

Entrepreneurial mindset in entrepreneurship education: Reorienting towards a competence development perspective

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Abstract

In recent years Entrepreneurship Education (EE) has become prevalent throughout Higher Education (HE), with a proliferation of programming for learners from Undergraduate to Post-experience studies. Despite the rapid scaling of provision, the majority of extant EE offerings demonstrate little conceptual evolution and development from early programs, with many approaches falling short of enabling the cognitive and behavioral change so critical to supporting entrepreneurial action. In this article we consider the concept of *entrepreneurial mindset* as a framing for EE programming, conceptualizing it as an approach to support the development of multidimensional cognitive and emotional competences and behavioral outcomes to enable entrepreneurial value creating activity across a range of contexts. We focus specifically on how educators can actively support the development of an entrepreneurial mindset through EE programming and start a conversation on the practicalities of operationalizing the entrepreneurial mindset concept within HE teaching and learning activity.

Keywords:

Entrepreneurial Mindset; Entrepreneurship Education, Entrepreneurial Cognition, Competence Development

Introduction

Over the past three decades Entrepreneurship Education (henceforth EE) has seen significant interest and development, becoming an integral part of educational programming across disciplines and programs within Higher Education (HE), from Undergraduate to Post-Experience courses. Aligned to this, research on EE has also flourished, providing a mechanism through which to critically engage in debates on not only the content of EE, but also how the learning and teaching of EE can (and should) take place (Neck and Corbett, 2018). As this scholarly debate has developed, conversations have slowly evolved from EE focused on solely creating new ventures towards EE as a mechanism to promote and support wider value creating activity (Hylton et al., 2020) as well as the development of the life skills “necessary to live productive lives even if one does not start a business” (Neck and Corbett, 2018, p.10).

In this vein, many now speak of the concept of *entrepreneurial mindset* to underpin - and to augment - current approaches to EE. An entrepreneurial mindset has for some time been recognized as important for individuals to operate in the 21st century economy (McGrath and MacMillan, 2000; Ireland et al., 2003) and has gained significant traction within HE and other academic institutions (Schoonmaker et al., 2020), albeit often in a superficial form (Heuer and Kolvereid, 2014). Yet the recent Covid-19 pandemic has proved a stark reminder of the turbulence and unpredictability of the economic environment and brought into sharp focus the need for an entrepreneurial mindset to support individuals in developing their resilience and ability to cope with feelings of discomfort, vulnerability and uncertainty (Berglund et al., 2020) whilst also engaging in value creating activity. Despite the burgeoning dialogue on entrepreneurial mindset, however, there remains a lack of definitional and conceptual clarity on what an entrepreneurial mindset entails (Hylton et al., 2020; Nabi et al., 2017), notwithstanding

attempts to seek consensual understanding among EE educators (Neck and Corbett, 2018). This definitional ambiguity is further complicated by recognition that an entrepreneurial mindset is an inherently cognitive phenomenon (Ireland et al., 2003; Nabi et al., 2017), comprising both ‘thinking and feeling’ (Shepherd, 2004), linked to often vague entrepreneurial skills and competences (Morris et al., 2013) that support the taking of entrepreneurial action (McMullen and Shepherd 2006; Kuratko et al., 2021b).

This begs a key question: if we cannot yet conceptualize or define entrepreneurial mindset, how can we be ‘teaching’ it effectively? We argue that ill-defined conceptual boundaries and limited clarity on the elements comprising entrepreneurial mindset have not only prevented a robust understanding of what is of relevance for inclusion within EE programming, but equally consideration of what these elements will mean for different learners and therefore how educators ultimately communicate the value of an entrepreneurial mindset (and EE) to learners. Most critically, perhaps, we have been prevented from robustly considering how an entrepreneurial mindset can be purposefully developed - and supported - through EE teaching and learning activity within HE.

In this article we address these issues by drawing on competence development literature and building on current conversations and findings from the entrepreneurial cognition and entrepreneurial education literature. We define entrepreneurial mindset as “*a set of learnable cognitive and emotional competences conducive to developing and enacting behaviors to support value creation activity*” and develop a conceptualization of entrepreneurial mindset contextualized specifically within EE. Specifically, we consider how educators can actively support the development of an entrepreneurial mindset (cognitive, emotional and behavioral competences) to support lasting behavioral change and value creation activity. It is important to

note that although we will argue for the need for a clear orienting conceptualization of entrepreneurial mindset, it is not our intention to prescribe a singular definition or approach. Rather, we seek to start a critical and scholarly conversation on the practicalities of operationalizing the entrepreneurial mindset concept within HE teaching and learning activity, building on a shared understanding of entrepreneurial mindset as active competence development to support behavioral change.

