c	7a	7b	7c	8a	8b	9a	9b	9c	9d	10
TLE	❶	❶	❶	❷	❷	❷	⓿	⓿	❶	❶	❶	❶	❷
PEE	○		○	○		○		●	●	●		○	●
PWE	●	●	○	●	○	●	●		○	●	○	●	○
Female	○	○	●	○	●		●	●		○	○	●	○
Business major		○	○	●	●	●		○	○		○	●	○
Pre-CSE	❷	❷	❷		❷	❷	❶	❶	❶	❶	❶	❶	❶
Cases	4	3	2	7	2	8	6	2	5	5	5	8	2
Consistency	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.83	1.00	0.83	0.88	1.00
Raw coverage	0.05	0.04	0.02	0.07	0.02	0.07	0.06	0.02	0.05	0.05	0.05	0.07	0.02
Unique coverage	0.04	0.03	0.02	0.02	0.02	0.03	0.06	0.02	0.02	0.02	0.05	0.07	0.02
S. consistency	1.00						0.94						
S. coverage	0.21						0.29						

TLE = type of learning experience, PEE. = prior entrepreneurial experience, PWE = prior work experience, Pre-CSE = level of creative self-efficacy before a learning experience, S. = Solution; Black circle denotes the presence of a condition. For learning experience: 2 = proof-of-business, 1 = proof-of-concept, 0 = business plan. For creative self-efficacy: 2 = high, 1 = medium, 0 = low. White circle denotes absence (or negation) of a condition. Blank space denotes that the condition is unimportant to a given configuration.

Pathway 9d (n = 8) is labelled *business creativity appliers* and consists of female business students with prior work experience, a lack of prior entrepreneurial experience and a medium level of pre-CSE, and those who went through a proof-of-concept learning experience. These students seem to be testing their creativity abilities in an entrepreneurial context via EE; however, this seems to shape their level of CSE only a little, if at all. The taxonomy is summarized on Table 5 below.

Discussion and Implications

Utilizing the QCA allowed us to examine entrepreneurial learning experience in conjunction with contingencies to provide new insights and explanations about the effect of EE (Nabi et al., 2017). The papers' contribution to the EE literature is five-fold. The results indicate that the type of learning experience does matter, to a certain extent: none of the configurations associated with high post-EI and high post-CSE were associated with the business plan learning experience. Therefore, our results provide further evidence on why traditional business plan–based learning experiences may not generate the results that EE is expected to generate (Lackéus, 2020). Conversely, proof-of-concept and proof-of-business learning experiences were associated with high post-EI and high post-CSE after a learning experience. It seems that entrepreneurship programs in which students only prepare a business plan do not yield high post-EI or post-CSE levels. This is in line with a growing body of evidence in support of

Table 5. Taxonomy of Creative Self-Efficacy of Entrepreneurship Education Learners.

Pathway	Description	Taxonomy
6a	Male business students Limited to no entrepreneurial experience Work experience High level of pre-CSE High level of post-CSE Proof-of-concept	Creativity appliers
7a	Male business students Limited to no entrepreneurial experience Work experience High level of pre-CSE Proof-of-business	
6b	Male non-business students Work experience High level of pre-CSE High level of post-CSE Proof-of-concept	
6c	Female non-business students Limited to no entrepreneurial experience Limited to no work experience High level of pre-CSE High level of post-CSE Proof-of-concept	Confident experience accumulators
7b	Female non-business students Limited to no work experience High level of pre-CSE High level of post-CSE Proof-of-business	
7c	Business students Limited to no entrepreneurial experience Limited to no work experience High level of pre-CSE High level of post-CSE Proof-of-business	
8a	Female students Work experience Medium level of pre-CSE Not high level of post-CSE Business plan	Experienced information seekers
8b	Female non-business students Entrepreneurial experience Medium level of pre-CSE Not high level of post-CSE Business plan	

(continued)

Table 5. (continued)

Pathway	Description	Taxonomy
9a	Non-business students Entrepreneurial experience Limited to no work experience Medium level of pre-CSE Not high level of post-CSE	Entrepreneurial creativity testers
10	Male non-business students Entrepreneurial experience Limited to no work experience Medium level of pre-CSE Not high level of post-CSE Proof-of-business	
9b	Male students Entrepreneurial experience Work experience Medium level of pre-CSE Not high level of post-CSE	Experienced non-innovators
9c	Male non-business students Limited to no work experience Medium level of pre-CSE Not high level of post-CSE	Creativity experience seekers
9d	Female business students Limited to no entrepreneurial experience Work experience Medium level of pre-CSE Not high level of post-CSE Proof-of-concept	Business creativity appliers

entrepreneurial pedagogies emphasizing learning by doing in developing entrepreneurial capacities, including EI and CSE (Kuratko & Morris, 2018; Lindberg et al., 2017). Our findings support extant research that demonstrates that learning through experience and real-life situations has a greater impact on students' perceptions and EI than traditional forms of learning (Costa et al., 2018; Liñan, et al., 2011).

