WHAT'S IN A MINDSET? EXPLORING THE ENTREPRENEURIAL MINDSET

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ABSTRACT

The subject entrepreneurial mindset is a multidisciplinary and widely discussed construct, yet its conceptualization and measurement remains vague. This article identifies critical attributes of the entrepreneurial mindset by conducting a systematic literature-review and explores perspectives among practitioners and educators using an iterative multistage survey (Delphi Method).

In essence, we identify 11 critical dimensions of an entrepreneurial mindset. In contrast to recent literature, acceptance of entrepreneurial mistakes and failure is considered as a prevalent attribute by the respondents. On the individual level, we find substantial differences among practitioners and educators with practitioners favoring personality-related constructs such as entrepreneurial passion or resilience. Our work sheds new light on the development of a multidimensional framework with implications for future entrepreneurship education mandates.

Keywords: Entrepreneurship Education, Entrepreneurial Mindset, Measurement Instrument.

INTRODUCTION

Researcher's postulate that the growth of the economy and an increase of citizen's living standards highly depend on entrepreneurial activities (Kirzner, 1997; McGrath & MacMillan, 2000; Shane, 2018). Particular outcomes of such economical and societal advantages are the sustainment the competitiveness of economic entities and the socioeconomic lifestyle of people (Kouakou et al., 2019) by creating employment and wealth, expanding the market and thus the variety and quality of goods and services (Asenge et al., 2018). The entrepreneurial mindset is understood as a combination of motives, traits, skills, and thought processes (Davis et al., 2016) that determines both entrepreneurial and intrapreneurial success (Kuxhaus & Troy, 2018), and subsequently plays a key role in cultivating entrepreneurial activities.

There is a growing scholarly interest in how to establish an entrepreneurial mindset (Santos et al., 2017; Shepherd et al., 2010). The growing scholarly interest on this subject disclosed puzzling aspect of the complex construct (i.e., antecedents, effects and attributes) (Naumann, 2017), developed new sub-facets (Englis & Wakkee, 2015; Frank & Roessl, 2015), but also pointed out related conflicts (McMullen & Kier, 2016). Other studies have emphasized the power of entrepreneurship education to build an entrepreneurial mindset (Balachandra, 2019; Schaefer & Minello, 2019; Bellotti et al., 2014; Laukkanen, 2000; Secundo et al., 2016; Pfeifer et al., 2016). The subject entrepreneurial mindset is obviously a multidisciplinary (e.g., engineering, entrepreneurship, management, etc.) and widely discussed construct (Cha & Bae, 2010; Beiler, 2015; Bosman & Fernhaber, 2018; Kuxhaus & Troy, 2018). However, the growing popularity of the subject also impedes "*to identify or develop a consensus within its body of knowledge as to*

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what constitutes the research program's set of formal theories" (Turner et al., 2018). Facing the consensus challenges within the discourse, the "*multidisciplinary nature*" of previous research, causing "*varying definitions of entrepreneurial mindset and it is problematic to determine an exact meaning of entrepreneurial mindset*" (Asenge et al., 2018), therefore, it is of paramount significance to examine the existing body of literature on this particular subject to provide a comprehensive overview and implication for future research. Robinson and Gough (2020) described the entrepreneurial mindset as a "*poorly defined concepts*." Moreover, its scientific popularity has neither provided a full picture yet (Naumann, 2017), nor met the need to rigorously define, conceptualize and measure the construct (Krueger & Sussan, 2017; Robinson & Gough, 2020). Hence, its vagueness led to an unclear "*academic understanding on what precisely the entrepreneurial mindset consists of*" and "*how it should be assessed*" (Verzat et al., 2018).

In response to that, we seek to shed a deeper light on the construct entrepreneurial mindset by investigating what constitutes the term "*entrepreneurial mindset*." In particularly, our contribution is to establish an academic and practitioner-based understanding of the entrepreneurial mindset that provides implications for identifying significant constructs, and to develop a proper measuring scale. A further objective is to discuss the development of the entrepreneurial mindset through to didactical tools within an organization and a learning setting in order to provide practical work-related and didactical approaches to instill an entrepreneurial mindset.

Employing both a theoretical and an explorative approach to investigate the entrepreneurial mindset, this article proceeds as follows. First, to identify the critical attributes of the entrepreneurial mindset, a systematic literature-review (Dewey & Drahota, 2016; Pittaway, 2008) was carried out, which captures the academic perspective. Second, we also chose an iteratively designed series of questionnaires, highly related to the methodological instrument Delphi technique (Linstone & Turoff, 1975) for exploring "*underlying assumptions leading to differing judgements*," but also to "*correlate informed judgements on a topic spanning a wide range of disciplines*" (Hasson et al., 2000). This empirical exploration enables to capture identify the perspectives of practitioners' and educators that have been neglected hitherto. Finally, the results on the two methods are compared and implications for the development of a new measurement tool are discussed.

Based on the results from both methods, we were able to extract eleven most mentioned constructs. While most constructs correspond with findings from the existing literature, we found that the tendency of accepting mistakes and failure as well as the ability to reflect them is stronger pronounced among practitioners and educators than in previous findings. Thus, the strive for learning from mistakes and failure competence are considered to be a key feature of an entrepreneurial mindset, with the necessity to be included into a multidimensional measurement framework.

The Entity of our Mindset(S)

Broad and generic definitions of the term mindset describe it as a specific way of thinking-e.g., out of the box-or a set of beliefs that initiates entrepreneurial thinking and action (Asenge, 2018; Lackeus, 2016). Further specific definitions pin the term on precise entrepreneurship-related behaviors such as searching and exploiting of opportunities (Senges, 2007), and growing a successful venture (Shane & Venkataraman, 2000; Mitchell et al., 2002). However, success in the

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entrepreneurial context is not only limited to economic value, but also on societal value-cultivating a value-creating entrepreneurial mindset (Blenker et al., 2011;2012).

