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Emotions and Entrepreneurship Education: State of the Art and Future Research Agenda

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EMOTIONS AND ENTREPRENEURSHIP EDUCATION: STATE OF THE ART AND FUTURE RESEARCH AGENDA

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ABSTRACT

Entrepreneurship education holds the potential to mitigate unemployment and boost prosperity, yet emotions, one of its sources of strength, remain underutilized. There is a strong consensus that emotions are tightly linked to learning processes, and vice versa. Across entrepreneurship education, the role of emotions as learning drivers is acknowledged but barely exploited. Following a systematic and reflective approach, the primary goal of this article is to examine the state of the art of the empirical evidence that touches upon the subject of entrepreneurship education and emotions. From the analysis undertaken, three relevant findings arise: 1) the research within the field has placed emphasis more on the by-products of emotions, such as emotional competencies, affective forecasting, emotional events as relevant in the execution of action-based entrepreneurship education schemes, and less on the determination and underpinnings of specific emotions critical to learning in entrepreneurship education; 2) despite the learning potential of emotions, the pedagogical use of emotions in entrepreneurship education remains neglected; and 3) there is an exclusive focus on the emotions on the student side at the expense of entrepreneurship educators' emotions, which are tremendously relevant. In the same vein, the study proposes a future research strategy based on three pillars: 1) identification of the specific emotions linked to entrepreneurial learning from both the student and teacher viewpoint; 2) the need to explore unconventional paths to integrate the strengths of emotions and emotion regulation into the teaching and learning of entrepreneurship; and 3) the incorporation of new technologies and methodologies to measure and take advantage of emotions to enhance entrepreneurial learning among existing entrepreneurship education programmes.

Keywords: entrepreneurship education, emotions and entrepreneurship, entrepreneurial learning

JEL-Classification: L26, M13, O33

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1 INTRODUCTION

Entrepreneurship education has been studied from multiple perspectives in business research, such as students' entrepreneurial intentions (Fayolle & Gailly, 2015; Karimi et al., 2016; Maresch et al., 2016; Shinnar et al., 2014; Westhead & Solesvik, 2016), competencies (Morris et al., 2013), self-efficacy (Kassean et al., 2015; Peterman & Kennedy, 2003; Piperopoulos & Dimov, 2015), learning in a startup context (Harms, 2015), institutional country-specific characteristics (Lima et al., 2015; Walter & Block, 2016), business school teaching (Gartner & Vesper, 1997; Katz, 2003; Neck & Greene, 2011), conceptual development (Hägg & Kurczewska, 2016; Kyrö, 2015; Pittaway & Cope, 2007), and methodological choices (Fayolle et al., 2016).

Despite these conceptual advancements, many perspectives on entrepreneurship education need more attention. The role of emotions in entrepreneurship education has received increasing interest in the literature, offering research opportunities for new initiatives, such as understanding the complexity of experiences in business failures and entrepreneurial career-making (Mandl, 2016), managing emotions (Fayolle, 2013), and the relationship between emotions and leadership among entrepreneurs (Huxtable-Thomas et al., 2016).

Entrepreneurship education can support managing emotions in entrepreneurial behavior. Entrepreneurship training, as a form of entrepreneur and entrepreneurship education, can influence entrepreneurial passion toward starting a venture (Gielnik et al., 2017). Still, as Nabi et al. (2017) suggest, entrepreneurship education research lacks studies on understanding entrepreneurial persons' emotions conceptually and empirically. There are research gaps around understanding entrepreneurial cognition, motivation, and emotions (Cardon et al., 2012; O' Shea et al., 2017; Shepherd, 2015), to which entrepreneurship education scholars can contribute through analyzing pedagogies to advance entrepreneurial behavior teaching. More research is also needed to understand entrepreneurial decision-making and how emotions influence it (Shepherd et al., 2015), because entrepreneurs are emotionally very committed to their ventures, and thus emotions play a crucial role in entrepreneurial behavior (Lundmark & Westelius, 2014). Still, we do not know enough about the relationships between students' emotions and entrepreneurial training (Sanchez, 2013). Emotions can act in the role of boosting the outcomes of entrepreneurship education; thus there is not just a scientific research gap in the literature, but the topic has educational and practical relevance for the society.

Studying emotions in entrepreneurship education is a multidisciplinary topic which combines the fields of education, psychology, and business science. Studying emotions in this research

context requires an understanding of behavioral psychology, entrepreneurship pedagogy, and small business management. In light of these demands in research design, we still to an extent lack many types of study which would increase our understanding of emotions and entrepreneurship education. As entrepreneurship education has moved from traditional teacher-based education to a focus on student-specific learning (Robinson et al., 2016), the need to understand and manage students' emotions has been increased. For these reasons, this review attempts to add value in terms of the state of the art of empirical research on emotions in entrepreneurship education and propose a future research agenda that may guide the efforts of scholars and entrepreneurship teachers working in this emerging line of inquiry.