However, the results also seem to suggest that EE may play a limited role in influencing students' predispositions toward entrepreneurship. In line with recent evidence from van Ewijk et al. (2020), we found that only individuals who already had high levels of EI before participating in an entrepreneurial learning experience had high levels of EI after the experience. These results are in line with the findings of Shneor et al. (2020), who also showed that those with low attitudes towards entrepreneurship remained unchanged after EE, and vice versa. Additionally, these findings contribute towards clarifying previously mixed findings regarding the effect of EE on the level of EI by examining how contingencies and learning experiences shape EE outcomes. As

suggested by prior literature (Piperopuolos & Dimov, 2015; Shneor et al., 2020), chosen pedagogies and students' characteristics shape the outcomes of EE. We extend these studies by examining students' gender, disciplines, prior experiences, CSE, and EI together with learning experiences, and, thus, provide new insights into how contingencies shape the outcomes of EE.

The study provides new understandings for how EE could shape CSE. Prior research has only recently started to examine the role of EE in shaping CSE (e.g., Laguia et al., 2019; Puente-Díaz & Cavazos-Arroyo, 2017; Tantawy et al., 2021). This study extends those findings by showing that EE might have a limited role in shaping CSE, although high levels of post-CSE are associated with proof-of concept and proof-of-business learning experiences. Students with high levels of CSE after a learning experience had high levels of CSE before the learning experience, and vice versa. Thus, it appears that EE may serve to confirm for students their existing predispositions towards entrepreneurship. These findings are concerning, given that creative skills play an important role through the entrepreneurial process (Baron & Ensley, 2006; Rauch, Wiklund & Lumpkin, 2009) However, these results also highlight the need to examine the specific elements of EE and their connection to possible changes in students' perceived creative skills and actual creative skills.

Following previous studies (Raposo et al., 2008; Roman & Maxim, 2017: Shneor et al., 2020), we proposed a taxonomy combining students' characteristics and learning experiences, and post-learning experience EI level (see Table 3), in which we distinguish between students who seem predisposed to entrepreneurship and those who do not. Raposo et al. (2008) found the existence of two distinct groups of students, whom they regarded as "the accommodated independents," who were less inclined toward start-up creation—similar to our "information seekers," "convinced non-entrepreneurs," and "confirmation seekers"—and "the confidents," who have a greater propensity for start-up creation—similar to our "confirmation gainers" and "entrepreneurship explorers" categories. Somewhat in line with this study, "the confidents" seem to benefit from EE as opposed to "the accommodated independents," however, the present study highlighted the re-enforcing nature of EE.

More recently, Shneor et al. (2020) found differential impacts of EE on students based on their pre-EE attitudes toward entrepreneurship and levels of ESE. "Confirmation gainers" are similar to their categorization of "Eager" students, who are positively disposed to entrepreneurship due to high pre-entrepreneurial attitudes and ESE. Their "Self-Doubter" category of students, possessing high pre-attitudes and low ESE, are similar to our "entrepreneurship explorers" and "entrepreneurship experiencers," who participate in EE to confirm their interests in entrepreneurship. "Convinced non-entrepreneurs" are similar to their "Disengaged" students, who have low levels of pre-EE attitudes and ESE, with a low predisposition for entrepreneurship, while "confirmation seekers" have high levels of work and entrepreneurial experience, and those with low pre-EI are similar to their "Skeptical" category, with high levels of pre-EE, ESE, and low attitudes. While the typologies are similar to the taxonomy we have developed, we extend the prior typologies by differentiating between types of

entrepreneurial learning experiences. Moreover, the developed taxonomies in the present study account for both individual characteristics, dispositions towards entrepreneurship, and learning experiences, thus providing a more comprehensive picture.

Fourth, we extend the results of prior CSE literature by proposing a taxonomy combining students' characteristics and learning experiences, and post-learning experience, with their level of CSE (See Table 5). To the best of our knowledge, there is no existing taxonomy describing how EE together with student characteristics shape the level of CSE. The findings of the study suggest six different groups of student characteristics-learning experience combinations that are associated with high levels of post-CSE, and seven different groups of student characteristics-learning experience combinations that are associated with not high levels of post-CSE. EE seems to mainly reinforce and decrease their pre-CSE levels, which provides a more nuanced view on the role of EE in shaping CSE.

Lastly, the configuration approach has been suggested to provide new insights about entrepreneurship (Douglas et al., 2020; Short et al., 2008). The results show that all configurations are associated with high levels of EI and CSE after a learning experience, and have limited or no prior entrepreneurial experience, thus suggesting that entrepreneurial learning could act as a way for students to accumulate entrepreneurial experience. This is in line with some evidence regarding the effectiveness of EE in the absence of prior exposure to entrepreneurship (Fayolle & Gailly, 2015; Roy et al., 2019). We extend the extant research by showing which specific learning experiences—namely proof-of-concept and/or proof-of-business—seem to be effective when combined with students' prior experience, or lack thereof.

These results also have practical implications. As suggested by the current findings, students seem to come to EE courses with different goals in mind. Some look for reassurance for their interest towards entrepreneurship as a career option, while others look for confirmation for their hesitant disposition towards entrepreneurship in a low-risk and controlled environment, which EE enables. When designing an entrepreneurship course, this should be taken into account. Thus, experiential pedagogies provide students with a realistic preview of entrepreneurship and enable them to decide whether an entrepreneurship career is for them. Furthermore, the findings of the study suggest that universities should build portfolios regarding their entrepreneurship courses, which should contain all three types of models: supply, demand, and competence. Including all three types of courses and their mixture will provide the widest entrepreneurial learning experience for the students, which, in turn, enables knowledge and awareness building, experimentation, and competence building.

