

Essays on Entrepreneurship

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Doctoral Thesis

submitted to

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June 28, 2024

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Dedication

This dissertation is dedicated to all girls, who follow their passion. And the strongest woman I know, my wonderful mum.

Acknowledgements

I would like to express my sincere gratitude to my doctoral advisor, Prof. Dr. Bausch. You have made this academic journey possible. Thank you for allowing me the autonomy to delve into a research topic that captured my interest and for guiding my dissertation. Your consistent advice, support, and patience, have been invaluable. Your expertise, especially in the early stages, has greatly enriched my research.

I am also grateful to Professor Pröllochs, my second PhD supervisor, for always being approachable and supportive, especially during the preparation of my PhD presentation.

My time in BWL II would not have been as fulfilling without my colleagues, who have become friends since day one. I would like to thank Christian Kaiser and Christian Schmidt for our enriching discussions about our dissertations and daily work. I also appreciate the contributions of my colleagues, Marius Brede and Andreas Höhre, in our research seminars and for the valuable feedback that improved this thesis. Special thanks go to Ute Grindel for facilitating our daily work. Thank you all, for the wonderful experience of working together.

This thesis owes its existence to the unwavering love and support of my family. I am grateful to my parents, Annabelle and Erhard Engel, for their constant support and guidance throughout. Their advice and encouragement have been instrumental in shaping my path. Your love is the kind that makes the world a better place! I am also grateful to Pauli and Lucy for their constant companionship and support throughout this journey. Further, thank you, Vera Lang, for being my partner in crime and support for more than half of my life.

Lastly, I am indebted to my husband Mike, for being my greatest supporter, motivator, chess opponent and discussant on my research. Your endless love and encouragement has been a constant source of energy and inspiration. Despite the inevitable challenges of pursuing a

PhD, we have created cherished memories together during this time. Your faithful support, incredibly funny sense of humor, and continuous optimism helped fuel my motivation. Thank you for being by my side and making every moment unforgettable. This thesis, and everything else, is better because of you. You truly are my No.1 Cheerleader.

Introduction

“Entrepreneurship is not about what is likely; it is about what is possible. It is not about ordinary; it is about extraordinary. The common denominator of all of these accessible entrepreneurs is their contrarian perception, creation, and capture of extraordinary value. It is their recognition, realization, and reaping of more value than anyone else (the market) could have anticipated.”

(Isenberg, 2013)

Entrepreneurship is widely recognized for its significant impact on economic growth, job creation, and innovation in a country (Acs et al., 2012; Cardella et al., 2019; Carree & Thurik, 2010; Laguía et al., 2019). Many governments and private sectors rely on entrepreneurial start-ups as a primary source of job creation (Hernández-Sánchez et al., 2019; Neneh, 2019). Numerous authors argue that passion is "at the heart" of entrepreneurship (Baum & Locke, 2004; Breugst et al., 2012; Cardon et al., 2005; Cardon, 2008; Cardon et al., 2009; Chen et al., 2009). Entrepreneurs driven by entrepreneurial passion are often motivated to explore possibilities beyond what is considered conventional or likely (Cardon et al., 2009; Murnieks, Cardon et al., 2020). They thrive on pushing boundaries and envisioning outcomes that others might consider unlikely (Vallerand, 2008). Entrepreneurial thinking and action requires a robust passion that drives personal agency, proactivity, creativity, risk-taking, aspiration, resilience, and persistence (Cardon et al., 2009). Moreover, entrepreneurial passion (EP) is critical in social interactions; entrepreneurs who demonstrate passion are often perceived as more likely to succeed by investors, customers, and employees (Baum & Locke, 2004; Cardon & Kirk, 2015; Chen et al., 2009). Successful entrepreneurs often cite a strong passion for entrepreneurship as a key success factor (Newman et al., 2019). It is noteworthy that

individuals engaged in entrepreneurial activities often vary in their level of EP, as not every entrepreneur is equally passionate about their endeavors.

The personality approach is one of the foundational and traditional perspectives in entrepreneurship research. Despite its long presence in the field, it remains a controversial area of study (Baum et al., 2012). By studying personality traits, we can identify broad behavioral tendencies that influence entrepreneurial processes, decision making, and success. Understanding these traits provides valuable insights into entrepreneurs' motivations, resilience, risk tolerance, and adaptability (Parks-Leduc et al., 2015). Such knowledge can inform targeted support programs, enhance entrepreneurship education, improve selection criteria for entrepreneurial initiatives, and ultimately foster a more conducive environment for entrepreneurial success and innovation.

In line with the nature of entrepreneurship and entrepreneurial behavior, this cumulative dissertation aims to explore the psychological underpinnings of entrepreneurs within a strategic management framework. This research contributes to the ongoing academic discourse and provides valuable insights for practitioners. The structure of this dissertation is as follows: The dissertation begins with a brief overview of the three papers, detailing the motivation, research questions, theoretical underpinnings, methodological approaches, findings, and contributions of each study. Chapters 2, 3, and 4 will then present these studies as independent essays. Finally, Chapter 5 will summarize the overall theoretical implications, highlight opportunities for future research, and conclude with practical implications relevant to various stakeholders.

The first paper, **Entrepreneurial Passion: A Literature Review and Framework** is a systematic literature review investigating the influence of passion in the entrepreneurial processes. This is significant to understand the motives and underlying personality factors of entrepreneurs as well as their behavior. The findings confirm the powerful role of passion to

improve the prospects of aspiring entrepreneurs. It systematically unravels the theoretical underpinnings of passion and illustrates its importance. It also clarifies how passion contributes to the entrepreneurial process and the lessons to be learned from entrepreneurial behavior. The procedure of the literature review is followed and outlined by Denyer & Tranfield (2009), which is a reproducible and explicit methodology. Due to the broad nature of the entrepreneurial field, no systematic overview has been provided of the state of the art in passion research and the three most studied areas of behavior, motivation, and performance. Such a study is essential to understand how important EP is and how it influences the entrepreneurial process. A total of 74 papers, published between 1998 and 2021 were synthesized to identify critical theories and research methods used in the domain. This research paper strives to systematically review the different research findings to contribute to the understanding of EP and add to the theoretical body of knowledge in entrepreneurship-research with the research question **“How can entrepreneurial passion influence and impact entrepreneurial outcome?”**

The second paper, **Exploring the Personal Values of Entrepreneurial Finance Investors: A Twitter Analysis** empirically explores individuals' online engagement and language use on social media platforms. We provide valuable insights into their psychological profile. This study analyzes Twitter posts (tweets) to gain a deeper understanding of the value systems of investors in entrepreneurial finance. It aims to understand the underlying personal values of business angels (BAs) and venture capitalists (VCs) using Schwartz's (1992) framework. Existing literature has only focused on observable factors and differences between BAs and VCs, neglecting psychological aspects (Mittens et al., 2012; Morrissette, 2007).

To answer our research question: **“What personal values do VCs and BAs hold, and how do they differ?”** We obtained 500 BAs and 478 VCs from LinkedIn and Crunchbase and compared them by using an innovative computerized language-based assessment tool that

analyzes their Tweets. Using Python code, the investors' names were linked to their Twitter accounts. To understand individuals' values, we applied LIWC software, which uses dictionaries and linguistic rules to measure various psychological dimensions in text (Bardi et al., 2008; Chung & Pennebaker, 2021). Univariate and multivariate analyses were then performed to compare the dominant values of the two groups of investors.

Our findings reveal comparable scores in five value dimensions between both investor groups, indicating a substantial degree of commonality. However, we observe significant value variations that align with our expectations and existing literature on entrepreneurial finance. VCs place emphasis on the overarching dimension of self-enhancement, scoring higher in power and achievement-orientation values than BAs. The study provides unexpected results when it comes to the second overarching dimension, openness to change vs. conservation. While VCs' focus on the security value is closely related to their investment objectives, we did not expect VCs to score higher than BAs on the opposite value of stimulation. Security is less relevant for BAs, as they may even enjoy risky challenges. In contrast, VCs feel pressure to meet the return targets, which is why they invest in more secure investment opportunities and conduct intensive due diligences. Overall, the results show that VCs tend to be conservative, risk-averse and return-oriented, while BAs value their freedom and act as mentors for the founding team. These findings can help entrepreneurs in aligning their pitches with investors' values and assist in forming successful partnerships in entrepreneurial finance. In addition, the use of social media analysis provides an objective means to uncover investor psychological traits, which represents a novel approach for future research in investor psychology.

The third paper, **Exploring Changes in Entrepreneurial Personality Traits: A Big Five Twitter Analysis of Indian and US-American Entrepreneurs Pre- and Post-COVID-19-Outbreak**, examines the impact of the COVID-19 pandemic on the personality traits and

behaviors of tech entrepreneurs in US-America and Asia, using the Big Five personality model and Hofstede's cultural dimensions. We built on these models to derive the following research questions: **“How do Indian and US-American entrepreneurs differ in their personality traits? Is there a change in personality traits of Indian and US-American entrepreneurs before and after the COVID-19-Outbreak?”** Again, we use an innovative, computer-based approach to analyze large amounts of textual data: LIWC (Bardi et al., 2008; Chung & Pennebaker, 2021). As a core element of human communication, language provides insight into behavioral and psychological characteristics (Boyd & Schwartz, 2020). By examining language use, we gain an understanding of an individual's values, emotions, and attitudes (Bardi et al., 2008; Chung & Pennebaker, 2021). We identified 76 Indian and 89 American entrepreneurs, with an average of 4,100 words per individual. We compare not only two international groups of entrepreneurs, but also their personality factors before and after COVID-19. We have included a time lag of one year, starting with the start of COVID-19 in 2020. This approach is intended to clarify and improve the comparability of personality factors before and after COVID-19. Our analysis includes both univariate and multivariate methods to explore value differences between Indian and U.S. entrepreneurs before and after COVID-19, providing a comprehensive view of how values are expressed individually and collectively on social media.

In summary, our study examined the differences in personality traits between Indian and U.S. entrepreneurs and the changes in these traits following the COVID-19 outbreak. Significant changes were observed in two key traits: Openness and Extraversion. U.S. entrepreneurs showed higher levels of Extraversion than Indian entrepreneurs, with a notable increase after the pandemic likely due to isolation effects. No significant differences in Agreeableness were found between the groups, but post-pandemic, US-American entrepreneurs showed a decrease in Agreeableness. US-American entrepreneurs scored higher on Openness to Experience, but this decreased after the pandemic, possibly due to increased uncertainty and

conservative approaches. No significant changes in Neuroticism and Conscientiousness were found for either group after the pandemic.

These findings highlight the dynamic nature of personality traits among entrepreneurs in response to external stressors such as the COVID-19 pandemic. The results provide insights into how cultural backgrounds and major global events influence entrepreneurial behavior and adaptation strategies. Implications for scholars include a deeper understanding of how cultural contexts and stressors shape entrepreneurial personality traits and suggest avenues for future research on the mechanisms and moderators of these changes. For practitioners, recognizing cultural differences in entrepreneurial environments can inform recruitment, team dynamics, and leadership strategies. Understanding the impact of crisis on personality traits can guide resilience building and support mechanisms for entrepreneurs facing similar challenges. Overall, our study provides valuable insights into the interplay between cultural contexts, external stressors, and personality traits among entrepreneurs.

Figure 1 provides an overview of the three papers, detailing the key dimensions of title, research question, theory, methods, and current status. This overview illustrates how each paper relates to the stream of entrepreneurship research.

Figure 1

Overview of Doctoral Dissertation

		Dissertation		
		Paper 1	Paper 2	Paper 3
Title		Entrepreneurial Passion: A literature review and framework <i>Anna Erica Engel</i>	Exploring the personal values of entrepreneurial finance investors: A Twitter Analysis <i>Anna Erica Engel, Christian Schmidt</i>	Exploring Changes in Entrepreneurial Personality Traits: A Big Five Twitter Analysis of Indian and US-American Entrepreneurs Pre- and Post-COVID-19-Outbreak <i>Anna Erica Engel</i>
Research Questions		How can entrepreneurial passion influence and impact entrepreneurial outcome?	What personal values do VCs and BAs hold, and how do they differ?	a) How do Indian and US-American entrepreneurs differ in their personality traits? b) Is there a change in personality trait after the crisis?
Theory		Identity theory, self-regulation theory, signaling theory	Personal Values (Schwartz)	Big Five (Goldberg) Hofstede's model for cultural distance
Methods		Systematic Literature Review by Denyer & Tranfield (2009)	Text Mining, LIWC, Uni- and Multivariate Analysis	Text Mining, LIWC, Uni- and Multivariate Analysis
Status		ICABE Conference 2021 G-Forum 2023	G-Forum 2023 Babson 2024	G-Forum 2023

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Paper I: Entrepreneurial Passion: A Literature Review and Framework

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Status:

- Presented at International Conference of Applied Business and Entrepreneurship (ICABE) 2021 in Cape Town (South Africa) with Best Presentation Award
- Accepted at G-Forum 2023 in Darmstadt in Germany

Abstract

The construct of passion, which for decades has spurred people to rise above themselves and achieve top performance, has become an increasingly important realm in entrepreneurial literature. In particular, the development process, which represent a great interplay of personality traits and cognitive processes, and the influence of passion in entrepreneurial processes, is receiving more and more scholarly intention. By providing an integrative framework, this study aims to review the different research results systematically, to contribute not only to the understanding of entrepreneurial passion, but also to the theoretical body of knowledge in entrepreneurial research. In addition, this study specifically focuses on entrepreneurial passion and its role in driving entrepreneurial motivation, behavior and success.

Keywords: Entrepreneurial passion, Passion, Entrepreneurship, Entrepreneurial Motivation, Entrepreneurial Behavior, Entrepreneurial Performance, Entrepreneurial Identity, Business founder

Word count: 12,335

Introduction

An emerging stream of research addresses the powerful role that passion plays in elevating the success potential of aspiring entrepreneurs (Cardon et al., 2009; Cardon, Glauser et al., 2017; Lee & Herrmann, 2021; Newman et al., 2019). Passion inspires people to achieve greater success, by pushing them forward and working harder. The positive emotions they feel lead them to not even notice the effort, but enjoy the work (Cardon et al., 2009; Mageau & Vallerand, 2007).

The concept of passion and its strong impact is widely known from the performance of athletes, musicians and medical worker (Murnieks et al., 2014), but entrepreneurs also know that passion can drive them to grow beyond themselves. Entrepreneurial passion (EP) has a spurring power, that can motivate, guide, and regulate entrepreneurial behavior (Obschonka et al., 2018; Vallerand, 2008) and many entrepreneurs ground their success or drive in passion opportunities (Baron, 2008; Sundararajan, 2010). Previous research has found this phenomenon to be a crucial source of entrepreneurial motivation, entrepreneurial behavior, as well as performance and success (Cardon, Glauser et al., 2017; Murnieks et al., 2014; Philippe et al., 2009; Vallerand, 2008; Warnick et al., 2018). These three constructs are of predominant interest in the passion literature, so understanding the potential that comes from them, helps to understand entrepreneurial drivers of action.

Motivation is an important construct in entrepreneurship, because to achieve a certain level of performance, individuals must continuously work and improve. This means high-level performance is only achieved through a process of repetition and optimization (Vallerand, 2008). To achieve this particular high level of performance, a source is needed to keep things moving. Such an underpinning motivational force and source of engagement is passion (Obschonka et al., 2018; Obschonka & Stuetzer, 2017).

Further, entrepreneurial thinking and action-taking is becoming increasingly important for organizational success, which is why EP is additionally a new core element in the research of organizational behavior (Newman et al., 2019). Evidence suggests that people who are passionate about their job are more committed, do more than is required, tend to help their colleagues and speak favorably about the company (Astakhova, 2015; Macey & Schneider, 2008; Robinson et al., 2004).

In addition, demonstrated by empirical findings, passionate entrepreneurs enjoy greater venture growth (Baum & Locke, 2004). EP helps entrepreneurs stay engaged and focused on their goals, even if they can't achieve the desired result at this point, they will remain centered on their goals and refuse to quit (Mueller et al., 2017). This ensures that they will be successful in the end. EP is thus an important component of performance, but cannot be used as a sole indicator of success (Schulte-Holthaus, 2019).

Passion is understood as one of the most important affective impulses that distinguishes the entrepreneur and is part of his or her experience (Cardon et al., 2009; Foo et al., 2009; Foo, 2011; Hubner et al., 2019; Shane et al., 2003; Smith et al., 2001). In particular, the founding and growing process of a business can be a difficult path full of setbacks and is only possible with the necessary motivation and perseverance driven by passion. This drive makes EP to a key element in passion (Newman et al., 2019; Obschonka & Stuetzer, 2017). An entrepreneur plays an important role not only in start-ups but also in companies. Therefore, EP has its relevance in both types of organizations. While previous research has extensively documented the impact of passion on performance in various fields such as athletics and music, this study specifically focuses on entrepreneurial passion and its role in driving entrepreneurial behavior and success (Cardon et al., 2009; Mageau & Vallerand, 2007).

Despite all the recent attention to EP, comparatively little attention has been paid to the causes, influencing factors, or preconditions as opposed to the effects and consequences in this relationship. Although research provides immense insight into the field of passion, there are still empirical and theoretical gaps in understanding the construct and its impact on individuals. In addition, it is not clear how entrepreneurs are able to transfer their passion to their employees. Understanding an individual's motives to start, grow, and drive their ventures is a subfield of particular interest to scholars because it examines insights into the dynamic operations of motivation in organizations in general (Murnieks, Klotz et al., 2020) There is no overarching framework and the basic interrelation between EP and other variables is still uncovered. Accordingly, the conceptual model (see Figure 1) explains the research question “**How can entrepreneurial passion influence and impact entrepreneurial outcome?**”

Insert Figure1 about here

The research underscores the crucial link between motivation and entrepreneurial passion, showing how passion serves as a motivational force that drives entrepreneurs to achieve high performance through persistence and optimization (Obschonka et al., 2018; Obschonka & Stuetzer, 2017).

By exploring how EP contributes to organizational success beyond individual ventures, this study adds to the understanding of EP as a core element in organizational behavior. It demonstrates that passionate entrepreneurs not only enhance their own ventures but also positively impact their organizations through increased commitment and proactive behavior (Astakhova, 2015; Newman et al., 2019). Empirical evidence presented in the study highlights

that passionate entrepreneurs experience greater venture growth, maintaining focus and perseverance even in the face of setbacks (Baum & Locke, 2004; Mueller et al., 2017). This finding is crucial for understanding the long-term impacts of EP on business sustainability and success.

Despite the substantial body of work on EP (Lee & Herrmann, 2021; Newman et al., 2019; Schwarte et al., 2023), this study identifies and addresses gaps in the literature, particularly concerning the causes, influencing factors, and preconditions of EP. It also explores how entrepreneurs transfer their passion to their employees, a relatively under-researched area (Murnieks, Cardon et al., 2020).

A synopsis of prior research on EP

Passion as a field of interest already arose in the early 16th century. In this context, scholars defined it as a construct, which influences personality. As a clear definition of passion is not given, researchers studied several constructs as joy (Smilor, 1997), enthusiasm, pride and love (Baum & Locke, 2004; Santos & Cardon, 2019) and associated it with passion (Cardon et al., 2009). As social psychologists began to focus on passion, three major characteristics show: first, the affective component, where the individual does something they enjoy, second a cognitive component, because the task they do is significant for their identity, and third the behavioral component, where they enjoy the task on a regular basis (Baum & Locke, 2004; Vallerand et al., 2003). The construct of passion has emerged into a motivational direction, which allows individuals to have strength, courage, the will to work over long hours and the persistence to overcome obstacles (Bierly et al., 2000). Most researchers see passion as a strong and intense feeling that fuels the individual with energy to fulfill a task. Over time, three directions have emerged: work specific passion, passion in the context of an activity and passion in the entrepreneurial context (Cardon et al., 2005). All these perspectives have one in common:

passion is a superordinate formative construct, which is domain-specific and emotional. Further, it highlights the love of an individual for an activity, work or a venture itself. Cardon (2009) splits this view and considers it in more details. The love or strong positive emotion an entrepreneur is feeling, does not affect the total activity, but a role in the entrepreneurial process. For example as an inventor, a founder or a developer. Eventually, the passion can be equal for all of these three roles, which brings us back to the holistic approach and the passion for an activity, but some entrepreneurs are only passionate about one role. In fact, this role-identity can change throughout the entrepreneurial process (Cardon et al., 2009).

Vallerand and colleagues (2003) were the first to connect motivation to work with passion. By proposing the dualistic model, Vallerand established two types of passion: harmonious and obsessive. While harmonious passion is fueled and controlled by the self-centrality of the entrepreneur, obsessive passion is uncontrolled and driven by affective interpersonal commitment. The major theoretical frameworks studied in entrepreneurship are those by Cardon and Vallerand. While the first focus on three entrepreneurial identities (inventor, founder, developer) the latter focus on passion in general and how passionate feelings are internalizing into one's self-identity (Cardon et al., 2009; Vallerand et al., 2007; Vallerand, 2008).

Passion as a personality trait and motivational construct is focus of research since the last two decades. Nowadays research on EP, or passion in the work context, is limited to the relation of emotions and motivation on performance (Iyortsuun et al., 2019). Early studies on passion examined the context of passion on physical activities like sports or a hobby (Cardon et al., 2009; Ho & Pollack, 2014). Passion has become more and more important in entrepreneurship literature, given the fact that emotions have a central role of influencing behavior (Cardon et al., 2005; Newman et al., 2019; Schwarte et al., 2023). Passion in the

entrepreneurial context has been discovered as a tipping point for entrepreneurial action and its importance to explain the entrepreneurial process (Collewaert et al., 2016; Murnieks et al., 2014; Smilor, 1997). Research findings also indicate growth and greater venture success, if entrepreneurs were passionate (Baum & Locke, 2004). Nevertheless, controversial findings in studies about passion, whether passion is having a significant effect on performance or not, shows the existing research gap.

Entrepreneurial research tend to focus on different phases of the entrepreneurial process, namely opportunity recognition, business venture initiation, growth or exit (Murnieks, Klotz et al., 2020). Following this approach, researchers gained insights about the motivation of different phases, but still missed the motives of motivation. Because motives can change over different phases and that we only know motivation of points in time, it is from utmost importance to deliver a holistic framework, which explains various motives of the entrepreneurial process as a whole. The first researcher who conceptualized passion as an entrepreneurial activity and later on operationalized the construct, was Cardon (2005). Initially, this review will serve the field of entrepreneurship. More precisely, it investigates motivation in the context of entrepreneurship with a nomological network of the types, causes, mechanisms, and moderators associated with EP. In addition, it builds a holistic framework to bridge EP with the three major investigated fields of research in the entrepreneurial context, namely entrepreneurial performance, motivation and behavior. In conclusion, it identifies unattended motives and differentiate the construct of passion from other motivational constructs in the entrepreneurial context.

EP in general

The construct of passion in the entrepreneurial context is defined as an intense positive feeling, which is experienced by engaging in entrepreneurial activities like venture-related

opportunities, activities or tasks. It is consciously accessible and important to self-identity (Cardon et al., 2013). Searching on literature, the three major realms of interest, related to EP for the last three decades are performance, motivation and behavior. Cardon and colleagues (2008) have shown that passion is a central element to the entrepreneurial process and contagious. Defining an Entrepreneur as someone who is founding and owning a business (Zhao & Seibert, 2006) is not sufficient. There is so much more to this term than some aspect of setting a newly found firm or a small business. For Shane and Venkataraman (2000) an entrepreneur is someone who recognizes opportunities and sources and can evaluate and exploit them. Entrepreneurship in research is often described as a profession, adopted by certain types of people. Looking through the conceptual lens it comes clear that this approach is problematic, due to the fact that it is a dynamic process. Entrepreneurship rather is a process, occurring over time (Shane et al., 2003), while the major question is how to make things differently, finding a better way (Ma & Tan, 2006).

Measurement of EP

By defining harmonious and obsessive passion, Vallerand (2003) was the first to bridge passion and work activities. He pioneered the first conceptualization of passion and work activities. Yet, only a single approach to operationalize EP is proposed from Cardon and colleagues (2013). Before, it was not possible to measure EP and its dimensions with a robust and validated instrument. This measurement shows that “relationships between EP and relevant outcomes are a function of interactions between intense positive feelings towards activities associated with each domain and the identity centrality of that domain to the entrepreneur” (Cardon et al., 2013, p. 374). This instrument focus on the entrepreneurs’ experience of passion in the domain of inventing, founding and developing, by asking them to measure how deep their experienced positive feelings are towards certain activities (Cardon et al., 2013). For the

operationalization, the definition of EP extends by the term “consciously accessible”, which was used in past research already. The instrument consists of 15 items, 12 to identify EP’s intense positive feelings and 3 items to measure identity centrality. The operationalization shows, that the two dimensions identity centrality and intense positive feelings and the three domains of EP inventing, founding, developing, clearly differ from each other.

The risk Cardon and her colleagues (2013) warning to avoid is to combine all the items of EP “into an overall average-across-all-domains measure of EP” (Cardon et al., 2013, p. 390). Individual level effects like individual attributes need more consideration. As well, the individual items of different roles (inventing and developing for example) differ (Cardon et al., 2013).

Constructs of passion

Due to the fragmented research in EP, academic research offers a wide variance of different concepts closely intertwined or also used synonymously with EP. To get a better overview, the following constructs all express EP in the field of entrepreneurial motivation:

- **Entrepreneurial motivation:** In entrepreneurial research, there is no clear distinction between the construct of entrepreneurial motivation and EP. In this paper, in contrast, passion conditions motivation and is preceded by. For over a century, psychological research and organizational behavior is interested in this realm. An amount of subdomains emerged, but one particular interest lies in the motivation of an entrepreneur to start and grow a business. The definition of motivation in general is a set of forces that release energies in individuals and make them grow beyond themselves (Mitchell & Daniels, 2006).
- **Intrinsic motivation for an activity:** Clearly differentiated from passion is the construct of intrinsic motivation as well as extrinsic motivation. The first construct is missing the factor of self-identity, while the latter shows a lack of liking the activity. Although intrinsic

motivation, extrinsic motivation and passion are considered as motivational constructs, they clearly represent different concepts (Vallerand et al., 2003). In sociology, there are intrinsic and extrinsic motives that influence motivation. Intrinsic motives are incentives that come from oneself; an example is self-actualization (Ryan & Deci, 2000). Extrinsic motives, for example a reward, are incentives that come from outside (Ryan & Deci, 2000). In this context, motives are categorized into self-oriented and other-oriented motives or drives. In the case of self-oriented motives, it is assumed that people act in their own interests and based on their own needs. Examples of self-oriented needs are security, freedom, love and success. In contrast to self-oriented motives, other-oriented motives are based on the assumption that a person's primary focus is on other persons or groups in order to create a benefit, with one's own needs are secondary. In research, it is assumed that a person has self-oriented drives and drives oriented toward others simultaneously. Social psychologist Daniel Batson explains that self-oriented drives are more pronounced in people than those oriented towards others (Batson & Shaw, 1991). In the entrepreneur research, self-oriented motivation is in the foreground, and there is a tendency to omit motives oriented toward others (Grimes et al., 2013).

- **Concept of flow:** The concept of flow is clearly distinguished from EP due to the fact that it is seen as an outcome of passion (Vallerand et al., 2003). Flow is defined as a peak experience, where a person becomes highly involved in a task without effort. During this peak experience, people still have complete control, or at least experience it as this. The degree of flow depends on the type of passion but all lead to happiness (Csikszentmihalyi, 2009; Vallerand et al., 2003).
- **Construct of grit:** Another outcome of passion, defined from Mueller and colleagues (2017) is the construct of grit. Grit means the perseverance of an individual to pursue its goals in a long-term. It consists of two components, locomotion and assessment.

Locomotion means to take action quickly, while assessment is the recognition and evaluation of alternative courses of action. Findings suggest that grit has a positive effect on corporate performance and passion influences how entrepreneurs achieve goals. Passion is a motivational antecedent of grit; thereby it fuels the pursuit of long-term goals (Mueller et al., 2017).

- **Work motivation:** Research clearly focus on the influence of endogenous factors or the impact of exogenous elements, namely extrinsic or intrinsic motivators. Passion for work is seen as a personality trait, which is not directed towards a specific activity or object and therefore relates to passion only marginally (Balon et al., 2013).
- **Dualistic model of passion:** Vallerand and colleagues (2003) were the first to connect the motivation to work with passion. They proposed the dualistic model, which consists of obsessive and harmonious passion. While harmonious passion refers from an activity, which relates to the identity of the individual and results from the autonomous internalization, obsessive passion relates to controlled internalization. Hence, obsessive passion is driven by affective interpersonal commitment, while harmonious passion is fueled by self-identity. Further, obsessive passion is generally seen as causing negative effect, while harmonious passion is seen as a healthy adaption towards work (Burke et al., 2015; Vallerand, 2012). The main difference between the two components is the lack of control to engage in a task a person has by experiencing it. Harmonious passion is flexible and individuals are able to control their engagement. They are able to focus on their tasks extended time and have a strong desire to succeed this activity. The task becomes genuinely important to them and they pursue it because they enjoy it. According to Ho and colleagues (2014) while experiencing harmonious passion, the task is important to the individual and becomes a part of their identity. Compared with obsessive passion, the activity is not overwhelming and overpowering and they remain in control of it. In contrast to harmonious

passion, obsessive passion is in conflict with other aspects of the individual's life and they have no control over the task and must participate. They have no control over the desire of the task and their passion controls them. In contrast, by experiencing obsessive passion, individuals are not able to stop pursuing in this activity and suffer by termination (Vallerand et al., 2003). The model grounds in the self-determination theory (Ryan & Deci, 2000).