Generic interpretations of the term mindset conceptualize it as mental attitude (Lamberton, 2005), a distinctive way of a person's thinking (Noble, 2015), or as a "*set of memorized procedures, scripts, or schemas that somehow, somewhere exist within a person's brain*" (Duening & Metzger, 2017). The individual mindset determines action and decisions (Lamberton, 2005); however, the mindset depends on "*individuals, norms, identities and mores held by groups within cultures*" (Noble, 2015). Dweck (2007) differentiates between a fixed and a growth mindset. A fixed mindset considers an individual's spectrum of capabilities as carved in stone, while a growth-mindset believes that an individual's qualities can evolve throughout time. The interpretations above reflect the definition of a fixed mindset. However, in entrepreneurship, Mathisen and Arnulf (2013) believe that the entrepreneurial mindset is not a fixed mindset, but it evolves, forms, and changes over the course of one's life. This process of change can be highly conscious, accompanied by strong emotions, or alternatively unconscious, when changes are integrated into the repertoire of actions without notice (Noble, 2015).

However, it is also proposed that some mindsets work preventive towards behavioral changes, while other mindsets require a constant change (Noble, 2015). Noble (2015) argue that "*the entrepreneurial mindset is a special case of a mindset which requires people to change. Whereas mindsets are generally created as knowledge to act, the entrepreneurial mindset is a metacognitive state of thinking*." The entrepreneurial mindset is defined by the way an entrepreneur responds to uncertainty and how entrepreneurial actions exploit the benefits from uncertainty (McGrath & MacMillan, 2000; Haynie et al., 2010). Noble (2015) even underlines that entrepreneurs must acquire the ability to respond to uncertainty.

The ability to respond to uncertainty and a change of a mindset depend on the learning process, which involves the construction of novel knowledge. Due to the confrontation between existing and new knowledge, it depends on how novel knowledge will be perceived, processed and formed. For instance, tacit knowledge hinders reflection and therefore does not necessarily lead to mindset (Noble, 2015). However, when learning leads to the development of skills and capabilities, it is more likely to initiate a change of mindsets. Entrepreneurship education has the potential to transform mindsets. Studies focusing on intention-based models postulate that entrepreneurial education has a significant impact on students' entrepreneurial orientation and intention, and subsequently on the entrepreneurial mindset (Krueger & Crasrud, 1993; Krueger et al., 2000; Pfeifer et al., 2016). For instance, entrepreneurship education has a positive effect on promoted the formation of students' entrepreneurial mindset that is mediated through students' entrepreneurial inspiration (Cui et al., 2021). Results from the study of Wardana et al. (2020) also indicated an influence between entrepreneurship education and the entrepreneurial mindset. Entrepreneurship education aims at developing "*individuals' entrepreneurial spirit, to make them more entrepreneurial, first in terms of mindset, then through their actions*" (Fayolle, 2008). A wide range of pedagogical methods (e.g., student-centered learning, action-oriented learning, experimental learning) are proposed for imparting student's perception of entrepreneurship, (Fayolle, 2008), entrepreneurial behavior and mindset (Ilayaraja, 2015). Rodriguez and Lieber (2020) provided evidence into the significantly positive relationship between entrepreneurship education and the entrepreneurial mindset. In particular, entrepreneurship education was able to enhance students' opportunity recognition, and critical thinking and problem-solving.

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THEORETICAL EXPLORATION-THE SYSTEMATIC LITERATURE REVIEW

Procedure

For the theoretical exploration, a systematic literature-review (Dewey & Drahota, 2016; Pittaway, 2008) was carried out. This process captures the academic understanding of the term entrepreneurial mindset. As scholars recommended, the systematic literature review should be carried out in a systematic and coherent way (Tranfield et al., 2003; Fisch & Block, 2018). This theoretical approach enables us to identify the most recent developments on the entrepreneurial mindset, current areas of focus, and opportunities for future research. This systematic literature review focused mostly on peer reviewed journals; however, some books and book chapters have been included. Publications from 2000 to 2020 in the four major databases were screened: Scopus (n=204), Web of Science (n=166), ProQuest (n=217) and Science Direct (n=1,708). The databases were searched for the keywords "*entrepreneurial mindset*." After reading the abstracts, the results were reduced to 145 documents of which 117 were selected for a detailed analysis. In the initial stage, we analyzed the papers in terms of methodology (e.g., theoretical, empirical issues). In a further step, the papers were examined to determine whether they provide a definition or a description of the entrepreneurial mindset.

Results

A most cited definition of the entrepreneurial mindset is provided by Ireland et al. (2003): "*The ability to rapidly sense, act, and mobilize, even under uncertain conditions*." Furthermore, possible constructs of the definitions and descriptions are identified. Referring to the definition of Ireland et al. (2003), the identified sensing, taking action, mobilizing resources and uncertainty are seen as prevalent constructs of the entrepreneurial mindset. Afterwards, the constructs were clustered into different groups. The systematic literature review provides insights into some prominent constructs of the entrepreneurial mindset (Table 1). It seems apparent that the construct of opportunity recognition and exploitation is empirically and theoretically a defining characteristic of the term entrepreneurial mindset. A further frequently mentioned attributes are uncertainty and ambiguity. Entrepreneurial activities are embedded in an uncertain and ambiguous environment and therefore entrepreneurs have to find ways to cope with such a context.