The inclusion of supply and demand courses is important to build students' confidence in their skills, such as their CSE, which is enabled by these types of EE. Lastly, the findings of the study suggest that teachers need to consider the goal of EE, whether it is student self-reflection, skill development, or developing new entrepreneurs, as this shapes the framing of the course and to whom entrepreneurship should be taught. The findings show that, regarding the types of entrepreneurial learning experiences included in this study, the students' EI and CSE levels did not change considerably, thus

suggesting that in these cases, it seems that EE only managed to reinforce the students' perception of their creative skills and intent to become entrepreneurs.

Conclusions and Limitations

The aim of this study was to examine the contingencies shaping two different outcomes of EE. By examining university students participating in three different learning experiences through a quasi-experimental field study approach, the study proposed a taxonomy for contingencies related to both EI and CSE. Taken together, the results seem to indicate that EE has limited potential in changing students' willingness to become entrepreneurs. Those who already had a predisposition toward entrepreneurship, as indicated by high levels of pre-EI and pre-CSE, seemed to maintain the same high levels of post-EI and post-CSE. The opposite also held true. Moreover, EE seemed to act as a so-called testing board for students to try and see whether entrepreneurship was for them, or whether they should instead seek employment in a company.

This study has limitations, which open avenues for further research. For instance, the study was conducted in the context of Western countries, and the sample size is a limitation of the study. Future research should examine the research questions of interest using a larger sample size and different national and institutional contexts. Additionally, the sample includes both bachelor and master's students, and their distribution varied across three country contexts, which also may limit the results. Future research could examine path differences at different levels of academic studies, and in different national and institutional environments, which may shape the forms of entrepreneurship and the social views on entrepreneurship. Similarly, the data consisted of several nationalities and ethnic backgrounds, thus rendering any national-level cultural examination tenuous given the fragmented composition of the sample. Future research on the role of cultural dimensions as contingencies in outcomes of entrepreneurial education may include a larger number of observations for pre-specified contexts, along with theoretically important cultural aspects. Furthermore, the study applied a quasi-experimental field study approach, and as such, the teaching methods and materials were not standardized. Future research could apply a controlled experimental approach, which would overcome some of the challenges related to the field study approach. Additionally, mvQCA was used to examine the differences among different groups of students in the context of EE; however, based on mvQCA, we cannot make any conclusions about the causality of these relationships. Thus, future research could apply more traditional methods to test the effect of different types of EE on the outcomes of EE. Moreover, mvQCA utilizes categorical data, which limits the possibility to examine variance in degree for the conditions and outcome variables. Future research could apply fuzzy-set QCA to account for the degree in examination of association between contingencies and outcomes of EE. As with previous studies (e.g., Chen et al., 1998; Gist, 1989), we examined two outcome variables, namely EI and CSE. However, these are not the only outcomes of EE. Future research could consider

other outcomes (e.g., entrepreneurship specific competences, such as opportunity recognition, resilience, risk-taking, and effectual thinking, among others). Finally, we acknowledge that other types of contingencies that have an influence in shaping EI (most notably, role models Van Auken et al., 2006) may also be important in the context of EE. Future research may shed light on such relationships.

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References

Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl, & J. Beckmann (Eds.), *Action-control: From cognition to behavior (SSSP springer series in social psychology book series)* (pp. 1–39). Springer. https://doi.org/10.1007/978-3-642-69746-3_2

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*(2), 179–211. http://dx.doi.org.proxy.library.cpp.edu/10.1016/0749-5978(91)90020-T

Akbari, M., Bagheri, A., Imani, S., & Asadnezhad, M. (2021). Does entrepreneurial leadership encourage innovation work behavior? The mediating role of creative self-efficacy and support for innovation. *European Journal of Innovation Management*, *24*(1), 1–22. https://doi.org/10.1108/EJIM-10-2019-0283

Anna, A. L., Chandler, G. N., Jansen, E., & Mero, N. P. (2000). Women business owners in traditional and nontraditional industries. *Journal of Business Venturing*, *15*(3), 279–303. https://doi.org/10.1016/S0883-9026(98)00012-3

Autio, E., Keeley, R. H., Klofsten, M., Parker, G. G. C., & Hay, M. (2001). Entrepreneurial intent among students in scandinavia and in the USA. *Enterprise and Innovation Management Studies*, *2*(2), 145–160. https://doi.org/10.1080/14632440110094632

Bae, T. J., Qian, S., Miao, C., & Fiet, J. O. (2014). The relationship between entrepreneurship education and entrepreneurial intentions: A meta-analytic review. *Entrepreneurship Theory and Practice*, *38*(2), 217–254. http://dx.doi.org.proxy.library.cpp.edu/10.1111/etap.12095

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, *84*(2), 191–215. https://doi.org/10.1037/0033-295X.84.2.191

Bandura, A. (1982). The psychology of chance encounters and life paths. *American Psychologist*, *37*(7), 747–755. https://doi.org/10.1037/0003-066X.37.7.747