- **Egoistic passion:** Shane and colleagues argue that businesspersons' core motive is not to selflessly serve society and their employees but to passionate and selfish love the work (Shane et al., 2003). They enjoy the work itself and the process of making an organization more profitable (Shane et al., 2003).

Other affective and cognitive variables known to play a role in entrepreneurship: Namely hopefulness, experience of positive and negative emotions, perseverance and entrepreneurial self-efficacy (Cardon et al., 2013).

Why study and teach EP

"I'm convinced that about half of what separates the successful entrepreneurs from the non-successful ones is pure perseverance. It is so hard. You put so much of your life into this thing...Unless you have a lot of passion about this, you're not going to survive. You're going to give it up."

– Steve Jobs

Steve Jobs, being one of the most important role models for rising entrepreneurs around the world for decades, mentions one of the most critical, yet most important factors for founder and creator: passion. The inner passion one is feeling by doing their job. Without passion, the job of a founder in their uncertain and treacherous environment would be inconceivable. Hence, the majority of the human behavior is goal-directed, an avowed commitment is necessary to reach the goal (Locke & Latham, 2013). Entrepreneurship combines two very important and

interesting mechanisms: First, through entrepreneurship, problems of the society can be solved by the invention of services and products. Second, it discovers temporal and spatial inefficiencies in an economy (Shane & Venkataraman, 2000).

The teaching and study of business is incomplete without the understanding of entrepreneurship. Nevertheless, not all scholars are enthusiastic about the usefulness of a teaching-approach and even naming it a “teachability dilemma” (Haase & Lautenschläger, 2011). Precisely for this reason, it is from utmost importance to emphasize that teaching entrepreneurship to students is not negligible. Entrepreneurship literature (Aronsson, 2004; Gielnik et al., 2017) investigates this. The best way to make sure that students are having a great experience, is teaching entrepreneurship through apprenticeship (Aronsson, 2004). Gielnik and colleagues (2017) consider the relationship of entrepreneurship training on entrepreneurial self-efficacy, harmonious passion, and business creation. The study shows that EP is not only determined and influenced by the individuals themselves, but also that training can increase it. Furthermore, the researchers add a short- and long-term analysis to their model, which helps to understand EP as a central mechanism that maps entrepreneurs' motivation for entrepreneurship. By teaching undergraduate students entrepreneurial and business values, they are able to develop an entrepreneurial mind-set, which can influence their career path (Looi, 2020). Through entrepreneurship training, not only more start-ups are built, but also higher performance is achieved due to the fact that motivational and cognitive outcomes are promoted (Gielnik et al., 2017).

Studies with their focus on EP combined with entrepreneurship education are few at present. This few studies give a good insight of the necessity of entrepreneurial education. In fact, one study proved that the EP was declining over an entrepreneurial education module. This clearly demonstrates that it is important to confront students with entrepreneurial experiences

and it is not a career to underestimate. However, educators with the right educational supplies might be able to develop EP. These pedagogical means may be the highlighting of great opportunities or guest speakers (Clercq et al., 2012). Studies give evidence that a key element of the journey to become a successful entrepreneur is the entrepreneurial identity. Entrepreneurial education can help developing this identity, by verbal interaction and collaboration. Further, the engagement and inspiration through peers is important to develop entrepreneurial identity (Falck et al., 2010; Obschonka et al., 2012). Prior research demonstrated that a role model, and communicated opinions and behaviors of others, can influence entrepreneurial behavior and stimulate individuals career ambitions (Akerlof & Kranton, 2000). A way to develop entrepreneurial intention is the use of a web- and computer-based educational setting in entrepreneurial education. Prior research demonstrated a significant positive effect of this educational method on entrepreneurial intention (Fellnhofer, 2017).

Prior research indicated as well, that there is in fact more behind the transmission of work passion than simple emotional contagion. The findings of the study from Ho and Astakhova (2020) are consistent with the concept that passion goes beyond an affective component. In fact, employees perceive the displayed affective passion of their superior and copy it. The automatically synchronizing of their behavior, expression and movements thus turn into an adaption of emotions and an indirect transfer of passion (Ho & Astakhova, 2020).

Many entrepreneurs base their success or drive on passion, and in previous research, this phenomenon has emerged as a critical source of motivation, entrepreneurial success, drive, as well as persistence for entrepreneurs. Conceptual studies in entrepreneurship view passion as a powerful positive force that motivates entrepreneurs and promotes high performance (Cardon et al., 2009; Cardon & Kirk, 2015; Smilor, 1997; Smith et al., 2001). Passion is often described as a key element in the entrepreneurial process (Smilor, 1997). Entrepreneurial

thinking and action is becoming increasingly important in organizations for organizational success. That is why EP is additionally a new core element in organizational behavior research. EP is a characteristic of entrepreneurs, which helps them to achieve the goals set (Baron & Tang, 2011; Obschonka et al., 2018). Moreover, it is important for investment decisions because it helps entrepreneurs convince investors to invest in business projects (Mittens et al., 2012). In recent years, scientific interest in the study of passion has grown due to the described assumption that it plays an important role in understanding entrepreneurs' motives. Passion is understood as one of the most important affective impulses that distinguishes the entrepreneur and is part of his or her experience (Cardon et al., 2009; Foo et al., 2009; Mol et al., 2020; Shane et al., 2003; Smith et al., 2001). Scholars have become increasingly interested in understanding passion because it can influence entrepreneurs' creativity, information processing, and decision making (Baron, 2008; Cardon et al., 2009). Thinking processes as well as biases are shaped by it and lead to decisions courses of action, which are crucial for identifying and successfully exploiting business opportunities. Shane and colleagues (Shane et al., 2003) have described it as still low. They, too, emphasize the importance of looking at the individual entrepreneur as an individual after much of the focus on studies has been on the process of entrepreneurial opportunity (Shane et al., 2003). Despite all the recent attention to EP, the important question of the source of EP has not been fully addressed. In the existing literature on EP, comparatively little attention has been paid to the causes, influencing factors, or preconditions as opposed to the effects and consequences in this relationship. In other words, this means that scholars have focused on outcome variables rather than what influences EP in the first place.

In the systematic review presented in this paper, studies on entrepreneurial passion have shown an upward trend since the 2000s, with a notable increase in publications since 2010, as shown in Figure 2. This observation is consistent with the development over time of the still more newly emerging research field of entrepreneurship.

Insert Figure 2 about here

The absence of EP

As entrepreneurs are driven by their enthusiasm to start and grow businesses, Entrepreneurship is often associated with passion. EP serves as the fuel that drives individuals to overcome challenges, stay committed and relentlessly pursue their dreams. However, not all entrepreneurs have the same level of passion and some may struggle due to the absence or decline of this vital driving force. This chapter aims to explore the consequences of a lack of passion in an entrepreneurial context, emphasizing the impact it has on business success.

The power of passion in entrepreneurship

In the world of entrepreneurship, passion is like an intense and unyielding emotion that drives people to relentlessly pursue their business ideas and goals. Academic studies emphasize the strong link between passion and success in entrepreneurship, a link that strongly influences various aspects of a business such as motivation, resilience, innovation and customer relations (Berthold & Neumann, 2008; Cardon, 2008; Dubini, 1989). Entrepreneurs who are driven by passion tend to show high levels of commitment, which becomes a valuable asset in helping them overcome obstacles and navigate the complex journey of starting and running a business (Baron, 2008).

The impact of a lack of passion (The following list illustrates the effects of a lack of passion)

- **Lack of motivation:** Passion serves as an internal source of motivation for entrepreneurs. Without it, they may find themselves stuck in a state of inaction, lacking the energy to achieve their goals. This lack of motivation can lead to procrastination, missed opportunities and a business that doesn't progress. (Cardon, 2008; Cardon et al., 2013)
- **Reduced innovation:** Passion is like a melting pot that fuels creativity and innovation. Entrepreneurs who lack this passion may struggle to think outside the box, hindering their ability to come up with creative solutions that meet market needs and challenges. (Ma et al., 2017; Sajeela Rabbani et al., 2020)
- **Difficult decision-making:** Passionate entrepreneurs tend to make decisions based on their own vision and values. On the other hand, a lack of passion could lead to decisions driven by short-term gains or external pressures, jeopardising the long-term success of their business. (Balodi, 2020; Bandura, 1991; Sundararajan, 2010)
- **Reduced resilience:** Passion acts as a powerful shield against setbacks and failures, giving entrepreneurs the strength to bounce back from tough times. In its absence, entrepreneurs may struggle with the aftermath of failure, possibly leading to burnout or abandonment of their entrepreneurial endeavours. (Ayala & Manzano, 2014; Wolfe & Shepherd, 2015)

Conceptual Framework

Theories of EP

EP is controversially discussed in different theories. Although the concept of passion was further explored in recent years, it is difficult to find a clear theoretical foundation and integrate it into existing theoretical frameworks of entrepreneurship. Current passion theories

are not able to explain the conflicting and complementary effects of the domains of passion (Schulte-Holthaus, 2019). Cardon and colleagues (2008) recognize that scientific evidence demonstrating the role of passion in practice is still lacking. In 2012, Cardon et al. add that the different sciences (entrepreneurship and psychology) need to be combined to clearly show the impact relationships and correlations of EP (Mitteneess et al., 2012). In this thesis, the high number of theories are reduced based on their frequency and relevance in the existing literature and empirical studies (Bandura, 1991; Baumeister et al., 2007; Cardon et al., 2009; Collewaert et al., 2016; Ho & Astakhova, 2020; Locke & Latham, 2002; Lord et al., 2010; Murnieks et al., 2014; Murnieks, Cardon et al., 2020; Stets & Burke, 2000; Stryker & Burke, 2000). Therefore, identity theory, self-regulation theory and signaling theory are described in the following subsections.

Applying the lens of identity on entrepreneurship, one theory highly stands out: the identity theory. This approach is still young but has one significant advantage: It extends the scope of motivations on entrepreneurial behavior from economic self-interest towards a motivation through the concern of others (Gruber & MacMillan, 2017). According to **identity theory**, social roles are the origin of all identities. Meaning that behaviors are described within social categories, which represent the role, such as being an entrepreneur, engineer or banker (Murnieks et al., 2014; Stets & Burke, 2000). In referencing theory, identity is formed by internalizing roles into an individual's cognitive scheme (Stryker & Burke, 2000). This self-concept motivates individuals to take actions that confirm or verify its existence. This verification of one's identity satisfies individuals' need to feel competent (Stryker & Burke, 2000). Therefore, individuals are strongly motivated to take actions that are consistent with their identities. Stryker & Burke (2000) describe the motivation of identities through self-esteem as well as self-efficacy, self-consistency, and self-regulation (Stets & Burke, 2000; Stryker & Burke, 2000). Social psychology explains the general motivation of people to protect

and increase their self-esteem. Individuals begin to call themselves entrepreneurs as soon as they internalize the external meaning of the role and make it a self-definition. The entrepreneurial identity is a cognitive scheme of interpretations and behavioral specifications that show entrepreneurs what it means to be an entrepreneur. It describes the meanings and behaviors associated with this role and is the cognitive representation of the entrepreneur's current self (Murnieks et al., 2014). Entrepreneurial identities in the entrepreneurship context can also be characterized by the different stages in the entrepreneurial process or the specific entrepreneurial acts be characterized (Cardon et al., 2009). However, stability of identity over time and different situations is assumed by identity theory, even if changes in the self-concept, for example due to new life events, are possible (Collewaert et al., 2016; Stryker & Burke, 2000).

As an overarching conceptual framework, **self-regulation theory** clarifies how passion aids in motivation. In line with the other theories presented, this theory deals with the cognitive and emotional processes of performance and goal achievement (Lord et al., 2010). This approach complements the theoretical framework for understanding passion and adds the component of self-regulation to it (Cardon et al., 2009). Fundamental to the theory is the assumption that achievement and progress lead to a reduction in the discrepancy between the current state and a desired goal, which can be a trigger for positive feelings such as excitement or joy (Baumeister et al., 2007). Meaning, the reduction of the discrepancy between the current state and the desired goal is reduced by more effort on people's part. The faster this is reduced, the more positive emotions are experienced, such as for example, happiness, excitement, or euphoria (Carver, 2006). Positive emotions and affect are the result of significant progress that is induced by effort (Bandura, 1991; Carver, 2006; Locke & Latham, 2013). This assumption is similar to goal-setting and social cognitive theory, which views the attainment of goal as a direct precursor to a positive attitude toward a task (Locke & Latham, 2002). Social cognitive

theory, as explained in the previous subchapter, sees self-incentives and satisfaction as a response from the achievement of a Goal (Bandura, 1999). Related to the entrepreneur context, it describes the greater likelihood of faster progress, which entrepreneurs make by putting in more effort, which in turn making, which in turn increases positive emotions, i.e., EP, increases (Gielnik et al., 2015). Recent findings of Lex and colleagues (2020) suggests that passion reflects the dynamic interrelationship between cognitions and emotions over time. A reciprocal relationship is therefore assumed between passion, EP and self-efficacy as well as self-regulation (Lex et al., 2020).

Signaling theory has three advantages, which perfectly fit in the construct of EP. First, employees need to know why their work is so important and meaningful to their identity. By spreading this importance, passionate entrepreneurs making sure their employees stay motivated and perform well. The second advantage is the unique response-effect relationship of signaling. It depends on the signaler's and the receiver's characteristics, how signals are transmitted and interpreted. Since individuality plays a major role in EP, the theory reflects this. The last advantage includes the strategic effect of the entrepreneur. Passionate leader will share their passion, to push their employees. This presents a strong contrast to emotional contagion, which is unconscious and unobtrusive. (Ho & Astakhova, 2020)

Research model of EP

There remains much that research does not know about passion. But one major fact research does know is, that the heart of entrepreneurship is passion (Cardon et al., 2013). It is argued that there is one underlying model, explaining the impact of EP on entrepreneurial behavior, motivation and the resulting venture performance. The interdependence between entrepreneurial behavior and motivation is examined as well. In this paper, the research model is conducted as stated in Figure 1. Entrepreneurial behavior with opportunity recognition and

problem solving arises from the construct of EP, as well as the motivation in the entrepreneurial context. In this research model, entrepreneurial behavior and motivation originates from EP. Entrepreneurial motivation and behavior, in turn, influence the performance of the entrepreneur and thus also the performance of the new venture.

Insert Figure 1 about here

The reason this research investigates passion on behavior, motivation and performance is the following: Over the last years, research on EP investigated a multiplicity of factors for example persistency (Cardon & Kirk, 2015), which drive EP and which affected the business as an outcome from EP. Literature focused on the topics of performance, motivation and behavior in relation to EP. By analyzing a broad overview of 200 papers from EP, it came clear that the most important three research areas are EP and performance, EP and motivation and EP and behavior. The top research focus was performance. To capture these focus areas this review focus on these thematic priorities.

Often, the concepts of motivation and passion are subsumed among the entrepreneurial motives of the entrepreneur. Passion is strongly related to motivation, but the two variables form an independent construct (Bierly et al., 2000; Murnieks et al., 2014). Smith (1988) defines motivation as a psychological process that causes the arousal, direction, and persistence of voluntary, goal-directed action. This paper focus on EP and follows the idea that EP has a positive effect on motivation and can be a specific form of entrepreneurial motivation. According to this reflection, a passionate entrepreneur is motivated and ambitious to act. Such

action orientation can be traced back to passion. The goal of this work is to obtain a comprehensive understanding of EP. This research model follows up on the idea of Shane and colleagues (2003) that entrepreneurship research should more specifically consider the motivation and individuality of people to make entrepreneurial decisions. Following Edwin Locke (2000), his research argument assumes human action as a consequence of cognition and motivation or knowledge (including skills and abilities) and desires. In fact, individuals regulate their actions through their knowledge and through the evaluation of this knowledge, i.e., whether it is good or bad, important or unimportant (Locke, 2000). Delimitation and precise definition of these motives are not possible due to the complexity and limitations of measurability.

Scope, Method and Variables

Scope and Method of the Review

Although scholars highlight the need to explore more of the research realm with empirical studies, no comprehensive review of the EP literature exists. For this review, a multi-step approach is performed, in order to present an overview of the relevant literature. The procedure (see Figure 3) is followed and outlined by Denyer & Tranfield (2009), which is a reproducible and explicit methodology.

Insert Figure 3 about here

To identify the relevant literature, keywords were systematically conducted in electronic databases first. Following the general definition of EP, the Boolean search term

“entrepreneur*ial passion” and “entrepreneur* AND passion*” in peer-reviewed and academic journals were used. The initial search yielded a total of 980 articles. In accordance with the research objectives, specific content-related inclusion and exclusion criteria were established to refine the search results. Inclusion criteria focused on articles published in journals rated for quality according to the VHB (JQ3), matching the specified keyword search terms, and within the publication period of 1998 to 2021. Exclusion criteria for the first round included discarding articles that did not contain the specified search terms in the title, abstract, or keywords, as well as unpublished articles. This refinement reduced the pool to 452 articles. In the second round, further exclusion criteria were applied to eliminate articles that were not relevant to entrepreneurial passion, resulting in 268 articles. A word frequency analysis was then performed on these 268 articles, highlighting the most frequently occurring words. This analysis revealed that research areas such as performance, motivation, and behavior dominate the field of entrepreneurship research. Next, all papers that were not related to performance, behavior, or motivation were excluded. In addition, the references of the remaining papers were examined to identify additional relevant literature. The analysis revealed that scholars have devoted more effort to studying the relationship between passion and performance than passion and motivation or behavior. This imbalance is evident in the literature (Vallerand, 2012) (Bhansing et al., 2018; Mageau & Vallerand, 2007) where passion and motivation are often treated synonymously rather than as distinct constructs.

Ultimately, this refined process resulted in a final selection of 74 papers. (see Table 1).

Insert Table 1 about here

Passion and performance

The relation between passion and performance is one of the major fields of interest in entrepreneurship and passion research. In this paper, performance is an outcome of the entrepreneurial behavior and motivation induced by the passion. There are only a short number of studies investigating the relationship between EP and venture performance.

In all studies investigating the relationship between passion and performance, the measure of venture performance was based on comparisons to competitors on several different dimensions: growth in sales, growth in profitability, debt position, return on assets, gross profit margin, net profit margin, and the ability to fund growth from profit.

Why is the connection of EP and performance so important and must not be neglected?

Prior research on entrepreneurial success stated that entrepreneur's success depends on the effort their employees are making (Smith et al., 2001). Further, employees can be motivated to participate in the ventures' activities enthusiastically by the entrepreneur. In the multilevel model of Smith and colleagues (2001), five micro and macro research domains were tested (personality, situational motivation, skills, strategy, and environment). The results prove that the direct effect of passion on firm growth was significant.

In this chapter, the interdependence of passion and performance is demonstrated. An analysis of studies on passion and the resulting performance at the individual and company level will illustrate this interdependence. Investigating on EP, the individual level is paramount. Shifting from the individual to team level, introduces heterogeneity to EP. This field of research is mostly unexplored and in this paper excluded.

Passion in the entrepreneurial context fosters effort, greater persistence and hence success (Baron, 1998; Baron & Tang, 2009; Shane et al., 2003; Smilor, 1997). Ho and Pollack (2011) demonstrated in their study that entrepreneurs with harmonious passion earn more financial rewards than those with obsessive passion. In other studies, Ho et al. (2011) and Burke and colleagues (2015) demonstrated the link between harmonious passion and job performance, while obsessive passion did not have a significant relationship. For Vallerand (2003) obsessive passion originates from a pressured internalization of the activity into one's identity. The engagement of the task becomes so important to the individual that the outcome controls them and they suffer when the engagement is terminated. Indeed other researchers are convinced that even obsessive passion has a positive effect on performance. "Workaholics" are individuals with obsessive passion (Vallerand, 2008). Vallerand (2007) explained this relationship through the fact that passion fuels individuals with motivation and allows them to attain high level of performance over a long time and lowering their frustration level. Baron and Henry (2010) researched on the root of success, which is the outcome of a great performance and found out that entrepreneurs with high engagement and a high focus on their tasks performed better. Passion is clearly a source of engagement and a high task-focus. As identity-centrality is a major characteristic of EP, it comes clear that passion cannot be isolated from identity and contexts of individuals (Schulte-Holthaus, 2019). The fact that studies follow either the concept of passion for different roles or phases or the dualistic model of passion makes it difficult to compare. Further, the field is fragmented.

An important factor for the success of a firm is not only the performance of the entrepreneur, but of the created network and the employees as well. Since passion is known for being contagious (Cardon, 2008), the passion an employee is experiencing is from utmost important for the performance of the firm as well. The social and business network an entrepreneur is building, is highly relevant, because a bigger circle means more access to

information regarding business opportunities (Vries et al., 2020). More proactive mechanisms mean a broader network and in turn more financial implications (Ho & Pollack, 2014).

Important as well for success is the daily effort an entrepreneur has to make. Obstacles arising in everyday life and passion helps staying committed (Cardon et al., 2009). Passion and performance are closely linked, because entrepreneurs could not overcome all the challenges arising in the process of starting and running a business (Cardon & Kirk, 2015). Vallerand describes it as “Common sense has it that continued persistence in the activity at the expense of other life activities may be necessary to reach high achievement over time” (Vallerand et al., 2003, p. 766). Further, Brown and colleagues (1999) investigated in their studies that the relationship an employee is sharing with their supervisor is a lens, they are viewing their everyday job experience with. This lens is not only reflecting the attitude towards work, but their shared vision. In addition passion is a motivational construct and emotional state, just like any other emotional state the contagion of passion can be triggered through cognitive and emotional cues (Hillebrandt & Barclay, 2017; Kelly & Barsade, 2001). Hence, passionate leaders are able to transfer positive feelings like passion to their employees (Brown et al., 1999). Considering this fact, leaders need to utilize the contagion of their passion. Verbalizing and communicating their entrepreneurial identity is a great contagion tool. By talking about their entrepreneurial vision and sharing them with their employees, employees are able to understand the purpose behind the entrepreneurial activities. By helping employees to see the motives behind the activity, creating this understanding helps employees to internalize the establishment of their passion (Hubner et al., 2019). By using this contagion mechanism, the passion employees are experiencing is stimulated. This in turn affects their commitment and consequently their work performance (Hubner et al., 2019). Expressing personal connection to the business, is another behavior entrepreneurs are displaying (Cardon et al., 2005). By noticing this, employees might feel motivated and push their performance to prevent disappointing their

boss. In entrepreneurial research, sharing the personal entrepreneurial experiences, like verbalizing and showing emotions the entrepreneur is feeling and the communicating the reason why the individual is pursuing their vision, is called “emotional passion display” and “identity display”. In turn, the experience of an employee reacting to this “display” of feelings by getting involved and engaged in entrepreneurial tasks is called “employee passion response” (Cardon, 2008). The link between the effects of EP on employees and the overall firm performance is supported by studies of Drnovsek and colleagues (2016) and Hubner and colleagues (2019). Entrepreneurs need to share and display their feelings, emotions, identity and vision in order to leverage their employees’ potential (Breugst et al., 2012; Cardon, 2008).

When the founding identity centrality remained stable over time, often the positive intense feelings decreased (Collewaert et al., 2016). However, the entrepreneur often obtaining feedback and being given the opportunity to change and improve his ideas could counteract this. In combination with this change, the entrepreneurial actions under uncertainty drive EP (Collewaert et al., 2016).

Another important success factor of passion is the handling with failure. EP helps the individual to absorb negative outcomes and push forward again. Most founders fail due to the fact that they give up too early and not push to their limits (Mueller et al., 2017). High levels of grit, an outcome of passion, allow individuals to carry on, even through difficulties. It helps to stay focused and see the overarching aim. Sometimes entrepreneurs have to fight for their business and their idea for years, without any success, but experiencing passion helps them to stay focused and pursuing their long-term goal. Furthermore, positive relationships between passion and firm performance on the individual and firm level and grit and firm performance were shown (Mueller et al., 2017).

Based on the foregoing argument, an important factor, proving the link between passion and performance comes from the sport-industry. To achieve deliberate practice, the individual has to work on their performance continuously. High-level performance is only achieved through repetition and refinement (Vallerand et al., 2007). To reach this high-level performance with all the repetition and refinement a source to get things in motion is needed. An underlying motivational force, which can be an important source of fuel, is passion.

Studies on macro-level showed that self-set goals on venture growth and performance of small business owners affected subsequent growth independently. They support the finding that self-set goals, even when they are more complex than other tasks, have a higher probability to lead to performance than assigned goals. Performance is directly and partly affected by the effort of the individual and self-set goals ensure an increase in productivity (Locke, 2000).

Older studies in leadership show the positive affect, which leaders have on their employees and resulted in a better performance (George, 1995). Breaking it down to the different stages of the start-up, the passion for inventing pass positive affection to their employees. A factor, which is encouraging this, might be the fact that in the first stages, employees are more involved in the venture's key activity developing and inventing. In this phase, employees and entrepreneur are working closely together. Further, employees who are passionate about inventing communicate directly or indirectly through their actions, how important inventing and developing new services and products are for the growth of the business (Breugst et al., 2012). This often helps employees to understand these actions and feel passionate, too (Heneman & Tansky, 2006). Again, another factor affecting performance directly is that passionate entrepreneurs communicate their vision often and directly. A strongly communicated vision, hence a shared vision and mission will be adopted by employees more likely (Edwards & Cable, 2009; Haslam & Platow, 2001). In the ensuing phase, the founding

process, there is not that much employee involvement anymore, which inhibits the contagion of the passion and consequently the positive affection an employee, is experiencing. Due to the limited understanding of decision-making, the employee passion is declining.

To come to an end, “Passion alone cannot predict performance, but it is the crucial ingredient to achieve extraordinary performances” (Schulte-Holthaus, 2019, p. 210).

Passion and motivation

In order to achieve success, we need motivation. Over a century, scholars are researching why people do what they do. In the business context, motivation is a crucial factor driving towards business success (Gavric et al., 2020). In the entrepreneurial context, motivation influences every stage of the entrepreneurial process (Shane et al., 2003). Motivated employees invest more energy and feel more capable of obstacles in their way, which helps them to overcome problems. Their positive approach towards challenges and their work activities make them reach outstanding performance. Further, they feel emotional and intellectual fulfilled (Gavric et al., 2020). In the research model of this paper, motivation is an outcome of passion. Passionate entrepreneurs have higher motivation and can pass this to their employees (Cardon, 2008; Ho & Astakhova, 2020). As passion is a two-fold construct, consisting of general and task-specific motivation, this chapter will examine both forms. Cardon sees EP as a phenomenon, which appears by engagement with entrepreneurial task, rather than a personality trait. How involved entrepreneurs can get about their business comes clear by using the parenthood metaphor: Cardon and colleagues (2005) compare early stages of a business with child development. They assume that entrepreneurs have the same commitment to their new venture as parents have to their child (Cardon et al., 2005). As passion motivates individuals to surpass themselves, the parent metaphor clearly makes sense. Further, scholars suggested that EP has a motivational function which allows individuals to engage actively in

entrepreneurial tasks (Baum & Locke, 2004; Cardon et al., 2005). This chapter consequently combines the foregoing chapters.

As passion is a complex construct, it is not surprising that entrepreneurial behavior reverses on passion. The more an individual engages in entrepreneurial task, the more passion will grow. Proof of this construct found Gielnik and colleagues (2015) in their research. While making significant progress in their venture and investing more time in entrepreneurial tasks, entrepreneurs will increase their passion (Gielnik et al., 2015). Factors that ignite the EP and motivate the individual to engage in entrepreneurial tasks are very versatile. Major factors are intrinsic motivation and identity of the individual, but family background, social influences and economic reasons play a big role as well. Personal desires like striving for self-realization or recognition drive intrinsic motivation. The congruence of self-identity and the vision of the venture marks EP and motivation (Murnieks, Klotz et al., 2020). Research of Obschonka and colleagues (2019) shed a light on the socialisation process which entrepreneurial activities bring during working life, combined with the entrepreneurial personality and the development of the business from early stage. This research examined the major role of identity. Further, it highlights the importance to appreciate the role of identity in order to understand entrepreneurship. These results are supported by the research of a life span perspective on the entrepreneurial mindset (Obschonka et al., 2015).

Why is the connection of EP and motivation important and cannot not be neglected?

Motivation is defined as a complex force making the individual start an activity and keeping them at work. Repeatedly it has been reported as the major contributor to high-level performance. A strength that will influence the persistence and intensity someone invests in an activity (Gavric et al., 2020; Gillet et al., 2009; Pinder, 2014). Prior research on the construct of passion focused on three areas: the activation of motivation, the self-direction of motivation

on the individual and preparedness of response (Pervin, 2003). EP leads to motivation of the entrepreneur and in this process, the entrepreneur is driven by this powerful force to stay focused and dedicated towards his goals. Modern managers need to appreciate, that motivation is the most important thing to be aware of in human nature (Gavric et al., 2020). EP has powerful motivating effects which influences higher intentions to create a business. Further, the EP of an entrepreneur activates motivation, which investors signal as positive. Investors are more attracted to passionate and motivated entrepreneurs, which in turn, make this entrepreneurs more successful (Davis et al., 2017; Li et al., 2017; Warnick et al., 2018).