2 EMOTIONS, LEARNING, AND ENTREPRENEURSHIP EDUCATION

Emotions play a critical role in learning according to robust evidence in the fields of psychology (Meyer & Turner, 2002), neuroscience (Hinton, Miyamoto, & Della-Chiesa, 2008; Immordino-Yang, 2015), social contexts (Goss, 2005), education (Pekrun, 2006; Pekrun, Goetz, Frenzel, Barchfeld, & Perry, 2011; Sutton & Wheatley, 2003), and entrepreneurship (Cardon, Wincent, Singh, & Drnovšek, 2009; Fodor & Pinteá, 2017). Recent evidence also argues that emotions are highly related to action (Blakemore & Vuilleumier, 2017), decision-making (Welpe, Spörrle, Grichnik, Michl, & Audretsch, 2012), opportunity recognition (Hayton & Cholakova, 2012), and memory (Bower, 1992; Tyng, Amin, Saad, & Malik, 2017). More specifically, entrepreneurship scholars acknowledge the importance of emotions (Arpiainen, Täks, Tynjälä, & Lackéus, 2013; Jones & Underwood, 2017; Lackéus, 2014) in entrepreneurship education, concretely in the teaching and learning of entrepreneurship (Pless, Maak, & Stahl, 2011) and the development of entrepreneurial competencies (Lackéus, 2014). Emotions in entrepreneurship education reflect feelings and preunderstanding of entrepreneurship. As Zampetakis et al. (2017b) show, emotions increase information on attitudes. As attitudes reflect the first signs of entrepreneurial intention, the role of emotions in entrepreneurship education is important. According to Fernandez-Perez et al. (2019), emotional competencies help students to manage emotions and to recognize emotions when needed in entrepreneurship. Together with attitudes, these types of competency provide tools for emotional capabilities in entrepreneurship education which are not just meaningful for entrepreneurial learning, but also for enhancing and sharing emotions. However, it must be noted that emotions are not just an individual level research object. Instead of focusing on individuals, emotion researchers can also study organizational behavior and organizational

metamorphosis through emotional relationships and the characteristics of entrepreneurial passion (Cardon et al., 2013).

The role of emotions in entrepreneurship education can be significant for the participating students. Entrepreneurship education is not only content-based, but can also inspire and motivate students (Souitaris et al., 2007). This means not only the creation of emotional experiences, but also the nurturing of entrepreneurial mindsets. This can lead in the long run to the birth of entrepreneurial intention. Inspiring different elements of entrepreneurial behavior among students creates emotions. Emotions can offer motivational reasons to become an entrepreneur and to plan for new ventures. This is due to the emotional payback from the society, teams, and individuals, just as in the case of social entrepreneurs (Yitshaki & Kropp, 2016). Thus, emotions play a crucial cognitive role in entrepreneurship education.

Emotions can be anticipatory, as Zampetakis et al. (2017a) mentions, meaning that their current emotions reflect a person's future subjective assumption of positive or negative outcomes in the case of any kind of personal entrepreneurial behavior. They influence a person so that the causal and effectual decision-making typical of entrepreneurs (Sarasvathy, 2001) dominates the logic of managing emotions. The focus in entrepreneurial decision-making is on current resources and the processes in hand, and on expected future outcomes. However, emotions and passion do not alone explain decision-making logic, which is also influenced by risk-taking behavior and self-efficacy (Stroe et al., 2018).

Emotions, together with attitudinal and motivational factors, influence the interest and intention to become an entrepreneur (Ustav & Venesaar, 2018). Emotions can be labeled positive or negative (He et al., 2017). Positive emotions can be regarded as those which create feelings of satisfaction. They occur in experiences which are related to goal achievement and motivation fulfillment in entrepreneurship. These emotions feel rewarding in entrepreneurial learning, such as love, happiness, gratitude, joy, and passion. Positive emotions can increase creativity among entrepreneurial persons and through entrepreneurial behavior innovation in organizations (Baron & Tang, 2011). Additionally, they seem to foster entrepreneurial learning more than negative emotions experienced during learning procedures (Ucbasaran et al., 2013; Verzat et al., 2017). For this reason, positive emotions, and the ability to feel them, need empirical study in future entrepreneurship research, such as in new venture creation (Baron et al., 2012). Thus, positive emotions offer multiple research opportunities to understand the outcomes of entrepreneurial behavior.

Negative emotions are not necessarily only bad for entrepreneurial behavior: as Van Gelderen et al. (2015) show, action-based emotions related to anxiety can lead to positive outcomes for

entrepreneurial persons. Thus, entrepreneurial processes which aim for financial and social value creation actively contain emotions which can be challenging mentally, but which eventually lead to goal achievement. However, as Weinberger et al. (2018) find, creativity suffers under negative emotions. It seems that negative emotions related to survival, like fear and anxiety, can lead to positive outcomes, while new creation processes related to creativity suffer under negative emotions.

Negative emotions take place in event of startup failures, mistakes, human errors, and tragedies. These involve not only financial losses, but also emotional costs, which might influence attitudes toward entrepreneurship (Breugst & Shepherd, 2015). Negative emotions related to startup creation deter interest in entrepreneurship, or even prevent the birth of an entrepreneurial intention at the very early stage (Zampetakis, Lerakis, Kafetsios, & Moustakis, 2015). These negative emotions, including fear of failure (Kollmann et al., 2017), anger, sorrow, jealousy, bitterness, and shame, can reflect past experiences of entrepreneurship, such as family business failures, in the next generation. This heritage can cognitively influence individuals so that entrepreneurship as a career choice will be neglected. Conversely, as Khelil (2016) suggests, emotional support can lead to a decision to become an entrepreneur, and thus can be meaningful in the very early stage of the entrepreneurial process, such as entrepreneurial intention. As an emotion, fear of failure in a planned venture can cause novice entrepreneurs to start new ventures (Morgan & Sisak, 2016) due to the subjective reasoning related to fear of failure (Li, 2011). Fear of failure damages self-esteem. Also, the threat of losing one's reputation influences the avoidance of failure at all costs (Chua & Bedford, 2016). Just as emotions can be energy-consuming, they can also create and increase the energy experienced by an entrepreneur. This is due to situational and interactional factors, such as socio-emotional ones which influence emotional energy. Some of these negative emotions in entrepreneurship, like shame, stem from social relationships and the associated power relations (Doern & Goss, 2013). Coping with negative emotions is essential for any entrepreneur, as many mistakes contain learning experiences and new opportunities to explore the business environment further (Byrne & Shepherd, 2013).