Table 1
KEY ATTRIBUTES OF THE ENTREPRENEURIAL MINDSET

Key Attributes	Paper
Opportunity seeking & exploiting Sensing & acting Mobilizing resources	McGrath & MacMillan (2000); Wright et al. (2001); Sarasvathy (2001); Ireland et al. (2003); Ireland et al. (2006); Haynie et al. (2010); Matheson (2013); Frese & Gielnik (2014); Ngek (2015); McMullen & Kier (2016); Schelfhout et al. (2016); De Hoyos-Ruperto et al. (2017); Bosman & Fernhaber (2018); Neck & Corbett (2018); Rasca et al. (2018); Verzat et al. (2018); Holm et al. (2018); Gillin et al. (2018); Dahalan et al. (2018); Kouakou et al. (2019), etc.
Dealing with uncertainty & ambiguity	McGrath & MacMillan (2000); Ireland et al. (2003); Ireland et al. (2006); Haynie et al. (2010); Matheson (2013); Ngek (2015); Neck & Corbett (2018); Shepherd & Patzelt (2018); Kouakou et al. (2019); Dahalan et al. (2018), etc.
Entrepreneurial awareness	Frese & Gielnik (2014); Valerio et al. (2014); Schelfhout et al. (2016);

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Proactivity Initiative Autonomy	Verzat et al. (2018); Schaefer & Minello (2019), etc.
Cognitive adaptability Problem-solving Problem-oriented	Robinson (2010); Mulllins (2017); Shepherd & Patzelt (2018); Cui et al. (2021); Schaefer & Minello (2019), etc.
Risk-taking	Rasca et al. (2018); Matheson (2013); Frese & Gielnik (2014); Schelfhout et al. (2016); Dahalan et al. (2018), etc.
Self-efficacy Self-confidence	Matheson (2013); Frese & Gielnik (2014); Asghar et al. (2019); Korte (2018); Zhang & Chun (2018), etc.
Value creation	Matheson (2013); Illés et al. (2015); De Hoyos-Ruperto et al. (2017); Hixon & Paretti (2018); Kuxhaus & Troy (2018), etc.
Innovativeness Creativity	Frese & Gielnik (2014); McMullen & Kier (2016); Schelfhout et al. (2016); Stauffer (2016); De Hoyos-Ruperto et al. (2017); Dahalan et al. (2018), etc.
Perseverance Resilience Persistency	Illés et al. (2015); Schelfhout et al. (2016); Mullins (2017); Nadelson et al. (2018); Krueger & Sussan (2017), etc.

Thematic Clustering

A thematically analysis enables a clustering of the different themes of the selected papers. In this analysis, we analyzed the 117 papers in terms of the entrepreneurial mindset and the related specific research subjects (Table 2). The papers were classified into different categories depending on their research focus. Following the thematic analysis approach of Linan and Fayolle (2015), if papers focused on more research subjects, the stated research purpose of the paper was chosen as a main criterion for the classification. Furthermore, "*if more than one aim was proposed, the most relevant result was chosen as a criterion for classification*" (Linan & Fayolle, 2015).

The thematic analysis reveals that there are some major research areas of the entrepreneurial mindset. We clustered the articles thematically into four categories. The first distinguishing category which the entrepreneurial mindset is examined is its relation to entrepreneurial outcomes at an interindividual and intraindividual level. These impact studies involve resulting entrepreneurial cognition, behaviors and activities. Some papers analyze the entrepreneurial intention (Mann & Blum, 2004; Cao & Ngo, 2019), entrepreneurial orientation (Oberholzer et al., 2014; De Clercq et al., 2015), entrepreneurial competences (Abereijo, 2015); entrepreneurial motivation (Cha & Bae, 2010; Cowden & Bendickson, 2018) or variables of the entrepreneurial mindset to draw distinction between entrepreneur and non-entrepreneurs (Rozan & Zibarzani, 2018). Within the outcome context, there is also a great focus on opportunity recognition and exploitation, which are considered as an entrepreneurial outcome, by analyzing the entrepreneurial process from entrepreneurial intention to opportunity realization and pursuit (Cha & Bae, 2010; Mitchell et al., 2008; Ucbasaran et al., 2003; Thorpe & Holt, 2007).

A great body of literature on entrepreneurial mindset is related to entrepreneurship education. Some studies investigate the entrepreneurial mindset outside the context of entrepreneurship such as in scientists, engineering (Beiler, 2015; Kuxhaus & Troy, 2018; Bodnar, et al., 2015; De Hoyos-Ruperto et al., 2017; Bellotti et al., 2014; Secundo et al., 2016) or art and creative and performing arts (Pollard & Wilson, 2014). A great number of studies focus on entrepreneurial mindset affecting entrepreneurs' attributes such as confidence, tolerance of

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uncertainty, risk and failure, etc. (Illès et al., 2015; Wongpreedee et al., 2015) and its benefits for enhancing students' employability (Clinkard, 2018; Rasca, 2018; Walsh & Powell, 2018). Other scholars discuss the interplay between the didactical design of entrepreneurial learning settings and the creation and deployment of an entrepreneurial mindset (Mitchell, 2007; Kwong et al., 2012; Robinson et al., 2016; Scheela, 2001; Bellotti et al., 2014; Laukkanen, 2000; Benchrifa et al., 2017; Melyoki et al., 2018; Gankar & Ahire-Kale, 2016).

The multidisciplinary nature of the entrepreneurial mindset research stimulates the discussion on different types of mindsets (Mathisen & Arnulf, 2013; Talke, 2007). While entrepreneurial and enterprising mindset are used as synonyms; managerial and corporate mindset are semantically related (Boisot & MacMillan, 2004; Groves et al., 2008). Managerial concepts are still henpecking in the entrepreneurship domain. As entrepreneurial and managerial mindsets are likely to overlap, it hampers the drawing of a clear dividing line (Boisot & MacMillan, 2004). Entrepreneurial thinking employs managerial thinking to deal with uncertainty and novelty. Likewise, entrepreneurial thinking becomes necessary in managerial contexts when being faced with the need for change and renewal (Boisot & MacMillan, 2004).