Motivation in general can be divided into two directions: self- and other-oriented motives. Psychological theories assume that people act in their own interest and want to fulfil their needs. Building a new venture is always fulfilling a need: If the individual follows their identity (Mahto & McDowell, 2018), wants to be autonomy in work life or has other personal economic reasons (Ruskin et al., 2016). Becoming an entrepreneur because passion inflamed motivation seems logic.

Another point of interest is the fact, that the relationship between employee passion and leadership is driven by the employees' awareness of the leader's passion (Ho & Astakhova, 2020). Entrepreneurs, hence leaders, are the most important link between the venture and employees. The whole work-experience of an individual is reflecting the relation and respect we share with our supervisor (Brown et al., 1999). This indicates that a motivated and passionate leader will pass this positive work attitude to his employees. Leaders then act like role models, which motivate and inspire their employees. Further is the transfer of positive emotions from the entrepreneur a motivational boost for the employees. They are able to perform better and increase their emotional contagion (Ho & Astakhova, 2020). Given that, leaders can directly influence subordinates' motivation at work, because "when exposed to

others expressing certain emotions, individuals may have a corresponding change in their own emotional state” (Li et al., 2017, p. 1077). Individuals tend to mimicking and converge emotionally automatically and in a subconscious manner (Neumann & Strack, 2000). Expressing a personal connection to the business is very important in regards to motivate employees. As already discussed in the foregoing chapters, once an entrepreneur spread the experience of his passion, the vision and mission of his activities, employees understand the importance of the business activities and the same desire. In this motivational process, team member work affective and are able to increase their creative contribution (Gavric et al., 2020; Zedeck, 2011).

Given this contagion and the fact that individuals are able to increase their positive feelings, it implies that passion is something we can create. Motivation applies to being activated to do something and feeling energized. Research in motivational constructs suggest that human motivation refers to the social environment and culture (Bhansing et al., 2018). Because inspiration is conceptualized as a motivational state, with a role model, individuals get inspired to achieve success (Thrash & Elliot, 2003). Maybe some individuals need a higher trigger than others do, by getting inspired and affected by another entrepreneurs passion. Inspiration as motivational construct has three characteristics:

As Bhansing and colleagues (2018) suggest, inspiration and localised passion are related. Localised passion is the combination of passion atmosphere and the perceived passion in other entrepreneurs in this atmosphere. The more passionate an entrepreneur is engaged in his professional activities, the more inspired the individual will feel. In their studies, they treat the motivational construct of passion as an outcome of passion, which leads to motivation. Combining the inspirational, contagious effect EP has with the aspect of localised passion, EP and the resulting motivation are complex, but clearly social processes. Passionate peers

facilitate EP (Bhansing et al., 2018). Following this social influence, Lindquist and colleagues (2015) examined in their studies that having entrepreneurial parents increases the probability of becoming an entrepreneur by yourself by 60 %. This finding is consistent with foregoing research. In his study, Lindquist is aiming to answer the question if entrepreneurs are born or bred. Main contributions of his research is the impact of role modelling. Entrepreneurial parents teach their kids an entrepreneurial set of skills, including general business human capital, self-esteem and entrepreneurial thinking. For sons, fathers are the bigger role models, while the same applies to daughters and their mothers. Further, parents with entrepreneurial influence mostly have an entrepreneurial environment, which can create opportunities and helps children to establish contacts in this social network (Lindquist et al., 2015).

For the organizational success, the motivational state of an entrepreneurs mind plays a central role. The context of a situation might influence that motivational state and therefore it is highly important how an entrepreneur feels about the entrepreneurial activity (Bhansing et al., 2018).

Investigating the relationship between start-up motivation and entrepreneurial performance, research identified two drivers: entrepreneurs can be necessity-driven and opportunity-driven. While for the necessity-driven entrepreneur, founding is the best work option available, the opportunity-driven entrepreneur comes up with a unique business opportunity he wants to exploit (Vries et al., 2020). As opportunity-driven entrepreneurs are more enthusiastic about the business idea itself and are convinced that they will create something unique, they tend to be more passionate about their entrepreneurial identity or rather experience more EP. Vries and colleagues (2020) examine, whether the start-up motivation has impact on the performance of the entrepreneur or not. Starting a business out of necessity, entrepreneurs often face low self-confidence, pressure to earn an income and resulting lack of

preparation. Due to their lack of preparation, the quality of the business opportunity taken is lower as soon as the business is running. Often necessity-driven entrepreneurs have a very low level of subjective well-being, compared to opportunity-driven entrepreneurs (Larsson & Thulin, 2019). They also suffer from severe credit constraints, most often experienced discrimination at the capital market and have a lower human capital level than their counterpart has. Due to this, their abilities to develop business strategies, manage employees and maintain a great network, are lower on average (Caliendo et al., 2015; Vries et al., 2020). Based on their research, Vries and colleagues (2020) estimated “that the probability of making an annual turnover of less than 10,000 euros is 1.8 to 4.4 percentage point higher for necessity solo self-employed compared with their opportunity counterparts, depending on the indicator for necessity motive” (Vries et al., 2020, p. 458). Hence, the fuel of motivation for a necessity-driven entrepreneur is completely different and they are mostly driven by the lifestyle which self-employment brings, like a flexible work schedule, independence, a higher income, job autonomy and the opportunity for learning and growing (Kerr, 2017).

Another factor influencing motivation comes from goal setting theory. Entrepreneurs tend to set their goals so high that they are not attainable. Previous research examined that difficult goals enhance performance, nevertheless too challenging goals might undermine the motivation and the lack of progress might lead to discouragement (Baron et al., 2016). In turn, it is important for entrepreneurs to set challenging goals that are attainable.

Müller and colleagues (2017) concluded in their research that EP is a powerful motivation fueling entrepreneurial efforts and being central to them (Chen et al., 2009b; Smith et al., 2001). But beyond this force, other types of motivation such as locus of control, a desire for independence and need for a achievement are important drivers as well (Aldrich & Zimmer, 1986; Collins et al., 2004).

Passion and behavior

Passion has an intense and positively affective character, which is why it is assumed to be a driver of energetic and persistent goal pursuit and activates actions to cope with challenging situations (Bierly et al., 2000). Moreover, passion is a crucial influencing factor on entrepreneurs' cognitive processes, which becomes part of entrepreneurial experience and leads to entrepreneurial behavior (Cardon et al., 2005; Juan Bautista Delgado García et al., 2015). Consequently, passion not only acts as a motivating force, but in addition can significantly influence their cognition, i.e., how entrepreneurs think. This, along with affect, is described as an influencing variable for entrepreneurs' judgment and explains differences and irrationalities in human behavior (Baron, 2008). Entrepreneurial cognition can be described as the knowledge structure that individuals use in order to make assessments, judgments, or decisions in the entrepreneurial process (Mitchell & Daniels, 2006). Affect encompasses a range of emotions and moods such as happiness, sadness, fear, or anger (Hayton & Cholakova, 2012). Cognition and affect, along with EP, have a relevant meaning for a better understanding of an entrepreneur. However, due to the research question, these two neurobiological processes will not be discussed in more detail, yet they should be taken into account in the overall consideration. Entrepreneurial behavior is defined as the activities that are associated with founding and operating a new venture (Murnieks et al., 2014). This includes creative problem solving, persistence, absorption, attention, and opportunity recognition. Academic research discovered different behaviors, for the different phases of the venture-process. Individuals with a passion for inventing are interested in the opportunity of exploration and recognition. Especially in finding new ways, methods and products for identified needs or for solving a problem. Behaviors in this phase refer to effectuation and experimenting (Zollo et al., 2020). As well, individuals with this passion engage in generating new ideas and implementing these new ideas (Kang et al., 2016). Individuals with passion for founding refer to learning and

creating behaviors. They enjoy turning a specific idea in something tangible. By doing so, they are highly achievement oriented and their goal is to launch a business (Cardon et al., 2013). If an individual is passionate about the phase of growing and expanding a business, they are interested in the development of a business culture and management skills. Mostly, they will join a business already founded, because they are interested in the organizational management skills (Qian et al., 2021). In addition, individuals with this quality are great creators of new business strategies (Santos et al., 2020). In general it comes clear that action and thus entrepreneurial activity is a key aspect of the entrepreneurial process (McMullen & Shepherd, 2006).

Why is the connection of EP and behavior important and cannot not be neglected?

The impact EP has on the performance of a new venture, is through behavior. To complete the overall picture, this chapter will connect the role of performance, motivation and behavior by showing that they have an interconnecting relation. Previous academic research suggested that EP promotes entrepreneurial behavior. For example, a CEO with a big passion for work will be influenced by this passion in the recruiting process (Baum & Locke, 2004). Role identity originates from EP, which promotes entrepreneurial behavior as well. The entrepreneurial identity is a cognitive schema, which helps the individual to understand what the role of being an entrepreneur means. These role identities define the individual entrepreneur and refer to individual behaviors and set of meanings they experience. The more an individual internalizes this role and becomes attached to “being an entrepreneur” the more his or her cognitive schema will form and EP will rise (Murnieks et al., 2014). Individuals experiencing more EP are willing to promote their enterprise more, resulting in a rise of performance. The mechanism behind this construct unfortunately remains not well studied, but scholars trying to shed a light on it. Bao and colleagues (2017) suggest in their research that social cognitive

theory might help to explain it, because opportunity recognition is a link between EP and behavior. Opportunity recognition is defined as cognitive process when individuals understand they identified a chance. As Baron (2008) examined in his research, positive feelings increases opportunity recognition. Consequently, the positive feelings experienced in EP enhance opportunity recognition, which in turn has a positive effect on entrepreneurial behavior. The research of Vallerand and colleagues (2007) proves this connection and examines that passion drives behavior. Murnieks and colleagues (2014; 2020) suggested that individuals with a central and higher entrepreneurial identity experience greater levels of passion, hence have an enhanced entrepreneurial behavior. Obschonka and colleagues (2018) stated that entrepreneurial behavior cannot exist without passion. In their studies, they examine that the two constructs tend to couple. While they found individuals that showed EP without entrepreneurial behavior, they did not find evidence for entrepreneurial behavior without EP (Obschonka et al., 2018). This suggests that passion is motivating entrepreneurial behavior on the one hand, but on the other hand, it is limiting.

As discussed in the foregoing chapters, passion is a core trait entrepreneurs need to experience in order to overcome difficulties and help them to keep going in difficult phases. Further, EP encourages the individual to execute entrepreneurial behavior (Feng & Chen, 2020). Contemporary, academic research explain entrepreneurial behavior by using theories of passion. Following this approach clearly makes sense because performance is an outcome of passion in combination with motivation and entrepreneurial behavior. Without an individual enhancing in entrepreneurial tasks and following the entrepreneurial process, no performance could be measured.

Passion energizes not only motivation and helps the individual to feel inspired, but encourages acting entrepreneurial and accomplishing difficult tasks in order to germinate a

great idea and found and operate a business. As already discussed in the foregoing chapter, communicated vision is an important tool to share the vision with employees. The best way entrepreneurs can share their vision is through behavior (Bandura, 1999). As EP and individual creativity correlate positively and significantly, the link about the relationship of creative behavior and passion is supported (Cardon et al., 2009). Murnieks (2014) examined in his research that passion as an important driver of behavior, because passionate entrepreneurs engage actively more in entrepreneurial tasks.

Important for prior academic research in the realm of EP as well, was the connection from behavior to creativity. Creativity in the context of EP refers not only to the passion of running a business, but also to the creative process built by the entrepreneur resulting in a marketable product. It is the desire to create something out of their ideas and perform with their products (Bhansing et al., 2018). Expressing a personal connection to the business is very important in regards to motivate employees. As already discussed in the foregoing chapters, once an entrepreneur spread the experience of his passion, the vision and mission of his activities, employees understand the importance of the business activities and the same desire. In this motivational process, team member work affective and are able to increase their creative contribution (Gavric et al., 2020). Passion nurtures not only creativity by encouraging the individual to take entrepreneurial action but creativity in turn positively impacts and reinforces passion (Amabile & Fisher, 2009; Hmieleski & Baron, 2009).

In particular, there is limited understanding of the mechanisms by which passion influences key entrepreneurial behaviors and firm outcomes (Murnieks et al., 2014). Drnovsek and colleagues (Drnovsek et al., 2016) are among the first to use mediation models to test more complex causal chains between EP and firm outcomes. Cardon and colleagues (Cardon et al., 2009) identify the importance of goal cognitions, such as levels of challenge, commitment, and

aspiration, as potential mediators of the influence of passion on entrepreneurial behavior. In their studies, Cardon and colleagues (Cardon et al., 2009) also indicate that the use of goal cognitions as mediators points to the possibility of parallel and dynamic pathways for the effects of passion, rather than simple linear relationships. To conclude this chapter, Entrepreneurial passion did not only influence entrepreneurial performance, motivation and behavior positively and significantly but as well entrepreneurial alertness and entrepreneurial self-efficacy to entrepreneurial intention (Li et al., 2020).

Conclusion

Summary

This study provides a comprehensive overview of the field of entrepreneurial passion. First, the concepts of passion and EP are explained. The theoretical framework is presented using identity theory, self-regulation theory, and signaling theory, followed by an integrated framework. The methodology of the literature review is then detailed. A thorough empirical review of related studies reveals a relationship between EP and performance, entrepreneurial motivation, and entrepreneurial behavior, demonstrating that all variables are interrelated and closely intertwined.

EP is conceptualized as an overarching construct characterized by intense positive feelings toward entrepreneurial activities associated with specific roles significant to the entrepreneur's self-identity, such as inventor, founder, and developer identities. The framework proposes a direct link between EP and motivation and behavior, and an indirect link between these constructs through EP. A reciprocal relationship between motivation and behavior, which are interdependent, is essential for transforming an individual into an entrepreneur and achieving venture performance, which results from the combination of these constructs.

Overall, our review highlights the role of EP and emphasizes that passion in the entrepreneurial context is a complex and multidimensional construct.

Limitations

Finally, our review is subject to limitations that offer opportunities for future research.

Having a deeper look into existing literature (Cardon, 2008; Cardon, Glauser et al., 2017; Murnieks et al., 2019; Obschonka et al., 2012; Santos & Cardon, 2019; Stets & Burke, 2000; Wahyuningtyas et al., 2018), it is clear that social identity and in general, the social network plays a big role in EP. To get a deeper understanding of the motives of EP it is important to step in that field. To add more knowledge it is important to test models and theories empirically. Empirical studies might bring better insights as conceptual work. As we rely on role-based passion, EP depends on the stage of the business life cycle. Research in this area, concluding EP and performance, motivation, behavior and creativity bases on the life cycle. A holistic frame, overarching all phases and empirically tested would gain a lot more insights on this field.

Furthermore, it is difficult to compare different empirical studies, because different researchers use different definitions, models and operationalisation of passion in the entrepreneurial and work context. Most common are the role-based passion model of Cardon and the dualistic model of Vallerand (Cardon et al., 2009; Vallerand, 2008).

Prior research on the relationship of EP in general and the relationship between EP and motivation focus on the single phases of the business development process. This gave many insights on the motivation in a single point of time, particularly venture initiation, growth and exit, but neglect the bigger picture. To understand the various motives that affect the motivational process, a holistic framework is needed.

Our study overall shows that a number of factors form passion, including personality factors, emotions, identity, intentions, social background and experience. Further, as discussed in the foregoing chapters, EP is positively influencing entrepreneurial behavior and motivation, as well as these constructs are interacting, but the mechanisms behind this construct remain unclear. Empirical testing and research is needed to explain the models behind. Still, the question of what makes an entrepreneur passionate or triggers EP remains open. Therefore, it is important to determine whether EP is shaped by the personality of the entrepreneur or by the situation. Empirical studies are needed to identify the causes of EP.

Implications

Our literature review joins a growing number of studies investigating the central role of EP in entrepreneurship and business studies (e.g. Murnieks, Cardon et al., 2020). The studies analyzed show that passion is the heart of entrepreneurship and impacts behavior, motivation and finally performance. By identifying their passion, individuals could explore their identities. Mentors might help by encouraging them to uncover aspects of their self-identity, which unleashes their passion and built a new mind-set. Research in entrepreneurship suggest that teaching new mind-sets and providing new cognitive processes, mechanisms and tools help to overcome obstacles and keep motivation high (van Gelderen, 2012).

This study contributes to existing theoretical frameworks on entrepreneurial passion by providing deeper insights into the antecedents and mechanisms through which passion influences entrepreneurial behavior and success (Cardon et al., 2009). It challenges the traditional view of passion as a static trait and instead highlights its dynamic nature and the factors that can cultivate or diminish it over time. By linking EP to motivational theories, this research underscores the role of passion as a key driver of sustained entrepreneurial effort and

performance (Vallerand, 2012). It enriches our understanding of how intrinsic motivation, fueled by passion, can lead to persistence and goal attainment in entrepreneurial contexts.

The research examines how entrepreneurs transfer their passion to their employees, adding a new dimension to organizational behavior theories (Cardon, 2008; Cardon, Post et al., 2017; Li et al., 2017; Murnieks, Cardon et al., 2020). It suggests that EP can be spread within teams, leading to collective motivation and improved organizational performance.

For entrepreneurship educators and trainers, the findings highlight the importance of fostering passion in aspiring entrepreneurs. Programs and interventions can be designed to help individuals identify and nurture their passions, thereby increasing their motivation and likelihood of success.

For entrepreneurial leaders, understanding how to transfer passion to their teams can lead to a more cohesive and motivated work environment (Cardon, 2008). Practical strategies include fostering open communication, creating a shared vision, and promoting a culture of enthusiasm and commitment.

For entrepreneurs operating in multicultural environments, the study's insights into cultural differences in EP can inform more effective management practices. Tailoring motivational strategies to cultural values can improve engagement and performance in diverse teams.

Policymakers and support organizations can use these findings to develop initiatives that support entrepreneurial passion, such as mentorship programs, networking opportunities, and resources that help entrepreneurs sustain their enthusiasm through challenges.

For entrepreneurs themselves, the study underscores the importance of maintaining passion as a long-term driver of success. Practical steps include setting personal goals that align

with their passions, seeking continuous learning opportunities, and building a support network that reinforces their motivation.

By addressing both the theoretical and practical aspects of entrepreneurial passion, this study provides a comprehensive framework for understanding and harnessing the powerful role of passion in driving entrepreneurial success.

ACKNOWLEDGEMENTS

We express our gratitude to the participants of the ICABE held in Cape Town in 2021, and the doctoral seminars in Giessen for their valuable comments and feedback on earlier drafts of this study.

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Appendix

Moderation models								
Author	Year	Research method	Sample	Country of origin	IV	Mediator	DV	Results
Collewaert, Veroniek; Anseel, Frederik; Crommelinck, Michiel; Beuckelaer, Alain de; Vermeire, Jacob	2016	Online survey in three waves	112 entrepreneurs	Belgium	Venture idea change Change in role ambiguity	Feedback-seeking behaviour	Entrepreneurial passion	p. 981 ff. H1, H2, H3, H5 supported H4 not supported
Murnieks, Charles Y.; Cardon, Melissa S.; Haynie, J. Michael	2020	Online survey	166 entrepreneurs	US	Entrepreneurial Identity Centrality Affective Interpersonal Commitment	Gender Gender	Harmonious entrepreneurial passion Obsessive Entrepreneurial Passion	Harmonious entrepreneurial passion is fueled by entrepreneurial identity centrality; obsessive entrepreneurial passion is fueled by affective interpersonal commitment; gender as a moderator
Collins, Christopher J.; Hanges, Paul J.; Locke, Edwin A.	2004	Literature search	41 studies		Need for achievement	Entrepreneurship	Entrepreneurial activity	Achievement motivation is related to both occupational choice and performance in an entrepreneurial role.

Hessels, Jolanda; van Gelderen, Marco; Thurik, Roy	2008		63 observations from the Global Entrepreneurship Monitor (GEM) for the years 2005 and 2006	36 countries:	Motivations (Necessity motive, Independence motive, Increase-wealth motive) and socioeconomic (GDP per capita, GDP growth, Social security contribution rate) variables	Increase-wealth motive	Entrepreneurial aspiration Entrepreneurial motivation	We find that countries with a higher incidence of increase-wealth-motivated entrepreneurs tend to have a higher prevalence of high-job-growth and export-oriented entrepreneurship and that a country's level of social security relates negatively to the prevalence of innovative, high-job-growth, and export-oriented entrepreneurship. Positive relationship betw.social security and the increase-wealth motive.
Obschonka, Martin; Silbereisen, Rainer K.; Cantner, Uwe; Goethner, Maximilian	2015	Online survey	Sample 1: T1: N = 488, T2: N = 200, T3: N = 117 Sample 2, T1: N = 496, T2: N = 205, T3: N = 122	Germany	Predictors of entrepreneurial self-identity	Entrepreneurial self-identity	Entrepreneurial intention	Self-identity showed a characteristic moderating effect with TPB-intention predictors. Their effect was weaker or even zero at low levels of self-identity. Self-identity forecasted behavior, but had no unique main or moderating effect on behavior in the TPB framework. Self-

								identity was predictable by past behavior, personality structure, recalled adolescent competencies, and early parental role models. Engagement in entrepreneurial activity led to an increase in self-identity over time.
Luu, Ngoc; Nguyen, Huy	2021	survey	195 entrepreneurs	Vietnam	Entrepreneurial passion	Entrepreneurs’ social identities darwinian social identity communitarian social identity	Exploitative Innovation strategies	<p>Entrepreneurial passion has a positive effect on a firm’s exploratory innovation strategies and a complex inverted U-shaped effect on the exploitative innovation strategies.</p> <p>Entrepreneurial passion will be less likely to increase firm-level exploratory innovation strategies. On the other hand, missionary social identity has a negative but nonsignificant influence on the relationship between entrepreneurial passion and exploitative innovation strategies.</p>

Direct effect							
Author	Year	Research method	Sample	Country of origin	IV	DV	Results
Pollack, Jeffrey M.; Ho, Violet T.; O'Boyle, Ernest H.; Kirkman, Bradley L.	2020	Meta-analysis	87 manuscripts, containing 106 different samples and 384 effect sizes		General work passion, Harmonious passion, Obsessive passion Passion for developing, founding, inventing	Affect, psychological states and attitudes, work behaviours Positive work-specific outcomes	p.322 ff. Although we also found that general passion demonstrated robust relationships with positive psychological states and job satisfaction, what is less clear is the link that general passion has with negative outcomes.
Santos, Gina; Marques, Carla Susana; Ferreira, João J.M.	2020	Questionnaire online	249 agri-food firms	Portugal			Individual characteristics have implications for entrepreneurs as all five dimensions influence firm management through entrepreneurial orientation
De Vries, Nardo; Liebrechts, Werner; van Stel, André	2020	Unique individual panel data	1360 solo self-employed (2010-2011)	Netherlands	Start-up motivation (opportunity vs. necessity)	Entrepreneurial performance	Necessity-driven solo self-employed perform worse than opportunity-driven solo self-employed

Direct effect							
Author	Year	Research method	Sample	Country of origin	IV	DV	Results
Gillet, Nicolas; Vallerand, Robert J.; Rosnet, Elisabeth	2009	Cluster analysis	Study 1: 170 junior national tennis players aged 13/14 years Study 2: 250 junior national fencers aged 15 years	France	Motivation	Sport performance	Cluster analysis is useful in the understanding of the relationship betw. Motivation and performance in elite sport. There are four clusters. Results of both studies show that athletes with least self-determined profile obtained the worst sport performance during season.
Looi, Kim Hoe	2020	Questionnaire Quantitative	378 undergraduates	Malaysia, Indonesia, China	Self-direction Stimulation Hedonism Achievement Power	Entrepreneurial intention	Openness-to-change values shape Malaysian and Indonesian undergraduates' entrepreneurial intentions, whereas achievement values shape Chinese undergraduates' entrepreneurial intentions. Malaysian and Indonesian business undergraduates pursue entrepreneurial activities as an end in themselves, whereas China business undergraduates are externally motivated to obtain wealth and status
Ruskin, Jennifer; Seymour, Richard G.; Webster, Cynthia M.	2016	Interview	13 social entrepreneurs	Australia	Drivers (Emotional antecedents and motives)	Establishment of social ventures	We find some emotions, such as entrepreneurial passion and frustration, lead to self-oriented motives, while sympathy and empathy are precursors for other-oriented motivations, such as altruism and social justice.

Direct effect							
Author	Year	Research method	Sample	Country of origin	IV	DV	Results
Balon, S.; Lecoq, J.; Rimé, B.	2013	Questionnaire	241 participants	France?	Harmonious passion Obsessive passion	Personality	Harmoniously passionate individuals are characterized by Conscientiousness, Extraversion, Agreeableness, and Openness. Obsessive passion is associated with a low level of Agreeableness as well as a lack of connection with any of the other personality dimensions.
Cardon, Melissa S.; Glauser, Michael; Murnieks, Charles Y.	2017	Interviews Semi-structured	80 entrepreneurs	US	Major sources of entrepreneurial passion identified through interviews		Passion for growth, people, product or service, inventing, competition, social cause
Burke, Ronald; Astakhova, Marina N.; Hang, Hongli	2015	Online-survey	Employee–supervisor dyads in Russia (N = 223) and China (N = 193)	Russia and China	Harmonious passion Obsessive passion	Job satisfaction, intentions to quit, job performance, organizational citizenship behaviors; career satisfaction, occupational commitment	We found considerable support for the harmonious passion–work outcome relationships and less support for the obsessive passion–work outcome relationships. In both Russia and China, harmonious passion predicted all six hypothesized outcomes. Russian employees with higher levels of obsessive work passion are more satisfied with their jobs and are more committed to their occupations. For Chinese employees, these relationships were not significant.

Direct effect							
Author	Year	Research method	Sample	Country of origin	IV	DV	Results
							harmonious passion is positively associated with OCB in China, but negatively associated with OCB in Russia
Larsson, Johan P.; Thulin, Per	2019	GEM survey second data source is The Worldwide Governance Indicators (WGI)	111,589 individual-level data, gathered from the GEM survey conducted in 2013.	70 countries	Entrepreneurial status	SWB (subjective well-being)	Empirically, our results are consistent with previous theorising that independence and procedural utility positively affect the SWB of entrepreneurs, We conclude that opportunity entrepreneurs drive the entire difference and that necessity entrepreneurs are in fact less satisfied than the general population.
Mol, Eva de; Cardon, Melissa S.; Jong, Bart de; Khapova, Svetlana N.; Elfring, Tom	2020	10-month accelerator program	107 new venture teams	Netherlands	Team Passion	New venture team performance	Our findings confirm the importance of affect and identity for new venture teams; there is a dark side to team passion. passion can be both helpful and harmful to organizational functioning
Schulte-Holthaus, Stefan; Kuckertz, Andreas	2020	one-hour, in-depth interview	11 German artists between the ages of 35 and 74, with an average age of 52.9 years among whom were three	Germany	Passion	Performance among individuals whose entrepreneurial journeys are prompted by a non-	The finding that passion is determined by personality is an unexpected result the scope and degree of passion can each be composed of up to four domains. If, however, passion is not only conceived of as an exercised activity, but also as an “abstract concept, idea, cause, or goal” (Vallerand, 2015, p. 28), it follows that passion is constituted highly individually

Direct effect							
Author	Year	Research method	Sample	Country of origin	IV	DV	Results
			women and eight men.			entrepreneurial passion.	through central and peripheral concepts in the context of a person's life.
Lindquist, Matthew; Sol, Joeri; van Praag, Mirjam	2015		Swedish adoptees 412,183 non-adopted children 3,941 adopted children Among the adoptees, we have 2,149 sons and 1,792 daughters.	Sweden	dummy that indicates whether either parent is or has been an entrepreneur.	Dummy that is one for "children" who have been or are entrepreneurs and zero otherwise (<i>Entrepreneur</i>)	We find that having an entrepreneur for a parent increases the probability that own-birth children become entrepreneurs by 60%. for adoptees, both biological and adoptive parents make significant contributions.

Moderated mediation								
Author	Year	Research method	Sample	Country of origin	IV	Mediator	DV	Results
Davis, Blakley C.; Hmieleski, Keith M.; Webb,	2017	Experiment	102 participants who each assessed ten different	US	Perceived Product creativity	Funders Positive affective reactions	Crowdfunding performance	p. 100 Perceived product creativity is positively related to crowdfunding performance, both directly and indirectly.

Moderated mediation								
Author	Year	Research method	Sample	Country of origin	IV	Mediator	DV	Results
Justin W.; Coombs, Joseph E.			product pitches made by ten different entrepreneurs.			(Moderator: Perceived EP)		via positive affective reactions of prospective funders. Moreover, we find the indirect effect of product creativity is contingent upon the extent to which funders perceive an entrepreneur to be passionate, such that perceived entrepreneurial passion increases the positive nature of the indirect effect.
Baron, Robert A.; Tang, Jintong	2009	Survey (two rounds)	500 new ventures <= 8 years, < 500 employees	China	Entrepreneurs' social skills	Entrepreneurs' success in obtaining information and essential resources	New venture performance	p.295 Results indicate that several social skills (e.g., social perception, expressiveness) are significantly related to measures of new venture performance and that these effects are indeed mediated by the two proposed mediating variables.
Cardon, Melissa S.; Mitteness, Cheryl; Sudek, Richard	2017	Survey, Observation (verbal and nonverbal communication during entrepreneurs' presentation)	1.995 evaluations of 133 pitches	US	Enthusiasm Commitment Preparedness	Commitment Moderator: Commitment	Evaluations of funding potential	H1, H3, H4a, H4b, H4c, H5b, H5c not supported H2, H5a supported p.1070 ff.