Baron, R. A., & Ensley, M. D. (2006). Opportunity recognition as the detection of meaningful patterns: Evidence from comparisons of novice and experienced entrepreneurs. *Management Science*, *52*(9), 1331–1344. https://doi.org/10.1287/mnsc.1060.0538

Baron, R. A., & Markman, G. D. (2000). Beyond social capital: How social skills can enhance entrepreneurs' success. *Academy of Management Executive*, *14*(1), 106–116. http://dx.doi.org.proxy.library.cpp.edu/10.5465/ame.2000.2909843

Baron, R.A., & Markman, G.D. (2003). Beyond social capital: The role of entrepreneurs' social competence in their financial success. *Journal of Business Venturing*, *18*(1), 41–60. https://doi.org/10.1016/S0883-9026(00)00069-0

Baron, R. A., & Ward, T. B. (2004). Expanding entrepreneurial cognition's toolbox: Potential contributions from the field of cognitive science. *Entrepreneurship Theory and Practice*, *28*(6), 553–573. https://doi.org/10.1111%2Fj.1540-6520.2004.00064.x

Beghetto, R. (2006). Creative self-efficacy: Correlates in middle and secondary students. *Creativity Research Journal*, *18*(4), 447–457. https://doi.org/10.1207/s15326934crj1804_4

Bignotti, A., & Le Roux, I. (2020). Which types of experience matter? The role of prior start-up experiences and work experience in fostering youth entrepreneurial intentions. *International Journal of Entrepreneurial Behavior & Research*, *26*(6), 1181–1198. http://dx.doi.org.proxy.library.cpp.edu/10.1108/IJEBR-10-2019-0577

Bird, B. (2019). Toward a theory of entrepreneurial competency. In J.A. Katz, & A.C. Corbet (Eds.), *Seminal ideas for the next twenty-five years of advances (advances in entrepreneurship, firm emergence and growth* (Vol. 21, pp. 115–131). Emerald Publishing Limited. https://doi.org/10.1108/S1074-754020190000021011

Bransford, J., Brown, A., & Cocking, R. (2000). *How people learn: Brain, mind, experience, and school*. National Research Council, National Academy Press.

Brazeal, D. V., Schenkel, M. T., & Kumar, S. (2014). Beyond the organizational bounds in CE research: Exploring personal and relational factors in a flat organizational structure. *Journal of Applied Management and Entrepreneurship*, *19*(2), 78–106. https://doi.org/10.9774/GLEAF.3709.2014.ap.00006

Brown, T. (2009). *Change by design: How design thinking transforms organizations and inspires innovation*. HarperCollins Publishers.

Chen, C. C., Greene, P. G., & Crick, A. (1998). Does entrepreneurial self-efficacy distinguish entrepreneurs from managers? *Journal of Business Venturing*, *13*(4), 295–316. https://doi.org/10.1016/S0883-9026(97)00029-3

Choi, J. N. (2004). Individual and contextual predictors of creative performance: The mediating role of psychological processes. *Creativity Research Journal*, *16*(2-3), 187–199. https://doi.org/10.1080/10400419.2004.9651452

Costa, S. F., Santos, S. C., Wach, D., & 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. http://dx.doi.org.proxy.library.cpp.edu/10.1111/jsbm.12348

Davidsson, P. (1995). Determinants of entrepreneurial intentions. In RENT IX Workshop in Entrepreneurship Research, Piacenza, Italy, 23–24 November 1995. https://eprints.qut.edu.au/2076/1/RENT_IX.pdf. Retrieved 4 June, 2015

DeNoble, A., Jung, D., & Ehrlich, S. (1999). Entrepreneurial self-efficacy: The development of a measure and its relationship to entrepreneurship. *Frontiers of Entrepreneurship Research*, 73–87. Babson College.

Douglas, E.J., Shepherd, D.A., & Prentice, C. (2020). Using fuzzy-set qualitative comparative analysis for a finer-grained understanding of entrepreneurship. *Journal of Business Venturing*, *35*(1), 1–17. http://dx.doi.org.proxy.library.cpp.edu/10.1007/s10551-019-04116-9

Engle, R. L., Schlaegel, C., & Delanoe, S. (2011). The role of social influence, culture, and gender on entrepreneurial intent. *Journal of Small Business & Entrepreneurship*, *24*(4), 471–492. https://doi.org/10.1080/08276331.2011.10593549

Fayolle, A., & Gailly, B. (2015). The impact of entrepreneurship education on entrepreneurial attitudes and intention: Hysteresis and persistence. *Journal of Small Business Management*, *53*(1), 75–93. https://doi.org/10.1111/jsbm.12065

Fayolle, A. (2013). Personal views on the future of entrepreneurship education. *Entrepreneurship and Regional Development*, *25*(7-8), 692–701. https://doi.org/10.1080/08985626.2013.821318

Fayolle, A., & Liñán, F. (2014). The future of research on entrepreneurial intentions. *Journal of Business Research*, *67*(5), 663–666. https://doi.org/10.1016/j.jbusres.2013.11.024