An interesting distinction is proposed by Mathisen and Arnulf (2013), who distinguishes between an implementing mindset (decisive action strategies) and an elaborating mindset (analytical thinking) within the entrepreneur. Numerous studies draw a distinction between entrepreneurial and managerial mindsets, based on general differences derived from the required tasks: Managerial tasks relate to executing and administering, while entrepreneurial tasks are encapsulated by searching and developing (Liening, 2017). Consequently, different tasks and responsibilities require different competencies. Organizing and strategic competencies are more likely to be considered managerial competencies, whereas competencies related to the exploitation of opportunities, conceptual, relationship, and commitment, are regarded as predominantly entrepreneurial competencies (Liening, 2017). The entrepreneurial mindset is built on "*the concept of plausibility*", while the object-oriented managerial thinking relies on "*the concept of probability*" (Boisot & MacMillan, 2004). In other words, managerial and entrepreneurial mindsets can be distinguished according to their necessity of justifying actions: While managerial thinking relies more on "*objectively verifiable facts and constraints from which it derives hypotheses with a high degree of probability" and "uses [the calculated] probabilities to justify their actions to others*" (Boisot & MacMillan, 2004), the entrepreneurial way of thinking does not explicitly demand this for its actions, because of the absence of "*prior probability distributions*" (Boisot & MacMillan, 2004). Aligning with these results, Kräkel (2004) observes that the two mindsets have different approaches concerning preferences with resources, the willingness to take risks, and takeover decisions. Accordingly, because of the influence of managerial thinking, the delegation of decisions provides advantages "*although managers have resource preferences (i.e., managers are empire builders or resource averse),*" since depending on the type of manager, he might be more competitive and aggressive concerning maximizing profits (Kräkel, 2004). Furthermore, managerial thinking is more risk averse than entrepreneurial thinking, and inefficient takeovers are more likely to be avoided by managers (Kräkel, 2004). Thus, by means of delegating decisions to a manager, an entrepreneur or an enterprise owner can largely benefit and make use of managerial competencies.

A different approach on the entrepreneurial mindset is its impact on the external environmental or on an organizational perspective. Papers on entrepreneurial mindset in this area focus on technology and innovation processes (Molner et al., 2019; Talke, 2007), environmental perceptions (Stewart et al., 2008), market conditions and customer needs (Hamlin, 2007;

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Markovetz et al., 2017), performance of enterprises (Putta, 2014), or impact of entrepreneurial mindset on organizational culture (Shepherd et al., 2010). We also found some entrepreneurial mindset studies with a focus on a variety of other subjects: social entrepreneurship and social value creation (Ghalwash et al., 2017; Zur & Naumann, 2018; Mohapeloa, 2017; Fuller, 2013), intrapreneurship (Seshadri & Tripathy, 2006) or gender research, specifically on female entrepreneurship (Neill et al., 2015).

The growing interest on the subject has contributed to a variety of instruments to measure the entrepreneurial mindset. The challenging aspect of detecting an individual's mindset is that we cannot conclude on a basis of a person's behavior his or her underlying mindset and also, there is no absolute reliability in identifying the mindset of an individual (Duening & Metzger, 2017). However, mainstream measure instruments employ self-report scales to question a person's "*motives, knowledge, and personal perspectives*" (Duening & Metzger, 2017). A frequently employed measure instrument, mostly conducted in the engineering context, is the Kern Entrepreneurial Engineering Network (KEEN) framework to measure the entrepreneurial mindset. This framework focused on the 3Cs (Curiosity, Connections, and Creating Value), which are defining for the entrepreneurial mindset (Gorlewicz & Jayaram, 2020). Other studies associate the entrepreneurial mindset with entrepreneurial orientation, intention, attitude, or tendencies and abilities (Robinson et al., 1991; Ahmetoglu et al., 2011; Al Kahtani et al., 2016; Allam, 2017; Allam, 2019; Allam et al., 2021; Solesvik et al., 2013; Toledano & Urbano, 2008). Mathisen and Arnulf (2013) provided a further measurement with 16 items that assess two entrepreneurial mindsets previously discussed: elaborating and implemental mindsets. Davis et al. (2016) proposed the Entrepreneurial Mindset Profile (EMP) with 14 dimensions consisting of personality traits (self-confidence, action orientation, passion) and skills (persistence, future focus, flexibility).

Table 2
THEMATIC CLUSTERING OF ENTREPRENEURSHIP MINDSET RESEARCH

Research focus	Paper
Impact on entrepreneurial outcomes, e.g.: ▪ Entrepreneurial intention ▪ Entrepreneurial orientation ▪ Entrepreneurial alertness ▪ Entrepreneurial self-efficacy	Cha & Bae (2010); Santos et al. (2017); Ullah et al. (2016); Asenge et al. (2018); Mathisen & Arnulf (2013); Balachandra (2019); Mann & Blum (2004); Oberholzer et al. (2014); De Clercq et al. (2015); Cowden & Bendickson (2018); Mitchell et al. (2008); Mullins (2017); Kyrgidou & Petridou (2011); Uy et al. (2015); Stauffer (2016); Cao & Ngo (2019); Abereijo (2015), Ucbasaran et al. (2003); Wardana et al., (2020), etc.
Types of mindsets, e.g.: ▪ Implementing / elaborating mindset ▪ Entrepreneurial / managerial Mindset ▪ Corporate mindset ▪ The triad of the entrepreneurial mindset	Boisot & McMillan (2004); Mathisen & Arnulf (2013); Levy et al. (2007); Groves et al. (2008); Kräkel (2004); Kuratko et al. (2021), etc.
Impact of entrepreneurial education, e.g.: ▪ Creative and performing arts ▪ Engineering education ▪ Improvisation training ▪ Conductive entrepreneurial learning ▪ Employability	Pollard & Wilson (2014); Illés et al. (2015); Kwong et al. (2012); Robinson et al. (2016); Scheela (2001); Beiler (2015); Rozan & Zibarzani (2018); Clinkard (2018); Rasca (2018); Walsh & Powell (2018); De Hoyos-Ruperto (2017); Wongpreedee et al. (2015); Bellotti et al. (2014); Laukkanen (2000); Figueiredo-Nery & Figueiredo (2008); Mitchell