In terms of negative emotions, failures create emotional costs for entrepreneurs as well as financial ones (Shepherd, 2003). Managing failures as entrepreneurs is a process of recovery and self-justification, and it can be regarded as an emotional process in which failures are accepted and understood as experiences (Mantere et al., 2013). Processing losses through letting go and overcoming the failures creates emotional costs. This leads to an accumulation of entrepreneurial learning experiences, and finally the recovery stage in entrepreneurship

(Cope, 2011). Thus, negative emotions are not simply a burden for entrepreneurs: rather, they can be fruitful learning experiences. As entrepreneurial learning is rooted in experiential learning, both negative and positive emotions feed learning outcomes in entrepreneurial processes.

As Lackéus (2014) shows, together with anger, emotions like despair and frustration can be part of a process in which the educational context supports events in which emotions occur. These events lead to entrepreneurial competencies which develop students' identity, self-efficacy, passion, and uncertainty-ambiguity tolerance. Thus, negative emotions do not necessarily produce negative outcomes; rather, they can be a part of the learning process to become an entrepreneur. Learning from failure, struggles, and mistakes has been seen as characteristics of long-term entrepreneurs (Minniti & Bygrave, 2001). For these reasons, experienced negative emotions are not a paradox in the process of experiential learning, which is typical for entrepreneurial learning. On the other hand, there is evidence that entrepreneurs tend on average to have more positive emotions about entrepreneurship than negative emotions (Patzelt & Shepherd, 2011). Arousal of entrepreneurial emotion is characterized by both positive and negative emotions, and by considerations, conditions, and interactions in the process of feeling an emotion (Jennings et al., 2015). Thus, entrepreneurial emotion is not just a feeling experienced by an entrepreneur, but is also influenced by the surrounding situational, contextual, and business-specific factors.

Up to this point, it can be said that the literature on entrepreneurial learning is individualistic and fragmented (Wang & Chugh, 2014), and the link between emotions and entrepreneurial learning is recognized. Less known, though, is the role of the construct of emotion in entrepreneurship education, a gap that this review aims to disentangle. Entrepreneurial learning is defined in terms of what and how entrepreneurs learn (Wang & Chugh, 2014).

Table 1 around here

3 METHODOLOGY

The research question set for the review was to assess the state of the art of entrepreneurship education research from the perspective of emotions. The research methodology was based on a stepwise process (Kitchenham 2004). Through Kitchenham's approach we searched

systematically and comprehensively for relevant research. The search considered articles published between 2000 and 2018. Firstly, all journals listed in the Social Sciences Citation Index (SSCI) were taken into account. Then, the SSCI journal list was compared with ten most influential journals in the field of entrepreneurship. For this purpose, Stewart and Cotton (2013) study was utilized. As a last step in journal analysis process, we searched for journals related to the topic of the review outside the SSCI platform.

The selection of the articles had two stages. The first stage consisted of identifying eligible articles through a search of the whole SSCI database, of the ten most relevant entrepreneurship journals as ranked by Stewart and Cotton (2013), of Google Scholar, and of the proceedings of three major conferences. Since the topic of this review is new, we considered it appropriate not to limit the search to journals with a pre-determined ISI impact factor. Then we searched the journals using the keywords *entre* education/programs/ programmes AND emotion/affect** to minimise subjective interpretation bias. These keywords capture the articles which are conceptually relevant for the research aims stated.

After the search within articles the emphasis was to understand conceptually the keywords. As this review concentrates on empirical articles produced within the area of emotions and entrepreneurship education, the chosen articles applied this approach and used both ‘emotions/affect’ and ‘entrepreneurship education/programs’/programmes’ in their main titles, chosen keywords, and abstracts. Also methodological choices of the articles were analysed in terms of recognizing empirical evidence of each article. We also excluded articles which did not relate entrepreneurship education with emotions, non-empirical articles, working papers, non-peer reviewed articles, non-published articles, and commentaries providing overviews of the field. Through this procedure, we identified four eligible articles from three journals. We also identified two non-empirical articles, one working paper, and four other empirical articles, but these were excluded because they did not fulfil the selection criteria set in the protocol for identifying relevant literature (see Table 2).

Table 2 around here

Overall, the analytical process follows the meta-narrative procedure presented by Greenhalgh, Robert, Macfarlane, Bate, and Kyriakidou (2004). Three types of coding, through grounded

theory approach, were conducted. They contained open coding, selective coding, and axial coding. (see Table 3).

Table 3 around here

The articles were coded. The coding enabled to start the analysis of theoretical frameworks and empirical findings of the studies made in emotions and entrepreneurship education. Conceptual contribution of the studies was in focus in this data-driven coding approach. We recorded their definitions, if indicated, and how the studies approached the emotions-entrepreneurship education connection.

The conceptualizations (Table 1) are the frame of reference in the analysis. At this research process, each article (selected for the process) formulated knowledge on education and emotions. This means that instead of focusing on individual variables or words each article was read thoroughly for the analysis. The aim was to see through this methodological choice the influence of each article on the research aims stated. Axial coding was conducted to see the similarity of concepts and their roots. Together with axial coding, selective coding was conducted. It lead to definition of research streams which reflect ongoing discussion on key issues of the field of emotions and entrepreneurship. As a last step, articles were evaluated based on the empirical contribution they had. This was done in comparison to entrepreneurship education by producing narrative accounts of findings made. Finally, synthesis of the observations was reported by us. This resulted in five elements, which are shared in the next section.

4 FINDINGS

This analysis reveals the results of the available empirical studies undertaken in the field of emotions and entrepreneurship education between 2000 and 2018. An extract of the studies is presented in Table 4. Before proceeding, there is one caveat to note: the fact that the studies presuppose that the aim of entrepreneurship education is venture creation does not reflect an absolute consensus within the field. Presently, there is growing debate about the philosophical implications of the so-called Anglo-American (what and how) and European continental (why) approaches to entrepreneurship education (Kyrö, 2015). This issue is excluded from this paper, but it is of such relevance that it is to be treated in a separate analysis. That said, we proceed to

illustrate the major findings from five perspectives, plus a section that details the limitations of this study.