This paper makes two main contributions. First, we make a conceptual contribution, building on and elaborating Kuratko et al. 's (2021a) triadic model of entrepreneurial mindset as a triad of cognition, emotion and behavior linked to specific entrepreneurial competences. In doing so, we also make a contribution to EE research, identifying key competences and considering what these mean for educators in terms of developing and delivering entrepreneurial mindset EE.

This article is structured as follows. First, we examine the theoretical foundations of entrepreneurial mindset, specifically considering foundational principles and definitions, before looking to the competence development perspective and discussing how this can be applied within EE. We then consider entrepreneurial mindset EE in terms of competence development, identifying and discussing and conceptualizing the cognitive, emotional and behavioral dimensions of entrepreneurial mindset linked to competences and how these can be operationalized in an entrepreneurial mindset EE teaching and learning context. Following this, we conclude with implications for EE educators looking to foster and support an entrepreneurial mindset and outline avenues for further research on entrepreneurial mindset to help support and shape mindset EE programming within HE.

Review of relevant literature

Theoretical and definitional foundations of entrepreneurial mindset

As noted earlier, conversations within EE have for some time encompassed the notion of entrepreneurial mindset. Indeed, we would argue that, thanks to the seminal book from McGrath and MacMillan (2000), it has become something of a ‘word du jour’ adopted widely across the entrepreneurship and small business disciplines. A substantial body of work on entrepreneurial mindset is now developing, spanning a wide range of disciplines and subjects within entrepreneurship, wider business and management, engineering, psychology and beyond. Indeed, a recent review of published studies on entrepreneurial mindset in so-called ‘top journals’ has identified a sharp increase in publication activity (both published and in-press) on this issue, particularly around individual-level antecedents of entrepreneurial mindset including metacognition, self-efficacy, experience, self-exploration, and disposition (Daspit et al., 2021). The entrepreneurial mindset concept and language has also taken hold within HE (Schoonmaker et al., 2020), with institutions seeking to encourage an entrepreneurial mindset for learners not only within specific classes but across entire curricula (Hylton et al., 2020). Amazingly, nearly fifty percent of the extant empirical studies on entrepreneurial mindset are classed as pedagogical (Daspit et al., 2021), with work covering nearly all broad international contexts to varying degrees.

Despite this proliferation of research, however, the conceptual and theoretical foundations of entrepreneurial mindset remain notably underdeveloped (Naumann et al., 2017; Pidduck et al., 2021), underscoring the difficulties of concept development across diverse fields of interest and study. At its inception, the concept of entrepreneurial mindset was based on the

foundational principle of sensing and acting on opportunities during conditions of uncertainty (McGrath and MacMillan, 2000). In line with the received wisdom at the time, this principle highlighted the role of a number of ‘traits’ or ‘characteristics’ in determining the presence of an entrepreneurial mindset, with scholars looking to common trait concepts such as the ‘big 5’ (Antoncic et al., 2015) to determine which individuals or groups were more likely to have an entrepreneurial mindset and thus to behave more entrepreneurially. Perhaps unsurprisingly, the conversation has since evolved. As Gartner (1988) warned over thirty years ago, ‘who is an entrepreneur’ is the wrong question - personality traits and characteristics yield limited explanatory power when explaining entrepreneurial activity, particularly when compared to behavioral approaches. Most importantly, a trait-based approach to entrepreneurial mindset is fundamentally at odds with EE. If traits are assumed to be inborn, then they are unlikely to be developed through teaching and learning activity.

In response to this tension, more recent studies on entrepreneurial mindset have shifted towards how entrepreneurs think and feel, rather than ‘who they are’ based on traits and characteristics. These studies have largely expanded the foundational principles of the entrepreneurial mindset concept to include interrelated metacognitive^a (Noble, 2015; Haynie et al., 2010), cognitive^b (Naumann, 2017), emotional (Cardon et al., 2012) and behavioral elements (Shepherd et al., 2010). Whilst some continue to call for further work on the interaction between genetic traits and entrepreneurial mindset (e.g. Daspit et al., 2021), there is now generally wider recognition of entrepreneurial mindset as a cognitive-behavioral construct emphasizing personal agency linked to personal action (Kuratko et al., 2021a). In essence, entrepreneurial mindset

^a Metacognition refers to the act of thinking about one’s own thinking to shape cognitive strategies.