Fern, M. J., Cardinal, L. B., & O'Neill, H. M. (2012). The genesis of strategy in new ventures: Escaping the constraints of founder and team knowledge. *Strategic Management Journal*, *33*(4), 427–447. https://doi-org.proxy.library.cpp.edu/10.1002/smj.1944

Fiet, J. O. (2001). The theoretical side of teaching entrepreneurship. *Journal of Business Venturing*, *16*(1), 1–24. https://doi-org.proxy.library.cpp.edu/10.1016/S0883-9026(99)00041-5

Fisher, S., Graham, M., & Compeau, M. (2008). Starting from scratch: Understanding the learning outcomes of undergraduate entrepreneurship education. In R. Harrison, & C. Leitch (Eds.), *Entrepreneurial learning: Conceptual frameworks and applications (313-340)*. Routledge Studies in Entrepreneurship https://doi.org/10.4324/9780203931929

Fiss, P. C. (2011). Building better causal theories: A fuzzy set approach to typologies in organization research. *Academy of Management Journal*, *54*(2), 393–420. https://doi.org/10.5465/AMJ.2011.60263120

Franco, M., Haase, H., & Lautenschlager, A. (2010). Students' entrepreneurial intentions: An inter-regional perspective. *Education+Training*, *52*(4), 260–275. https://doi.org/10.1108/00400911011050945

Furnari, S., Crilly, D., Misangyi, V. F., Greckhamer, T., Fiss, P. C., & Aguilera, R. (2020). Capturing causal complexity: Heuristics for configurational theorizing. *Academy of Management Review*, *46*(4). published online May 27, 2020 https://doi.org/10.5465/amr.2019.0298

Gibb, A. (2002). In pursuit of a new enterprise' and entrepreneurship' paradigm for learning: Creative destruction, new values, new ways of doing things and new combinations of knowledge. *International Journal of Management Reviews*, *4*(3), 233–269. https://doi.org/10.1111/1468-2370.00086

Gist, M. E. (1989). The influence of training method on self-efficacy and idea generation among managers. *Personnel Psychology*, *42*(4), 787–805. https://doi.org/10.1111/j.1744-6570.1989.tb00675.x

Goldsby, M. G., Kuratko, D. F., Marvel, M. R., & Nelson, T. (2017). Design-centered entrepreneurship: A four stage iterative process for opportunity development. *Journal of Small Business & Entrepreneurship*, *29*(6), 477–490. http://dx.doi.org.proxy.library.cpp.edu/10.1080/08276331.2017.1377396

Greckhamer, T., Furnari, S., Fiss, P. C., & Aguilera, R. V. (2018). Studying configurations with qualitative comparative analysis: Best practices in strategy and organization research. *Strategic Organization*, *16*(4), 482–495. http://dx.doi.org.proxy.library.cpp.edu/10.1177/1476127018786487

Henry, C., & Lewis, K. (2018). A review of entrepreneurship education research: Exploring the contribution of the Education + Training special issues. *Education + Training*, *60*(3), 263–286. http://dx.doi.org.proxy.library.cpp.edu/10.1108/ET-12-2017-0189

Hmelo-Silver, C. E. (2004). Problem-based-learning: What and how do students learn? *Educational Psychology Review*, *16*(3), 235–266. https://doi.org/10.1023/B:EDPR.0000034022.16470.f3

Joensuu, S., Viljamaa, A., Varamäki, E., & Tornikoski, E. (2013). Development of entrepreneurial intention in higher education and the effect of gender-a latent growth curve analysis. *Education+ Training*, *55*(8–9), 781–803. http://dx.doi.org.proxy.library.cpp.edu/10.1108/ET-06-2013-0084

Karwowski, M., Gralewski, J., & Szumski, G. (2015). Teachers' effects on students' creative self-beliefs is moderated by gender. *Learning and Individual Differences*, *44*(December 2015), 1–8. https://doi.org/10.1016/j.lindif.2015.10.001

Karwowski, M., Lebuda, I., Wisniewska, E., & Gralewski, J. (2013). Big five personality traits as predictors of creative self-efficacy and creative personal identify: Does gender matter? *The Journal of Creative Behavior*, *47*(3), 215–232. https://doi.org/10.1002/jocb.32

Kautonen, T., van Gelderen, M., & Fink, M. (2015). Robustness of the theory of planned behavior in predicting entrepreneurial intentions and actions. *Entrepreneurship: Theory and Practice*, *39*(3), 655–674. http://dx.doi.org.proxy.library.cpp.edu/10.1111/etap.12056

Kim, M.-S., & Hunter, J. E. (1993). Relationships among attitudes, behavioral intentions, and behaviors: A meta-analysis of past research, part 2. *Communications Research*, *20*(3), 331–364. https://doi.org/10.1177%2F009365093020003001

Krueger, N. F. (2017). Entrepreneurial intentions are dead: Long live entrepreneurial intentions. In M. Brännback, & A. Carsrud (Eds), *Revisiting the entrepreneurial mind. (International studies in entrepreneurship* (Vol. 35, pp. 13–34). Springer. https://doi.org/10.1007/978-3-319-45544-02

Krueger, N. F., & Brazeal, D. V. (1994). Entrepreneurial potential and potential entrepreneurs. *Entrepreneurship Theory & Practice*, *18*(3), 91–104. https://doi.org/10.1177%2F104225879401800307