Table 4 around here

4.1 Students and the origin and manifestations of emotions

First, the research addresses the interplay of emotions and entrepreneurship education. Fundamentally, the studies analyzed address the construct of emotions from a consequential perspective. In other words, the dominant assumption is that various positive and negative ‘emotional happenings’ arise and evolve as the result of students’ participation in entrepreneurship education courses— lecture and experience-based—where, along the way, processes of emotional self-adjustment take place which help students’ entrepreneurial intentions and venture creation. For example, Arpiainen et al. (2013, p. 340) present the idea of “waves of emotions” as a straight result of three sources of emotion: the new “learning environment (uncertainty and confusion, theory vs practice, support from outside), collaborative learning (teamwork, time pressure, individual learner differences), and challenging tasks (overcoming knowledge gaps, interacting with the real world, managing people)”. Fernández-Pérez, Montes-Merino, Rodríguez-Ariza, and Galicia (2019) conclude student entrepreneurs have an advantage in the growth of their emotional competencies. Lackéus (2014) links strong emotional events with the development of entrepreneurial competencies such as the ones of tolerating uncertainty and anxiety, and self-efficacy, whereas Zampetakis et al. (2015) connect entrepreneurship training with an increase in students’ negative anticipated affect, which in their view helps students’ entrepreneurial intention. On the one hand, the findings reflect a variety of ‘emotional happenings’ that naturally emerge as the result of an experiential pedagogical approach (Arpiainen et al., 2013; Lackéus, 2014); on the other hand, the results suggest the relevance of emotional competences and negative affect on students’ entrepreneurial intentions, this time under the patronage of a conventional lecture-based entrepreneurship course. This section concludes that the unveiled ‘emotional happenings’ act as ‘learning boosters’, and are relevant to entrepreneurial intentions and ultimately to venture creation.

4.2 *Students and the positive and negative emotions elicited*

A classroom is a social, but also emotional unit of people (Pekrun & Linnenbrink-Garcia, 2014). Recent research shows that students experience a variety of emotions, including subjectively both positive and negative emotions. (Pekrun, Muis, Frenzel, & Goetz, 2018). In the arena of entrepreneurship education, a degree of depth in the identification of emotions' link to entrepreneurial learning is not quite clear. Analysis of the articles selected in this research shows an emphasis on what we call 'emotional happenings' and their influence on the student's entrepreneurial intentions and venture creation during an entrepreneurship education program. These emotional happenings are influenced by sources and dynamics of emotions (Arpiainen et al., 2013), positive and negative emotional events (Lackéus, 2014), emotional competences (Fernández-Pérez et al., 2019), and affective forecasts (Zampetakis et al., 2015). Only Arpiainen et al. (2013, p. 340) proposed the metaphor of "waves of emotions" to report the presence of both positive and negative emotions at the beginning (fear, excitement, and happiness), during (fear), and after the learning process, claiming that both types of emotion can be helpful.

What can be distilled from this is that depending on the pedagogical approach applied (see Section 4.4), 'emotional happenings' arise either passively and spontaneously (Fernández-Pérez et al., 2019; Zampetakis et al., 2015), or are active and purposefully induced (Arpiainen et al., 2013; Lackéus, 2014). In the first case, emotions are assumed to arise naturally, whilst in the latter case, emotions are forced to emerge among students and expected to self-regulate across the training. Furthermore, the studies take a 'state' view of emotions, meaning that they attempt to capture the students' emotions when they arise: the primary focus on the 'momentary' forms of emotion is the key property of emotions as states. (Frenzel & Stephens, 2013).

4.3 *Students' emotions and learning*

There is no consensus on what types of causes and consequences learning produces (Shuell, 1988), but there is accord on the mutually interdependent ties between emotions and learning. In entrepreneurship education research, it is argued that "emotional exposure... created principally via group dynamics... plays a major role in creating an environment within which effective student learning can take place" (Pittaway & Cope, 2007, pgs. 222-223); this idea is also known in the field of education as "disjuncture" (Jarvis, 2012, p. 50). The studies refer to the emotions-learning link in different ways. Arpiainen et al. (2013) explore the student's

emotional and learning challenges produced as a result of the transition between a traditional and an active learning environment. Lackéus (2014), in line with Cope's entrepreneurial learning framework, introduces and analyses the theme of critical learning events as a source of both emotions and learning in venture business creation. Fernández-Pérez et al. (2019) claim that having emotional competencies signals the successful outcome of a learning program. The contribution of Zampetakis et al. (2015) is the only one that does not mention the issue of learning, yet their measures of anticipated affect imply a learning process. This all indicates that although the studies allude to differing emotion variables, they ultimately are linked to the construct of learning. As a corollary, we also report that the overall findings reflect a higher emphasis on students' emotions at the expense of teachers' emotions, which are absent from the core analysis.

4.4 Unidirectional pedagogical approaches

Pedagogical approaches matter in entrepreneurship education. For instance, within entrepreneurship education, there is a tendency to support action-based learning approaches as more instrumental to venture creation, because it is believed that only these take into account thoughts, actions, and emotions. More concretely, entrepreneurship scholars suggest that experiential learning approaches are suitable for fostering emotional happenings beneficial for learning and business creation (Pittaway & Cope, 2007). The results reveal three types of pedagogical approach used as a basis to gauge student entrepreneurs' emotions. The first refers to the traditional entrepreneurship lecture-based course delivered in a university setting on a semester basis (Fernández-Pérez et al., 2019). The second approach uses the basic structure of the former, but adds a module on emotions in the entrepreneurial process (Zampetakis et al., 2015): there are no further details about the content of the training module that deals with the theme of emotions. The remaining studies opt for a variety of experiential learning approaches for the execution of their investigations. For instance, Lackéus (2014) selected a venture creation approach in a two-year Master's program at Chalmers University of Technology because of its capacities to nurture entrepreneurial competencies (Hofer et al., 2010). Arpiainen et al. (2013) realized their comparative study under the framework of an integrative pedagogy based on real-life activities, project-based activities, and learning by doing (Estonian participants), taking an experiential approach with their Finnish student entrepreneurs. These two studies seem to have purposely chosen an experiential approach to evaluate Cope's idea of emotional exposure as a key learning driver in entrepreneurship education.