^b Cognition refers to all functions of mental information processing, including acquiring knowledge and building understanding.

entails cognitive, emotional and behavioral elements (Kuratko et al., 2021b; Lundmark et al., 2019). In this vein, a range of definitions have emerged covering a number of commonalities (please see Daspit et al. (2021) for a comprehensive overview): cognitive flexibility, (emotional) resilience and the ability to persist in dynamic and uncertain environments to create (commercial) value. These align closely to the triadic model of entrepreneurial mindset proposed by Kuratko et al. (2021a). In this model, an entrepreneurial mindset is conceptualized as interlinked cognitive, behavioral and emotional elements, where thinking and feeling processes are direct antecedents to (entrepreneurial) action (Krueger and Carsrud, 1993).

Whilst these conceptual developments are indeed helpful, they fall short of considering how such cognitive and emotional elements are developed. Critically. They fail to expressly consider how entrepreneurial mindset is linked to *skills* and *competences* (Davis et al., 2016; Casulli, 2022) which can be actively developed through personal *learning* (Lynch and Corbett, 2021). This omission is surprising, not only given the prevalence of pedagogically-focused entrepreneurial mindset studies as noted above, but also due to general agreement within the wider entrepreneurship literature on the importance of experience, education and learning on entrepreneurial development (Cope and Watts, 2000; Higgins and Elliott, 2011) and cognitive/metacognitive capability (Haynie et al., 2010). As a result, the majority of current definitions of entrepreneurial mindset also fail to explicitly consider personal learning and development, limiting the usefulness of the concept for EE. Thus, for the purposes of this article we consider entrepreneurial mindset to be “*a set of learnable cognitive and emotional competences conducive to developing and enacting behaviors to support value creation activity*”. Again, whilst we do not seek to prescribe a single definition we do hope to encourage scholars and educators to actively contemplate the developmental nature of entrepreneurial mindset and to

consider carefully which definitions support this more nuanced understanding. Not only will this help educators to better conceptualize entrepreneurial mindset as a developmental rather than static concept, it will also provide significant value to educators when considering how to operationalize the concept within EE through a focus on entrepreneurial competences.

A competence development perspective for EE

As with entrepreneurial mindset, work on entrepreneurial competences has flourished in recent years. Whilst different approaches exist to individual-level competence (for an overview, please see Le Deist and Winterton, 2005), within entrepreneurship scholars have adopted a holistic approach to competence which encompasses “the knowledge, skills, attitudes, values, and behaviors that people need to successfully perform a particular activity or task” (Morris et al., 2013, p. 353). The framing of competence development has become particularly prevalent within EE, as educators have called into question “old school” (Neck and Corbett, 2018, p.31) EE which pushes ‘about entrepreneurship’ or ‘how to’ approaches.

Traditionally, the ‘about entrepreneurship’ approach focuses on learning entrepreneurship theory (e.g. Schumpeterian, Kirznerian) and concepts (e.g. effectuation, bricolage) which promote knowledge acquisition. On the other hand, ‘how to’ approaches usually promote skill development, often taking the form of specific business modelling (e.g. Osterwalder et al., 2011) and new venture planning (e.g. Aulet, 2013) skills. Whilst knowledge is of course an important part of one’s learning and development, it is not in itself sufficient to develop individual competence (McEvoy et al., 2005). The same is true with skills, particularly when they have been ‘artificially’ fostered within controlled environment such as HE classrooms and incubators. In these settings, learners are often insulated from many of the harsh realities and uncertainties of

the economic environment (Casulli, 2022) and thus theoretical knowledge and applied skills take on greater perceived contextual relevance to meet assessment requirements and standardized start-up milestones. As a result, these traditional EE approaches are recognized to fall short of encouraging the development of the cognitive components of competence, specifically *attitudes* and *values*, that in turn shape behavioral adaptation. Yet attitudes and values are critical to the effectiveness of EE. Not only are attitudes and subjective norms (i.e. socially derived values) considered to be core drivers of entrepreneurial behavior (Ajzen, 1991), they are also critical in allowing for contextual variations of how the entrepreneurial self is constituted (Berglund et al., 2020) amongst different learners.