Krueger, N.F., Reilly, M.D., & Carsud, A.L. (2000). Competing models of entrepreneurial intentions. *Journal of Business Venturing*, *15*(5), 411–432. https://doi.org/10.1016/S0883-9026(98)00033-0

Kuratko, D. F., & Morris, M. H. (2018). Examining the future trajectory of entrepreneurship. *Journal of Small Business Management*, *56*(1), 11–23. https://doi.org/10.1111/jsbm.12364

Lackéus, M. (2020). Comparing the impact of three different experiential approaches to entrepreneurship in education. *International Journal of Entrepreneurial Behavior & Research*, *26*(5), 937–971. http://dx.doi.org.proxy.library.cpp.edu/10.1108/IJEBR-04-2018-0236

Laguía, A., Moriano, J. A., & Gorgievski, M. J. (2019). A psychological study of self-perceived creativity and entrepreneurial intentions in a sample of university students. *Thinking Skills and Creativity*, *31*(1), 44–57. https://doi.org/10.1016/j.tsc.2018.11.004

Langowitz, N., & Minniti, M. (2007). The entrepreneurial propensity of women. *Entrepreneurship Theory and Practice*, *31*(3), 341–364. https://doi.org/10.1111/j.1540-6520.2007.00177.x

Lans, T., Hulsink, W., Baert, H., & Mulder, M. (2008). Entrepreneurship education and training in a small business context: Insights from the competence-based approach. *Journal of Enterprising Culture*, *16*(4), 363–383. https://doi.org/10.1142/S0218495808000193

Leppänen, P. T., McKenny, A. F., & Short, J. C. (2019). Qualitative comparative analysis in entrepreneurship: Exploring the technique and noting opportunities for the future. In B. Boyd, T. R. Crook, J. K. Lê, & A. D. Smith (Eds.), *Standing on the shoulders of giants: Traditions and innovations in research methodology (research methodology in strategy and management* (Vol. 11, pp. 155–177). Emerald Publishing Ltd. https://doi.org/10.1108/S1479-838720190000011010

Lima, E., Lopes, R. M., Nassif, V., & da Silva, D. (2015). Opportunities to improve entrepreneurship education: Contributions considering Brazilian challenges. *Journal of Small Business Management*, *53*(4), 1033–1051. https://doi.org/10.1111/jsbm.12110

Liñán, F., & Chen, Y.W. (2009). Development and cross–cultural application of a specific instrument to measure entrepreneurial intentions. *Entrepreneurship Theory and Practice*, *33*(3), 593–617. https://doi.org/10.1111/j.1540-6520.2009.00318.x

Liñan, F., Santos, F. J., & Fernandez, J. (2011). The influence of perceptions on potential entrepreneurs. *International Entrepreneurship and Management Journal*, *7*(3), 373–390. http://dx.doi.org.proxy.library.cpp.edu/10.1007/s11365-011-0199-7

Lindberg, E., Bohman, H., & Hultén, P. (2017). Methods to enhance students' entrepreneurial mindset: A Swedish example. *European Journal of Training and Development*, *41*(5), 450–466. https://doi.org/10.1108/EJTD-10-2016-0078

Mandel, R., & Noyes, E. (2016). Survey of experiential entrepreneurship education offerings among top undergraduate entrepreneurship programs. *Education + Training*, *58*(2), 164–178. http://dx.doi.org.proxy.library.cpp.edu/10.1108/ET-06-2014-0067

Maresch, D., Harms, R., Kailer, N., & Wimmer-Wurm, B. (2016). The impact of entrepreneurship education on the entrepreneurial intention of students in science and engineering

versus business studies university programs. *Technological Forecasting and Social Change*, *104*(1), 172–179. http://dx.doi.org.proxy.library.cpp.edu/10.1016/j.techfore.2015.11.006

Martin, B. C., McNally, J. J., & Kay, M. J. (2013). Examining the formation of human capital in entrepreneurship: A meta-analysis of entrepreneurship education outcomes. *Journal of Business Venturing*, *28*(2), 211–224. https://doi.org/10.1016/j.jbusvent.2012.03.002

Mat, S. C., Maat, S. M., & Mohd, N. (2015). Identifying factors that affecting the entrepreneurial intention among engineering technology students. *Procedia-Social and Behavioral Sciences*, *211*(25 November 2015), 1016–1022. https://doi.org/10.1016/j.sbspro.2015.11.135

Morris, M. H., & Liguori, E. (2016). Preface: Teaching reason and the unreasonable. In M. H. Morris, & E. Liguor (Eds.), *Vergleichen in der Politikwissenschaft* (pp. xiv–xxii). Edward Elgar Publishing Ltd. https://doi.org/10.4337/9781784719166.00006

Morris, M. H., Miyasaki, N. N., Watters, C. E., & Coombes, S. M. (2006). The dilemma of growth: Understanding venture size choices of women entrepreneurs. *Journal of Small Business Management*, *44*(2), 221–244. https://doi.org/10.1111/j.1540-627X.2006.00165.x

Morris, M. H., Webb, J. W., Fu, J., & 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