Moderated mediation								
Author	Year	Research method	Sample	Country of origin	IV	Mediator	DV	Results
Locke, Edwin	2000	Literature review			Goals	Task knowledge Moderator: Interaction of goals and task knowledge	Performance	
Mueller, Brandon A.; Wolfe, Marcus T.; Syed, Imran	2017	Multi-source survey with 1 lag year	204 entrepreneurs engaged in the developing phase of their businesses	US	Entrepreneurial Passion	Locomotion, Assessment	Performance	Developer passion and grit are mediated by locomotion and assessment p.269ff.
Vallerand, Robert J.; Salvy, Sarah-Jeanne; Mageau	2007	Questionnaire Questionnaire	Study 1: 143 dramatic arts students from various theatre schools and colleges Study 2: 130 undergraduate psychology students	Canada	Harmonious passion Obsessive passion Harmonious passion Obsessive passion	Deliberate practice Mastery goals Mastery goals, Performance-approach goals, Performance-Avoidance goals	Performance Subjective well-being (SWB)	Dualistic model of passion is applicable to performance attainment. HP positively predicts deliberate practice (S1) and positively predicts mastery goals (S2) which in turn pos. predicts deliberate practice. Direct pos. effect of deliberate practice on performance. ...

Moderated mediation								
Author	Year	Research method	Sample	Country of origin	IV	Mediator	DV	Results
Yin, Jieli; Jia, Muxiao; Ma, Zhenzhong; Liao, Ganli	2020	Questionnaire	105 team leaders, 411 team members	Mainland China	Team leaders' conflict management style (CMS)	Team passion Moderator: Team emotional intelligence (TEI)	Team innovation performance (TIP)	Team leaders' cooperative CMS has a significant positive impact on TIP. Team passion mediates the relationship between team leaders' CMSs and TIP. TEI is moderator
Baron, Robert A.; Mueller, Brandon A.; Wolfe, Marcus T.	2016		167 entrepreneurs	Mid-west US	Self-efficacy	Goal difficulty Moderator: self-control	Firm performance	Positive relationship between self-efficacy and goal difficulty. Direct effect betw. self-control and goal difficulty. Negative moderation by self-control. Positive relationship betw. goal difficulty and performance. Relationship betw. Goal difficulty and performance is curvilinear. Entrepreneurial self-efficacy is more beneficial for performance at high-levels of self-control.
Florin, Juan; Karri, Ranjan; Rossiter, Nancy	2016	Survey	220 freshmen and seniors at a northeastern business school	US	Entrepreneurial drive (perceived desirability, perceived feasibility)	Intentions	Behaviour	Students differentiate between five attitudes to promote entrepreneurial behaviour. Women showed lower proactive disposition and self-efficacy compared to men.

Moderated mediation								
Author	Year	Research method	Sample	Country of origin	IV	Mediator	DV	Results
Gielnik, Michael M.; Spitzmuller, Matthias; Schmitt, Antje; Klemann, D. Katharina; Frese, Michael	2015	Questionnaire (Field study) Experiment	Study 1: 54 German entrepreneurs Study 2: 136 undergraduate students	Germany Enrolled at a university in Singapore	Entrepreneurial effort (EE)	New venture progress Moderator: Free choice	Entrepreneurial passion (EP)	EE leads to an increase in EP. Entrepreneurs increase their passion when they make significant progress on their venture and when they invest effort out of their free choice.
Gielnik, Michael M.; Uy, Marilyn A.; Funken, Rebecca; Bischoff, Kim Marie	2017	Field experiment (questionnaire)	227 students from university	Nairobi, Kenya	Entrepreneurship training (ET)	Entrepreneurial self-efficacy as mediator of ET on passion. Moderator: Entrepreneurial self-efficacy	Passion, Business creation	Post-training processes are dynamic and entrepreneurial self-efficacy is important to maintain high passion after training. This eventually leads to business creation.
Mahto, Raj V.; McDowell, William C.	2018				Self-Assessment	Improve Identity Change Escape Identity Conflict Moderator: Entrepreneurial Exposure	Entrepreneurial Motivation	We propose that an individual's desire to seek a higher social identity or establish a new identity (i.e., due to identity conflict) are the primary factors influencing formation of entrepreneurial motivation in individuals. An individual's tendency to engage in self-

Moderated mediation								
Author	Year	Research method	Sample	Country of origin	IV	Mediator	DV	Results
								assessment or self-appraisal of their identity is the antecedent of the process.
Murnieks, Charles Y.; Klotz, Anthony C.; Shepherd, Dean A.	2020	Literature review	71 articles		Antecedents	Entrepreneurial motivation Mediator and Moderator each related to the dependent variable	Initiation, growth, exit outcomes	Roadmap that both outlines the extant literature and highlights opportunities for future research. Motivation is a cornerstone of the entrepreneurial process. Our review reinforces the conclusion that entrepreneurial motivation drives essential behaviors related to venture initiation, growth, and exit.
Shane, Scott; Locke, Edwin A.; Collins, Christopher J.	2003	Review			Entrepreneurial motivation (nAch, locus of control, vision, desire for independence, passion, drive, goal-setting, self-efficacy) Cognitive Factors	Environmental conditions	Entrepreneurial process	In addition to outlining the major reasons for exploring these motivations, we have identified the major weaknesses that have limited the predictive power of previous research on this topic.

Moderated mediation								
Author	Year	Research method	Sample	Country of origin	IV	Mediator	DV	Results
					(vision, knowledge, skills, abilities)			
Kang, Jae Hyeung; Matusik, James G.; Kim, Tae-Yeol; Phillips, J. Mark	2016	Survey	105 managers 39 CEOs		Innovative climate	Passion for inventing Moderator: proactive climate, risk taking climates	Innovative Behaviour	The indirect relationship between organizational innovative climate and employee innovative behavior via passion for inventing suggests that organizations with strong innovative climates can stimulate employees' passion for inventing, which in turn encourages employees to engage in generating new ideas and implementing these new ideas. Various organizational climates interactively relate to employee innovative behavior.

Moderated mediation								
Author	Year	Research method	Sample	Country of origin	IV	Mediator	DV	Results
Li, Cai; Murad, Majid; Shahzad, Fakhar; Khan, Muhammad Aamir Shafique; Ashraf, Sheikh Farhan; Dogbe, Courage Simon Kofi	2020	Questionnaire	346 university students	China	Entrepreneurial Passion	Entrepreneurial self-efficacy, Entrepreneurial intention Entrepreneurial alertness Moderator: proactive personality	Entrepreneurial behaviour	Entrepreneurial passion positively and significantly influenced entrepreneurial alertness, entrepreneurial self-efficacy to entrepreneurial intention, and entrepreneurial behaviour. Proactive personality positively and significantly moderated the relationship between entrepreneurial intention and entrepreneurial behaviour.
Li, Junchao Jason; Chen, Xiaoping; Kotha, Suresh; Fisher, Greg	2017	Study 1 and 2: survey and archival data Study 3: experiment	Study 1 archival data: 100 projects Survey data: 170 undergraduate business students Study 2 archival data: 135 projects Survey: 180 MBA students	US	Entrepreneurs' displayed passion in the introductory video for a crowdfunding	Viewers' Experienced Enthusiasm Project Social Media Exposure Moderator: Perceived Project Innovativeness	Intended Funding Amount Willingness to Share	Passion displayed in a video has a direct relationship with funding outcomes.

Moderated mediation								
Author	Year	Research method	Sample	Country of origin	IV	Mediator	DV	Results
			Study 3: 120 MBA students					
Zollo, Lamberto; Rialti, Riccardo; Tron, Alberto; Ciappei, Cristiano	2020	Survey	300 entrepreneurs actively involved in European small and medium enterprises (SMEs).	Europe	Entrepreneurial passion	Entrepreneurial orientation Moderators: linear thinking (rationality), Non-linear thinking (emotion/intuition)	Strategic entrepreneurship behaviour	Entrepreneurial passion is shown to be a significant antecedent of EO, which, in turn, strongly influences SEB. Moreover, entrepreneurs' linear thinking style positively moderates the EO-SEB relationship, but not the link between passion and EO. Instead, a nonlinear thinking style positively moderates the relationship between passion and EO, but not the links between EO and SEB. Our empirical findings show that a nonlinear/intuitive/emotive thinking style is fundamental to the transformation of EP into EO. Linear/rational thinking is shown to be what instigates the transformation of EO into SEB. Thus, the results show that entrepreneurs think nonrationally when passion matters more than strategy and they start to think

Moderated mediation								
Author	Year	Research method	Sample	Country of origin	IV	Mediator	DV	Results
								rationally when focused on emerging opportunities and when figuring out how to exploit these in order to overcome competitors.
Hillebrandt, Annika; Barclay, Laurie J.	2017	Negotiation and questionnaire	<p>Study 1: 267 participants were recruited from a North American university</p> <p>Study 2: full-time employees (N= 289) from the United States via Amazon's MTurk</p> <p>Study 3: Participants (N =333) were recruited from a North American university</p> <p>study 4: Participants (N = 243) were recruited from a North</p>	North-America, US	Emotion target (integral vs incidental)	Attributions to one's own behavior inferences	<p>Study 3: concessions</p> <p>Observers reactions</p>	Emotion target influenced concessions for both anger and happiness (Study 1), with perceived threat and cooperativeness mediating the effects of anger and happiness, respectively (Study 2, N// 280). Study 3 (N// 314) demonstrated the mediating role of attributions and moderating role of need for closure. Study 4 (N// 193) outlined how observers' need for cognitive closure influences how they attribute incidental anger.

Moderated mediation								
Author	Year	Research method	Sample	Country of origin	IV	Mediator	DV	Results
			American university					
Lex, Maïke; Gielnik, Michael; Spitzmüller, Matthias; Jacob, Gabriel; Frese, Michael	2020	Structured face-to-face interviews After the interview, participants completed a questionnaire on positive feelings, identity centrality, entrepreneurial self-efficacy, and performance	65 entrepreneurs	Tanzania	Entrepreneurial performance Entrepreneurial performance Passion	Entrepreneurial self-efficacy Growth in Entrepreneurial self-efficacy Entrepreneurial self-efficacy	Positive Feelings Identity centrality Entrepreneurial performance	Passion and its components of positive feelings and identity centrality develop over time as a function of entrepreneurial self-efficacy and performance. Positive feelings can change as a consequence of entrepreneurial self-efficacy and performance over shorter cycle times, while changes in identity centrality require growth in entrepreneurial self-efficacy over a longer cycle time. Furthermore, passion has reverse effects on entrepreneurial self-efficacy and performance.
Locke, Edwin A.; Latham, Gary P.	2002	Review Summary of 35 years empirical research on goal-setting theory			Assigned goals	Personal goals, self-set goals and self-efficacy	Performance	Goal-setting theory is fully consistent with social-cognitive theory in that both acknowledge the importance of conscious goals and self-efficacy. The two theories differ in emphasis and scope. Goal-setting theory is not limited to but focuses

Moderated mediation								
Author	Year	Research method	Sample	Country of origin	IV	Mediator	DV	Results
								<p>primarily on motivation in work settings.</p> <p>With goal-setting theory, specific difficult goals have been shown to increase performance</p>
Locke, Edwin A.; Latham, Gary P.	2013	Testing goal theory	Refers to theory of goal setting and task performance from 1990 book Locke and Latham		Goals	Self-efficacy (self-regulatory variables)	Task performance, memory behavior	<p>It has been shown that goals are motivational, in that they impact task performance and memory behavior [...]. Ability impacts goal-directed performance gains, self-efficacy and related beliefs have been shown to affect goal achievement and behavior across adulthood goal setting even seems to boost self-efficacy and buffer the negative effects of lower confidence levels</p>
Brown, Douglas; Freiberg, Steven; Lord, Robert	1999				The self (individual, interpersonal, and group levels)	Working self-concept (composed of self-views, possible selves, and goals)	Information processing and behavior	
Ho, Violet T.;	2020	Survey	201 supervisor-employee	US	Leader harmonious and	Contingent reward leadership	Employee harmonious and	Leaders' harmonious passion led to employees' harmonious passion through

Moderated mediation								
Author	Year	Research method	Sample	Country of origin	IV	Mediator	DV	Results
Astakhova, Marina N.			dyads from the health-care industry		obsessive passion	charismatic leadership	obsessive passion	charismatic leadership, whereas contingent reward leadership accounted for the transfer of obsessive passion. IPSE did not play a moderating role for either form of passion.

Mediation models								
Author	Year	Research method	Sample	Country of origin	IV	Mediator	DV	Results
Baum, J. Robert; Locke, Edwin A.; Kirkpatrick, Shelley A.	1998	Pilot study: 31 structured interviews; Survey	Survey of 849 architectural woodwork industry companies; 183 entrepreneur/CEO and employee pairs met criteria	US	Vision attributes/ vision content/ vision communication Vision attributes Vision content	- Vision communication	Vision-organizational performance Venture growth	H1, H2 supported H3 partly supported

Mediation models								
Author	Year	Research method	Sample	Country of origin	IV	Mediator	DV	Results
Boone, Sarah; Andries, Petra; Clarysse, Bart	2019	Survey and competition score	86 new venture teams		Team entrepreneurial passion (TEP)	Relationship conflict, i.e. conflict that arises from personal-related disaffection	New venture team performance	Passion focus reflects the entrepreneurial activities required for the specific development stage the venture operates in
Breugst, Nicola; Domurath, Anne; Patzelt, Holger; Klaukien, Anja	2012	Survey	124 venture employees who work closely together with the founder of the firm	Germany	Perceived passion for inventing, for founding, for developing	Positive affect at work Goal clarity	Employees' affective commitment to entrepreneurial ventures	p.186 ff. employees' positive affect at work is a more important mediator than goal-clarity
Cardon, Melissa S.; Kirk, Colleen P.	2015	Survey	129 entrepreneurs	US	Entrepreneurial self-efficacy	Entrepreneurial Passion for inventing, for founding, for developing	Entrepreneurial persistence	p.1036 ff. H1, H2, H3 supported H4 not supported
Foo, Maw-Der; Uy, Marilyn A.; Baron, Robert A.	2009	Survey, ESM (type of repeated data collection method)	46 entrepreneurs	57% Malay, 39% Chinese, 4% Hispanics	Negative affect Positive affect	- State future temporal focus	Effort on venture tasks immediately required Effort on venture tasks	p. 1089 ff. H1, H2a, H2b, H3 supported

Mediation models								
Author	Year	Research method	Sample	Country of origin	IV	Mediator	DV	Results
							beyond what is immediately required	
Ho, Violet T.; Pollack, Jeffrey M.	2014	Survey	206 members of networking groups affiliated with Business Networking International (BNI)	US	Harmonious passion Obsessive passion	In-degree and Out-degree Network centrality	Financial performance	p. 446 harmoniously passionate entrepreneurs had higher out-degree centrality -> more income; obsessively passionate entrepreneurs had lower in-degree centrality -> less income
Ho, Violet T.; Wong, Sze-Sze; Lee, Chay Hoon	2011	Questionnaire-based survey	509 full-time employees from the headquarters office of an insurance firm	US	Harmonious passion Obsessive passion	Cognitive absorption Cognitive attention	Work performance	Employees with harmonious passion performed better at work; obsessive passion negatively related to cognitive attention
Hubner, Sylvia; Baum, Matthias; Frese, Michael	2019	Study I: Field study, cross-sectional survey data (H1) Study II: experiment (H2 to H6)	162 employees and 73 entrepreneurs	Germany	Entrepreneurs' passion	Employee passion response	Employees' outcomes and work performance	p. 10 p. 15 Our empirical studies, one field study and one experiment, provide empirical support for a contagion effect of entrepreneurial passion.

Mediation models								
Author	Year	Research method	Sample	Country of origin	IV	Mediator	DV	Results
Iyortsuun, Akuraun Shadrach; Nmadu, Mwuese Theresa; Dakung, Reuel; Gajere, Monica C.	2019	Literature review	64 articles (28 empirical articles, 28 conceptual reviews, 1 conference proceeding, 1 thesis, 3 book chapters, 3 textbooks) from 1971-2018 (p.1139)		Entrepreneurial passion	Goals, entrepreneurial behaviour, entrepreneurial self-efficacy	Venture performance	Entrepreneurial passion has a direct effect on venture performance and an indirect link mediated by goal-setting, entrepreneurial behaviour, entrepreneurial self-efficacy
Schulte-Holthaus, Stefan	2019	Literature Review and comparison			Antecedents of passion/ pre-existing passion Interests to passion		Passion in entrepreneurial contexts	
Baum, J. Robert; Locke, Edwin A.	2004	Questionnaire	229 entrepreneur CEOs 106 associates in a single industry, architectural woodwork firms	US (North America)	Passion, New resource skill, tenacity	Goals, self-efficacy, communicated vision	Venture growth	Variables of entrepreneurs' traits, skill and motivation categories are significant direct or indirect predictors of venture growth. Communicated vision is independently and quantitatively related to performance. Passion and tenacity had no direct effect on venture growth. Traits

Mediation models								
Author	Year	Research method	Sample	Country of origin	IV	Mediator	DV	Results
								have rather indirect effects. P.595 ff.
Bhansing, Pawan V.; Hitters, Erik; Wijngaarden, Yosha	2018	Questionnaire	319 creative entrepreneurs in creative business centres (CBCs)	Netherlands	Localised passion (passion atmosphere and passion in others)	Passion for work	Inspiration	Localised passion has two components (passion atmosphere and passion in others) which have a positive effect on inspiration. Passion for work has a mediating role. Passion atmosphere is significantly correlated to passion in others and passion for work (p.16 ff.). Motivation is a deeply social process.
Bao, Jiani; Zhou, Xiaohu; Chen, Ying	2017	Survey	195 entrepreneurs in new Chinese companies	China	Entrepreneurial passion	Opportunity recognition	Entrepreneurial behaviour	Entrepreneurial passion had a significant impact on opportunity recognition and entrepreneurial behaviors. Further, opportunity recognition partly mediated the relationship between entrepreneurial passion and entrepreneurial behaviors. Entrepreneurs with entrepreneurial passion are, therefore, more likely than others are to identify opportunities and start new ventures.

Mediation models								
Author	Year	Research method	Sample	Country of origin	IV	Mediator	DV	Results
Feng, Bing; Chen, Min	2020	Survey	300 entrepreneurs	Hangzhou, Wenzhou, Jiaxing, Shaoxing, and Huzhou	Entrepreneurial passion (harmonious and compulsive passion)	Entrepreneurial self-efficacy	Entrepreneurial persistence Business performance	The direct effect of harmonious passion on entrepreneurial persistence and enterprise performance is not significant, while the direct effect of compulsive passion on entrepreneurial persistence and enterprise performance is significant. Entrepreneurial passion can positively guide the entrepreneurial persistence of entrepreneurs
Murnieks, Charles Y.; Mosakowski, Elaine; Cardon, Melissa S.	2014	Survey	221 new ventures	US	Entrepreneurs' passion Antecedent: Entrepreneurial identity centrality	Entrepreneurial self-efficacy	Entrepreneurial behaviour	H1, H2, H3 supported H4 not supported
Obschonka, Martin; Moeller, Julia; Goethner, Maximilian	2018	Survey	137 scientists	Germany	Entrepreneurial personality profile	Entrepreneurial passion	Entrepreneurial behaviour	We found that the domain-specific personality feature (the entrepreneurial trait profile) predicted entrepreneurial passion and passionate entrepreneurial behavior. By contrast, the domain-unspecific single Big Five traits had no significant effects.

Mediation models								
Author	Year	Research method	Sample	Country of origin	IV	Mediator	DV	Results
Bandura, Albert	1991	Experiment			Self-monitoring Self-observation	Motivational level	Performance	Self-regulation is a multifaceted phenomenon operating through a number of subsidiary cognitive processes including self-monitoring, standard setting, evaluative judgment, self-appraisal, and affective self-reaction. The human capacity for forethought, reflective self-appraisal, and self-reactio gives prominence to cognitively based motivators in the exercise of personal agency.

Mediation models								
Author	Year	Research method	Sample	Country of origin	IV	Mediator	DV	Results
Baumeister, Roy; Vohs, Kathleen; DeWall, Nathan; Zhang, Liqing	2007	Development of theory of emotion as a feedback system			Emotions	Learning, guidelines	Behavior/ action	<p>This paper rejects the view that the primary function of emotion is to cause behavior directly. We do not deny that emotion can occasionally have such direct effects, but these are likely to be sporadic and sometimes counterproductive.</p> <p>We think human conscious emotion operates mainly and best by means of its influence on cognitive processes, which in turn are input into decision and behavior regulation processes.</p> <p>Emotion may however directly shape cognition, and cognition may have fairly direct impact on behavior. (To be clear, there is room for debate as to whether cognition directly causes behavior or there is an intervening step, in which case cognition would function as a kind of advisor to the executive that actually controls behavior.</p>

Mediation models								
Author	Year	Research method	Sample	Country of origin	IV	Mediator	DV	Results
Edwards, Jeffrey R.; Cable, Daniel M.	2009	Online-survey	997 employees working in four water treatment agencies in various technical, administrative, and managerial positions. from first-line supervisors to senior managers.		Congruence between personal and organizational values	Communication, predictability, attraction, and trust	Outcomes of value congruence (job satisfaction, organizational identification, and intent to stay)	<p>Our results show that the indirect effects transmitted through trust were 2–3 times larger than those transmitted through communication and attraction.</p> <p>our results provide little support for predictability as an explanation of value congruence effects. one of the key reasons communication explains the effects of value congruence is that communication promotes trust. the joint relationships of individual and organizational values with the mediators in our model rarely conformed to the hypothetical value congruence effect.</p> <p>Our results point to trust as a key explanation of value congruence effects, followed by communication, and, to a lesser extent, attraction.</p>

Mediation models								
Author	Year	Research method	Sample	Country of origin	IV	Mediator	DV	Results
Kelly, Janice R.; Barsade, Sigal G.	2001	Review			Individual-level affective factors that group members possess	affective composition of the group: dispositional affect, mood, acute emotions, emotional intelligence, and sentiments	Group emotion	We broadened how emotion norms are applied to groups by including local group emotion norms and a group's emotional history as contextual influences on affect. Last, we also pointed out how affect influences the outcomes of small group behavior and considered some likely relationships between affective and nonaffective factors.
Xia, Lei; Han, Qingjiang; Zhang, Weidong	2020	Questionnaire	228 new enterprise owners	Wuhan, Chengdu, and Zhengzhou, in China	Entrepreneurial passion	Entrepreneurial perseverance entrepreneurial competence	New enterprise performance	<p>Entrepreneurial passion had a positive impact on new enterprise performance, and that entrepreneurial perseverance mediated this relationship.</p> <p>Entrepreneurial competence had a positive mediating effect in the relationship between entrepreneurial perseverance and new enterprise performance, and partially mediated the relationship between entrepreneurial passion and new enterprise performance.</p> <p>The stronger is an entrepreneur's competence, the stronger is the mediating</p>

Mediation models								
Author	Year	Research method	Sample	Country of origin	IV	Mediator	DV	Results
								effect of entrepreneurial perseverance on the performance of their new enterprise.
Zhao, Shouzheng; Zhou, Yuqin; Guan, Hai; Xu, Wenhai	2021	Questionnaire	Entrepreneurs of small and medium-sized enterprises Average age: 35 and 45 years, and the proportion of males and females is equal	Zhejiang Province.	Entrepreneurial passion and risk taking	Work engagement	Entrepreneurial performance	Entrepreneurial passion has a significant positive impact on work engagement; risk taking has a significant positive impact on work engagement; work engagement has a significant positive impact on entrepreneurship performance; in addition, work participation plays a mediating role in the process of entrepreneurial passion and risk taking
Vallerand, Robert J.	2008		Teenagers and young adults best at the national level (some of the water polo players) findings have been replicated with adult high elite performers	Canada	Harmonious passion Obsessive passion	Mastery goals, deliberate practice Performance avoidance goals	Performance	Harmonious passion was found to lead to mastery goals that, in turn, led to deliberate practice that positively predicted objective performance. On the other hand, obsessive passion was positively related to all three goals.

Mediation models								
Author	Year	Research method	Sample	Country of origin	IV	Mediator	DV	Results
Neumann, Roland; Strack, Fritz	2000	Questionnaire and several experiments (cognitive and physical)	Four experiments: 1) 30 students from Trier 2) 44 students from Würzburg 3) 80 students from Trier 4) 52 students from Würzburg	Germany	Emotional expression	Arousal	Mood state	Our findings suggest that emotional responses were influenced by the hedonic valence of a concurrent mood state. Mood contagion can be conceived of as a mechanism by which affective feelings are transferred between person listening to another person's emotional expression is sufficient to automatically evoke a congruent mood state in the listener.
Qian, Shanshan; Brannon, David L.; Tabak, Filiz	2021	survey	235 undergraduate students from a business school in the Mid-Atlantic region of the United States.	US	Entrepreneurial passion	growth-oriented intentions	Entrepreneurial behavior	Our findings indicate EPs for inventing and for founding are significantly related to entrepreneurial behavior and that growth-oriented intentions partially mediate the relationships between passions for founding and for inventing with behavior. participants with high levels of EP exhibited high levels of growth-oriented intentions and entrepreneurial behavior.

Comparative studies						
Author	Year	Research method	Sample	Country of origin	Comparison	Results
Cardon, Melissa S.; Zietsma, Charlene; Saporito, Patrick; Matherne, Brett P.; Davis, Carolyn	2005				We compare the experience of starting and growing a new venture to the experience of giving birth to and nurturing a child.	We believe that the parenthood metaphor of entrepreneurship described here highlights some new ways of conceptualizing the process involved in organizational and human creation New metaphors help us to identify and challenge the assumptions that have been built on other dominant metaphors in managerial discourse
Caliendo, Marco; Hogenacker, Jens; Künn, Steffen; Wießner, Frank	2015	Computer-assisted telephone interviews.	2,306 subsidized businesses out of unemployment, as well as 2,303 non-subsidized businesses.	Germany	Performance of subsidized start-ups over time compared to regular business founders	Nascent unemployed entrepreneurs indeed face disadvantages compared to regular business founders in variables correlated with entrepreneurial ability and access to capital; and 2) in terms of business performance, subsidized start-ups show higher survival rates 19 months after start-up, but lag behind regular business founders in terms of income, business growth and innovation. 3) Deadweight effects seem to exist, albeit at a much lower scale than usually assumed.
Kerr, Gerry	2017	Four questionnaires	197 entrepreneurs	Canada	The demographics, motivations, rewards, satisfaction, and commitment of career and later-life older entrepreneurs	Both types of entrepreneur post very high ratings for personal fulfillment and control and flexibility, high valuations for financial need, and only an above-neutral score for continuing contribution. The only difference in the measures that was statistically significant was the valuation of personal fulfillment, which was higher in the later-life entrepreneur.

Figure 1

Research model of EP, motivation, behavior, and venture performance.

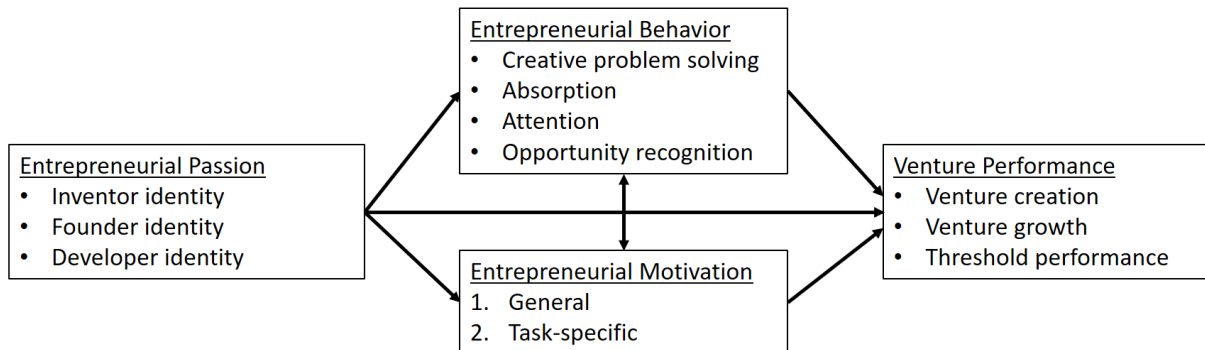


Figure 2

Systematic overview of reviewed studies.