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▪ Alternative strategies in entrepreneurial education	(2007); Benchrifa et al. (2017); Melyoki et al. (2018); Gankar & Ahire-Kale (2016); Secundo et al. (2016); Bodnar et al. (2015); Cui et al. (2021); Rodriguez & Lieber (2020); Robinson & Gough (2020), etc.
Impact on environmental outcomes, e.g.: ▪ Technology & innovation ▪ Enterprise performance ▪ Organizational culture ▪ Environmental Perceptions	Molner et al. (2019); Kuxhaus & Troy (2018); Markovetz et al. (2017); Talke (2007); Hamlin (2007); Putta (2014); Shepherd et al. (2010); Stewart et al. (2008), etc.
Other research areas, e.g.: ▪ Social entrepreneurship ▪ Intrapreneurship ▪ Women entrepreneurship ▪ Minor entrepreneurship	Ghalwash et al. (2017); Zur & Naumann (2018); Mohapeloa (2017); Fuller (2013); Seshadri & Tripathy (2006); Neill et al. (2015), etc.
Existing measurement instruments ▪ 14 Dimensions ▪ KEEN ▪ Entrepreneurial Intention/Orientatio/Attitude ▪ Five dimensions	Davis et al. (2016); Hayes & Richmond (2017); London et al. (2018); Brunhaver et al. (2018); Bosman et al. (2019); Linan & Chen (2009); Robinson et al. (1991); Pfeifer et al. (2016); Solesvik et al. (2013); Toledano & Urbano (2008); Mullins (2017); Schaefer & Minello (2019), etc.

Empirical Exploration-the Delphi-Survey

Procedure

While most of the studies are literature-based (Naumann, 2017; Linan & Fayolle, 2015), only a few explorative approaches include practitioners' perspectives (Davis et al., 2016). For instance, Hixon & Paretti (2018) incorporate the engineering faculty's perspective on the entrepreneurial mindset. However, an empirical approach that incorporates both practitioner and educator views on the entrepreneurial mindset remains missing. Within the iterative multistage survey (e.g., Delphi Technique) (Linstone & Turnoff, 1975), two expert groups (entrepreneurs/founders, entrepreneurial educators) were surveyed to capture a more accurate and holistic understanding of the term (Rowe et al., 1991). Expert practitioners were recruited through the internal network of the Nasdaq Entrepreneurial Center located in San Francisco, while the expert educators were recruited from the networks of Lehigh University and Lehigh@NasdaqCenter.

The survey was structured in two rounds, beginning with open-ended questions (qualitative data) followed by a structured questionnaire (quantitative data). Subsequently, the generated data were extracted, compared and analyzed, which resulted in insights for developing a measuring scale (Transfield et al., 2003). The first-round survey consisted of four main questions: definition of EM, core elements of EM, relevance of EM, and methods to develop EM. Based on the first survey round, we selected the most mentioned constructs and resent them to the expert educators and practitioners for further evaluation. The evaluation was divided into three categories: relevance of the constructs (7-Likert-scale from 1=strongly disagree to 7=strongly agree), types of mindset (growth-mindset or fixed mindset) and the nature of the constructs (personality-related, skill- and competence-related, and attitude-related).

Sample Description, Participant Recruitment Process & Data Collection

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Linstone and Turoff (1975) suggest including a diverse assessment and judgement on the researched subject. Also, Delbecq et al. (1975) acknowledge that a heterogenous groups has the potential to generate qualitative insights. The Delphi was conducted with two rounds over a 4-week period from October to November 2019. For the first survey round, 38 experts from the educator group participated, while 14 experts from the founders group took part in the survey. The data on the socio-demographics of the participants can be retrieved from the table (Appendix Table 3 and Table 4). In the second survey round, 23 educational experts and 14 practitioner experts completed the survey. All participants were anonymous and did not know about other participants. The first survey generated 47 definitions and 49 constructs of the entrepreneurial mindset.

Appendix Table 3
PRACTITIONERS OF ENTREPRENEURSHIP (SOCIO-DEMOGRAPHIC CHARACTERISTICS)

Variable	Number	%
Sex		
Male	7	36,84
Female	11	57,89
No answer	1	5,26
Age		
17 or younger	0	0,00
18-20 (A3)	1	4,17
21-29 (A4)	1	4,17
30-39 (A5)	6	25,00
40-49 (A6)	5	20,83
50-59 (A7)	2	8,33
60 or older (A8)	2	8,33
No answer	7	29,17
Funding stage		
Pre-seed and seed-phase	3	17,65
First-round financing and growth-stage	2	11,76
Growth-stage and early-maturity stage	2	11,76
Other	8	47,06
No Response	2	11,76
Venture industry		
Education & coaching	4	26,67
Business services/consulting	6	40,00
Tech/software	2	13,33
Health business	2	13,33
Textile industry	1	6,67
Type of business		
Product (A2)	5	33,33
Service based business (A3)	9	60,00
Other	1	6,67

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Entrepreneurship experience		
≤ 2 years (A2)	0	0,00
2-5 years (A3)	1	6,25
5-10 years (A4)	4	25,00
≥ 10 years (A5)	10	62,50
No answer	2	12,50
Industry experience		
≤ 2 years (A2)	0	0,00
2-5 years (A3)	2	11,77
5-10 years (A4)	4	23,53
≥ 10 years (A5)	9	52,94
No answer	2	11,77