In response, a number of entrepreneurship educators have emphasized the value of aligning EE teaching and learning activity to entrepreneurial competence development through dedicated classroom interventions (e.g. Burnette et al., 2020), mirroring education developments in other fields such as leadership (McEvoy et al., 2005) and public administration (Getha-Taylor et al., 2013). Proponents of the competence development model have emphasized its effectiveness in preparing learners for unforeseeable challenges in rapidly changing environments where individuals are constantly required to adapt and learn (Getha-Taylor et al., 2018; Rodriguez et al., 2002), which is arguably critical for entrepreneurial activity given the challenges of the current economic context as the world reconfigures post-Covid-19. Put differently, a competence model of EE shifts focus from specific knowledge or skills to *learning how to learn*, thus allowing for both current and future individual development needs (Getha-Taylor et al., 2013).

In terms of implementing the competence model, there is general consensus that individuals should move through a multi-stage process (e.g. Broadwell, 1969; Dalton and

Thomson, 1986; McEvoy et al., 2005). This process starts with becoming aware of one's own current stance in relation to the competence to be developed (*conscious incompetence stage*), followed by applied and reflective practice which is sustained over time (*conscious competence*) in order to arrive at a high level of mastery in the competence so that it becomes unconsciously embedded in the individual (*unconscious competence*) (Ambrose et al., 2010; Getha-Taylor et al, 2013). It thus follows that the cornerstone of a competence development approach to EE should place a strong focus on reflection and self-awareness as the generative mechanism that enables moving through the stages (McEvoy et al., 2005). This is of particular relevance when we consider how the principles of the competence model support the operationalization of the entrepreneurial mindset concept in EE.

Reorienting entrepreneurial mindset in EE

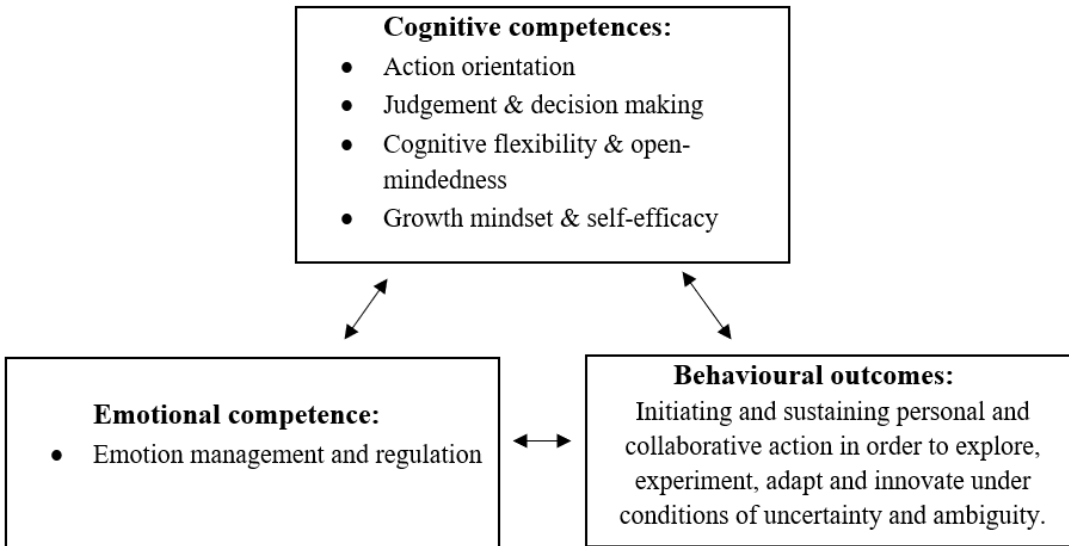
Having established the advantages that the competence development perspective can bring in the context of EE, we now consider it specifically in terms of entrepreneurial mindset EE. As we have argued, the lack of accepted definitions and ill-defined conceptual boundaries have made the entrepreneurial mindset concept difficult for educators to operationalize effectively through specific teaching and learning activity. So how then can educators actively support the development of an entrepreneurial environment to support lasting behavioral change and value creation activity?