4.5 *Use of traditional theoretical frameworks and measurement methods*

Emotions can be identified and measured in a variety of ways, yet the studies reviewed focused on a single theoretical framework and conventional mixed methods, particularly self-report measures. It must be noted that all individuals are not capable to document their emotions and emotional states. However, self-reporting of emotions has been seen more valid than other type of reporting, because self-reports reflect just recently experienced emotions. (Mauss & Robinson, 2009). Lackéus (2014) employed a triangulation approach, consisting of a mobile survey engine to capture emotional events (quantitative) and semi-structured interviews to reveal underlying mechanisms (qualitative). Arpiainen et al. (2013) carried out semi-structured interviews and in-depth individual interviews to evaluate the role and dynamics of emotions at the beginning, middle, and end of an entrepreneurship course. Zampetakis et al. (2015) used a quasi-experimental design. The study focused on the effects of an entrepreneurship education program and its emotion-related variables, whilst Fernández-Pérez et al. (2019) conducted a survey at the beginning and end of a semester to detect changes in entrepreneurial intentions among students taking part in business creation and entrepreneurship study. On the other hand, the theory of planned behavior (TPB) seems to be the preferred theoretical framework for the analysis of emotions among student entrepreneurs. Fernández-Pérez et al. (2019) applied an extended version of the TPB to explore the impact of emotional competencies on entrepreneurial intentions, entrepreneurial attitude, and self-efficacy, whilst Zampetakis et al. (2015) implemented this theory to assess the variation of perceived behavioral control, positive attitudes, and subjective norms in students' entrepreneurial intentions.

The use of the TBP and mixed methodologies indicates that this research stream is in its infancy: we foresee that as the field progresses, new methods and technologies will naturally be incorporated.

5 FUTURE RESEARCH AGENDA

This review addresses the first contributions concerning the input of emotions in entrepreneurship education research during the period 1990–2018. Nevertheless, there is a long way to go, and the nascent interest in this topic needs to be widened with deeper theoretical and empirical supplies. The results suggest four lines of academic 'emopreneuring' research necessary to augment our understanding of emotions in entrepreneurship education: (1) expand the identification of a whole range of emotions that have a positive and negative influence on

entrepreneurship training; (2) ideation, testing, and comparison of emotion-driven pedagogical approaches in terms of their learning impact; (3) incorporation of new measurement methods and technologies; and (4) expanding research on the interplay of teachers' emotions across the entrepreneurial education process. Each of these suggestions is elaborated in the following sections.

5.1 The emotions that matter and do not matter in learning in entrepreneurship education

Entrepreneurship scholars identify passion (Cardon et al., 2009) and fear (Cacciotti & Hayton, 2015) as emotions germane to entrepreneurship. Passion is seen as a positive emotion, typical for entrepreneurial success and profit-making (Stenholm & Renko, 2016), while fear, as a negative emotion, can cause both positive and negative outcomes in entrepreneurial behavior (Van Gelderen et al., 2015). Passionate behavior toward goal achievement in a venture seems to be characteristic of entrepreneurial behavior (Huyghe et al., 2016; Mooradian et al., 2016), which is convincing for venture capitalists, and increases enthusiasm for capitalizing a venture (Li et al., 2017). These positive outcomes are supported by Cardon et al. (2013), who suggest that passion is not just meaningful for a venture's success, but is also longer lasting than many other emotional constructs. As Mueller et al. (2017) mention, passion increases grit toward a venture and offers ingredients for long-term commitment to entrepreneurial behavior. As Warnick et al. (2017) have shown, passion toward a target, such as a product, can be separated from entrepreneurial passion. Thus, entrepreneurial passion has multiple targets, such as products and services, inventing processes, competitive behavior, and the team and social contexts of a venture (Cardon et al., 2017).

Previous studies have not covered fully emotions and entrepreneurship education in details. One of the exceptions is the study by Cope (2003) in which he analysed learning events as discontinuous and emotional processes. There are three studies that do not focus on emotions in entrepreneurship education but implicitly refer to the intensity of emotions, also known as emotional exposure, which influence on creating circumstances for students on effective learning (Pittaway & Cope, 2007). According to Souitaris et al. (2007) inspiration is a meaningful asset on birth of entrepreneurial intentions. Together with events, the positive emotional displays of managers can boost employees' entrepreneurial intentions (Brundin et al., 2008; Shepherd & Patzelt, 2018). Thus, leadership and role models have an impact on the early steps of entrepreneurship through emotional behavior.

Furthermore, the studies overlook the distinction between affect, emotions, and mood, and unveil a plethora of new variables such as emotional events, sources of emotions (Lackéus,

2014), emotional competences (Fernández-Pérez et al., 2019), and anticipated affect (Zampetakis et al., 2015) which seem to exert an influence on students' entrepreneurial intention and, later, on venture creation.

There seems, too, to be a lack of quantitative evidence that can tell more about the role played in learning of a broad range of emotions before, during, and after students' participation in an entrepreneurship course. There are several avenues to take into account. One theoretical framework that could help is the control value theory of achievement emotions (Pekrun, Frenzel, Goetz, & Perry, 2007); alternative methods of analyzing learning could be used to expand our knowledge on the connection between student entrepreneurs' emotions and learning, such as the analysis of critical actions, analysis of conceptions and contents, analysis of learning actions, analysis of forms of interaction, analysis of types of artefact, analysis of voices and social languages, analysis of expressions of agency, and analysis of disturbances and discursive manifestation of contradictions.