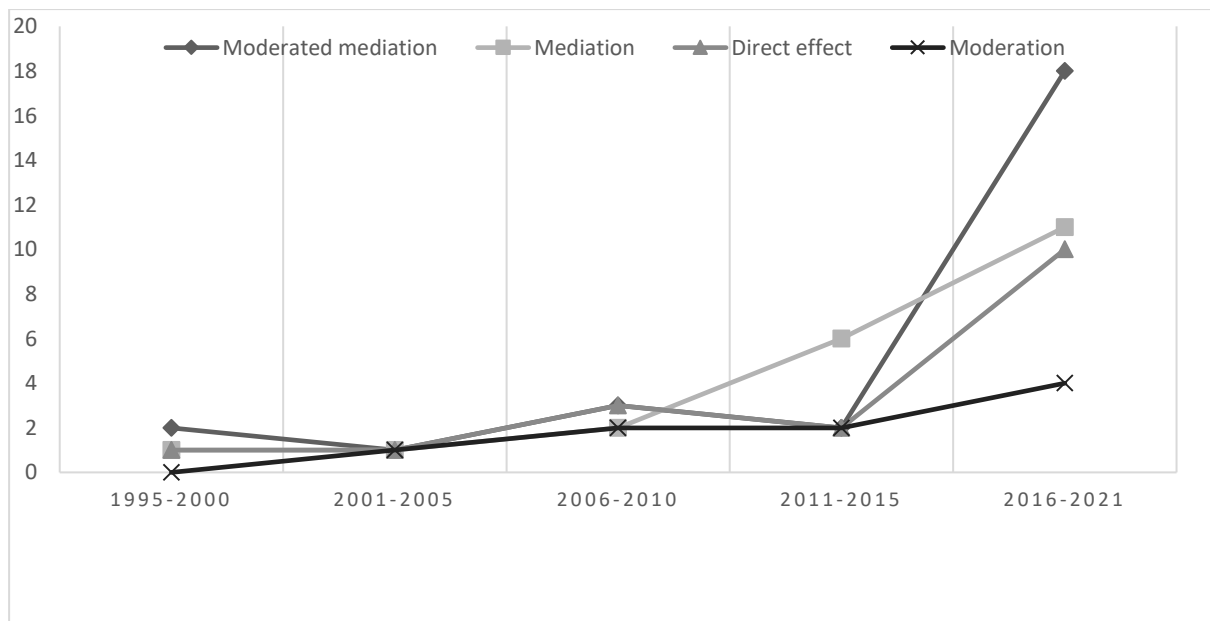


Figure 3

Review method (adapted from Denyer & Tranfield, 2009).

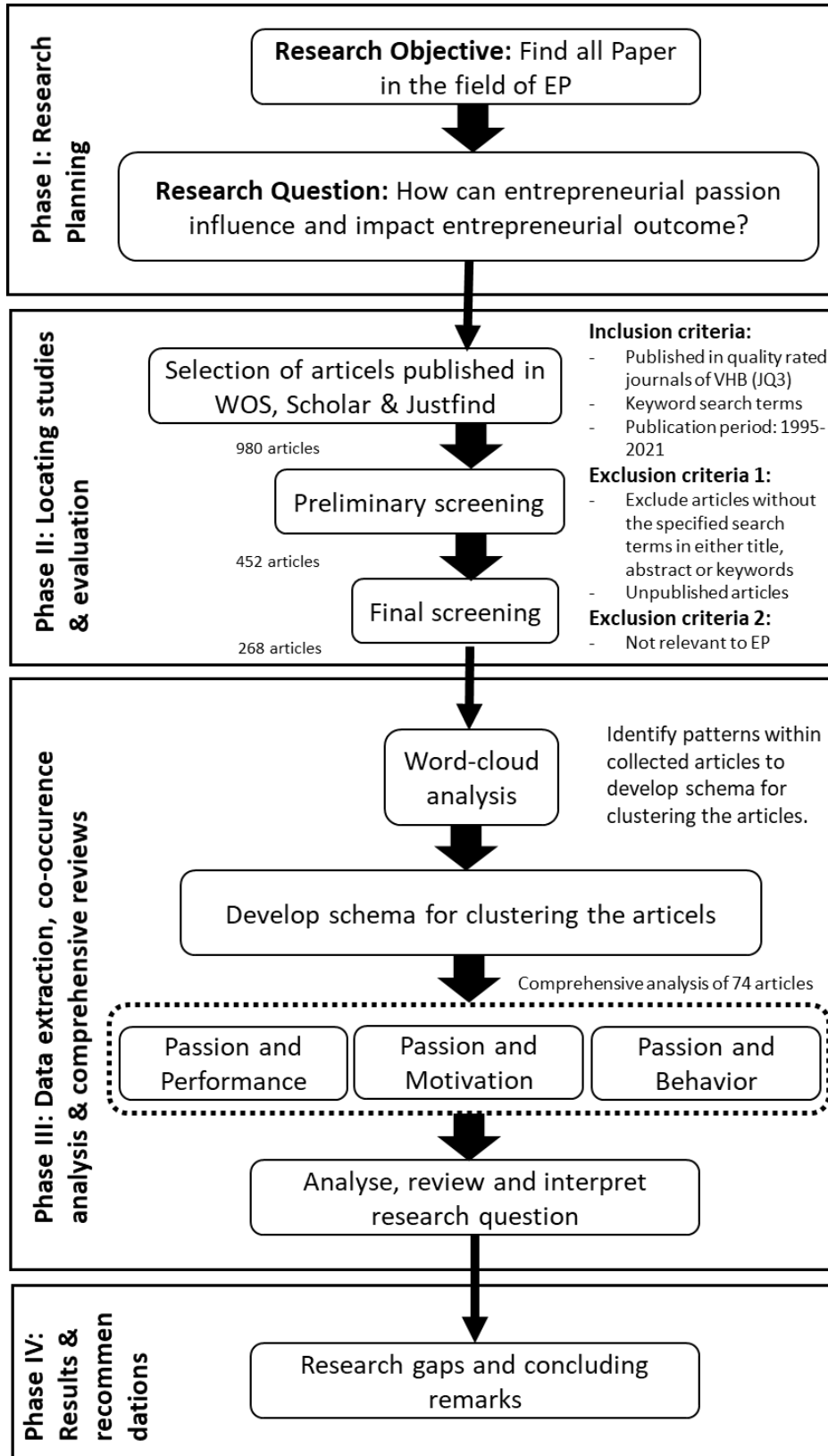


Table 1**Overview of Literature Search, Selection and Analysis.**

(Effect) relationship	Amount	In %	Years
Moderated mediation	26	35	2000-2020
Mediation	21	28	1998-2021
Direct effects	17	23	1998-2020
Moderation	10	14	2004-2021
In total	74	100	1998-2021

**Paper II: Exploring the Personal Values of Entrepreneurial Finance Investors: A
Twitter Analysis**

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Status:

- Presented at G-Forum 2023 in Darmstadt (Germany)
- Presented at Babson College Entrepreneurship Research Conference (BCERC) 2024
in Munich (Germany)

Abstract

Individuals' online engagement on social media platforms can offer valuable insights into their psychological profile. This study analyzes social media activity to gain a deeper understanding of the personal values of entrepreneurial finance investors. Drawing on Schwartz's (1992) framework of personal values, we identify considerable value differences between business angels and venture capitalists. We compare 500 business angels with 478 venture capitalists by employing a computerized language-based assessment tool that examines their Twitter messages. Our findings indicate that both investor groups exhibit comparable scores in five value dimensions, underscoring a substantial degree of commonality between them. However, we also observe significant value variations between both investor types that are mostly in line with our expectations and the existing literature on entrepreneurial finance: venture capitalists place emphasis on the overarching dimension of self-enhancement, as they score higher on the values of power and achievement orientation than business angels. Moreover, the study provides some unexpected results when it comes to the second overarching dimension, openness to change vs. conservation. While venture capitalists' focus on the security value is closely related to their investment objectives, we did not expect venture capitalists to score higher than business angels on the opposite value of stimulation.

Keywords: entrepreneurial finance, business angels, venture capitalis, personal values, social media analysis, psychology

Word count: 8,069 words

Introduction

Business angels (BAs) & venture capitalists (VCs) play vital roles in the field of entrepreneurial finance (Drover et al., 2017). Consequently, research on both groups of investors has increased significantly in recent years. By now, papers have explored the personal characteristics, objectives, behavior or investment practices of both investor types and note that BAs and VCs differ in various aspects (Boulton et al., 2019; Mitteness et al., 2012; Morrissette, 2007; Zinecker et al., 2022). However, there is remarkably little research analyzing the psychological traits of these investor groups (Block et al., 2019; Duxbury et al., 1996a).

This lack of research is all the more surprising considering the crucial impact that psychological traits, and values in particular, have on investment decisions (Matusik et al., 2008; Quas et al., 2021; Sreedevi & Chitra, 2012). As integral part of individual psychology (Hueso et al., 2021; Sagiv et al., 2017), our focus lies on the human values held by investors. A value can be defined as “a belief pertaining to desirable end states or modes of conduct, that transcends specific situations, guides selection or evaluation of behavior, people, and events, and is ordered by importance relative to other values to form a system of value priorities” (Schwartz, 1994, p. 20). According to Schwartz' theory (1992), there are ten basic human values, organized along two overarching dimensions (self-enhancement vs. self-transcendence; conservation vs. openness to change). These personal values shape decisions under uncertain circumstances and can also serve as indicators of human behavior (Matusik et al., 2008; Rohan, 2000). That is why, the relevance of personal values has been underscored in various economic studies. Egri and Ralston (2004) compare Chinese and American managers and find substantial value differences. For instance, Chinese managers who have been active since the establishment of Communist China exhibited a significantly higher inclination toward self-enhancement than the generation from the Republican Era. Similarly, Lyons et al. (2007) identify value differences

between generational cohorts: generation X individuals demonstrated notably greater openness to change and less adherence to conservative values compared to the older baby boomers. In turn, Doran (2009) focuses on consumers who support fair trade and investigates the impact of their value systems on purchasing behavior. Little surprisingly, her research reveals that universalism is the prevailing value among loyal fair trade consumers. As the only study in the field of entrepreneurial finance, Matusik et al. (2008) apply the personal values framework to examine how VCs' level of security and self-direction influence their initial assessment of entrepreneurs. The underlying paper marks the initial attempt to explore the value differences of the two primary investor types in entrepreneurial finance, BAs and VCs. Thus, this study fills the research gap by delving into the value profiles of both BAs and VCs. Correspondingly, our research question is: **“What personal values do VCs and BAs hold, and how do they differ?”**

While BAs and VCs diverge notably in their investment motives and behavior, they also share similarities in their expertise for evaluating, financing, and nurturing start-up ventures. Accordingly, there is an ongoing debate whether BAs and VCs should be seen as complements (friends) or substitutes (foes) (Chahine et al., 2007; Hellmann & Thiele, 2015). For this reason, we aim to enhance our comprehension of the shared personal values between the two groups and identify the dimensions in which they diverge. Drawing on Schwartz' seminal theory, we can identify considerable value differences between both investor types, enriching our understanding of investor psychology. Analyzing the Tweets of 500 BAs and 478 VCs, this study provides interesting findings. Both investor groups exhibit comparable scores in five value dimensions, underscoring a substantial degree of commonality between them. However, we also observe significant and notable value variations between BAs and VCs: these are largely consistent with the literature on entrepreneurial finance, as VCs show higher levels of

power, security and achievement-orientation. Moreover, the study provides some unexpected results, suggesting that BAs have lower levels of stimulation than VCs.

Our study contributes in several ways to the growing literature on entrepreneurial finance and, in particular, on investor psychology. First, we examine the personal values of key players in entrepreneurial finance. We gain insights into the mindset of start-up investors, a group that has been little studied in business and economics research, largely due to the challenges of obtaining relevant data (Croce et al., 2021). This paper adds another interesting dimension to knowledge about similarities and differences between VCs and BAs. Hence, our study contributes to a more accurate delineation of the two primary investor types in entrepreneurial finance and brings a new perspective to the “friends vs. foes” debate, as we show that both types of investors substitute and complement each other in certain value dimensions. Specifically, we employ both univariate and multivariate analyses to empirically evaluate distinctions between BAs and VCs.

Second, despite psychology’s great relevance for investment-related decisions, we are among the pioneering researchers to scrutinize (investor) psychology in the context of entrepreneurial finance. We are raising awareness of a research area that has received little attention so far. While Matusik et al. (2008) have analyzed the impact of self-direction and security values on VCs’ decision-making; no researcher has yet comprehensively investigated the value systems of BAs or VCs. Therefore, our paper serves as a starting point for future research to delve more deeply into various dimensions of investor psychology (such as personality traits, attitudes or emotions). Similarly, there is a need to better understand the effects of certain psychological traits on investment-related outcome variables (such as performance effects or co-investor selection). In this context, our paper sheds light on which investor values are particularly relevant for a more thorough analysis.

Third, we present a novel approach to evaluate personal value disparities related entrepreneurial finance research. This involves the utilization of a computerized language-based assessment tool designed to explore digital footprints. Language serves as a fundamental component of human communication, and analyzing it helps to better understand human behavior and psychology. In fact, examining social media posts has recently proven to be a valid and interesting method to uncover psychological characteristics such as values, emotions or personality traits of a respective target group (Kakar et al., 2021; Kaur et al., 2021; Obschonka et al., 2017). In particular, analyzing social media data has the distinct advantage of being considerably more objective compared to other methods of identifying psychological traits, such as surveys (Ponizovskiy et al., 2020).

Fourth, our paper also provides valuable insights for practitioners: it aids founders seeking funding to gain a clearer understanding of the value system associated with a particular investor type and adjust their start-up pitch accordingly (Mason & Stark, 2004). Drawing insights from our value analysis, we can provide specific recommendations for presenting to start-up investors. Since VCs exhibit a strong inclination toward self-enhancement, founders should articulate specific growth and profit targets for upcoming periods to align with VCs' achievement orientation. Indeed, finding an investor who aligns with the founder's way of thinking and personal values is essential, potentially resulting in more effective goal attainment and enhanced interpersonal dynamics (Matusik et al., 2008; Mitteness et al., 2012). Moreover, since syndicated investments represent an established form of entrepreneurial finance, assessing the value system, psychology or behavior of the co-investor is critical to building a successful partnership (Block et al., 2019). Hence, examining the values of prospective co-investors enables the lead investor to evaluate whether the identified traits align with the objectives of syndication formation, depending on whether a preference for homogeneity or heterogeneity exists among the investors (Huang et al., 2015).

Conceptual Background

Business Angels & Venture Capitalists

BAs (also known as informal investors) and VCs represent the most important sources of start-up financing (Drover et al., 2017; Lindsay, 2004; White & Dumay, 2017): traditionally, BAs are described as middle-aged, wealthy men (less than 1/10th of all BAs are women) with extensive entrepreneurial background and networks (Mitteness et al., 2012; Tenca et al., 2019). They invest their own money and prefer start-ups at an early stage that are geographically close to them (Freear et al., 1994; Morrissette, 2007). Usually, BAs become active when the financial needs to develop the venture exceed the financial means of founders, family and friends (3F) (Aram, 1989; Ramadani, 2009). BAs therefore often fill the funding gap between 3F and banks, institutional funds or VCs that consider the start-up too risky to finance (White & Dumay, 2017). In terms of their post-investment engagement, BAs are heavily involved in the day-to-day operations of the venture and act as mentors (van Osnabrugge, 2000).

VCs differ from BAs in several aspects: VCs obtain money from a group of limited partners, such as universities or pension funds (Benjamin & Margulis, 2000). Their objective is to generate returns for the limited partners by strategically investing in a portfolio of young ventures with high potential (Gompers & Lerner, 2000). Accordingly, they have different goals than BAs when investing in new ventures (Boulton et al., 2019): VCs are primarily motivated by achieving successful exits to generate substantial returns for the limited partners (Drover et al., 2017). Therefore, VCs closely monitor the funded start-up, often obtaining board seats or providing value-added services to expedite the venture's growth and increase its value (Fried & Hisrich, 1995; Gorman & Sahlman, 1989). Due to their high level of education (they often have a Master's degree or a PhD), VCs represent specialists in finance and valuation (Bonnet et al., 2014). Similarly, VCs are rather seen as generalists (unlike BAs who often possess expertise in

a particular industry) as they manage a diverse portfolio of start-ups to mitigate risk (Bonnet & Wirtz, 2012).

In terms of investment phases, BAs often provide funding to new ventures at early stages, when risk is the highest (Morrisette, 2007). In contrast, VCs rather invest at later stages when uncertainty has decreased and the venture's potential can be assessed more thoroughly (Gregson et al., 2013; Sapienza et al., 1996). While the total annual investment amounts from VCs and BAs are comparable (OECD, 2011), there is a notable distinction in the distribution. Numerous BAs engage in many deals, often with lower average values, while VCs frequently target (technological) start-ups deemed to have the highest potential (Hsu, 2001). The average size of a VC investment is \$4 million, while BAs provide tens and sometimes hundreds of thousands of dollars (Morrisette, 2007). In light of these similarities and differences, scholars continue to debate whether BAs and VCs complement or substitutes each other (Chahine et al., 2007): on the one hand, the literature suggests that VCs become more influential (and displace BAs) in later stages of investment aimed at a profitable exit (van Osnabrugge, 2000). On the other hand, there are many examples where BAs and VCs cooperate efficiently and even form syndicates (Harrison & Mason, 2000). Since this “friends or foes” question remains unresolved (Hellmann & Thiele, 2015), our study is all the more relevant because the two types of investors may complement each other in terms of their psychological profiles.

Likewise, we identify characteristics closely related to investor psychology and values: as BAs have a long-term investment horizon and no predefined exit strategy, they are more patient and build closer relationships with the founders (Croce et al., 2018). Correspondingly, BAs find satisfaction in their work due to intrinsic motivation and show higher levels of both entrepreneurial passion and orientation (Bonnet et al., 2014; Duxbury et al., 1996a; Mittens et al., 2012). This is also why BAs take more risks and rely more on their instincts (Lindsay,

2004; Morrissette, 2007; Ramadani, 2009). As BAs strive to become part of and support an interesting entrepreneurial project, they spend less effort on due diligence and may even invest opportunistically against rational considerations (Mittiness et al., 2012; Robinson & van Osnabrugge, 2000). Conversely, VCs, constrained by the need to maximize return on investment, are more analytical and conduct intensive due diligences against spreadsheets (Morrissette, 2007). However, although entrepreneurial finance investors play a crucial role in nurturing promising companies, no study has yet examined the psychological traits - such as values, attitudes or emotions - of both BAs and VCs.

Schwartz' Theory of Personal Values

Human psychology, defined as “the mental characteristics (...) of a person or group” (Oxford English Dictionary, 2023), encompasses various dimensions such as individuals’ personality, thoughts, feelings, attitudes, thinking styles – and personal values (Boyd, 2017; Hueso et al., 2021; Mitchell, 2009; Omorede et al., 2015; Sagiv et al., 2017). As stated above, values are not visible, intrinsic and enduring perspectives on the importance of overarching goals that individuals hold (Rokeach, 1973). Accordingly, personal values act as guiding principles in people's lives (Schwartz, 1992). Value dimensions are ranked in a certain hierarchy as the degree of each value dimension varies from person to person (Schwartz, 2012). However, this value hierarchy typically remains consistent and stable over time (Schwartz et al., 2010). In this paper, we focus on personal values as an integral part of psychology, as individuals make behavioral choices that are consistent with their value systems (Rohan, 2000). The theory of basic human values comprises a total of ten broad value dimensions, which are universally recognized across cultures (Schwartz, 1992). These values can be depicted within a circular arrangement that considers their motivational congruence and interrelationships (see Figure 1).

Insert Figure 1 about here

On the one hand, values close to each other in the structure share similar motivations and are more likely to be pursued together, for instance tradition and conformity are compatible values. On the other hand, values with conflicting motivations, positioned opposite each other, contradict one another, such as benevolence and power. Thus, the crucial factor influencing the relationship between the values is the compatibility of their motivational goals. The motivational conflicts between opposing value types can be succinctly summarized by conceptualizing values as arranged along two bipolar dimensions: while conservation values (security, conformity & tradition) embody the desire for control and protection, openness to change values (self-direction, stimulation & hedonism) signify the pursuit of exploration and novelty. In a similar vein, self-transcendence values (universalism & benevolence), which focus on equality and the influence of one's actions on others, contrast with the self-enhancement values (achievement & power), which highlight personal outcomes and success. Each value dimension is defined as follows:

(1) Openness to Change:

- *Self-Direction*: valuing autonomy, individual freedom, and self-determination.
- *Stimulation*: the desire for new opportunities, excitement and encounters in life.
- *Hedonism*: appreciating pleasure and the pursuit of enjoyable moments.

(2) Conservation:

- *Security*: valuing stability, safety, and predictability in life.
- *Conformity*: recognizing social norms and expectations to gain acceptance in society.
- *Tradition*: preserving traditions, cultural customs and values.

(3) Self-Transcendence:

- *Universalism*: emphasizing tolerance and the equality of all people.
- *Benevolence*: valuing empathy & goodwill and promoting the welfare of others.

(4) Self-Enhancement:

- *Achievement*: striving for personal success and attaining ambitious goals.
- *Power*: striving for influence and control over others and asserting dominance.

Indeed, prior studies demonstrate the high relevance of personal values in diverse economic contexts: Egri and Ralston (2004) conducted a comparison of managers from various generations in both China and the United States, revealing substantial value disparities. For instance, Chinese managers who have been active since the establishment of Communist China exhibited a significantly higher inclination toward self-enhancement, while being comparatively less conservative than the generation from the Republican Era. Conversely, Doran (2009) focuses on consumers who support fair trade and investigates the impact of their value systems on purchasing behavior. Unsurprisingly, she finds that universalism is the most important value for loyal fair trade consumers, while benevolence and security values play a significant role for those who abstain from purchasing fair trade products altogether. Being the sole study in the field of entrepreneurial finance, Matusik et al. (2008) utilize Schwartz' framework to investigate the impact of security and self-direction values on VCs' initial assessment of entrepreneurs. While VCs, for whom self-direction holds critical value, consider the start-up experience of founders as a pertinent decision factor, VCs who focus on the security dimension rather place positive emphasis on the founder's education.

Method & Sample

Methodology: language-based personality assessment tools

We employ a novel computer-based method to examine large volumes of text, harnessing the power of language analysis to gain valuable insights into individuals' personal values. Language serves as a fundamental component of human communication, and analyzing it helps to better understand human behavior and psychological traits. Accordingly, people's utilization of language can yield crucial insights into an individual's values, emotions, or attitudes (Boyd & Schwartz, 2020). Consequently, researchers have devised various assessment tools centered on language to enhance our understanding of human psychology. Language-based tools allow to draw conclusions about psychological traits, as language use remains consistent over time, has internal coherence and varies significantly between individuals (Bardi et al., 2008; Chung & Pennebaker, 2021). Thus, these tools are gaining increasing popularity due to their efficiency and accuracy in evaluating an individual's psychological dimensions (Boyd & Pennebaker, 2017; Tausczik & Pennebaker, 2010).

One such instrument is the Linguistic Inquiry and Word Count (LIWC) software, a text analysis program that scrutinizes individual's word choice and language patterns. LIWC originated in the late 1990s through the collaborative efforts of psychologists James Pennebaker, Roger Booth, and Martha Francis, emerging as a prominent language analysis tool within the area of psychology. LIWC, in essence, examines language by detecting the presence and frequency of specific words and phrases within a given text. Afterwards, the software is able to categorise these linguistic elements along a number of dimensions, including personality traits, values or emotions (Boyd et al., 2015; Chung & Pennebaker, 2021; McHaney et al., 2018). We provide LIWC with a reputable and validated dictionary of words and linguistic

rules, which we found in Ponizovskiy et al. (2020) to determine the presence of different value dimensions within a given text.

We performed both univariate and multivariate analysis on the LIWC-output to examine personal value variations between BAs and VCs. The univariate analysis examines one value dimension at a time, while the regression analyses the model as a whole. Moreover, combining both uni- and multivariate analyses allows for a comprehensive understanding of how values are expressed in tweets individually and in relation to each other, offering a nuanced and detailed perspective on the characteristics of individuals or groups on social media platforms.

Data

We draw on two platforms to find a sufficient number of both BAs and VCs: *LinkedIn* (www.linkedin.com) and *Crunchbase* (www.crunchbase.com). While LinkedIn is a social network platform for maintaining existing business contacts and making new ones, Crunchbase represents a commercial database providing information about firms, entrepreneurs, M&A activities or (start-up) investors.

In March 2023, we performed a broad keyword search on LinkedIn using the following search terms: “business angel”, “angel invest*”, “angel financ*”, “BA”, “informal investor”, “venture capital*”, “VC financ*” and “VC”. For Crunchbase, we either used the same keywords when searching for “Job Title” or we directly selected “Individual/Angel” or “Venture Capital” as the investor type. By this means, we were able to extract 1,701 BAs as well as 900 VCs. For each investor, we collected relevant information (age, education, experience etc.) and coded them as corresponding control variables.

We excluded investors in accordance with the following criteria. First, we could not find enough background information on each investor to adequately code the control variables. Second, we employed a Python code to link the investors' names to their Twitter (since

renamed: X) profiles. However, it was not possible to find Twitter accounts for every single investor. Third, we excluded so-called "superstar" investors, such as Nico Rosberg (former formula 1 world champion) or Keisuke Honda (former Japanese national footballer), with more than 500,000 followers to reduce potential bias from individuals who may not be primarily investors or whose accounts are professionally managed (Block et al., 2019). Fourth, we manually checked each investor to see if the classification as VC/BA was correct. We then introduced a binary variable. This variable is assigned a value of 0 for BAs and 1 for VCs in order to distinguish between these two groups of investors. Ultimately, we find 500 BAs and 478 VCs with an average of 7,774 words per individual. Furthermore, we were able to analyze a total of 146,211 tweets, whereby we did not impose any time restrictions.

Variables

Personal Values

We refer to the Personal Values Dictionary by Ponizovskiy et al. (2020) to assess the personal values of the two investor types according to Schwartz's (1992) theory (see Table 1).

Insert Table 1 about here

The dictionary contains approximately 100 words and phrases for each value dimension, resulting in a total of 1068 terms. The lexicon demonstrates a high level of reliability and internal consistency. Furthermore, it has been validated by using single-authored Facebook or blog posts, essays or book chapters, encompassing 525 million words written by more than 180,000 individuals from 1990 to 2017.

Control Variables

To examine if any variations in the human values between BAs and VCs are influenced by other factors, we take into account several control variables. We gather biographical data for each investor by conducting manual online searches. Following similar studies (Obschonka et al., 2017; Qiu et al., 2012), we control for individual characteristics such as *age, gender, education, place of residence and professional experience* (both general and as an investor). In cases where the investor's birth year is unspecified, we approximate it by taking the initial year of their education or occupation and subtracting 20 years. Additionally, we include Twitter-related variables to eliminate potential effects stemming from variations in Twitter usage. Therefore, we control for both *number of followers* and *number of Tweets*.

Results

Descriptive statistics

Our dataset shows the following characteristics: we find demographic differences between BAs and VCs that are mostly in line with the existing literature. The majority of entrepreneurial financial investors are still men, with more than 80% in both groups. In terms of age, our sample resembles previous studies which found most investors aged 45-50 (Freear et al., 1994; Hill & Power, 2002). BAs are a bit younger than the VCs, which could indicate that many start a venture first and then act as a BA after its sale. In contrast, the age distribution turns in favor of VCs from the age of 50, suggesting that reputation is an important indicator in the VC industry. The clearest differences we see are in education: while most BAs hold a Bachelor's degree, the majority of VC have a Master's, MBA or even PhD – other researchers have also observed this distinction (Ramadani, 2009; World Bank Group, 2018). In the context of investor experience, it is noteworthy that BAs boast a considerably longer history as investors (64% started before 2000 compared to only 25% of VCs), while the majority of VCs

commenced their investment careers after 2011 (51 % compared to 4% of BAs). In terms of origin, the majority of investors in our sample come from the U.S., with more than 50% for each investor group, but we have found many investors from Europe and Asia as well. Regarding the number of tweets and the quantity of followers, BAs and VCs are on a comparable level.

Univariate & multivariate analysis

Overall, while BAs and VCs have similar scores in 5 dimensions, we observe highly noteworthy differences between these two groups in the other 5 out of 10 variables. Table 2 presents a univariate analysis where we utilize a two-sided t-test to assess the disparities in mean personal values between BAs and VCs.

Insert Table 2 about here

VCs exhibit a higher inclination towards achievement compared to BAs. Their mean score of 0.32 surpasses that of BAs (0.29). Furthermore, VCs value security more (0.1) than BAs (0.08). When it comes to power, VCs (1.88) show a higher value than BAs (1.81). The same applies to the stimulation dimension, where VCs (0.16) are higher than BAs (0.13).

To determine the persistence of the effects while considering crucial demographic factors, we employ a multivariate analysis (logistic regression) to predict the probability of being a BA versus a VC (as displayed in Table 3). The results of the multivariate analysis support our findings of the univariate analysis: stimulation ($p < 0.1$), achievement ($p < 0.1$), power ($p < 0.1$) and security ($p < 0.1$) have positive effects on the likelihood of being a VC. In turn,

universalism ($p < 0.05$) has a negative effect on the likelihood of being a VC. Additionally, the Pearson correlations between the variables are presented in Table 4.

Insert Table 3 and Table 4 about here

Discussion

Our results show that BAs and VCs have comparable scores on about half of the value dimensions analyzed. This is hardly surprising given that they operate in the same industry and are therefore influenced by similar environmental conditions. For example, Mason and Stark (2004) found that, in contrast to bankers, VCs and BAs use a similar approach in the funding decision process. Bonnet and Wirtz (2012) take a different perspective, showing that the cognitive distance between founders and VCs is the greatest, while BAs exhibit similarities with both groups. Accordingly, consistent with both the idea of cognitive distance between BAs and VCs and previous research on entrepreneurial finance, we observe notable distinctions on certain value dimensions.