To address this question, we must begin by considering the conceptual boundaries of entrepreneurial mindset and the position we take in relation to extant thought. As discussed earlier, Kuratko et al. (2021a) identified three dimensions of a 'triadic' entrepreneurial mindset: the emotional; the cognitive; and the behavioral. Whilst this view is significantly more complex

than those proposed by others, and arguably still in need of further development, we see two significant points of strength. First, it acknowledges the fundamental interlinkages between emotion, cognition and behavior. Conceptual framings taking a cognitive perspective alone (e.g. Daspit et al., 2021), for example, fail to consider this. Indeed, recent theoretical advances in research on entrepreneurial affect emphasize the important interplay of emotion and cognition (Damasio, 2000; Adolphs and Damasio, 2001) in the entrepreneurial process (for a review, please see Delgado García et al., 2015). Second, it reflects the consensus that entrepreneurial mindset is an individual-level construct, one related to but distinct from the organizational level equivalent normally referred to as Entrepreneurial Orientation (Ireland et al., 2003; Lundmark et al., 2019). There has been a tendency in the entrepreneurial mindset literature to conflate the two terms (e.g. Pidduck et al., 2021), but it is important to clearly differentiate between them. A focus on individual-level emotional and cognitive competences leading to behavioral outcomes aligns with the fundamental nature of EE as an individual level journey.

Having identified the conceptual boundaries and dimensions comprising the entrepreneurial mindset – cognitive, emotional and behavioral – we can then consider the competences (comprising knowledge, skills, attitudes, values and behaviors) (Morris et al., 2013) aligned to each of these dimensions (see Figure 1 below) and how these relate to EE teaching and learning activity.

Figure 1. Entrepreneurial mindset domains and indicative competences and behavioral outcomes



Competences in the cognitive dimension of entrepreneurial mindset

Cognition is a central tenet of entrepreneurial activity, with all entrepreneurial action (no matter how big or small) underpinned by reasoning (i.e. cognition) (Krueger and Carsrud, 1993; Shepherd and Patzelt, 2018). Perhaps the most cited definition of entrepreneurial cognition is from Mitchell et al. (2002, p. 97), who define it as “the knowledge structures that people use to make assessments, judgments, or decisions involving opportunity evaluation, venture creation, and growth.” Whilst this definition usefully situates cognition within the context of new venture creation, it is now, we contend, too narrow to accommodate cognition as a competence conducive to other forms of entrepreneurial value creating activity, particularly outside a start-up context. To remedy this, we can instead draw on cognition (Braisby and Gellantly, 2012) and social cognition (Fiske and Taylor, 1991) psychology to consider the cognitive dimension of entrepreneurial mindset as the set of an individual’s mental functions, mental processes (e.g. thought, judgment), mental states (Estes, 1975) and mental models (Fiske and Taylor, 1991) that underpin action conducive to value creation. Bearing in mind this framing of cognition, looking

to the entrepreneurship literature a range of competences have been identified which align to the cognitive dimension of mindset. These include: action orientation; judgment and decision-making; cognitive flexibility (linked to open-mindedness); creativity; and growth mindset (linked to self-efficacy). This is by no means an exhaustive list, but rather an indicative set of cognitive competences underpinning entrepreneurial action.

Entrepreneurial action is central to the very concept of entrepreneurship (McMullen and Shepherd, 2006), whereby individuals take, sustain and coordinate action over the course of the entrepreneurial journey (McMullen and Dimov, 2013). At a cognitive level, this manifests as *action-orientation*, whereby individuals gather information and feedback from the environment, evaluate this and determine actions and plans (Dimov, 2010). To do so, entrepreneurs often use heuristic-based *judgment* which allows them to quickly *make decisions* (e.g. Baron, 1998; Busenitz and Barney, 1997; Hmieleski and Baron, 2009;) based on ‘rules of thumb’, in turn enabling fast and responsive action. There is, however, a trade-off between speed and efficacy. Reliance on heuristics may facilitate faster judgements, but may also make individuals more prone to biases in their decision-making (Simon et al., 2000) thus resulting in unanticipated negative outcomes (Hmieleski and Baron, 2009). To offset this, the literature identifies the importance of *cognitive flexibility*, or “the awareness that in any situation there are options and alternatives available, a willingness to be flexible and adapt to the situation and confidence in being flexible” (Martin and Rubin, 1995, p. 624; see also Haynie et al., 2012). Often linked to the concept of *open-mindedness* (e.g. Casulli, 2022, based on Reeve, 2015), cognitive flexibility is of particular importance when looking to engage in creative behavior (Nijstad et al., 2010) such as exploring problems, experimenting or trying to ‘connect the dots’ (Ireland et al., 2003). It supports individuals in looking beyond their personal values and frames of reference and

overcoming functional fixedness (Dajani and Uddin, 2015) in order to explore a diverse range of possibilities and options for innovation and value creation. A final cognitive competence, linked to the competences above as well as to perceived *self-efficacy* (Chen et al., 1998) is *growth mindset*. Often associated with the work of Carol Dweck, growth mindset is a set of values and attitudes that considers all attributes and skills to be shaped by effort and practice, rather than inherent within an individual (Dweck and Leggett, 1988). This prioritizes skill development (and ultimately mastery), seeking learning from both successes and setbacks (Burnette et al., 2013) over a sustained period of time.