There is a need to get to the heart of this issue across the various layers of the educational system. Some of the questions that need to be examined to move forward in this direction are: Which emotions matter and which do not in the context of entrepreneurship education? What are the roles of positive and negative emotions? And how can the emotional journey be depicted before, during, and after a student's participation in an entrepreneurship course?

5.2 Ideation, testing, and comparison of alternative theories and pedagogies to assess and boost entrepreneurship education

The results indicate that the emotions variable runs on autopilot among student entrepreneurs: regardless of the pedagogical approach used, these 'emotional happenings' simply emerge and autoregulate as the training progresses. Regrettably, there is little empirical evidence that monitor and reports the degree of learning efficiency of existing pedagogical approaches, and much less information is available on the pedagogical use of emotions in entrepreneurship education. An action-based/experiential approach is the ideal recipe for emotions to arise and help students' entrepreneurial intentions (Lackéus, 2014). Prior research on experiential learning supports this idea. As Beard and Wilson (2006) mention, discovering something for yourself, through subjective emotional engagement, increases quality of learning. According to this school of thought, learners' affective experience is a powerful determinant of all types of learning. (Boud & Miller, 1996).

The dominance of the TBP framework calls our attention as the revered thought-based approach to measure entrepreneurial intentions, despite its inability to explore how, when, and why learning takes place (Lackéus, 2014). So-called action-based measurement tools are also not a realistic solution due to the methodological challenges they present and the amount of resources they require. Lackéus (2014) proposes an emotions-based assessment of entrepreneurship based on Cope's ideas (2003; 2011) about entrepreneurial learning; however, in light of incorporating a more concrete framework, we would like to suggest Pekrun's (et al. 2007) control theory of achievement emotions, because it is a validated method which has the capacity to assess a whole range of emotions, and it might well be compatible with an experiential learning approach. Thus there is a demand for further clarificatory studies to elucidate and compare the learning impact of emotions in distinct entrepreneurship pedagogies. Intriguing questions in this line of reasoning are: Which meaning-oriented pedagogical approaches¹ are most applicable for use of the emotion-oriented teaching? How can emotions and emotion regulation inputs be incorporated into existing pedagogies to speed up learning in entrepreneurship education? How can learning be learning in the context of an emotion-driven pedagogical approach?

5.3 Expand the range of components of emotions studied

Emotions are complex and multidimensional constructs. According to Frenzel and Stephens (2013) they consist of affective, psychological, cognitive, expressive, and motivational elements. Other scholars view emotions as episodes consisting of multiple components: subjective feeling, action tendency, appraisal, motor activity, and support (physiological) (Russell, 2003). Our results concentrate on the description of 'emotional happenings' experienced by students from the perspective of self-reported subjective feelings (affective component) commonly associated with a monitoring function (Shuman & Scherer, 2014). This component is also referred to as the affective core of an emotion. The affective experience is essential and sufficient to signal a psychological experience as an emotion: there is no emotion without the affective experience, and without emotion, there is no affective experience (Frenzel & Stephens, 2013). A typical expression of this component is the phrase "I am afraid".

It is necessary that other equally important components of emotions be given a fair share of scholarly attention, such as the components associated with functions of monitoring (subjective

¹ For instance, assignment-based teaching, case-based learning, problem-based learning, project-centered learning, challenge-based learning, and dual learning (Baeten, Struyven, & Dochy, 2014).

feeling), meaning-making function (appraisal), communication (motor activity), support (physiological), and motivation (action tendency) (Shuman & Scherer, 2014). Cognitive component is recognized by the arousal of distinct thoughts, like when experiencing fear, the likelihood of failure rises in a person's mind (Frenzel & Stephens, 2013). According to Shuman and Scherer (2014), the appraisal component is important because it enables individuals to detect whether an event is relevant or not—for instance, “I just do not have enough time to prepare for the pitch”. Emotions contain a motivational component, which means that emotions can trigger behavior; hence, it is likely that this component serves to promote survival (Frenzel & Stephens, 2013). The action tendency or motivational component focuses on actions that are required in a given situation—for instance, “I don't want to be here” (Shuman & Scherer, 2014). The expressive component of emotions refers to the specific, spontaneous facial expressions and body movements or postures that are displayed during an emotional experience (Frenzel & Stephens, 2013). The expressive or motor component serves a communicative goal, such as when one expresses feelings of happiness by smiling (Shuman & Scherer, 2014). Moreover, most emotion researchers agree that emotions are characterized by a physiological component. Bodily processes are set in motion when we experience an emotion. For instance, when we feel fear, our pulse increases, our muscles contract, our pupils dilate, our breath becomes shallow, and our digestive system slows down. Together, these processes may feel like tension or agitation (Frenzel & Stephens, 2013). The physiological component supports the activity of other components—for example, “I feel jittery” (Shuman & Scherer, 2014). As can be seen, there is a long way to go in this matter. Further investigations should therefore consider individual or joint analyses of these components to enable a wider understanding of the interplay of emotions among student entrepreneurs.

5.4 Incorporate new technologies to measure emotions

Emotions can and should be measured in a variety of ways. There is agreement on the need to develop multidimensional instruments to capture the complexity of students' and teachers' emotions (Pekrun & Bühner, 2014). However, the study shows that research into emotions in entrepreneurship education is still unidirectional, because it mainly relies on self-reported measures of emotion. The disadvantage of this measure is that not all individuals are capable of reporting their emotional experiences (Mauss & Robinson, 2009). Future research should consider the use of available technologies for the measurement of emotions. For example, discrete emotions can be studied in the brain (Izard, 2007) with the use of electroencephalography (EEG) and neuroimaging methods (Mauss & Robinson, 2009). No

doubt the use of these methods among entrepreneurship education scholars will require learning them from scratch, but the benefits will be rewarding.