Nabi, G., Liñán, F., Fayolle, A., Krueger, N., & Walmsley, A. (2017). The impact of entrepreneurship education in higher education: A systematic review and research agenda. *Academy of Management Learning & Education*, *16*(2), 277–299. https://doi.org/10.5465/amle.2015.0026

Nikou, S., Brännback, M., Carsrud, A.L., & Brush, C.G. (2019). Entrepreneurial intentions and gender: Pathways to start-up. *International Journal of Gender and Entrepreneurship*, *11*(3), 348–372. https://doi.org/10.1108/IJGE-04-2019-0088

Oosterbeek, H., van Praag, M., & Ijsselstein, A. (2010). The impact of entrepreneurship education on entrepreneurship skills and motivation. *European Economic Review*, *54*(3), 442–454. https://doi.org/10.1016/j.euroecorev.2009.08.002

Osterwalder, A., & Pigneur, Y. (2010). *Business model generation: A handbook for visionaries, game changers, and challengers*. John Wiley & Sons.

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.2004.07.005

Petridou, E., & Sarri, K. (2011). Developing "potential entrepreneurs" in higher education institutes. *Journal of Enterprising Culture*, *19*(01), 79–99. https://doi.org/10.1142/S0218495811000647

Piperopuolos, P., & Dimov, D. (2015). Burst bubbles or build steam? Entrepreneurship education, entrepreneurial self-efficacy, and entrepreneurial intentions. *Journal of Small Business Management*, *53*(4), 970–985. https://doi.org/10.1111/jsbm.12116

Pittaway, L., & Cope, J. (2007). Entrepreneurship education: A systematic review of the evidence. *International Small Business Journal*, *25*(5), 479–510. https://doi-org.proxy.library.cpp.edu/10.1177%2F0266242607080656

Powell, G. N., & Greenhaus, J. H. (2010). Sex, gender, and decisions at the family work interface. *Journal of Management*, *36*(4), 1011–1039. https://doi-org.proxy.library.cpp.edu/10.1177/0149206309350774

Puente-Díaz, R., & Cavazos-Arroyo, J. (2017). The influence of creative mindsets on achievement goals, enjoyment, creative self-efficacy and performance among business students. *Thinking Skills and Creativity*, *24*(1), 1–11. https://doi.org/10.1016/j.tsc.2017.02.007

Ragin, C. (2008). *Redesigning social inquiry: Fuzzy sets and beyond* (*240*). University of Chicago Press.

Ragin, C.C. (2000). *Fuzzy set social science*. University of Chicago Press.

Ragin, C. C., & Sonnett, J. (2005). Between complexity and parsimony: Limited diversity, counterfactual cases, and comparative analysis. In S. Kropp, & M. Minkenberg (Eds.), *Vergleichen in der Politikwissenschaft* (pp. 180–197). VS Verlag für Sozialwissenschaften.

Raposo, M., do Paco, A., & Ferreira, J. (2008). Research note: Entrepreneur's profile: A taxonomy of attributes and motivations of university students. *Journal of Small Business and Enterprise Development*, *15*(2), 406–418. https://doi.org/10.1108/14626000810871763

Rauch, A., & Hulsink, W. (2015). Putting entrepreneurship education where the intention to act lies: An investigation into the impact of entrepreneurship education on entrepreneurial behavior. *Academy of Management Learning & Education*, *14*(2), 187–204. https://doi.org/10.5465/amle.2012.0293

Rauch, A., Wiklund, J., Lumpkin, G. T., & Frese, M. (2009). Entrepreneurial orientation and business performance: An assessment of past research and suggestions for the future. *Entrepreneurship Theory and Practice*, *33*(3), 761–787. https://doi.org/10.1111/j.1540-6520.2009.00308.x

Roman, T., & Maxim, A. (2017). National culture and higher education as pre-determining factors of student entrepreneurship. *Studies in Higher Education*, *42*(6), 993–1014. https://doi.org/10.1080/03075079.2015.1074671

Roy, N., Schlosser, F., & Pasek, Z. (2019). Stimulating entrepreneurial interest in engineers through an experiential and multidisciplinary course collaboration. *Entrepreneurship Education and Pedagogy*, *3*(1), 14–40. https://doi.org/10.1177%2F2515127419856602

Samwel Mwasalwiba, E. (2010). Entrepreneurship education: A review of its objectives, teaching methods, and impact indicators. *Education + Training*, *52*(1), 20–47. http://dx.doi.org.proxy.library.cpp.edu/10.1108/00400911011017663

Sánchez, J.C. (2011). University training for entrepreneurial competencies: Its impact on intention of venture creation. *International Entrepreneurship and Management Journal*, *7*(2), 239–254. http://dx.doi.org.proxy.library.cpp.edu/10.1007/s11365-010-0156-x

Sánchez, J.C. (2012). Entrepreneurial intentions: The role of the cognitive variables. In T. Burger-Helmchen (Ed.), *Entrepreneurship - born, made and educated*. Retrived from: http://www.intechopen.com/books/entrepreneurship-born-made-and-educated/entrepreneurialintentions-the-role-of-the-cognitive-variables

Sawyerr, O., Dong, W., Ozkaya, H.E., & Emerson, S. (2016). Evaluating the efficacy of a STEM entrepreneurship program: Lessons from the trenches. In United States association for small business and entrepreneurship. Conference proceedings (p. DJ1), San Diego, California, 10-12 January 2016. United States Association for Small Business and Entrepreneurship.