These cognitive competences of entrepreneurial mindset have important implications for EE and educators. Whilst critical thinking, reasoning and decision making are common learning outcomes within EE activity (Kakouris and Liargovas, 2021), when considering EE from a competence development perspective we need to consider how actively and directly cognitive activities are explained, explored and developed within EE. Arguably further emphasis is needed to encourage identification of learners' own attitudes and values, aligned to their perceived skills and abilities, ideally through focused personal reflection and metacognition (Haynie et al., 2010). Learners should be set tasks that promote focused consideration of their own thought processes and to determine the factors that underpin such thoughts. For example, in the development of a growth mindset, it is important that students reflect on whether they believe in the power of effort or rather believe in inborn talent. Digging even deeper, one may guide students in probing which contextual values (educational, professional, cultural, etcetera) underpin their thought processes towards or away from a growth mindset. Similar guidance on reflective practice may be used in order to address the beliefs and values underpinning reasoning, judgment and decision making. We would also encourage educators to incorporate further activity to promote cognitive

flexibility and open-mindedness in a way that builds and strengthens these competences beyond one-off or time-bound ideation exercises. We deliberately stop short of offering specific educational tools for cognitive competence development because, we would argue, not one tool may be more or less effective than another in EE competence development. Rather, it is the use that is made of educational approaches and the interplay of these with the situated learning experience that matters. For illustration purposes, one may use an experience-based business venturing approach that accomplishes skills development such as business ideation, modeling, pitching, selling but that still stops short of developing cognitive competence from a values and beliefs perspective because the tasks set for learners do not include reflections on thought processes throughout the business venturing experience. Yet, using the same educational approach but by adding a task that requires students to reflect on their cognitive (and emotional) responses to the experiences undergone and interrogate their sources, the values and beliefs components of competence can be developed.

Competences in the emotional dimension of entrepreneurial mindset

As previously discussed, emotion and cognition continually interact with each other (Damasio, 2000; Adolphs and Damasio, 2001) during the entrepreneurial process (Delgado García et al., 2015), shaping behavioral outcomes. Whilst we adopt the term ‘emotion’ within this paper, we recognize that the terms ‘emotion’ and ‘affect’ are often used interchangeably in the literature (Cardon et al., 2012) in order to refer to different types of feelings experienced by individuals, including dispositional affect, specific emotions and mood. As yet, the emotion and affect literature largely fails to consider emotion from the perspective of competences or competence development, despite interest in the role emotion plays in shaping cognition and behaviors. Scholars have for some time recognized that the entrepreneurial journey is an

emotional one, with individuals experiencing significant ‘ups’ and ‘downs’. Referred to as *positive* and *negative valence* in affect research, scholars have sought to identify whether an emotion is perceived as positive or negative, and to determine the relative strength of such emotions (please see Delgado García et al., 2015 for a review). However, based on current thought it appears that a central emotional competence in entrepreneurial activity is the *emotional management and regulation* of positive and negative emotions.

Strong positive emotions have been found to be associated with cognitive processes such as idea generation or the development of a new entrepreneurial endeavor (Delgado García et al., 2015) and include, *inter alia*, *passion* (Cardon et al., 2009) and *empathy* (Korte et al., 2018). Passion is defined as an intense and positive emotional response (Cardon et al., 2009) associated with excitement (e.g. for the entrepreneurial endeavor) (Foo et al., 2006), which manifests in visible body language. This has been shown to be contagious not only between founders and employees within entrepreneurial ventures (Breugst et al., 2012), but can also play a role in influencing investors (Mitteness et al., 2012) to embrace an entrepreneurial concept. In a similar vein, empathy is often aligned to positive emotion and has been highlighted as an important yet underrated part of entrepreneurial leadership (Holt & Marques, 2012). Empathy involves the ability to understand and appreciate the feelings, thoughts, and experiences of others (Korte et al., 2018), regardless of personal circumstances. Not only can empathy help develop trust-based relationships between individuals, it also plays an important role in developing psychologically safe environments (Edmondson, 1999) which support communication and collaboration. On the other hand, strong negative emotions are usually associated with the cognitive appraisal of events such as setbacks and failures (Delgado García et al., 2015; Shepherd, 2004). Importantly, some have argued that emotions themselves have no inherent valence, but are labeled as ‘positive’ or