5.5 Teachers' emotions hold power

Emotions influence on teachers' own wellbeing. Naturally, they have an impact on classrooms, teaching, and learning culture. There is an obvious lack of research addressing teachers' emotions (Frenzel, 2014): whereas the field of education research has widely evaluated teachers as experts in respect of their subject and pedagogical knowledge, research exploring the teacher as 'human', in having positive and/or negative emotions and related experiences, is very limited (Frenzel & Stephens, 2013). Despite the scant research on teachers' emotions, it can be postulated that emotions affect the quality of teaching (Sutton & Wheatley, 2003), teachers' emotions influence students' achievement behavior (Beilock, Gunderson, Ramirez, & Levine, 2010), and students' high achievement can be a source of positive experiences for teachers (Frenzel, 2014). Sutton and Wheatley (2003) found when studying emotional transmissions in the classrooms that teacher and enjoyment are correlated, and that the interaction is mediated by teacher enthusiasm. Frenzel et al. (2016) have shown that in teaching emotions include typically enjoyment, but also anxiety and anger.

The underpinnings of teachers' emotions in entrepreneurship education are less known. Shepherd (2004, p. 275) made an early call for a new "pedagogy to help students manage the emotions of learning from failure", and Arpiainen et al. (2013) claim that constant dialogue and feedback among teachers and students may help to overcome negative emotions and challenging learning tasks: these constitute the scarce accounts on this issue.

If the aim is to enhance learning outcomes in entrepreneurship education, then it is imperative for avid scholars looking for challenging research paths to consider digging deeper into the teachers' emotional factor. Some of the research questions to tap into in forthcoming research are: How can teachers engineer inspiring and efficient learning spaces involving emotional depth? What teacher emotions favor/inhibit learning in entrepreneurship education? How do their emotions affect students' learning and venture creation? What is the relationship between teacher and student enjoyment in the context of an entrepreneurship course? All these questions suggest for the need to construct empirical and theoretical accounts suitable for the field of entrepreneurship education at the various educational layers.

6 LIMITATIONS OF THE STUDY

The review has some limitations which need to be acknowledged. The keywords focused on peer-reviewed articles whose title or abstract included the terms ‘emotions’ AND ‘entrepreneur* education’, ‘emotions’ AND ‘entrepreneur* learning’, ‘affect’ AND ‘entrepreneur* education’, ‘emotions’ AND ‘entrepreneur* training’. These terms consider the keywords of the review and can be considered to maximise the finding of the articles within the scope of this revision. However, it is possible that some articles may not have included these terms in their titles and abstracts, and as a consequence have been omitted. The search for articles from the ten most influential journals in entrepreneurship journals as ranked by Stewart and Cotton (2013), from the proceedings of leading conferences linked to the theme of the review, and through scholars linked to the topic of the review, substantially minimises this risk.

Another limitation arises from the challenges of interpretive research concerning the structure of the results. We needed to assess, critically judge, and reflect on the contribution of the studies. Other researchers might have come up with different ways of organising the results and interpreting them. The research questions stated influence interpretations, and so does the content of the chosen literature. For this reason, we follow the methodological choices earlier stated by Corbin and Strauss (1990), Greenhalgh et al. (2004), Kitchenham (2004), Mainela et al. (2014), Pike (1967), and Stewart and Cotton (2013) to justify the decisions made in the research process.

Lastly, the studies are relatively recent, so it will take a little while for them to reveal their potential influence; therefore, through this review, it is feasible to focus on trends rather than the latest developments (Kraus, Filser, O’Dwyer, & Shaw, 2014). Nonetheless, the findings are sufficient to highlight critical research questions and the need for further studies on the link between emotions and learning in entrepreneurship education.

7 CONCLUSIONS

This review has assessed the state of the art of the construct of emotions within the domain of entrepreneurship education. The emerging empirical evidence allowed the analysis to draw four conclusions to advance our understanding of the role played by emotions in learning in entrepreneurship education. The outcome of this exercise sheds light on unexplored issues that deserve a more focused scholarly eye within this exciting research enquiry.

Firstly, the studies claim that a range of emotional happenings emerge spontaneously in the course of an entrepreneurship education scheme, and that these emotions favor the development of emotional competencies, entrepreneurial intentions, and negative anticipated affect, which ultimately either assist or hinder venture creation. What these studies tacitly acknowledge is that deep inside the origin of their findings lies the construct of learning. For instance, detected changes in emotional competencies, entrepreneurial intentions, and the like ultimately refer to learning processes that have taken place during the trajectory of a training program. In this sense, we consider that the link between learning and emotions in entrepreneurship education should be the core of future research in this field and therefore expanded.

Secondly, the evidence implicitly suggests that students' emotional happenings are the core component to take nurture in entrepreneurship education. The results identify a variety of sources of emotion, emotional competencies, and emotional events and affective forecast variables that take place during the trajectory of an entrepreneurship course, yet say little about the role played by teachers' emotions in this process. Teachers' emotions also have a strong influence in entrepreneurship education if the end goal is to build synergies between emotions and learning; therefore teachers' emotions comprise a variable that should be considered in the entrepreneurship education formula.

Thirdly, the data are insufficient to claim a correspondence between a specific pedagogical approach and the elicitation of emotional happenings favorable for upgrading entrepreneurial intentions and venture creation. The fact that the studies in this review were undertaken within the confines of an experiential learning approach and a traditional entrepreneurship course favor Cope's ideas (2003; 2011); however, is not enough to have the blessing of this report. Further research is needed to test, compare, and confirm the emotion-learning efficiency within experiential and alternative learning pedagogies.

Finally, emotions have been studied mainly through quasi-experimental designs and self-report measures (case studies, longitudinal surveys, and questionnaires), but the intellectual difficulty of grasping the heart of emotions in entrepreneurship education demands the combined use of other measures and technologies, such as startle response magnitude, brain states (EEG, fMRI), and behavioral measures (vocal characteristics, facial behavior).