As expected, both investor types have by far the highest scores in the **power** dimension. This result reflects the specific context of the entrepreneurial finance industry: as investors contribute funds in high-risk ventures, they strive to exert influence and actively participate in the processes of the start-up in order to successfully drive its development. However, divergent investment motives contribute to variations in the power dimension between BAs and VCs. Given their imperative to meet pre-defined return targets, it is not surprising that VCs score higher on the power dimension than BAs. That is why, VCs try to influence entrepreneurs to

attain their financial objectives. For example, VCs may exert pressure on the start-up team to accelerate the value of the venture rapidly and to take growth-maximizing measures, as they are aiming for a lucrative exit rather than sustainable business development (Kang, 2020). In practice, their power is clearly demonstrated by replacing the venture's founding team members or the CEO (Hellmann & Puri, 2002). Filling these positions with people they know gives them another mechanism to control the venture (Schmidt, 2003). The representation of VCs on the board, the refusal of follow-on funding if start-ups miss milestones or the use of incentive contracts are further forms of monitoring and exercising power over the founding team (Bergemann & Hege, 1998; Bonnet & Wirtz, 2012).

Existing literature also provides evidence to explain why power holds slightly less importance to BAs. Since BAs are former founders, they understand the problems and challenges during the entrepreneurial process very well. Thus, as the cognitive distance between BAs and entrepreneurs is smaller than that of VCs, BAs are more cooperative, because they can better identify with the entrepreneurs and their needs, fears and wishes. Correspondingly, rather than putting pressure on founders to meet growth targets, BAs are proactively involved in mentoring and advising ventures and sharing their experience as former entrepreneurs (Bonini et al., 2019; Preston, 2007). By coaching the start-up team, BAs try to build a stable, trusting working relationship (Croce et al., 2021; Politis, 2008). In this context, the angel may even become a co-founder (Morrissette, 2007). Consequently, BAs interact frequently with the founding team, fostering strong interpersonal relationships and reducing power differentials (Granz et al., 2020). Thus, fewer conflicts arise between BAs and entrepreneurs (Croce et al., 2020), which implies that BAs perceive less necessity to assert their power claims. Since BAs have objectives beyond purely financial ones (Wetzel, 1983), they opt for simple contracts with the founders (Mason & Stark, 2004), indicating that they (can) exercise less power. Accordingly, BAs are less focused on predefined exit strategies and dates (Bonnet & Wirtz,

2012). Moreover, BAs operate more on an equal footing with the founders since they invest considerably smaller sums on average (7,6% of common share equity) than VCs (43%) (Goldfarb et al., 2014). Given that, VCs expend substantial amounts; this presumably entails a certain claim to power and influence.

Achievement-orientation appears to be relevant for both investor types as financial success is an important and fundamental incentive for entrepreneurial finance investors. Indeed, both investor groups exhibit high scores on this dimension. Nonetheless, though Duxbury et al. (1996) state that BAs strive for achievement and control, VCs score even higher in this dimension for a number of reasons. VCs present themselves as more achievement-oriented, striving to increase the value of the start-up in a short time, to exit the venture successfully and to generate the promised returns for their limited partners (Drover et al., 2017; van Osnabrugge, 2000). This finding is consistent with Granz et al. (2020) who characterize VCs as outcome-oriented, whereas BAs tend to be behavior-oriented, focusing more on the start-up team. Since VCs invest on behalf of other people, there is a certain pressure to succeed. Thus, they only pursue financial investment goals (Bonnet & Wirtz, 2012). Therefore, they set challenging, contractual milestones for their portfolio firms, which they have to reach in order to receive follow-on funding (Hsu et al., 2014a). Due to their financial objectives, VCs also pay more attention to criteria such as market and business model analyses or the venture's technology potential in their decision making, while BAs focus strongly on the characteristics and behavior of the founding team (Sudek, 2006; Wiltbank, 2005). This attitude, known as entrepreneurial orientation (Lindsay, 2004), may therefore lead BAs to prioritize ventures in challenging environments or with intriguing products over start-ups that promise secure returns. Indeed, existing studies show that VCs do achieve higher rates of return (van Osnabrugge, 2000). Certainly, BAs strive for financial success, but have additional altruistic motivations for investing, such as having fun or being part of an entrepreneurial venture (Croce et al., 2020;

Ramadani, 2009). For example, BAs derive satisfaction not only when founders heed their advice but their own entrepreneurial experience also makes them willing to support underperforming ventures for a longer period of time (Hsu et al., 2014a; Mason & Harrison, 2002). In line with this, Croce et al. (2020) found that BAs demonstrate more patience than VCs in developing the chosen venture and occasionally share (non-financial) objectives with the start-up team.

Due to both their primary objectives and professional background, VCs value **security** more than BAs. Predictability is less relevant for BAs than for VCs, as BAs are more adept at (and may even enjoy) dealing with challenging situations or unexpected events (Ramadani, 2009). The vast majority of BAs are former entrepreneurs who have experience with the “feeling of uncertainty” and may find fulfillment in working under such conditions. Uncertainty and the risk of failure are particularly high for BAs because they usually invest in early-stage companies that are not yet profitable (Wetzel, 1983). Accordingly, their selection of deals is mainly driven by the BAs’ gut feeling, intuition and instinct (Huang, 2018; Robinson & van Osnabrugge, 2000). In a similar vein, they place less emphasis on the contractual arrangements (incomplete contracts approach) and rely more on soft monitoring mechanisms such as their ability to intervene in the post-investment phase if necessary (Bonnet & Wirtz, 2012; van Osnabrugge, 2000). Hence, as BAs’ initial focus is on building a trustful relation with the entrepreneur, BAs do not draw up detailed contracts (Bonini et al., 2019; Croce et al., 2021). However, it is also part of the truth that BAs are usually high net worth individuals, which allows them to act more independently than VCs, who must adhere to the guidelines set by their employer (Zinecker et al., 2022).

Contrariwise, VCs feel pressure to meet the return targets, which is why they choose measures to minimize the risk of failure. VCs conduct intensive due diligence, use more

complex contractual terms and consider various potential exit options (Morrisette, 2007; van Osnabrugge, 2000). Through the frequent utilization of complex covenants, clauses and securities, VCs aim to reduce the risks of potential agency conflicts (Bonnet & Wirtz, 2012). Consequently, most contracts between start-ups and VCs incorporate specific elements, such as staged financing, the use of convertible preferred stock, or the provision of seats on the venture's board (Benjamin & Margulis, 2000; Wallmeroth et al., 2018). Staging is of considerable importance for VCs, because if ventures fail to meet the contractually agreed milestones, the VCs are able to refuse follow-on funding (Bergemann & Hege, 1998; Granz et al., 2020). Additionally, VCs have moved away from investing in early-stage start-ups towards more secure and established ones (Sapienza et al., 1996). Similarly, Chen et al. (2009a) have found that the preparedness of the founding team plays a fundamental role for VCs in their funding decision, even more important than the founders' level of entrepreneurial passion. Given that preparedness is associated with in-depth analyses and a high-quality business plan, this again indicates the VC's inclination for predictability. The higher security scores observed among VCs could also be attributed to their educational background. As highlighted above, a significant majority of VCs hold at least a Master's degree, and many have even attained a PhD, in contrast to BAs who predominantly possess a Bachelor's degree. Having likely acquired the skill of conducting thorough financial analyses to mitigate risks during their education, they are prone to applying this approach in their role as professional investors. Lastly, VCs may also take these actions (and share them on Twitter) to publicly demonstrate their commitment to delivering returns and their sense of responsibility to their investors. They might portray themselves as reliable investors, aiming to persuade limited partners to trust them with their investments. Ultimately, their goal is to convey trustworthiness, strengthening existing relationships with institutional investors and potentially attracting new limited partners for the future (Bonnet & Wirtz, 2012).

The previous explanations are consistent with our results from the multivariate analysis regarding the **universalism** dimension: the adverse impact on the probability of being a VC implies that the higher your appreciation for tolerance or equality among individuals, the less likely you will be a VC. When VCs exert influence over the funded venture (with the help of contracts or board positions) this creates power structures. The formation of hierarchies in turn leads to a loss of equality between the people involved (Magee & Galinsky, 2008). In turn, individuals who place less value on equality and tolerance tend to score lower on the universalism dimension - as do VCs. Therefore, the negative impact of universalism on the likelihood of being a VC can be attributed to the elevated power aspirations of VCs. Besides, VCs may have a lower tolerance for (start-up) failures than BAs, as VCs see the ventures as a means to achieve their financial goals. Again, BAs are more tolerant when faced with problems or serious challenges in the entrepreneurial process, drawing from their own experiences as founders. Accordingly, Freear et al. (1994) stress that more than 50% of their BA sample continue to support the funded venture even though lower returns are expected. Since BAs invest in new ventures for regional development and social reasons as well (Preston, 2007), this might offer an additional rationale for the positive impact of universalism on the likelihood of becoming a BA.

In terms of our last significant value dimension, the analysis reveals an unexpected but remarkable result. VCs exhibit a higher **stimulation** score compared to BAs, indicating a greater inclination to actively seek new opportunities or experiences in life. From our point of view, this result is quite surprising, as one of the main motivations for BAs to invest in start-ups is the opportunity to participate in something “new and uncertain”. Ramadani (2009) even compares BAs’ investment approach to gambling. Likewise, Lindsay (2004) explains that a high level of proactiveness is essential for BAs to both compete successfully with more visible investor types and to add value to the start-up through post-investment involvement. As it is in

the nature of entrepreneurial finance investors, we have expected VCs to be also curious about new (investment) opportunities or to get to know potential partners. However, we did not anticipate them surpassing the level of BAs, given that VCs typically rely on standardized routines and syndicate with known investors (Jääskeläinen, 2012; Wallmeroth et al., 2018). We posit that the VCs' higher stimulation score could be the result of utilizing Twitter as a tool for self-promotion or impression management (Saffer et al., 2013). By presenting themselves as particularly bold and open to new, innovative projects, they may be seeking to enhance their reputation or increase their attractiveness to prospective limited partners. Indeed, Fischer and Reuber (2014) have identified that managers, sharing more similarities with VCs than BAs, employ social media as a communication tool to market their products or services. Contrariwise, BAs are less likely to see Twitter as a marketing tool, as they do not need money from investors and therefore write tweets without the explicit intention of signaling their professionalism or attracting new partners. In a similar vein, Obschonka et al. (2017) discover that entrepreneurs (who frequently transition into BAs) exhibit a lower concern for impression management.

Overall, in terms of the overarching value dimensions, it is striking to see that both categories of **self-enhancement** (achievement and power) are highly valued by VCs. Consistent with this, individuals who score low on the opposite category of self-transcendence are more likely to be VCs. This is particularly noteworthy in the case of the universalism dimension (being part of the **self-transcendence** category), as our results suggest that individuals show a higher probability to be BAs when they value tolerance and equality among people. These findings, especially VC's achievement-orientation, reflect the primary investment objective of VCs, which is to meet pre-defined return targets (Bonnet & Wirtz, 2012). Regarding the second dimension of self-enhancement, VCs frequently implement standardized processes in funded

ventures to attain rapid growth, a task that necessitates a certain degree of power. Conversely, BAs have investment objectives beyond financial gains. These include a willingness to share their start-up experience, provide mentoring, or contribute to regional development and job creation (Preston, 2007). Hence, it is not surprising that individuals with high scores in the universalism dimension tend to be BAs. However, concerning the second overarching category, **openness to change** versus **conservation**, our findings are not as straightforward as in the case of self-enhancement. In this bipolar category, VCs score significantly high on both the conservation (security) and the contrasting openness to change dimension (stimulation). While we anticipated that VCs pursue conservation values due to their preference for control and predictability (of their investments), the results regarding stimulation are more unexpected, as mentioned above. In principle, the attributes associated with the stimulation value, such as the pursuit of exciting experiences, new challenges and variety, contrast sharply with those of the security value, which emphasizes stability and structure in life. We argue that VCs (and possibly their marketing assistants) are very conscious of using Twitter as a means of communication and are therefore careful about their choice of words. VC firms may aim to refrain from portraying themselves in a one-dimensional manner on Twitter, such as solely highlighting investment successes or the intensive due diligence process (which could account for the elevated scores in the security dimension). Accordingly, to explain the VCs' high score in the stimulation dimension, VCs might choose to employ language characterized by exciting and varied words and phrases, in order to present themselves as courageous and multifaceted individuals.

Limitations

Inevitably, the present study is not without limitations. First, since we identified value differences between BAs and VCs based on their Twitter texts, we only considered investors who are active on the social media platform Twitter. Therefore, there might be a potential

selection bias as investors who use other social media platforms (and aim to reach a different audience) or do not blog online at all could exhibit different scores in other value dimensions (Block et al., 2019). Furthermore, even though our sample is broadly consistent with previous literature on the demographic characteristics of entrepreneurial finance investors, social media users are typically younger (Perrin, 2015). This could potentially lead to an over-representation of younger investors. For these reasons, it may be useful to conduct similar analyses on different social media platforms and to employ other methods to uncover psychological differences, such as surveys.

Second, our study sought to explore variations in human values between the two predominant types of start-up investors and the reasons behind them. However, as individual investors differ from one another in terms of demographic characteristics, investment objectives or skills, for example, we are aware that both BAs and VCs do not represent homogeneous groups (Croce et al., 2021; Tenca et al., 2019). That is why, it can be dangerous to make generalizations about their psychological profiles (Lindsay, 2004). Nevertheless, we see this study as a useful starting point for further analysis of each dimension in the future, as well as for identifying in-group-differences. Thus, future studies could investigate whether value differences can also be found within an investor group when cultural and country-specific factors are taken into greater account. Moreover, as women are still largely underrepresented in the entrepreneurial finance landscape (White & Dumay, 2017), it would be interesting to analyze whether there are value variations between male and female investors and whether these are comparable to society as a whole.

Third, although psychology and values in particular are assumed to be relatively stable over time (Haan et al., 1986; Rokeach, 1973), we see the possibility that the length of time an individual has been an active investor may change her value system over the years. Indeed, it

would be intriguing to examine how certain events, developments or crises impact the investor's values. For example, in the context of entrepreneurial finance, one could explore whether investment failures or intensive collaboration with co-investors significantly alter the value systems of investors. We therefore call for future studies that delve into the temporal component and the longitudinal evolution of psychological traits, similar to the approach taken by Weismayer et al. (2021) in measuring how emotions change over time by analyzing Instagram posts.

Fourth, as highlighted earlier in the discussion, it is plausible that investors may not spontaneously express their sentiments on Twitter but instead take (considerable) time to deliberate on the content they wish to convey and the manner in which they articulate it. Thus, similar to managers valuing Twitter as a strategic communication platform (Fischer & Reuber, 2014), VCs could utilize Twitter as a marketing or retention tool for their limited partners (Saffer et al., 2013). As they depend on the money flow from the limited partners, VCs will pay more attention to their choice of words and may not give free rein to their emotions. Naturally, in such cases, VCs are inclined to present themselves as positive, affable, or professional investors. In fact, VCs try to convince fund providers of the quality of their investments by emphasizing a number of different actions (van Osnabrugge, 2000): they communicate their remarkable qualifications, their industry expertise, or the clearly defined procedures used in the selection of targets. Furthermore, there is the risk that it is not the investors themselves who author the Twitter posts, but that assistants manage the account. To mitigate this bias, all "superstar" accounts with more than 500,000 followers were excluded from the sample (Block et al., 2019).

Implications

Our findings offer interesting insights for both practitioners and scholars. First, our paper provides a starting point for future scientific contributions dealing with the psychology of entrepreneurial finance investors. While values constitute a fundamental aspect of one's psychology, there is a necessity to explore other psychological characteristics of investors, such as personality traits, attitudes, moral foundations or emotions. Accordingly, researchers may focus on the interdependencies between different frameworks and study, which psychological dimensions go hand in hand. In fact, current research provides evidence to jointly examine various psychological traits: Feldman's meta analysis (2021) indicates that personal values are associated with moral foundations. For instance, the dimensions of conservation vs. openness to change show strong links to the binding foundations. Therefore, conducting a thorough and multidimensional examination of investor psychology will help to create more detailed profiles. By this means, researchers could supplement Sullivan and Miller's (1996) seminal paper and the three types of investors they identified by providing a detailed list of relevant psychological characteristics. Furthermore, there is a need to better understand the impact of values (and other psychological traits) on investment-related outcome variables. Therefore, future studies could analyse the effects of psychological characteristics on specific variables, such as investment performance, syndicate partner selection or exit choices. In this context, our paper sheds light on which investor values are particularly relevant for a more thorough analysis.

Second, our paper introduces a new dimension to the ongoing "friends versus foes" discourse. Our results show that BAs as co-investors can indeed fulfill a complementary and important role for VCs. Since BAs navigate between both "worlds" (of founders and institutional investors) and demonstrate entrepreneurial orientation, for example (Lindsay, 2004), they have a reduced cognitive distance to both groups (Bonnet & Wirtz, 2012), enabling

them to act as effective translators and mitigate potential conflicts (Wallmeroth et al., 2018). Thus, BAs and VCs differ (and complement each other) not only in their financial resources and skills, but also in their value characteristics. This implies that future studies could explore whether both groups of investors take their value systems into account when choosing co-investors. For example, it could be examined whether investors reflect on their values and contemplate selecting individuals with differing values.

Third, our study has substantial practical relevance. With regard to founders, understanding the dominant values of investors would be beneficial to persuade them of the business idea and ultimately obtain funding. For this reason, founders are advised to tailor the presentation of their venture and to emphasize certain aspects depending on the type of investor and their value system (Mason & Stark, 2004). Based on our value analysis, we can make concrete recommendations for pitching to start-up investors. Since VCs exhibit notably high scores in the self-enhancement dimension, founders should articulate precise growth and profit targets for upcoming periods in order to address the VCs' striving for achievement. In order to consider the second self-enhancement dimension, power, entrepreneurs can refer to the extent to which the VCs are provided with opportunities to monitor the venture. As we have shown that VCs are also concerned about the security of their investment, founders should be able to present a structured business plan with realistic figures. In particular, the start-up team should be prepared for financially relevant queries from VCs. Conversely, entrepreneurs may shift their focus when presenting their venture to BAs. Since most of the BAs themselves have founding experience, the start-up team, their skills and the founding story, including challenges and milestones, can be explained in much more detail. In addition, it would be possible to identify potential areas where BA's mentoring could be beneficial, emphasizing its value added. Overall, assessing the investor's value system can have a major impact on how to successfully pitch the venture. It can also aid in identifying potential challenges stemming from divergent

or shared values, thus improving the alignment between entrepreneurs and investors (Murnieks et al., 2011).

Fourth, this paper presents practical implications for co-investors and local authorities. Understanding the prevailing values of investors is important not only when entrepreneurs are preparing their pitches, but also when investors search for potential syndicate partners (Duxbury et al., 1996a). Indeed, the decision to invest alone or to form a syndicate will be influenced by the psychology and values of the potential co-investor (Block et al., 2019). For example, a lead investor might recognize that high levels of stimulation or power of the potential co-investor (which the lead lacks) could add value to the development of the venture. In this way, the parties mentioned can find mutually compatible partners by studying the cognitive profile of the investor. Moreover, in order to promote entrepreneurial development in a particular region, it is helpful for authorities to understand the value dimensions that local investors are pursuing. By analyzing the investors' dominant values, the authorities could match the investor with a suitable start-up team, thus facilitating more efficient start-up financing (Aram, 1989). Finally, the analysis of one's own value system could serve as a self-reflection tool to better understand the influence of values on both the venture valuation and the investment decisions (Mitteneß et al., 2012), and thus to make them more objective.

ACKNOWLEDGEMENTS

We express our gratitude to the participants of the G-Forum held in Darmstadt in 2023 and the Babson College Entrepreneurship Research Conference (BCERC) 2024 in Munich, as well as to the doctoral seminars in Giessen, for their valuable comments and feedback on earlier drafts of this study.

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Figure 1

Schwartz' (1992) framework of personal values.

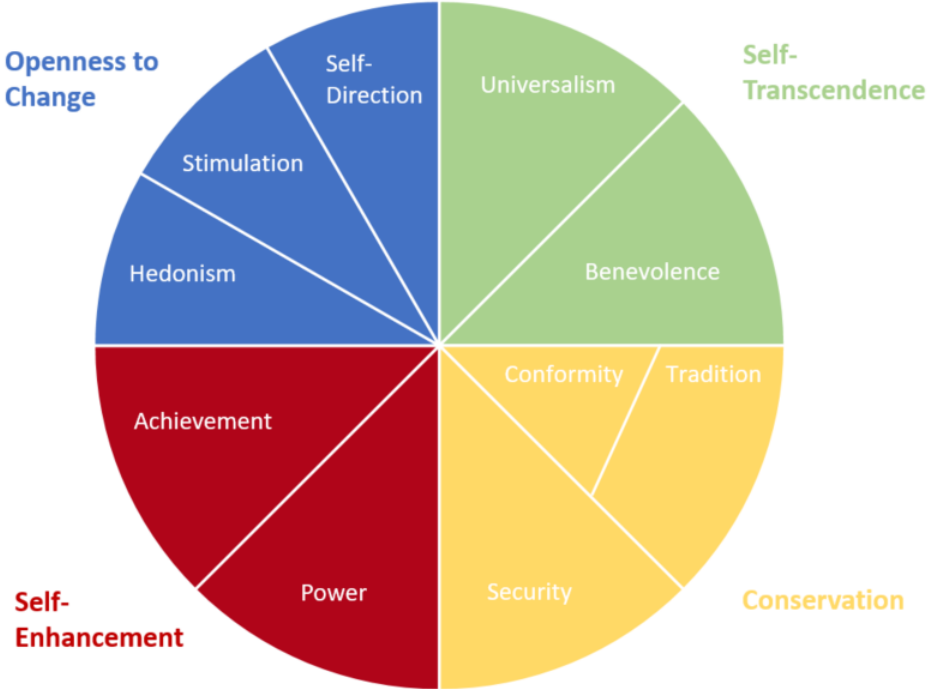


Table 1**Description of variables according to Schwartz' (1992) framework of personal values.**

<i>Variables</i>	<i>Description</i>	<i>Mean</i>	<i>SD</i>	<i>Min.</i>	<i>Median</i>	<i>Max</i>
<i>Personal Values</i>						
<i>Self-direction</i>	Valuing autonomy, individual freedom, and self-determination.	0,29	0,23	0,00	0,25	2,65
<i>Stimulation</i>	The desire for new opportunities and encounters in life.	0,15	0,14	0,00	0,12	1,28
<i>Hedonism</i>	Appreciating pleasure and the pursuit of enjoyable moments.	0,09	0,09	0,00	0,07	0,67
<i>Achievement</i>	Striving for personal success and attaining ambitious goals.	0,31	0,22	0,00	0,26	2,62
<i>Power</i>	Striving for influence and control over others and asserting dominance.	1,84	0,35	0,96	1,81	3,99
<i>Security</i>	Valuing stability, safety, and predictability in life.	0,09	0,16	0,00	0,06	2,83
<i>Conformity</i>	Recognizing social norms and expectations to gain acceptance in society.	0,10	0,11	0,00	0,08	1,06
<i>Tradition</i>	Preserving traditions, cultural customs and values.	0,06	0,13	0,00	0,03	1,86
<i>Benevolence</i>	Valuing empathy & goodwill and promoting the welfare of others.	0,21	0,16	0,00	0,18	1,41
<i>Universalism</i>	Emphasizing tolerance and the equality of all people.	0,21	0,20	0,00	0,17	2,21

Table 2

Group differences between business angels and venture capitalists.

	(0) Business Angel (N = 500)		(1) Venture Capitalists (N = 478)		t-test (1-0)
	Mean	SD	Mean	SD	
<i>Personal Values</i>					
<i>Self-direction</i>	0,30	0,23	0,28	0,23	-0,02
<i>Stimulation</i>	0,13	0,14	0,16	0,14	0,03***
<i>Hedonism</i>	0,09	0,09	0,09	0,08	0,00
<i>Achievement</i>	0,29	0,22	0,32	0,23	0,03***
<i>Power</i>	1,81	0,32	1,88	0,39	0,07***
<i>Security</i>	0,08	0,14	0,10	0,19	0,02***
<i>Conformity</i>	0,11	0,12	0,10	0,10	-0,01
<i>Tradition</i>	0,06	0,16	0,05	0,09	-0,01
<i>Benevolence</i>	0,22	0,16	0,20	0,16	-0,02
<i>Universalism</i>	0,22	0,21	0,21	0,18	-0,01

Notes: * $p < 0.10$. ** $p < 0.05$. *** $p < 0.01$.

N=978

Table 3

Logistic regression (dependent variable: Business Angel 0/1).

<i>Model 1 Logit (SE)</i>		
<i>Age</i>	-0,05 (0,02)	**
<i>Country</i>	0,03 (0,02)	*
<i>Gender(male)</i>	1,32 (0,8)	**
<i>Education</i>	0,54 (0,35)	**
<i>Educationstart</i>	0,00 (0,02)	*
<i>Investorstart</i>	0,00 (0,02)	
<i>Careerstart</i>	0,00 (0,03)	*
<i>Follower</i>	0,00 (0)	***
<i>Tweets</i>	0,00 (0)	*
<i>Personal Values</i>		
<i>Self-direction</i>	-0,46 (0,9)	
<i>Stimulation</i>	1,43 (1,96)	*
<i>Hedonism</i>	-1,57 (3,25)	
<i>Achievement</i>	1,40 (1,24)	*
<i>Power</i>	0,86 (0,71)	*
<i>Security</i>	3,21 (2,63)	*
<i>Conformity</i>	-0,29 (2,54)	
<i>Tradition</i>	-0,32 (1,52)	
<i>Benevolence</i>	-0,91 (1,55)	
<i>Universalism</i>	-1,78 (1,44)	**
<i>Pseudo-R² (Log likelihood)</i>	0,34	

Notes: * $p < 0.10$. ** $p < 0.05$. *** $p < 0.01$.

Table 4
Correlations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
(1) Group																				
(2) Age	0,09																			
(3) Country	0,05	-0,15 *																		
(4) Gender	0,09	-0,05	-0,02																	
(5) Education	0,28 ***	0,10	0,12	0,02																
(6) Educationstart	-0,07	0,07	0,06	-0,04	-0,05															
(7) Investorstart	-0,31 ***	0,07	-0,01	0,05	-0,05	0,31 ***														
(8) Careerstart	-0,04	0,01	0,03	0,02	0,01	0,14 *	-0,04													
(9) Followers	-0,28 *	0,07	-0,06	-0,08	-0,05	-0,10 *	-0,14	0,00												
(10) Tweets	-0,24 **	-0,05	0,00	-0,15	-0,08	-0,11	-0,21	0,04	0,64 ***											
(11) Stimulation	0,20 **	0,01	-0,15	0,23 **	0,12	-0,03	-0,02	0,01	0,07	-0,05										
(12) Selfdirection	-0,09	0,10	-0,19	0,07	-0,03	0,14	0,03	0,01	0,14	0,02	0,27 ***									
(13) Hedonism	-0,14 *	0,09	-0,03	0,12 **	-0,08	0,05	0,12	-0,08	0,07	0,07	0,09	0,08								
(14) Achievement	0,11	0,11 **	-0,17 *	0,23 **	0,02	-0,13	0,03	0,06	0,06	-0,03	0,36 ***	0,23 **	0,19 **							
(15) Power	0,15 *	0,00	-0,22 **	-0,01	-0,03	0,00	-0,03	-0,09	-0,01	-0,04	0,22 *	0,02	-0,09	0,08						
(16) Security	0,04	0,15	-0,17	0,07 *	0,03	0,09	-0,08	0,09	0,13	0,15	0,22 **	0,28 *	0,07	0,17	0,03					
(17) Conformity	-0,02	0,07	-0,14	0,04	0,03	0,08	-0,06	0,13	0,17	0,16	0,16 *	0,38 ***	0,04	0,16 *	0,05	0,24 ***				
(18) Tradition	0,06	0,04	-0,06	0,02	-0,01	0,11	0,03	0,04	0,04	-0,01	0,11	0,15	-0,04	0,13	0,11	0,08	0,15			
(19) Benevolence	-0,01	0,07	-0,22 *	0,14 *	-0,02	0,02	0,01	0,05	0,01	-0,05	0,20 *	0,32 **	0,20 **	0,30 ***	-0,04	0,30 ***	0,14 **	0,13		
(20) Universalism	0,03	0,21 **	-0,19 **	0,15 *	0,07	0,08	0,01	0,12	0,05	-0,04	0,23	0,26 ***	-0,01	0,28 ***	-0,01	0,31 ***	0,23 ***	0,19	0,31 ***	

Notes: * $p < 0.10$. ** $p < 0.05$. *** $p < 0.01$

**Paper III: Exploring Changes in Entrepreneurial Personality Traits: A Big Five
Twitter Analysis of Indian and US-American Entrepreneurs Pre- and Post-COVID-19-
Outbreak**

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Status:

- Presented at G-Forum 2023 in Darmstadt (Germany)

Abstract

This study examines the impact of the COVID-19 pandemic on the personality traits and behaviors of tech entrepreneurs in the US and India, using the Big Five personality model and Hofstede's cultural dimensions. By analyzing the tweets of U.S. and Indian tech entrepreneurs, with a focus on changes before and after the onset of COVID-19 in 2020, this research provides an accurate comparison of personality traits before and after the pandemic. By identifying changes in the Big Five personality traits, the study aims to better understand how global crises affect the psychological profiles of entrepreneurs. It also explores the influence of individual differences on the use of social networking sites, particularly Twitter.

Our research examined the differences in personality traits between Indian and U.S. entrepreneurs and the changes in these traits following the COVID-19 outbreak. Our results revealed significant shifts in two key personality traits - openness and extraversion - between the two groups. The findings have important implications for understanding the impact of major societal disruptions on the psychological characteristics of entrepreneurs from different cultural backgrounds.