‘negative’ due to interpretation (through cognition) by individuals (Delgado García et al., 2015). For example, a state of arousal can be interpreted as horrific fear by one individual but excitement and a push for action by another (Cacciotti et al., 2016) - emotions are both the source and the outcome of thoughts. This observation has important implications for how we conceptualize emotional competence. If we take the view that emotions are simply states of arousal (strong or weak) that require cognition in order to be interpreted (to positive or negative) (e.g. Cacciotti et al., 2016), it then follows that emotions require *management and regulation* (Shepherd, 2004). This way, the negative interpretation of emotions may not prevent behaviors to support entrepreneurial action whilst, by the same token, the interpretation of emotions as overly positive may be prevented from potentially clouding rational judgment and decision making (Delgado García et al., 2015).

Looking at the operationalization of the emotional competence of entrepreneurial mindset in EE raises a number of considerations. Challenging the dominant narrative of entrepreneurship as stimulating, exciting and inherently positive (think visually stimulating and high-energy ‘Demo days’), educators will need to take a more balanced (or indeed critical) perspective on emotion in the entrepreneurial process, paying attention to both positive and negative emotions in order help learners to develop robust emotional competence. In doing so, educators can consider building awareness and openness by encouraging discussion on a range of emotional responses to different situations, exploring how individuals respond in different ways and linking this back to some of the cognitive framings (e.g. attitudes, values) discussed above. There is also the need to consider how to engage learners in building emotion management skills, embedding this within curriculum design (Shepherd, 2004) rather than as tangential to core teaching and learning activity. For example, educators could focus on a specific negative emotional response

(e.g. a personal fear), encourage discussion and reflection to consider where reframing or alternative interpretation may encourage other, perhaps less negative, emotional states.

Behavioral outcomes of entrepreneurial mindset

The ultimate intended outcome of developing cognitive and emotional dimensions of entrepreneurial mindset in EE is to encourage and shape entrepreneurial behavior (McMullen and Shepherd, 2006). Given the recent application of the entrepreneurial mindset concept beyond business venturing in favor of wider career trajectories, it is perhaps unsurprising that the behaviors linked to entrepreneurial mindset in this context are conceptually underdeveloped. Indeed, whilst many national and supranational organizations (e.g. the World Economic Forum, the Kauffman Foundation, European Commission etc.) speak of entrepreneurial behaviors in the context of mindset, there is often conflation between knowledge, skills, attitudes and behaviors. For example, the European Commission (2012, p. 3) states that “the ability to think critically, take initiative, problem solve and work collaboratively will prepare individuals for today's varied and unpredictable career paths”, classing these as the core entrepreneurial competences for the 21st century. It is, however, unclear which of these are cognitive competences, which are emotional competencies and which are observable behaviors. These boundaries are further confused by conversations within the EE literature on the development of ‘life skills’ (Costello et al., 2012), with little consideration of how individuals use these to undertake action in the form of discernable behaviors. This fuzziness in conceptualization is thus an issue when designing EE approaches based on competence development across each of the dimensions of entrepreneurial mindset, as in order to implement and assess the effectiveness of cognitive and emotional components of mindset on behavioral outcomes one has to be able to clearly observe whether or not the intended behaviors manifest further down the line. Turning to the entrepreneurship

literature (e.g. Kuratko et al., 2020a,b), we can distill behavioral components of entrepreneurial mindset that have potential for wider application and which should therefore be included in the intended outcome(s) of emotional and cognitive competence development. Notably, many point to the behaviors of *implementing novel solutions* to problems through *acting and mobilizing* in response to a judgmental decision under uncertainty about possibilities (for value creation) (based on Shepherd et al., 2010). Others stress the importance of persistence (Holland and Shepherd, 2013; Morris and Liguori, 2016) in order to *sustain* value creating behavior, often aligned to *interacting with others* in order to gain new ideas and resources (Sarasvathy, 2001). We can thus argue that the cognitive and emotional competences of entrepreneurial mindset shape behavioral outcomes in the form of *initiating and sustaining personal and collaborative action in order to explore, experiment, adapt and innovate under conditions of uncertainty and ambiguity*.