Much has been said about the passive and induced elicitation of a variety of emotional happenings linked to both lecture-based and experiential learning approaches which seem to help entrepreneurial intention and venture creation, but less has been said about the controllable side of emotions, known as emotions regulation. Taking into account that emotions regulation

enables the direct and indirect regulation (control) of positive and negative emotions, we suggest that a major direction for future research is further exploration of how emotions regulation may help both teachers and students to enhance learning in entrepreneurship education.

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APPENDIX

Table 1. Basic concepts

Conceptualisations	Determining Characteristics
Entrepreneurship education	Entrepreneurship education seeks to provide students with the knowledge, skills, and motivation to encourage entrepreneurial success in a variety of settings
Learning	The process of acquisition of knowledge or skills through study, experience, or being taught
Emotions	Conscious experiences characterized by intense mental activity and a certain degree of pleasure or displeasure

Table 2. Protocol for identifying relevant literature

Criteria	Rationale
(1) Publication up to 2018 (including in-press articles in September 2018)	Specific starting point not set to deliberately widen the identification of eligible articles.
(2) Publication as a full-length journal article or research note	Non-empirical articles, non-peer reviewed articles, non-published articles, and commentaries providing overviews of the field were excluded.
(3) Publication in the field of entrepreneurship	<p>Searched all journals listed in the Social Sciences Citation Index (SSCI) with an intentionally broad scope so that all possible articles were identified.</p> <p>Searched the ten most influential entrepreneurship journals as ranked by Stewart and Cotton (2013).</p> <p>Searched journals related to the topic of the review outside the SSCI platform.</p> <p>Searched the proceedings of the Babson College Entrepreneurship Research Conference and Academy of Management Annual Meeting (last five years).</p> <p>Searched journals through the keywords ‘emotions’, ‘affect’, AND ‘entrepreneur* education/training/programs/programmes’ to reduce subjective interpretation bias.</p>
(4) Keywords ‘emotions/affect’ AND ‘ entrepreneur education/training/programs/programmes ’ used in the title, abstract, or keywords of the article	<p>Empirical studies within the boundaries of entrepreneurship education and emotions.</p> <p>Ensured that the articles explicitly focus on student entrepreneurs at all levels of schooling from primary or secondary schools through graduate university programs.</p>

Table 3. Analysis procedure

Phase	Task	Description
Mapping	Open coding	Examining the articles from the inside
	Emic, data-driven codes	Examining the articles from the outside
	Etic, theory-led codes	Analysis of interrelationships
	Axial coding	Analysis of concepts
Appraisal	Selective coding	Evaluation of the articles in terms of their validity and relevance
	Evaluation	Compilation and ordering of key results
Synthesis	Extraction and collation	Identification of common elements, concepts, and results
	Identification of research streams	A narrative account of the elements and contribution
	Narrative of each research stream	

Table 4. Summary of studies

Key Items	Fernandez-Perez et al. (2017)	Zampetakis et al. (2015)	Lackeus (2014)	Arpiainen et al. (2013)
Research questions	What is the influence of emotional competencies on shaping university students' entrepreneurial intentions?	What is the impact of an elective entrepreneurship education program on students' affective forecasts of new business creation?	What are the links between emotional events and entrepreneurial competencies in action-based entrepreneurship education?	What are the main sources of negative and positive emotions in the entrepreneurship education learning process? What kinds of dynamic patterns can be identified?
Definitions	Emotional competencies operationalized as a behavioral approximation of emotional intelligence (EI) with five clusters: self-awareness, self-regulation, motivation, empathy, and social skills.	Affective forecasting includes forecasts of potential future events and representations of states and motivations that differ from one's current condition.	Emotional event understood as the identification of strong positive or negative emotion experienced related to the student's experience.	-
Hypotheses	H1. The SE, EA, and EI of university students are influenced directly and positively by the SN experienced. H2. The EI of university students is impacted directly and positively by their EA and by SE. H3. The EI of university students is influenced directly and positively by their EC. H4. The EA of university students is influenced and positively by their EC. H5. The SE of university students is influenced directly and positively by their EC. H6. The positive influences of EC on EA and SE and EI are higher when entrepreneurial education has been received.	Affective forecasts could be important for entrepreneurial decision-making. The anticipation of negative affect from new business creation may lead to a long delay of new businesses start-up.	There is a link between emotional events and the development of entrepreneurial competencies in an action-based entrepreneurship education program.	Both positive and negative emotions have a role in entrepreneurship education learning process.
Emotions measure	University students' EI, EA, SE, SN, and EC.	Entrepreneurial intention, positive and negative effects on new business creation, anticipated effect on new business creation.	Emotional events	Sources of emotion
Task	-	-	-	-
Other measures	-	Attitudes toward entrepreneurship, subjective norm, perceived behavioural control.	-	-
Data collection tool	Survey	Questionnaire and quasi-experimental control-group design	Mobile-app based survey and semi-structured interviews	In-depth interviews
Sample	751 students enrolled in business creation and entrepreneurship subjects. 111 students who had not received training in entrepreneurship (control group).	60 engineering students attending an entrepreneurship education program and 51 control group participants.	Three engineering student entrepreneurs	79 engineering student entrepreneurs from Finland, Estonia, and Namibia
Statistics	Confirmatory factor analysis (CFA) and structural equation modeling	ANOVA	NVivo analysis	Qualitative thematic analysis
Main results	Students with a higher degree of emotional competency who receive entrepreneurship education will have a more positive attitude toward entrepreneurship and will perceive themselves as more capable of becoming entrepreneurs.	Increase in students' entrepreneurial intentions and perceived behavioral control and increase in students' negative anticipated on new business creation.	Identification of three emotional events strongly linked to developed entrepreneurial competencies: interaction with the outside world, uncertainty and ambiguity, and teamwork experience.	Three primary sources of emotion were identified: a new kind of learning environment, collaborative learning, and challenging tasks.