Keywords: entrepreneurship, entrepreneur personality, twitter, personality, crisis, covid-19, liwc, big five, international comparison

Word count: 6,799

Introduction

The world is currently re-emerging from an unprecedented crisis. The novel coronavirus that began to spread in late 2019 and early 2020 was recorded in nearly every country and region of the world (Al-Omiri et al., 2021; World Health Organization, 2024). The response to contain the spread of the virus was also unprecedented. In the early stages of the pandemic, entire countries implemented lockdowns to reduce transmission, travel was restricted and preventive behaviors were performed e.g. wearing a face mask, limiting in-person contacts, keeping a distance to others in public, washing hands, and using a disinfectant (Airaksinen et al., 2021; Brooks et al., 2020). These measures were essential to controlling the spread of the virus (Lai et al., 2020). Nevertheless, the personal fear of the virus and the pressure of social restrictions have led to significant psychological effects (Al-Omiri et al., 2021; Trnka & Lorencova, 2020). For decades, personality traits were considered stable; however, it has been found that they can indeed change due to personal or external crises (Borghuis et al., 2017; Specht et al., 2011; Wortman et al., 2012).

Research in psychology has suggested that underlying psychological constructs, more specifically personality traits, can explain preferences and behaviour to a large extent (Ozer & Benet-Martínez, 2006). Recent meta-analytic studies have shown significant links between personality and entrepreneurship, but these findings are primarily focused on business performance (Brandstätter, 2011). Although, it has been recently shown that the digital footprint of individuals can be used to automatically infer their personality. For example, Kosinski et al. (2013) and Youyou et al. (2015) showed that automated personality judgments based on Facebook likes are more accurate than those made by users' friends or even their spouses. Social Networking Sites (SNS) like Twitter (now X) and Facebook have emerged as digital platforms that allow users to create and share virtual profiles. Despite the widespread integration of the

Internet and social media into everyday life, there has been a noticeable lack of research focusing on the underlying factors that drive individuals' engagement with SNS. Latest research suggest that there is growing interest in understanding how individual differences shape online behavior, especially as it relates to SNS use (Amiel & Sargent, 2004; Hughes et al., 2012).

The interrelational aspects of the five-factor theory of personality and culture are extensively supported by the work of McCrae and Costa (1996) and Hofstede (2004), who emphasize the distinction between biologically based tendencies and culturally shaped adaptations (Costa & McCrae, 1996; Hofstede & McCrae, 2004; McCrae, 2000; Migliore, 2011). For instance, language is a universal basic tendency, but the cultural environment influences its adaptation. Other studies that emphasize the interrelationship between personality and culture include those by Parsons and Shils (1951), Norman (1963), Digman (1990), Goldberg et al. (1992; 2006), and Hofstede and McCrae (2004). These studies distinguish between values at the national cultural level and individual personality traits, based on the premise that individuals adapt their actions and reactions to circumstances using their repertoire of learned responses (Migliore, 2011). These studies do not focus on the personality traits of entrepreneurs, nor do they examine the impact of a crisis.

A comparison between the U.S. and India is particularly interesting because of the sharp contrasts and unique dynamics in their respective economic environments, cultural contexts and entrepreneurial ecosystems (Hofstede & McCrae, 2004; Migliore, 2011). The U.S., with its mature and highly developed market, provides a rich benchmark for understanding how established economic principles and cultural values influence entrepreneurial behavior and business practices. In contrast, India, with its emerging market status and rapid economic transformation, offers a compelling case for studying how different cultural and economic factors interact to shape entrepreneurial outcomes. The post-COVID-19 macro-financial

package in India, aimed at encouraging spending over saving, provides a unique opportunity to observe the effects of targeted economic interventions on entrepreneurial activity (Goyal, 2020).

However, currently there is a lack of knowledge on **a) how Indian and US-American entrepreneurs differ in their Big five personality traits and b) whether there is a change in personality traits of Indian and US-American entrepreneurs before and after the COVID-19-Outbreak**. Accordingly, we fit our conceptual model (see Figure 1) to answer these questions by examining the following:

Insert Figure 1 about here

The scientific objective behind this approach is twofold. On one hand to contribute to the understanding of how global crises, such as the COVID-19 pandemic, affects the personality traits and behavioral patterns of entrepreneurs. By comparing two international groups of entrepreneurs—specifically Indian, US-American—, and their personality factors before and after the pandemic, this study aims to identify potential changes or adaptations in their psychological profiles.

National cultural differences in work-related values and personality traits interact to shape the behavior of individuals and social groups (Hofstede & McCrae, 2004). For example, the Indian market exemplifies how individual personality traits combine with national cultural characteristics (Hofstede, 2013; Hofstede & McCrae, 2004). Understanding this interplay is critical to gaining market insights and effectively engaging with Indian stakeholders. Achieving organizational success in the global marketplace of the 21st century requires the ability to adapt

to the diverse cultural nuances inherent in the expanding global economy. Research has shown for decades that national culture significantly influences several core business activities, including organizational structure, leadership practices, ethics, negotiations, communication, and sales and marketing strategies (Hofstede, 1980). Consequently, understanding and being sensitive to cultural differences has become an essential competency. This competency allows for the adaptation and alignment of organizational practices with the business practices of the countries in which companies operate (Corporate Leadership Council, 2003).

The inclusion of a one-year time lag, starting with the onset of COVID-19 in 2020, allows for a more precise analysis of these changes over time. This methodology enhances the comparability of pre- and post-COVID-19 personality factors, thereby providing valuable insights into the resilience, adaptability, and psychological evolution of Indian and US-American entrepreneurs in the face of unprecedented global challenges.

On the other hand, it aims to further understand the impact of individual differences on social networking site (SNS) usage. Specifically, we examine the relationships between the five personality traits Extraversion, Agreeableness, Openness, Conscientiousness and Neuroticism/Emotional Stability (Goldberg, 1992; Goldberg et al., 2006) in how individuals use the social and informational aspects of one of the leading SNS platforms: Twitter.

This study holds significant scientific relevance as it fills the research gap by incorporating and testing the Big Five personality on Indian and US-entrepreneurs in the tech-industry before and after COVID-19 within a model. The key research objectives are to develop and empirically test a model that compares the general Big Five personality traits of entrepreneurs before and after COVID-19. We systematically collected all available tweets from our sample group, encompassing a one-year lag from the onset of the COVID-19 pandemic. Specifically, this timeframe begins with the declaration of COVID-19 as a public health emergency of

international concern on January 30, 2020, and extends for one year to the period following the World Health Organization's declaration of the outbreak as a pandemic on March 11, 2020 (World Health Organization, 2024).

Theoretical background

The Entrepreneur

Entrepreneurs play a key role as initiators and drivers of new ideas, products and services in the marketplace. According to Shane and Venkataraman (2000), entrepreneurs are individuals who identify and exploit opportunities and accept risks and uncertainties to create and grow ventures. They tend to be innovative, creative and imaginative, often breaking new ground to achieve their vision. What is most fascinating about entrepreneurs is their ability to see opportunities where others see challenges (Shane, 2003). They exhibit a unique blend of traits, including resilience, adaptability and a willingness to accept failure as part of the learning process (Gartner, 1989). In addition, their ability to assemble resources, build networks and manage ambiguity while driving change contributes significantly to economic development and societal progress (Baumol, 1996). Entrepreneurs embody a diverse range of individuals, from small business owners to high-profile visionaries, each contributing their own perspectives and innovations to the entrepreneurial landscape.

In order to understand the dynamics and impact of entrepreneurial endeavours in different socio-cultural, economic and geographical contexts, the study of entrepreneurs at an international level is of great importance. The comparative analysis of entrepreneurs at the international level allows the identification of different entrepreneurial practices, strategies and outcomes across regions and countries. This approach helps to identify the influence of cultural norms, institutional frameworks and regulatory environments on entrepreneurial activities (Acs & Armington, 2006; Lehto, 2015; Loué, 2018). Furthermore, international comparisons shed

light on the effectiveness of different entrepreneurial support systems, policies and incentives implemented by different countries, providing valuable insights into best practices and areas for improvement (Stephan & Uhlaner, 2010). Studying entrepreneurs across borders fosters a deeper understanding of the global economy, trade patterns, innovation diffusion and the role of entrepreneurship in driving economic growth and development (Audretsch & Keilbach, 2004). Diversifying entrepreneurship research internationally not only enriches academic discourse, but also provides policymakers and practitioners with actionable knowledge to foster a more conducive environment for entrepreneurial activity worldwide.

Big Five Modell (Goldberg)

By the early 1960s, personality psychologists were growing increasingly discontent with the psychodynamic approach. This approach focused primarily on instincts and conflict, portraying a generally pessimistic view of human nature. In contrast, humanistic psychologists directed their attention towards how individuals pursue self-transcendence and self-actualization. Maslow identifies self-actualization as the highest psychological need, emerging when all fundamental physical and psychological needs are fulfilled, and a sense of self-worth is attained (Myers & DeWall, 2023). According to Maslow, self-transcendence involves the pursuit of finding one's identity. Critics argue that humanistic psychology overlooks the realistic engagement with the negative aspects of human beings. Therefore, trait theorists aim to define personality by emphasizing stable and enduring behavior patterns, rather than depending on unconscious drives or limited avenues for personal growth. Personality is not an object and is not tangible. Each individual has a unique essence of thought, emotion, and resulting behavior (Myers & DeWall, 2023). Personality traits are used to describe an individual's personality and are directly derived from trait theory (Obschonka et al., 2017)

This study used the Big Five personality traits, also known as the Five-Factor Model, to represent the normal range of personality (Digman, 1990). The Big Five provides a widely accepted taxonomy that enhances understanding of the relationship between personality constructs and important organizational outcomes. The individual personality traits are defined below for better understanding.

Agreeableness

Agreeableness refers to an individual's tendency to be cooperative, friendly, and helpful. Individuals high in agreeableness tend to be empathetic and value harmonious relationships. Entrepreneurs with high agreeableness tend to be better at building strong, supportive networks and managing conflict effectively. In collectivist Asian cultures, agreeableness can play a critical role in leadership and team management, emphasizing group cohesion. In contrast, in American contexts, agreeableness can help foster a positive workplace culture and improve customer relations. (Goldberg, 1992; Goldberg et al., 2006)

Extraversion

Extraversion refers to an individual's tendency to be outgoing, energetic, and stimulated by external interactions. Individuals who score high on Extraversion are often communicative, assertive, and actively seek social engagement. In an entrepreneurial context, particularly among tech entrepreneurs, high levels of extraversion can be advantageous because they facilitate networking, team leadership, and motivating others. Cultural differences can influence how extraversion manifests, with Asian cultures potentially having different social norms and interaction styles than more individualistic American cultures. (Goldberg, 1992; Goldberg et al., 2006)

Openness to experience

Openness to Experience describes an individual's tendency to be curious, creative, and receptive to new ideas and experiences. High scores on this dimension are associated with intellectual curiosity and a preference for diversity and innovation. Entrepreneurs who are open to new experiences are often at the forefront of developing innovative products and services. This trait is particularly valuable in the technology industry, both in Asia and US-America, as it promotes adaptability to rapidly changing markets and technologies. (Goldberg, 1992; Goldberg et al., 2006)

Conscientiousness

Conscientiousness includes the tendency to be organized, dependable, and goal-oriented. Individuals high in Conscientiousness are typically disciplined and strive for high performance and perfection. Entrepreneurs who score high on conscientiousness demonstrate a strong work ethic and the ability to effectively plan and pursue long-term goals. In Asian cultures, this trait may be reflected in a high regard for discipline and responsibility. In American contexts, conscientiousness is often associated with entrepreneurial success and the ability to manage large projects efficiently. (Goldberg, 1992; Goldberg et al., 2006)

Neuroticism

Neuroticism refers to the tendency to experience emotional instability and negative emotions such as anxiety, anger, or depression. Individuals with high levels of neuroticism are more susceptible to stress and are likely to perceive challenging situations as more threatening. For business owners, high levels of neuroticism can be detrimental because they can interfere with effective stress management and decision-making. Cultural differences in the acceptance and expression of emotions may mean that Asian and American entrepreneurs experience and

respond to neuroticism differently, influenced by cultural norms and support systems. (Goldberg, 1992; Goldberg et al., 2006)

COVID-19-Outbreak

The global community is now in a period of recovery from an unprecedented crisis. The novel coronavirus that began to spread in late 2019 and early 2020 had been documented in nearly every nation and territory in the world (Al-Omiri et al., 2021). The measures taken to contain the spread of the virus were also unprecedented. During the early stages of the pandemic, entire nations imposed lockdowns in an effort to curb transmission (Brooks et al., 2020). These measures were critical in controlling the spread of the virus (Lai et al., 2020). However, the fear of the virus and the stress of social restrictions have left significant psychological effects (Trnka & Lorencova, 2020). (Al-Omiri et al., 2021)

This study examines whether there are immediate changes in personality traits and facets of the Big Five Model (Costa & McCrae, 1992; Goldberg, 1992) in response to the coronavirus pandemic. Big Five traits represent stable individual differences that typically remain consistent despite normative stressful life events (Goldberg, 1992). Despite their usual stability, research from psychology (Depoux et al., 2020) and intervention studies (Dong & Bouey, 2020) suggests that these traits may change in response to stress and therapeutic interventions, respectively. The coronavirus outbreak and its response have significantly disrupted many aspects of life, including basic motivations (e.g., relationships, work) and daily activities, which are critical to research on adult personality development (Wang et al., 2020).

Hofstede's model for cultural distance

Hofstede's cross-cultural research, originally conducted as a study within the multinational corporation IBM, provides a detailed framework for understanding country-

specific differences in employee values (Hofstede, 2013). It clearly shows culture's role in entrepreneurship.

Hofstede's research is particularly noteworthy for establishing the five cultural dimensions used to analyze cultures and their relationship to the Big Five/five-factor model of personality. This has sparked renewed interest among psychologists in the intersection of personality and culture (Lee et al., 2013). Hofstede and McCrae (2004) found that mean personality scores from 33 countries were significantly correlated with Hofstede's cultural dimensions. Smith and Bond (1999) also hypothesized that McCrae's personality scores would correlate with Hofstede's cultural dimensions and predicted strong positive correlations such as individualism with extraversion, uncertainty avoidance with neuroticism, and power distance with conscientiousness. However, Hofstede and McCrae differ on whether these variables are predictors or criteria. Hofstede's framework outlines five cultural dimensions of work-related values at the national level:

- *Individualism-Collectivism*: This dimension measures whether individuals are expected to take care of themselves or remain integrated into groups. Individualistic societies emphasize self-reliance and care for the immediate family, whereas collectivistic societies emphasize lifelong loyalty and group cohesion (Hofstede et al., 2005).
- *Power distance*: Defined as the extent to which less powerful members of institutions and organizations expect and accept that power is distributed unequally (Hofstede et al., 2005).
- *Masculinity-Femininity*: This dimension differentiates societies based on gender roles, with masculine societies emphasizing assertiveness, toughness, and material success, and feminine societies emphasizing modesty, tenderness, and quality of life (Hofstede et al., 2005).

- *Uncertainty Avoidance*: This dimension describes how members of a culture feel threatened by ambiguous or unknown situations and the extent to which they try to avoid such situations (Hofstede et al., 2005).
- *Time Orientation*: This dimension measures the extent to which a culture values long-term versus short-term satisfaction of material, social, and emotional needs (Hofstede et al., 2005).

These dimensions provide a comprehensive framework for analyzing and comparing cultural values and their impact on behavior and organizational practices at the national level.

Hofstede characterizes culture as "the collective programming of the mind that distinguishes members of one group or category of people from another" (Hofstede et al., 2005). This concept is consistent with the classical theory that personality structures and cultural traits are interrelated. According to this theory, individuals within a culture develop similar characteristics due to shared cultural influences, implying that cultural differences result in different personality traits (Hofstede & McCrae, 2004). Hofstede further clarifies that culture operates at multiple levels, including the national, organizational, and individual levels (Hofstede, 2013). In the context of American culture, assertiveness is often interpreted as a leadership trait, reinforcing the perception that individuals who are more vocal are also more competent.

McCrae and Allik (2002), proposes that the cultural characteristics of a society may be influenced by the collective personality traits of its members (reverse causation hypothesis). Value systems and their associated institutions can be understood as social adaptations to the psychological environment created by these distributions of personality traits. McCrae's research (Allik & McCrae, 2002; McCrae, 2000; McCrae & Allik, 2002) shows that higher levels of neuroticism and lower levels of agreeableness are associated with increased

uncertainty avoidance. According to the reverse causation hypothesis, a group predisposed to such personality traits tends to experience tension and irritability, leading to challenging interpersonal interactions. Each new decision becomes a potential source of conflict, necessitating a rigid set of rules and the avoidance of novel situations, thereby fostering the development of values and institutions characteristic of high uncertainty avoidance societies. Furthermore, McCrae's (2002; 2000) findings indicate a significant correlation between extraversion and individualism. From a reverse causation perspective, it may seem counterintuitive that introverts form close-knit groups. However, these groups often consist of familiar individuals, such as family or colleagues. Collectivism supports social interactions within these groups of introverts, who are typically reluctant to make new social contacts. On the other hand, individualism promotes the open social interactions that are naturally preferred by groups of extraverts (Robie et al., 2005).

A comparative study of the U.S. and India is particularly compelling because of the marked contrasts and unique dynamics in their economic environments, cultural contexts, and entrepreneurial ecosystems (Hofstede & McCrae, 2004; Migliore, 2011). The U.S., with its mature and highly developed market, serves as a rich benchmark for understanding how established economic principles and cultural values influence entrepreneurial behavior and business practices. In contrast, India's status as an emerging market undergoing rapid economic transformation provides a valuable case for examining the interaction of different cultural and economic factors in shaping entrepreneurial outcomes. The post-COVID-19 macro-financial package in India, designed to encourage spending over saving, provides a unique opportunity to observe the effects of targeted economic interventions on entrepreneurial activity (Goyal, 2020).

Hypotheses Development

Based on Hofstede's and Goldberg's research (Goldberg, 1992; Goldberg et al., 2006; Hofstede, 2001, 2013; Hofstede & McCrae, 2004), several research questions can be formulated from which the following testable hypotheses can be derived.

Research Questions:

- a) "How do Indian and US-American entrepreneurs differ in their personality traits?"
- b) "Is there a change in personality traits of Indian and US-American entrepreneurs before and after the COVID-19-Outbreak?"

Hypotheses:

First, individuals from the U.S. and Asia are expected to exhibit differences in personality traits that correspond to the cultural dimensions that most clearly differentiate these two regions. The primary cultural dimensions that distinguish these cultures are individualism and uncertainty avoidance (Robie et al., 2005). The US is characterized by high individualism, and individuals from high individualism cultures typically score higher on **Extraversion** (Hofstede & McCrae, 2004; Leutner et al., 2014; Obschonka et al., 2019; Robie et al., 2005). Conversely, the U.S. has lower levels of uncertainty avoidance, and individuals from low uncertainty avoidance cultures tend to score low on **agreeableness** and high in **emotional stability** (measured in this study as negative neuroticism) (Hofstede & McCrae, 2004; Kajonius & Mac Giolla, 2017; McCrae & Allik, 2002; Robie et al., 2005). Furthermore, cultural dimensions such as long-term orientation and uncertainty avoidance may influence **conscientiousness**. Cultures with high long-term orientation and high uncertainty avoidance, like Asian countries, may foster higher levels of conscientiousness due to their emphasis on perseverance, thriftiness, and a strong sense of duty (Gow et al., 2016; Heine & Buchtel, 2009;

Hofstede & McCrae, 2004; Mayatürk Akyol, 2016). **Openness to experience** is likely influenced by individualism. High individualism supports self-expression and innovation, leading to higher levels of openness to experience (Allik & McCrae, 2002, 2004; Hofstede & McCrae, 2004; Schmitt et al., 2007). Using a sample of entrepreneurs from the U.S. and India, the following hypotheses were formulated:

H1a): US-American entrepreneurs are probably more extraverted than Indian entrepreneurs are.

H1b) Entrepreneurs' Extraversion changed significantly after the COVID-19 outbreak.

H2a): US-American entrepreneurs probably exhibit lower agreeableness compared to Indian entrepreneurs.

H2b) Entrepreneurs' Agreeableness changed significantly after the COVID-19 outbreak.

H3a): US-American entrepreneurs may tend to be emotionally more stable than Indian entrepreneurs are.

H3b) Entrepreneurs' Neuroticism changed significantly after the COVID-19 outbreak.

H4a) US-American entrepreneurs are likely to exhibit lower conscientiousness compared to Indian entrepreneurs.

H4b) Entrepreneurs' Conscientiousness changed significantly after the COVID-19 outbreak.

H5a): US-American entrepreneurs are likely more open to new experiences compared to Indian entrepreneurs.

H5b) Entrepreneurs' Openness changed significantly after the COVID-19 outbreak.

Method, data, and variables

Method

We use an innovative, computer-based approach to analyze large amounts of textual data, using language analysis to uncover insights into personal values. As a core element of human communication, language provides a window into human behavior and psychological characteristics. By examining language use, we can gain a significant understanding of an individual's values, emotions, and attitudes (Boyd & Schwartz, 2020). As a result, researchers have developed various language-focused tools to enhance psychological assessment. These tools are effective in drawing conclusions about psychological traits due to the consistent, coherent, and individual-specific nature of language (Bardi et al., 2008; Chung & Pennebaker, 2021). Their growing popularity can be attributed to their accuracy and efficiency in assessing psychological dimensions (Boyd & Pennebaker, 2017; Tausczik & Pennebaker, 2010).

One such tool is Linguistic Inquiry and Word Count (LIWC) software. Developed in the late 1990s by psychologists James Pennebaker, Roger Booth, and Martha Francis, LIWC has become a leading tool in language analysis. It identifies and quantifies specific words and phrases in text and categorizes them along various dimensions such as personality traits, values, and emotions (Boyd et al., 2015; Chung & Pennebaker, 2021; McHaney et al., 2018). Using a validated dictionary of words and linguistic rules LIWC can detect different value dimensions in text (Ponizovskiy et al., 2020).

In addition, LIWC can be applied to data from platforms such as Twitter. By analyzing language patterns, LIWC can reveal aspects such as emotional tone, sentiment, cognitive styles, and behavioral tendencies. When applied to data from Twitter-such as tweets from profiles or founder biographies-LIWC provides insights into the personalities and characteristics of the key players in an organization (Chung & Pennebaker, 2021).

Our analysis includes both univariate and multivariate methods to explore value differences between Indian and US-American entrepreneur before and after COVID-19. Univariate analysis examines one value dimension at a time, while multivariate analysis assesses relationships between multiple values simultaneously. This combined approach provides a comprehensive view of how values are expressed individually and collectively on social media, offering detailed insights into the characteristics of individuals or groups.

Data

To identify a sufficient number of Indian and US-American entrepreneurs, we used the platform Crunchbase. Crunchbase is a commercial database that provides information on companies, entrepreneurs, mergers and acquisitions, and investors. It aggregates data on companies, funding rounds, key people, acquisitions and industry trends.

In August 2022, we conducted an extensive keyword search on Crunchbase using terms such as "entrepreneur," "founder", "co-founder", "business owner", "startup founder", "startup", "CEO", "Tech entrepreneur" or "Small business owner". We used the keywords for "job title" searches or directly selected "entrepreneur" or "founder" as the job type on Crunchbase. This study ensures sample equivalence by surveying experienced entrepreneurs residing and operating in the USA and India. Following Hofstede's methodology, occupational categories are controlled to maintain consistency. The sample criteria include: a minimum of five years since founding, residing and working in the respective countries, generating a minimum of \$1 million in sales revenue and being beyond the seed stage. Using this approach, we were able to identify 453 Indian entrepreneurs and 1769 US-American entrepreneurs. We collected relevant information for each entrepreneur, such as age, education, and experience, and coded them as control variables.

Entrepreneurs were excluded based on the following criteria: insufficient background information to code control variables, inability to find Twitter profiles using Python, and exclusion of "superstar" entrepreneurs with more than 500,000 followers to avoid bias from professionally managed accounts (Block et al., 2019). We also manually verified the classification of each investor as either Indian or US-American entrepreneur. A binary variable was assigned: 0 for Indian and 1 for US-American entrepreneurs to distinguish between these groups. In the end, we identified 77 Indian and 95 US-American entrepreneurs, with an average of 4,100 words per individual. We compare not only two international groups of entrepreneurs, but also their personality factors before and after COVID-19. We have included a time lag of one year, starting with the start of COVID-19 in 2020. This approach is intended to clarify and enhance the comparability of personality factors before and after COVID-19.

Variables

Personality traits

We focus on the Big Five dimensions to measure an individual's basic personality traits. This dictionary contains approximately 540 words and phrases in total. It has high reliability and internal consistency and has been validated by authors investigating personality factors. Our LIWC-Dictionary measures each of these personality traits, which are described in Table 1.

Insert Table 1 about here

Control Variables

To explore whether potential variations in personality traits between Indian and U.S. entrepreneurs may be influenced by additional factors, we include several control variables in our analysis. We manually collected biographical data by conducting web searches on Twitter and LinkedIn for each individual. Based on insights from the relevant literature (Dimov & Shepherd, 2005; Lee et al., 2017; Malmendier & Tate, 2009; Obschonka et al., 2017), we control for age, gender, education level, start of education, the duration of being an entrepreneur, activity status as an entrepreneur, their general work experience in years and numbers of companies founded (nocf).

Previous studies by Obschonka and colleagues (2017) in this area have consistently used two primary variables to characterize Twitter activity, which we also include as control variables: the number of followers (i.e., subscribers to one's account who receive messages) and the number of tweets (i.e., messages posted on Twitter) (Obschonka et al., 2017). Due to their non-normal distribution, we log-transform these variables before including them in our analysis.

Analysis and Results

Descriptive statistics

Our dataset shows the following characteristics: We find demographic differences between Indian and US-American entrepreneurs that are mostly in line with the existing literature. The majority of entrepreneurs are still men, with more than 80% in both groups. In terms of age, most entrepreneurs are aged around 41-50 years. Indian entrepreneurs are a bit younger than Americans are, which resembles previous studies (Migliore, 2011). Research confirms that entrepreneurship is increasingly becoming a viable career option for young people

in India, with the average age of starting a business being 25. Younger entrepreneurs exhibit traits such as optimism, enthusiasm, passion, excitement, and confidence in their plans and ideas, which increases their willingness to take risks (Rai, 2008). In contrast, the age distribution turns in favor of Americans from the age of 70. Regarding their education level, the number of tweets and the quantity of followers, both groups are on a comparable level.

Univariate & multivariate analysis

In this section, we examine the differences in personality traits between Indian and US-American entrepreneurs before and after the COVID-19 outbreak. Our analysis shows that while the two groups have similar pre-pandemic scores on three personality dimensions, significant differences emerge on two traits.

Table 2 and Table 3 present our univariate analysis, which uses a two-tailed t-test to evaluate the mean differences in personality traits between the Indian and US-American groups. Before the COVID-19 outbreak, US-American entrepreneurs' exhibit higher in Openness to Experience (pos.), with a mean score of 0.23 compared to 0.07 for Indian entrepreneurs. After the outbreak, the data show notable differences, with US-American entrepreneurs showing a higher propensity for negative agreeableness (0.52) compared to their Indian counterparts (0.04). Additionally, there is a shift in openness, with US-American entrepreneurs, who were previously more open, now exhibiting higher negative openness (0.04) compared to Indians (0.02).

Insert Table 2 and Table 3 about here

To further explore these findings, we conducted a multivariate analysis using logistic regression to predict the likelihood of being an Indian versus an US-American entrepreneur, controlling for key demographic factors. The results, shown in Table 4, confirm the univariate analysis. Specifically, prior to the COVID-19 outbreak, negative neuroticism ($p < 0.1$) positively predicts the likelihood of being an US-American entrepreneur. In contrast, negative extraversion ($p < 0.1$) is negatively associated with the likelihood of being an US-American entrepreneur, suggesting a higher likelihood of being an Indian entrepreneur. After the outbreak, we can see a shift towards positive extraversion ($p < 0.1$). It emerges as a significant positive predictor of being an US-American entrepreneur. In addition, Pearson correlations between the variables before and after COVID-19-Outbreak are displayed in Table 5 and Table 6, providing further insight into the relationships among the personality traits examined.

Insert Table 4, Table 5 and Table 6 about here

Conclusion

Discussion

Our results shows important shifts in two of the five personality-traits: Openness and Extraversion. We will analyze and interpret the results in the context of the hypotheses proposed and the broader theoretical framework.

H1a): US-American entrepreneurs are probably more extraverted than Indian entrepreneurs are.

As US-American business culture often emphasizes networking, self-promotion, and extroverted traits, entrepreneurs from this group may show higher scores (Hofstede, 1980; Hofstede & McCrae, 2004; Migliore, 2011). Our results of the multivariate analysis show that negative Extraversion is higher for Indian entrepreneurs. Indian entrepreneurs might be more reserved and place less emphasis on extroverted qualities, given cultural emphasis on modesty and restraint.

H1b) Entrepreneurs' Extraversion changed significantly after the COVID-19 outbreak.

After the COVID-19-Outbreak, US-American entrepreneur show higher scores in Extraversion (pos.). This may be a response to the prolonged isolation period, leading individuals to seek out more social interactions and place greater value on social connections once restrictions are lifted. Research indicates that individuals with higher levels of extraversion tend to gain more influence in face-to-face groups and exert a disproportionate impact on group decisions (Judge et al., 2002).