When it comes to EE, and as implied throughout the previous sections, behavior is not a taught competence *per se*. Rather, we would expect to see a behavioral shift as a result of working on the underpinning cognitive and emotional competencies. This therefore invites a conversation on what a realistic amount of time elapsing between EE intervention at the cognitive and emotional level and the subsequent evidence of behavioral manifestation resulting from the intervention. Whilst some would advocate that certain cognitive interventions can create immediate behavioral shifts, the only study known to us thus far that has attempted mindset intervention did not observe any immediate impact on behavior (Burnette et al., 2020). Rather than seeing this as a limitation in the value of cognitive and emotional competence intervention, and in the absence of empirical insight on the timings of EE interventions, we suggest that it is unrealistic to expect behavioral change within the time-frame of days or even

weeks. The timeline to behavioral change is likely to be contingent on the baseline behavior compared to the desired behavior and will also likely to depend on a number of other factors such as cognitive flexibility and personal engagement with the intervention. However, given evidence from the use of cognitive-behavioral intervention in clinical settings such as trauma (e.g. Bryant, 2006), we suggest that entrepreneurial mindset and its associated behaviors could take months - perhaps years - to shift even within a structured EE setting, requiring sustained self-reflection drawing on tools such as cognitive-behavioral journaling (Fritson, 2008). Thus, EE programmes and educators seeking to address the concept of entrepreneurial mindset need to be clear about what is realistic in terms of aims and objectives within time-constrained classroom interventions (usually lasting weeks or months). They also need to actively consider how such aims and objectives link to the longer-term and sustained behavioral change that they are intended to foster.

Conclusion

In this article we have considered the concept of *entrepreneurial mindset* as a framing for EE programming, conceptualizing it as an approach to support the development of multidimensional cognitive and emotional competences leading to behavioral outcomes to enable entrepreneurial value creating activity across a range of contexts. We have argued that the entrepreneurial mindset construct requires further conceptual clarity if we hope to be able to engage in mindset-focused EE activity that is robust, relevant and meaningful for learners.

This paper makes two key contributions. First, we make a conceptual contribution, building on and elaborating Kuratko et al. 's (2021a) triadic model of entrepreneurial mindset as a triad of cognition, emotion and behavior linked to specific entrepreneurial competences. To do

so, we integrate insights from the entrepreneurial cognition, competence development and entrepreneurial education literature, identifying and mapping a number of key competences and behavioral outcomes to the domains. In doing so, we also make a contribution to EE research, positioning entrepreneurial mindset in EE as a competence that is learnable and that requires training beyond knowledge and skills development and that also tackles issues of values and beliefs (Morris et al., 2013). More broadly, we have sought to start a conversation on the practicalities of operationalizing the entrepreneurial mindset concept within HE teaching and learning activity.

In many ways, our conversation raises more questions than it provides answers. We identify that lasting behavioral change as an intended outcome of cognitive and emotional competence development is complex and unlikely to be observable within the timeframe of traditional education or professional training settings, which usually last from a few hours to a few weeks. Further research is needed to better understand the implications of this for EE, not only in terms of seeking consensus on what the core behavioral outcomes of entrepreneurial mindset are, but also investigating timing and structures currently dominating EE and considering alternative delivery structures that might better accommodate and support the development of said behaviors. It is also important to consider the relevance of the competences in different contexts, given that the majority of these have been identified and appraised within Western cultural contexts and particular (e.g. high tech) industries. We would thus echo Bruton et al.'s (2018) call for indigenous theory development on both EM and its pedagogical implications across different cultural and industrial settings. In terms of EE activity, there is perhaps also a need to consider how entrepreneurial mindset aligns to gender and identity. Many of the competences identified can be perceived of as 'masculine', perhaps further promoting a

male-gendered view of entrepreneurial thinking and behavior (Lundmark et al., 2019). Future research could consider how these competences reflect the identities of learners and how we can work to ensure entrepreneurial mindset education that is open and inclusive. This issue of inclusivity also links to the importance of considering neurodiversity and the needs of neurodiverse learners and educators in the developing EE programmes of entrepreneurial mindset. As individuals with ADHD are, for example, known to take action through impulsivity and thus apply limited directed reasoning (Lerner et al., 2019; Wiklund et al., 2017; Wiklund, 2019), what are the implications for entrepreneurial mindset teaching and learning activity for these learners - and for others.

Given the above, we wish to conclude by saying that entrepreneurial mindset, as considered beyond the venturing context, calls for a full research programme to be worked on by interested scholars, and then further extended into the context of EE. We see this as the start of a fruitful exchange of ideas and empirical findings among our community of peers.

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