Appendix Table 4
EDUCATORS OF ENTREPRENEURSHIP (SOCIO-DEMOGRAPHIC CHARACTERISTICS)

Variable	Number	%
Sex		
Male	24	53,33
Female	18	40,00
No answer	3	6,67
Age		
17 or younger	0	0,00
18-20 (A3)	0	0,00
21-29 (A4)	2	4,44
30-39 (A5)	5	11,11
40-49 (A6)	7	15,56
50-59 (A7)	15	33,33
60 or older (A8)	14	31,11
No answer	2	4,44
Highest degree		
Less than high school degree	0	0,00
High school degree or equivalent	1	2,22
Some college but no degree	0	0,00
Associate degree	0	0,00
Bachelor degree	5	11,11
Master degree	13	28,88
Professional degree	0	0,00
Doctorate degree	23	51,11
Other	1	2,22
No answer	2	4,44
Founder experience		
Yes	29	64,44
No	12	26,67
No answer	4	8,89
Teaching experience		

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≤ 2 years (A2)	2	4,65
2-5 years (A3)	6	13,95
5-10 years (A4)	5	11,63
≥ 10 years (A5)	26	60,47
No answer	4	9,30
Teaching EE		
≤ 2 years (A2)	8	12,50
2-5 years (A3)	9	23,68
5-10 years (A4)	6	15,79
≥ 10 years (A5)	15	39,47
Types of EE courses		
Sensitization courses	28	39,44
Qualification courses	26	36,62
Specialization courses	11	15,49
Other	6	8,45

Data Analysis & Interpretation

Methods to analyze the collected data depend on the research purpose (Powell, 2003). In the first step, we used the content analysis techniques to extract the definitions and characterization of the entrepreneurial mindset from the unstructured questionnaire. Results of the content analysis enable the structure of the "*questionnaire that forms the basis of the following rounds*" (Powell, 2003). In the second round, which is typically quantitative in nature, we used rating techniques (Jairath & Weinstein, 1994) based on a seven-point Likert-scale (Ulschak, 1983). For analyzing the quantitative data to identify the central tendency, Delphi studies use statistical parameters such as means, median, and mode for identifying the central tendency or standard deviation and inter-quartile range for identifying the level of dispersion (Hasson et al., 2000). Studies show a high favor of using the median score based on Likert-scale (Hill & Fowles, 1975; Hsu & Sanford, 2007), since it "*would inherently appear best suited to reflect the resultant convergence of opinion*" (Jacobs, 1996).

RESULTS & DISCUSSION

Delphi Survey 1st Round-Defining the Entrepreneurial Mindset and Its Core Elements

Results from the Delphi Survey show differences within the expert groups (Table 5). While entrepreneurs and founders rated in favor of personality-related constructs, educators have a tendency towards skills-/competence-related constructs. While entrepreneurs and founders consider personality traits or internal factors (e.g., risk taking, passion, determination, etc.) as well as economic aspect of entrepreneurship factors (e.g., success, profitable business or monetizing a business idea) as more relevant for an entrepreneurial mindset, educators emphasized the competence-related aspects (e.g., ability to identify problems, recognize and exploit opportunities). This highly corresponds with the result of the literature review, which we assume that it is due to the scholarly background of some educators.

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Table 5 DEFINITION OF THE ENTREPRENEURIAL MINDSET FROM THE DELPHI PANELISTS
Founders' responses
"*Passion, drive, vision, focus, patience, persistence*."
"*Curiosity. Grit. Resilience. Focus. Flexibility. Confidence. Self-Awareness*."
"*The mindset needed to experience success and enjoy the wild process of entrepreneurship*."
"*Identifying ways to make a financial profit through the sale of products or services.*"
Educators' responses
"*A way of thinking and acting that focuses on seeing problems/gaps as opportunities to create value in the marketplace regardless of vertical or organizational structure*."
"*A future possible opportunity realizing that you have the required knowledge to enter into a business based upon a specific opportunity that you have encountered*."
"*The ability to recognize a problem as an opportunity and create meaningful solutions.*"
"*Being able to identify the need and opportunity to add value through the engineering design process.*"

Relevance of the Entrepreneurial Mindset

Regarding the relevance of the entrepreneurial mindset, we identified another difference between founders and educators. Founders associate the entrepreneurial mindset with two aspects: adversity and success. The entrepreneurial mindset is considered as the main driver that helps to navigate through obstacles and overcome failures, and thus a crucial component of entrepreneurial success. Entrepreneurship educators, on the other hand, tend to have a rather global and societal perspective on the entrepreneurial mindset. Educators argue that the entrepreneurial mindset creates a "*greater*" value not only personally, but also more importantly, environmentally and socially. Furthermore, educators' postulate that having an entrepreneurial mindset will enforce entrepreneurial activities by promoting entrepreneurial skills (Table 6).

Table 6 RELEVANCE OF THE ENTREPRENEURIAL MINDSET
Founders' Responses
"*Being an entrepreneur is not a rational act for most human beings. Failure is a real possibility and entrepreneurs must drive forward in spite of the odds or critics*."
"*Having an entrepreneurial mindset is relevant because you will need all the core elements to catapult you forward in the long haul to success…*"
"*You cannot create a profitable business if you are not able to identify solutions to problems that people will pay you for*."
"*You can't be a successful entrepreneur without it*."
Educators' Responses
"*The world needs solutions to endless challenges, in all spheres.*"
"*People who possess an entrepreneurial mindset will be the ones to create the change, growth and value that will*

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continue to move our society forward."
"*We need different types of thinkers solving global challenges*."
"*It provides students with soft skills that add value to their educational experience and their professional toolbox. It trains the next generation of scientists and engineers that will create value for society*."