Sawyerr, O.O., Dong, W., & Emerson, S. (2012). Student partnerships for innovation in engineering entrepreneurship development (SPIEED): Developing entrepreneurial competencies in twenty-first century engineers. *Journal of Higher Education Theory and Practice*, *12*(4), 24–43.

Schneider, C.Q., & Wagemann, C. (2012). *Set-theoretic methods for the social sciences: A guide to qualitative comparative analysis*. Cambridge University Press.

Shabbir, A., & Di Gregorio, S. (1996). An examination of the relationship between women's personal goals and structural factors influencing their decision to start a business: The case of Pakistan. *Journal of Business Venturing*, *11*(6), 507–529. https://doi-org.proxy.library.cpp.edu/10.1016/S0883-9026(96)00034-1

Shneor, R., Smith, J.B., Smith, C.G., & Goedecke, J.F.M. (2020). The differential impact of entrepreneurship education on the entrepreneurial intentions of segments of students. *Entrepreneurship Education and Pedagogy*, *4*(4). Epub ahead of print 20 June 2020 https://doi.org/10.1177%2F2515127420936240

Short, J.C., Payne, G.T., & Ketchen, D.J. (2008). Research on organizational configurations: Past accomplishments and future challenges. *Journal of Management*, *34*(6), 1053–1079. http://dx.doi.org.proxy.library.cpp.edu/10.1177/0149206308324324

Souitaris, V., Zerbinati, S., & Al-Laham, A. (2007). Do entrepreneurship programmes raise entrepreneurial intention of science and engineering students? The effect of learning, inspiration and resources. *Journal of Business Venturing*, *22*(4), 566–591. https://doi-org.proxy.library.cpp.edu/10.1016/j.jbusvent.2006.05.002

Tantawy, M., Herbert, K., McNally, J.J., MengelPiperopuolos, T.P., & Foord, D. (2021). Bringing creativity back to entrepreneurship education: Creative self-efficacy, creative process engagement, and entrepreneurial intentions. *Journal of Business Venturing Insights*, *15*(June 2021), 1–8. https://doi.org/10.1016/j.jbvi.2021.e00239

Thiem, A. (2015). Parameters of fit and intermediate solutions in multi-value Qualitative Comparative Analysis. *Quality and Quantity*, *49*(2), 657–674. https://doi.org/10.1007/s11135-014-0015-x

Tierney, P., & Farmer, S. M. (2002). Creative self-efficacy: Potential antecedents and relationship to creative performance. *Academy of Management Journal*, *45*(6), 1137–1148. https://doi.org/10.2307/3069429

Tierney, P., & Farmer, SM (2011). Creative self-efficacy development and creative performance over time. *Journal of Applied Psychology*, *96*(2), 277–293. http://dx.doi.org.proxy.library.cpp.edu/10.1037/a0020952

Timmons, J. (1995). *New venture creation: Entrepreneurship in the 21st century*. McGraw-Hill/Irwin.

Van Auken, H., Fry, F. L., & Stephens, P. (2006). The influence of role models on entrepreneurial intentions. *Journal of Developmental Entrepreneurship*, *11*(02), 157–167. https://doi.org/10.1142/s1084946706000349

van Ewijk, A. R., Oikkonen, E., & Belghiti-Mahut, S. (2020). Linking methods to outcomes: A multi-course mixed-method study of the effects of active and passive pedagogy on entrepreneurial intentions. *The International Journal of Management Education*, *18*(3), 100420. https://doi.org/10.1016/j.ijme.2020.100420

Walter, S. G., Parboteeah, K. P., & Walter, A. (2013). University departments and self–employment intentions of business students: A cross–level analysis. *Entrepreneurship Theory and Practice*, *37*(2), 175–200. http://dx.doi.org.proxy.library.cpp.edu/10.1111/j.1540-6520.2011.00460.x

Wang, C., Mundorf, N., & Salzarulo-McGuigan, A. (forthcoming). Entrepreneurship education enhances entrepreneurial creativity: The mediating role of entrepreneurial inspiration. *The International Journal of Management Education.* https://doi.org/10.1016/j.ijme.2021.100570

Waterwall, B., Fuller, B., & Budden, H. (2017). Understanding the inner muse: Integrating the creative self-efficacy literature. *Journal of Managerial Issues*, *29*(2), 189–211. https://www.jstor.org/stable/45176543

Wiggins, G., & McTighe, J. (2001). *Understanding by design*. Prentice-Hall.

Wood, R., & Bandura, A. (1989). Social cognitive theory or organizational management. *Academy of Management Review*, *14*(3), 361–384. https://doi.org/10.5465/amr.1989.4279067

Zhang, Y., Duysters, G., & Cloodt, M. (2014). The role of entrepreneurship education as a predictor of university students' entrepreneurial intentions. *International Entrepreneurship and Management Journal*, *10*(3), 623–641. https://doi.org/10.1007/s11365-012-0246-z

Zhao, H, Seibert, SE, & Hills, GE (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