Methods to Develop an Entrepreneurial Mindset

The final aspect is the question on how founders and entrepreneurship educators enable the development of an entrepreneurial mindset. In an organizational context, founders recommend exposure to risk taking, to decision making, and to taking responsibility for one's own actions by employing techniques such as (peer-to-peer) trainings, keeping an open dialogue, and creating a safe place for experimentation. In the entrepreneurial learning context, educators propose methods that encourage students to examine the rationale behind decisions, to step outside their comfort zones, and to think differently and creatively through techniques such as student-centered learning, project-based learning, hands-on and application-oriented learning, collaborative learning, and experienced-based learning. Furthermore, educators propose involving entrepreneurial role models in the students' learning environment (Table 7).

Table 7 **DEVELOPING AN ENTREPRENEURIAL MINDSET**
Organizational Context
"*Creating a safe space for them to experiment and also take risks and challenge themselves*."
"*Giving them enough space to make decisions. Telling them they take the credit and blame*."
"*I ensure that people inside my company develop an entrepreneurial mindset by exposing them to the many opportunities to see and learn from other Entrepreneurs. We offer peer to peer trainings and personal development sessions to foster the entrepreneur in everyone. One of our popular sessions is "Everyone has a gift, but can you sell it?" During this session, we highlight our gifts and passions and create a roadmap to monetizing them*."
Educational Context
"F*ostering student-centered learning, co-designing the experience with them, trying and failing, exploring new areas of interest. Human centered design, design challenges, strengths finder, team building activities*."
"*Active learning. It is a project-based course in which the students are the textbook*."
"*Teaching the basic tenets, embedding the mindset and behaviors into all aspects of program and providing role models and mentorship/coaching*."

Delphi Survey 2nd Round

The results reveal that knowledge and expertise are not considered in both expert groups (founders: mean=4, 86; educators: mean=4,15) as relevant for the entrepreneurial mindset. Both expert groups have a preference for personality-related and attitude-related attributes (e.g., determination, drive & initiative. However, educators specifically mention opportunity recognition and exploitation in their definitions of the entrepreneurial mindset and rate this attribute with higher scores. More interestingly, educators evaluate aspects such as profit-orientation (mean=3,5) and being success-driven (mean=4) with one of the lowest scores, while founders consider them (profit-orientation: mean=5,79; success-driven: mean=6) as relevant for running a business (Table 8).

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Table 8 HIGHEST AND LOWEST SCORES OF THE 2ND DELPHI SURVEY			
Top 5 highest scores of both expert groups			
Constructs	**Mean (Founders)**	**Constructs**	**Mean (Educators)**
Drive & Initiative	7	Determination	6,4
Resilience	6,93	Passion	6,25
Determination	6,85	Resilience	6,25
Grit	6,79	Acceptance of failure	6,25
Flexibility	6,79	Opportunity recognition & exploitation	6,13
Top 5 lowest scores of both expert groups			
Constructs	**Mean (Founders)**	**Constructs**	**Mean (Educators)**
Exit planning	3,93	Altruism	3,25
Skepticism	4,21	Exit planning	3,35
Relaxed about owning	4,5	Profit-orientation	3,5
Altruism	4,57	Modesty	3,65
Knowledge & expertise	4,86	Disruption-driven	3,75

Personality-/Attitude-/Skills-Related Constructs and Types of Mindset

The development of the entrepreneurial mindset is influenced by both internal and external factors. A recent study by Kuratko et al. (2021) offered a multifaceted insight into the entrepreneurial mindset. They proposed the triad of the entrepreneurial mindset: the cognitive aspect (thinking), the emotional aspect (feeling), and the behavioral aspect (acting). Furthermore, the debate on the innate traits and the trainable skills of the entrepreneurial mindset still continues in the literature (Robinson & Gough, 2020; Lynch & Corbett, 2021). Thus, we asked the expert groups to give their opinion on whether the constructs are personality-related, skill- and competence-related, or attitude-related. Additionally, we asked the experts to assess whether the constructs are improvable (growth mindset) or not (fixed mindset).

Results show that practitioners and educators consider opportunity recognition and exploitation as an entrepreneurial skill or competence that can be developed. Differences between the two groups exist i.e., for creativity and imaginativeness, which founders assessed as personality traits, while educators consider them as skills. However, both groups consider it as improvable. A further interesting aspect is problem-solving-founders evaluated this attribute as an

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attitude, but the educators rated it as a competence. Regarding a growth or a fixed mindset, there is a difference for the attribute self-efficacy. While most educators assessed it as a fixed-mindset, founders interpreted it as a growth-mindset. Furthermore, educators and founders consider profit-orientation as a competence of entrepreneurship that can be trained, although being success-driven, which is a similar construct to being profit-oriented, is considered as an attitude-related attribute. Table 9 reveals that founders not only tend to value personality traits and attitude-related attributes, but also consider some of them as a fixed-mindset. In contrast to this view, educators assess all types of attributes as relevant for an entrepreneurial mindset. Most relevant constructs are considered as improvable by educators.

The results reflect the born *vs* made discourse existing within the entrepreneurship research. Some scholars endorse the claim that entrepreneurs are born, which suggests that in some way entrepreneurs have inherited '*entrepreneurial gene*' (Turkheimer, 2000; Shane, 2010), and studied the relationship between genetics and the decision to enter entrepreneurship (Nicolaou et al., 2009; Zhang et al., 2009; Zur & Naumann, 2018). This fixed and genetically based belief usually focuses on the entrepreneurial personalities. Robinson & Gough (2020) pointed out that older theories often associate the entrepreneurial mindset with '*traits*' that are difficult to be trained through entrepreneurial learning. In contrast, other scholars follow the proposition that the entrepreneur's characteristics and skills are rather acquired or better educated than rooted in his or her genes (Drucker, 1985). This perspective claims that entrepreneurial skills are acquired, for instance, through entrepreneurship education. Modern entrepreneurial pedagogy considers entrepreneurship as a method (a body of skills or techniques), which can be learnt and taught through practice-based pedagogies including serious games and reflective practice (Neck & Green, 2011; Robinson & Gough, 2020). Our results indicate that entrepreneurs and founders have the preference towards the born perspective, whereas educators coincide with the made perspective.

Table 9
TYPES OF ATTRIBUTES AND TYPES OF MINDSETS

Constructs	**Founders**		**Constructs**	**Educators**	
Drive & Initiative	Personality	Fixed-mindset	Determination	Attitude	Growth-mindset
Resilience	Attitude	Growth-mindset	Passion	Attitude	Growth-mindset
Determination	Personality	Growth- & Fixed-mindset	Resilience	Personality	Growth- & Fixed-mindset
Grit	Attitude	Fixed-mindset	Acceptance of failure	Attitude	Growth-mindset
Flexibility	Personality	Growth-mindset	Opportunity recognition & exploitation	Competence	Growth-mindset
Acceptance of failure	Attitude	Growth-mindset	Resourceful	Personality, Attitude, Competence	Growth-mindset

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Implications

The numbers of entrepreneurial education programs show a clear upward trend (Katz, 2008). Yet, the relationship between educational arrangements and entrepreneurial mindset is poorly clarified. Based on our results from the Delphi study and the systematic literature review, we selected eleven most mentioned constructs (Table 10), which serves as a basis for future undertakings with regard to the development of measurement instruments to capture the entrepreneurial mindset.

Table 10
CRITICAL ATTRIBUTES OF THE ENTREPRENEURIAL MINDSET

Identified Attributes of the Entrepreneurial Mindset
Opportunity recognition & exploitation
Risk-taking
Uncertainty & ambiguity tolerance
Creativity & imaginativeness
Innovative behavior
Value creation
Problem-solving
Resilience
Self-efficacy
Proactivity
Mistakes & failure competence

The results of this study aim to provide academic and practitioner implications to better understand the composition of the entrepreneurial mindset, including its attributes and its measurement. The phenomenon of opportunity recognition and exploitation, and its subdimensions such as rapid sensing and acting, and mobilizing resources, dominates in the academic field. According to prior studies, opportunity recognition and exploitation is a predominant characteristic for entrepreneurship, and defines an entrepreneur (Venkatraman, 1997; Shane & Venkataraman, 2000). The result of the educators' perspective in this study is aligned with the prior academic perspective in the literature. However, previous measurement scales do not explicitly include opportunity recognition and exploitation. We highly recommend for future measurement instruments to take this construct into account by adapting validated scales (Kuckertz et al., 2017).

The theoretical and empirical results show that entrepreneurs emphasize personality-related traits, while both the academic literature and educators' perspective focus on skills-related attributes. The results also show that an entrepreneurial personality-related construct such as entrepreneurial passion or resilience is a relevant dimension, particularly from the entrepreneur's and founder's perspective. The initiation of the venturing journey is determined by the entrepreneur's passion towards a business idea, while the entrepreneur's resilience in time of business crisis and failure defines whether the entrepreneurial path will continue or withdraw. Cardon et al. (2009) show relation between these constructs: passionate individuals are more creative and persistent. Both attributes also seem to relate to business success and effectiveness of organizations (Cardon, 2008). While the discussion of entrepreneurial passion and resilience has in general expanded (Cardon et al., 2009; Cardon & Kirk, 2015; Hedner et al., 2011; De Vries & Shields, 2006), there is limited research that is focused on entrepreneurship education. Further

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research can investigate entrepreneurial learning settings in terms of addressing and building entrepreneurial passion and resilience. This also requires including passion and resilience into the entrepreneurship curriculum, particularly training programs for individuals with high entrepreneurial intention. For instance, didactical approaches such as critical learning or crisis-based learning that discuss the opportunities to confront students with entrepreneurial adversities (Cope, 2003;2005; Pittaway & Thorpe, 2012) provide implications to develop entrepreneurial resilience. It conceptualizes crisis as unusual and transformative events that are critical sources for learning (Pittaway & Thorpe, 2012).

The empirical results of this study also show a favor for the ability to learn from mistakes, which are inevitable in the venturing journey. We found that accepting mistakes and failure as well as the ability to reflect on them was of greater importance for practitioners and educators than in previous scholarly literature. Prior research has primarily focused on entrepreneurial failure (Zacharakis et al., 1999; Kollmann et al., 2017; Ucbasaran et al., 2013), but neglected the process of learning from errors and mistake. Lynch and Corbett (2021) already discussed the role of learning and failure in the context of the entrepreneurial mindset and argued that including "*learning and failure into prior conceptualizations*" can provide clarity to older theories (Lynch & Corbett, 2021). Literature considers mistakes as a learning potential to develop error competencies that is defined as the ability to reflect on and communicate mistakes. Other studies address the possibility to develop negative knowledge-expertise about what not to do-through learning from mistakes (Gartmeier et al., 2008; Minsky, 1994). We encourage future research to theoretically transfer both concepts to field of entrepreneurship, but also to empirically include the constructs into the measuring of the entrepreneurial mindset. For instance, the error culture and error competencies scales can be adapted and employed within the entrepreneurial context (Rybowiak et al., 1999; Van Dyck et al., 2005; Liening et al., 2016; Harjula, 2006).

CONCLUSION

Although entrepreneurship education addresses both the creation of businesses and the cultivation of an entrepreneurial mindset, the practitioner perspective on the entrepreneurial mindset reveals the relevance of business success in terms of scalability of business model and profit-orientation. The balance between business-orientation and social-value-orientation is certainly a challenge for entrepreneurs, notably social entrepreneurs. This insight should be further examined in general and included in future research that aims to measure the entrepreneurial mindset.

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