No statistically significant differences were observed for Indian entrepreneurs on this personality trait after the COVID-19-Outbreak.

H2a): US-American entrepreneurs probably exhibit lower agreeableness compared to Indian entrepreneurs.

No statistically significant differences were observed between the two groups on this personality trait.

H2b) Entrepreneurs' Agreeableness changed significantly after the COVID-19 outbreak.

US-American entrepreneurs show higher scores in negative Agreeableness after the outbreak. US-American entrepreneurs may have higher scores on negative agreeableness (i.e., lower agreeableness) following the outbreak due to several factors. The COVID-19 pandemic

introduced significant stressors, including economic uncertainty, increased competition, and heightened demands for personal and professional adaptability. These pressures may heighten traits such as competitiveness, assertiveness, and self-reliance, which are often associated with lower agreeableness. In addition, the cultural context of the U.S., with its emphasis on individualism (Goldberg, 1992; Goldberg et al., 2006), may exacerbate these tendencies as entrepreneurs navigate the challenges posed by the pandemic. This shift toward lower agreeableness may be a coping mechanism for maintaining business viability and personal resilience in the face of unprecedented adversity.

No statistically significant differences were observed for Indian entrepreneurs on this personality trait after the COVID-19-Outbreak.

H3a): US-American entrepreneurs may tend to be emotionally more stable than Indian entrepreneurs are.

As already discussed in the hypotheses development, the U.S. has lower levels of uncertainty avoidance (Hofstede & McCrae, 2004; Kajonius & Mac Giolla, 2017; McCrae & Allik, 2002; Robie et al., 2005). Cultures with these characteristics tend to score higher in **emotional stability** (measured in this study as negative neuroticism). Our result support this hypothesis by measuring significantly higher negative neuroticism/ emotional stability for US-American entrepreneurs. Because self-control and composure are often highly valued, they are less prone to neurotic tendencies (Hofstede, 2001; Migliore, 2011).

H3b) Entrepreneurs' Neuroticism changed significantly after the COVID-19 outbreak.

No statistically significant differences were observed between the two groups on this personality trait.

H4a): US-American entrepreneurs are likely to exhibit lower conscientiousness compared to Indian entrepreneurs.

No statistically significant differences were observed between the two groups on this personality trait.

H4b) Entrepreneurs' Conscientiousness changed significantly after the COVID-19 outbreak.

No statistically significant differences were observed between the two groups on this personality trait.

H5a): US-American entrepreneurs are likely more open to new experiences.

Our results support this hypothesis, indicating that US-American entrepreneurs score higher on openness to experience. This trait is likely influenced by a culture of individualism, as high individualism encourages self-expression and innovation (Allik & McCrae, 2002, 2004; Hofstede & McCrae, 2004; Schmitt et al., 2007). The US-American cultural emphasis on individualism and creativity encourages risk-taking and innovation, distinguishing US-American entrepreneurs from their Indian counterparts.

H5b) Entrepreneurs' Openness changed significantly after the COVID-19 outbreak.

Our results support this hypothesis, by showing a shift after COVID-19-Outbreak. US-American entrepreneurs show significant higher scores in negative Openness. This might apply, because the pandemic introduced significant uncertainty and risk, which may have led entrepreneurs to adopt more cautious and conservative approaches. In times of crisis, individuals and organizations often prioritize stability and security over innovation and novelty. The prolonged stress and economic challenges of the pandemic may also have dampened enthusiasm for new experiences and creative ventures. In addition, the need to focus on

immediate survival and adaptation to rapidly changing conditions may have shifted priorities away from exploration and innovation, resulting in lower openness to experience scores.

No statistically significant differences were observed for Indian entrepreneurs on this personality trait after the COVID-19-Outbreak.

In conclusion, our study examined the differences in personality traits between Indian and US-American entrepreneurs and the changes in these traits following the COVID-19 outbreak. Our results revealed significant shifts in two key personality traits - Openness and Extraversion - between the two groups.

First, with respect to Extraversion, our findings supported the hypothesis that US-American entrepreneurs tend to have higher levels of Extraversion than their Indian counterparts. However, post-pandemic data indicated a notable increase in Extraversion scores among US-American entrepreneurs, possibly in response to the prolonged period of isolation during the COVID-19 outbreak.

Second, while our hypothesis suggested that Indian entrepreneurs would demonstrate higher levels of Agreeableness, no statistically significant differences were observed between the two groups. However, post-outbreak data showed that US-American entrepreneurs scored higher on negative Agreeableness, suggesting a decrease in Agreeableness levels, possibly due to increased stress and competitiveness following the pandemic.

In addition, our results supported the hypothesis that US-American entrepreneurs would score higher on Openness to Experience, suggesting a greater propensity for innovation and risk-taking. However, post-pandemic data revealed a significant decrease in Openness among American entrepreneurs, possibly due to increased uncertainty and the need for conservative approaches amidst the challenges posed by the pandemic.

Notably, no significant changes in Neuroticism and Conscientiousness were observed in either group following the COVID-19 outbreak.

Overall, our study sheds light on the dynamic nature of personality traits among entrepreneurs, particularly in response to external stressors such as the COVID-19 pandemic. These findings provide valuable insights for understanding how cultural backgrounds and major global events can influence entrepreneurial behavior and adaptation strategies.

Implications

The implications of our study are significant for both scholars and practitioners in understanding the dynamics of personality traits among Indian and US-American entrepreneurs, especially in the context of the COVID-19 crisis.

First, our findings shed light on the differences in personality traits between Indian and US entrepreneurs. While our results revealed no significant differences in Agreeableness and Conscientiousness between the two groups, notable differences were observed in Extraversion and Openness. US-American entrepreneurs exhibited higher levels of Extraversion and Openness compared to their Indian counterparts, possibly influenced by cultural norms and values.

Second, our study highlights the impact of the COVID-19 outbreak on entrepreneurs' personality traits. After the pandemic, US-American entrepreneurs showed a significant increase in extraversion but a decrease in openness to experience. These shifts may reflect adaptive responses to the challenges posed by the crisis, such as the need for increased social interactions amidst isolation and a shift toward more conservative approaches to managing uncertainty.

For scholars, these findings add to the understanding of how cultural backgrounds and external stressors shape the personality traits of entrepreneurs. Future research could delve deeper into the mechanisms underlying these changes and explore potential moderators that may influence the adaptation process.

For practitioners, our findings underscore the importance of recognizing and accommodating cultural differences in entrepreneurial environments. Understanding the different personality profiles of entrepreneurs can inform recruitment, team dynamics, and leadership strategies. Moreover, recognizing the potential impact of crises such as the COVID-19 pandemic on personality traits can guide resilience-building efforts and support mechanisms for entrepreneurs facing similar challenges in the future.

Overall, our study provides valuable insights into the nuanced interplay between cultural contexts, external stressors, and personality traits among entrepreneurs, offering avenues for both academic inquiry and practical application in entrepreneurial settings.

Limitations and future research

A potential research gap in the area of comparing entrepreneurial digital footprints is the need to expand the scope of analysis beyond Twitter and explore other social media platforms such as LinkedIn, Facebook and Instagram. In addition, while a two-country analysis is a good start; further research could explore a more diverse range of countries to gain a more comprehensive understanding of the relationship between digital footprints and entrepreneurial success across different cultures and contexts.

Another potential research gap is the need to consider factors beyond personality traits when analysing digital footprints. For example, research could explore the impact of social networks, marketing strategies and other factors on the success of tech entrepreneurs. In addition, the use of different analytical techniques and tools, such as machine learning algorithms, could provide a more in-depth analysis of the digital footprints of tech business entrepreneurs.

Overall, while current research on digital footprints and entrepreneurship is growing, there is still much to explore and discover. By broadening the scope of analysis and considering a wider range of factors, researchers can gain a more comprehensive understanding of the relationship between digital footprints and entrepreneurial success.

While this study provides valuable insights into the personality traits of Indian and American entrepreneurs before and after the COVID-19 outbreak using data from tweets, several limitations should be acknowledged:

The data is limited to individuals who are active on Twitter. This self-selection bias means that the results may not be representative of all Indian and American entrepreneurs, especially those who do not use social media or prefer other platforms.

Language usage and cultural norms have a significant impact on how personality traits are expressed in social media. Differences in language proficiency, idioms, and cultural communication styles between Indian and American entrepreneurs can lead to misinterpretations or oversimplifications when analyzing personality traits.

The methods used to collect and analyze tweets can introduce algorithmic bias. The selection of tweets, the sentiment analysis algorithms, and the classification of personality traits can all introduce systematic errors that affect the validity of the results.

Tweets represent only one aspect of a person's behavior. Other important indicators of personality, such as face-to-face interactions, decision-making processes, and business activities, are not captured in this data set, limiting the comprehensiveness of the personality assessment.

The analysis of personal tweets raises ethical concerns regarding privacy and consent. While tweets are publicly available, the use of this data for research purposes must consider the ethical implications and ensure that individuals' privacy is respected.

While changes in personality traits are observed, it cannot be definitively concluded that these changes are caused solely by the COVID-19 outbreak without accounting for other potential confounding variables.

Acknowledging these limitations is crucial for interpreting the results of the study and for guiding future research that aims to build on these findings. Further studies could address these limitations by incorporating more diverse data sources, using longitudinal designs, and employing mixed methods approaches to gain a more comprehensive understanding of personality traits in entrepreneurs.

ACKNOWLEDGEMENTS

We express our gratitude to the participants of the G-Forum held in Darmstadt in 2023, as well as to the doctoral seminars in Giessen, for their valuable comments and feedback on earlier drafts of this study.

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Figure 1

Conceptual Model

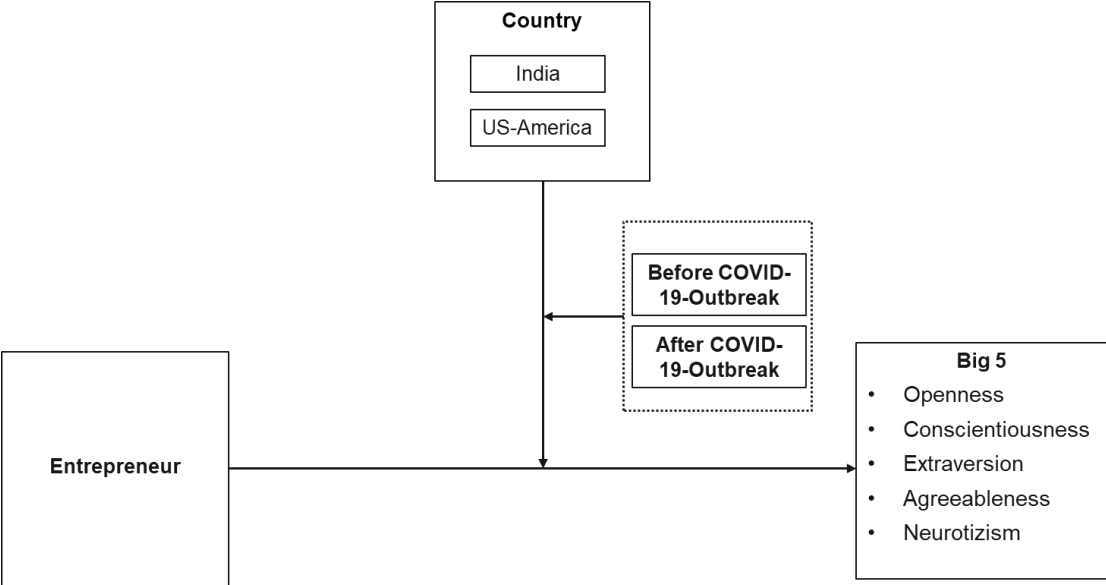


Table 1

Description of variables according to Goldberg (1992) framework of Big Five Personality-traits.

<i>Variables</i>	<i>Description</i>	<i>Mean</i>	<i>SD</i>	<i>Min.</i>	<i>Median</i>	<i>Max</i>
Before COVID 19- Outbreak Big Five						
<i>Agreeableness Pos.</i>	1)...is cooperative, friendly, and helpful.	0,46	0,44	0	0,42	1,94
<i>Extraversion Pos.</i>	2)...is outgoing, energetic, and stimulated by external interactions.	0,35	0,43	0	0,27	2,86
<i>Openness to Experience Pos.</i>	3)...is curious, creative, and receptive to new ideas and experiences.	0,17	0,08	0	0,07	1,92
<i>Conscientiousness Pos.</i>	4)...is organized, dependable, and goal-oriented.	0,15	0,2	0	0,04	0,82
<i>Neuroticism Pos.</i>	5)...is more susceptible to stress and are likely to perceive challenging situations as more threatening.	0,11	0,27	0	0	1,72
<i>Agreeableness Neg.</i>	6)...is independent and straightforward.	0,03	0,06	0	0	0,22
<i>Extraversion Neg. / Introversion</i>	7)... preference for solitude and introspection over external stimulation.	0,04	0,08	0	0	0,31
<i>Openness to Experience Neg.</i>	8)... familiar routines, valuing stability and predictability.	0,02	0,08	0	0	0,51
<i>Conscientiousness Neg.</i>	9)... flexible and spontaneous.	0,01	0,05	0	0	0,22
<i>Neuroticism Neg. / Emotional Stability</i>	10)... handle stress well, remain composed in challenging situations, leading to effective problem-solving and emotional resilience.	0,02	0,07	0	0	0,4

After COVID 19-Outbreak**Big Five**

<i>Agreeableness Pos.</i>	1)	0,59	0,65	0	0,47	5,56
<i>Extraversion Pos.</i>	2)	0,28	0,25	0	0,25	1,1
<i>Openness to Experience Pos.</i>	3)	0,08	0,17	0	0,08	1,23
<i>Conscientiousness Pos.</i>	4)	0,24	0,26	0	0,19	2,22
<i>Neuroticism Pos.</i>	5)	0,07	0,26	0	0	0,46
<i>Agreeableness Neg.</i>	6)	0,05	0,09	0	0	0,48
<i>Extraversion Neg / Introversion</i>	7)	0,05	0,11	0	0	0,83
<i>Openness to Experience Neg.</i>	8)	0,03	0,06	0	0	0,32
<i>Conscientiousness Neg.</i>	9)	0,01	0,04	0	0	0,18
<i>Neuroticism Neg. / Emotional Stability</i>	10)	0,02	0,07	0	0	0,65

Table 2

Group differences between Indian and American Entrepreneurs before the covid-19-outbreak

	(0) Indian Entrepren. (N = 76)		(1) American Entrepren. (N =89)		t-test (1-0)	Cohen's d
	Mean	SD	Mean	SD		
<i>Big Five</i>						
<i>Agreeableness Pos.</i>	0,43	0.42	0,49	0,44	0,06	-0,14
<i>Extraversion Pos.</i>	0,35	0.30	0,35	0,5	0	0,00
<i>Openness Pos.</i>	0,07	0.08	0,23	0,46	0,16***	-0,47
<i>Conscientiousness Pos.</i>	0,20	0.23	0,13	0,17	-0,07	0,35
<i>Neuroticism Pos.</i>	0,09	0.17	0,13	0,3	0,04	-0,16
<i>Agreeableness Neg.</i>	0,05	0.08	0,02	0,04	-0,03	0,49
<i>Extraversion Neg.</i>	0,06	0.1	0,02	0,05	-0,04	0,52
<i>Openness Neg.</i>	0,05	0.12	0,01	0,03	-0,04	0,48
<i>Conscientiousness Neg.</i>	0,03	0.06	0,01	0,04	-0,02	0,4
<i>Neuroticism Neg.</i>	0,02	0.06	0,02	0,07	0	0,00

Notes: * $p < 0.10$. ** $p < 0.05$. *** $p < 0.01$. $N = 165$

Table 3

Group differences between Indian and American Entrepreneurs after the covid-19-outbreak.

	(0) Indian Entrepren. (N = 76)		(1) American Entrepren. (N =89)		t-test (1-0)	Cohen's d
	Mean	SD	Mean	SD		
Big Five						
<i>Agreeableness Pos.</i>	0,52	0,52	0,63	0,7	0,11	-0,18
<i>Extraversion Pos.</i>	0,25	0,24	0,23	0,25	-0,02	0,08
<i>Openness Pos.</i>	0,12	0,18	0,13	0,16	0,01	-0,06
<i>Conscientiousness Pos.</i>	0,25	0,28	0,23	0,29	-0,02	0,07
<i>Neuroticism Pos.</i>	0,06	0,09	0,07	0,1	0,01	-0,1
<i>Agreeableness Neg.</i>	0,04	0,07	0,52	0,09	0,48 ***	-5,9
<i>Extraversion Neg.</i>	0,04	0,12	0,05	0,09	0,01	-0,1
<i>Openness Neg.</i>	0,02	0,05	0,04	0,06	0,02 **	-0,36
<i>Conscientiousness Neg.</i>	0,02	0,04	0,01	0,03	-0,01	0,28
<i>Neuroticism Neg.</i>	0,02	0,08	0,03	0,06	0,01	-0,14

Notes: * $p < 0.10$. ** $p < 0.05$. *** $p < 0.01$. $N = 165$

Table 4

Logistic regression (dependent variable: Indian Entrepreneur 0/1).

<i>Variable</i>	<i>Model 1 BC Logit (SE)</i>		<i>Model 2 AC Logit (SE)</i>	
<i>Age</i>	0,00	(-0,01)	0,00	(0,00)
<i>Gender</i>	-0,13	(0,20)	0,10	(0,13)
<i>Educationlevel</i>	-0,06	(0,10)	0,02	(0,05)
<i>Educationstart</i>	0,00	(0,00)	0,00	(0,00)
<i>Entrepreneursince</i>	0,00	(0,00) *	0,00	(0,01)
<i>Active</i>	6,72	(27,81)	1,06	(12,13)
<i>Workingexperience</i>	0,00	(0,01)	0,00	(0,00)
<i>Followers</i>	0,00	(0,00)	0,00	(0,00)
<i>Tweets</i>	0,00	(0,00)	0,00	(0,00)
<i>Nocf</i>	-0,09	(0,04)	0,00	(0,03)
Big Five				
<i>Agreeableness (pos.)</i>	0,27	(0,19)	0,00	(0,05)
<i>Extraversion (pos.)</i>	-0,12	(0,34)	0,36	(0,15) *
<i>Openness (pos.)</i>	0,20	(0,17)	0,09	(0,26)
<i>Conscientiousness (pos.)</i>	0,25	(0,39)	-0,17	(0,20)
<i>Neuroticism (pos.)</i>	-0,17	(0,20)	0,32	(0,36)
<i>Agreeableness (neg.)</i>	1,76	(1,34)	0,10	(0,44)
<i>Extraversion (neg.)</i>	-3,16	(1,37) *	0,00	(0,40)
<i>Openness (neg.)</i>	-9,72	(0,98)	0,85	(0,62)
<i>Conscientiousness (neg.)</i>	1,71	(3,58)	-0,30	(1,02)
<i>Neuroticism (neg.)</i>	2,78	(1,05) *	0,51	(0,81)

Notes: * $p < 0.10$. ** $p < 0.05$. *** $p < 0.01$.

BC = before covid-19; AC = after covid-19

N=165

Table 5

Correlations before COVID-19-Outbreak.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
(1) Group																					
(2) Age	0.208																				
(3) Gender	0.023	0.171																			
(4) Educationlevel	0.387**	0.403**	0.182																		
(5) Educationstart	0.209	0.834***	0.187	0.327*																	
(6) Entrepreneursince	0.339*	0.272*	0.107	0.379**	0.439***																
(7) Active	0.284*	0.337*	0.096	0.381**	0.515***	0.903***															
(8) Workingexperience	0.283*	0.335*	0.096	0.381**	0.514***	0.904***	1.000***														
(9) Follower	0.243	0.061	0.062	0.176	-0.002	0.100	0.109	0.107													
(10) Tweets	-0.214	-0.270*	-0.022	-0.211	-0.293*	-0.189	-0.215	-0.214	0.088												
(11) Nocf	-0.026	0.132	-0.025	-0.098	0.168	0.474***	0.426**	0.423**	0.107	-0.070											
(12) Agreeableness_pos	0.061	-0.112	0.201	0.069	-0.075	0.145	0.089	0.089	-0.060	-0.061	-0.112										
(13) Conscientiousness_pos	-0.162	-0.104	-0.210	0.085	-0.142	0.010	0.105	0.105	-0.160	0.157	0.003	-0.003									
(14) Extraversion_pos	0.001	-0.019	0.052	-0.045	-0.107	-0.040	-0.093	-0.095	0.649***	0.013	0.050	0.103	-0.107								
(15) Neuroticism_pos	0.043	-0.077	-0.147	-0.050	0.031	0.048	0.077	0.077	-0.079	-0.150	0.018	0.041	-0.085	-0.079							
(16) Openness_pos	0.216	-0.159	-0.101	0.169	-0.203	0.015	0.025	0.025	0.078	-0.005	-0.051	-0.113	-0.039	-0.146	0.425**						
(17) Agreeableness_neg	-0.213	0.033	0.028	-0.101	-0.182	-0.492***	-0.561***	-0.563***	-0.096	0.141	-0.291*	-0.042	-0.082	0.107	-0.117	-0.082					
(18) Conscientiousness_neg	-0.080	-0.265	-0.090	-0.296*	-0.299*	-0.110	-0.136	-0.135	-0.061	0.627***	0.036	-0.064	0.006	-0.001	-0.066	-0.107	0.089				
(19) Extraversion_neg	-0.200	-0.278*	-0.015	0.009	-0.182	-0.038	-0.070	-0.072	-0.071	0.277*	0.001	0.039	0.262	-0.055	0.030	-0.144	0.300*	0.344*			
(20) Neuroticism_neg	-0.003	-0.136	-0.084	-0.172	-0.074	-0.447***	-0.292*	-0.293*	-0.089	-0.109	-0.107	0.011	0.149	-0.137	0.111	-0.016	0.026	-0.083	0.230		
(21) Openness_neg	-0.274*	-0.137	-0.173	-0.262	-0.084	-0.084	-0.112	-0.110	-0.075	0.504***	0.039	-0.096	0.245	0.027	-0.072	-0.097	0.040	0.219	0.055	0.025	

Notes: * $p < 0.10$. ** $p < 0.05$. *** $p < 0.01$.

Table 6
Correlations after COVID-19-Outbreak.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
(1) Group																					
(2) Age	0.156*																				
(3) Gender	0.062	0.085																			
(4) Educationlevel	0.283***	0.400***	0.127																		
(5) Educationstart	0.168*	0.767***	0.065	0.336***																	
(6) Entrepreneursince	0.313***	0.430***	0.099	0.397***	0.507***																
(7) Active	0.298***	0.488***	0.091	0.463***	0.568***	0.926***															
(8) Workingexperience	0.295***	0.482***	0.091	0.463***	0.567***	0.925***	1.000***														
(9) Follower	0.165*	0.070	0.013	-0.019	0.060	0.073	0.067	0.065													
(10) Tweets	0.059	-0.000	-0.018	0.004	-0.031	0.023	0.006	0.005	0.344***												
(11) Nocf	0.152	0.233**	-0.050	-0.026	0.253**	0.409***	0.378***	0.375***	0.199*	0.090											
(12) Agreeableness_pos	0.093	-0.104	0.042	0.099	-0.082	0.013	-0.001	0.003	-0.066	-0.067	-0.090										
(13) Conscientiousness_pos	-0.004	0.105	0.183*	-0.051	0.041	0.042	0.065	0.064	0.152	0.068	-0.015	-0.086									
(14) Extraversion_pos	0.167*	0.134	0.208**	0.111	0.196*	0.227**	0.217**	0.219**	-0.060	-0.076	0.045	0.094	0.110								
(15) Neuroticism_pos	0.054	0.050	0.055	0.003	-0.007	0.013	0.021	0.022	-0.056	-0.056	-0.049	0.082	0.069	0.064							
(16) Openness_pos	0.018	0.138	0.025	0.024	0.145	0.118	0.148	0.148	-0.075	-0.017	-0.020	0.031	-0.011	0.198*	0.019						
(17) Agreeableness_neg	0.094	-0.127	-0.071	0.123	-0.144	0.021	-0.006	-0.004	0.084	0.074	-0.018	-0.023	0.062	-0.048	0.030	0.030					
(18) Conscientiousness_neg	-0.117	0.015	-0.065	-0.125	-0.043	0.079	0.064	0.064	0.131	0.063	0.112	0.016	0.043	0.043	0.056	0.111	0.007				
(19) Extraversion_neg	0.003	-0.106	-0.152	-0.133	-0.013	0.006	-0.014	-0.014	-0.053	-0.012	-0.055	0.129	-0.015	0.180*	-0.089	-0.002	0.000	-0.061			
(20) Neuroticism_neg	0.065	-0.172*	-0.026	-0.078	-0.192*	-0.066	-0.082	-0.082	-0.001	0.017	-0.023	-0.085	-0.113	-0.021	-0.037	-0.090	0.060	0.006	-0.005		
(21) Openness_neg	0.142	0.073	0.058	0.127	0.051	0.048	0.038	0.036	-0.050	0.088	-0.022	-0.036	0.032	-0.048	0.162*	-0.029	0.095	-0.068	-0.046	-0.051	

Notes: * $p < 0.10$. ** $p < 0.05$. *** $p < 0.01$.

Conclusion

Summary to the Overall Theoretical Contributions

This dissertation includes a comprehensive exploration of entrepreneurial passion, personal values of entrepreneurial finance investors, and the evolving nature of entrepreneurial personality traits in response to the COVID-19 pandemic.

The first paper, **Entrepreneurial Passion: A Literature Review and Framework**, provides an in-depth systematic literature review on the influence of passion within the entrepreneurial process. It highlights the importance of understanding the motivations, performance and behaviors of entrepreneurs. The findings confirm the critical role of passion in enhancing the prospects of aspiring entrepreneurs, elucidating its theoretical foundations and practical implications. By synthesizing 74 papers published between 1998 and 2021, this research identifies key theories and methodologies, making a substantial contribution to the theoretical body of knowledge in entrepreneurship. While other literature reviews provide a more unstructured overview of the field (Lee & Herrmann, 2021; Newman et al., 2019), our approach focuses on the three core areas of entrepreneurial passion (EP) that have been most extensively studied: motivations, performance, and behavior. The study underscores the importance of EP in influencing entrepreneurial outcomes, and highlights the impact of personal and professional constraints on the occurrence and efficacy of passion.

The second study, **Exploring the Personal Values of Entrepreneurial Finance Investors: A Twitter Analysis**, uses an innovative approach to analyze the personal values of business angels (BAs) and venture capitalists (VCs) through their Twitter activity. Using Schwartz's values framework (1992) and LIWC linguistic analysis software (Boyd & Pennebaker, 2017), this study provides a nuanced understanding of the psychological profiles of investors in entrepreneurial finance. The results show that VCs prioritize self-enhancement

values such as power and achievement, while BAs emphasize freedom and mentorship. Contrary to expectations, VCs also scored higher on stimulation values, suggesting a complex balance between security and innovation.

Speaking of power, venture capitalists (VCs) may pressure the founding team to quickly increase the value of the venture and to adopt growth-maximizing strategies, aiming for a lucrative exit rather than sustainable business development (Kang, 2020). In practice, their influence is evident in actions such as replacing members of the venture's founding team or the CEO (Hellmann & Puri, 2002). Rather than pressuring founders to meet growth targets, business angels (BAs) take a proactive role in mentoring and advising ventures, sharing their experiences as former entrepreneurs (Bonini et al., 2019; Preston, 2007). By coaching the startup team, BAs aim to build a stable and trusting working relationship (Croce et al., 2021; Politis, 2008). Venture capitalists (VCs) are more outcome-oriented, focusing on rapidly increasing the value of the start-up for a successful exit and generating returns for their limited partners (Drover et al., 2017; van Osnabrugge, 2000). This outcome-oriented approach contrasts with business angels (BAs), who are behavior-oriented and emphasize the start-up team (Granz, Henn, and Lutz 2020). VCs are under pressure to succeed because they invest on behalf of others and pursue financial goals only (Bonnet & Wirtz, 2012). They set challenging milestones for portfolio companies to secure follow-on funding (Hsu et al., 2014b) and prioritize market analysis, business models, and technology potential in their decisions (Sudek, 2006; Wiltbank, 2005). This entrepreneurial orientation may lead BAs to favor ventures in challenging environments or with innovative products over those promising secure returns. Studies show that VCs tend to achieve higher rates of return (van Osnabrugge, 2000).

The findings help entrepreneurs tailor their pitches and form successful partnerships demonstrate the potential of social media analysis to uncover investor traits, and inform future research in investor psychology.

Finally, the third essay, **Exploring Changes in Entrepreneurial Personality Traits: A Big Five Twitter Analysis of Indian and US-American Entrepreneurs Pre- and Post-COVID-19-Outbreak**, extends the empirical investigation of online engagement and linguistic patterns to examine the impact of the COVID-19 pandemic on the personality traits of tech entrepreneurs in the US and Asia. Using the Big Five personality model (Goldberg, 1992) and Hofstede's cultural dimensions (Hofstede, 2001), the study analyzes tweets from 165 entrepreneurs. The results indicate significant changes in openness and extraversion following the pandemic.

US-American entrepreneurs showed higher levels of openness than Indian entrepreneurs did. This trait is likely shaped by a culture of individualism that encourages self-expression and innovation (Allik & McCrae, 2002, 2004; Hofstede & McCrae, 2004; Schmitt et al., 2007). In addition, high indulgence cultures encourage the pursuit of personal happiness and new experiences, leading to greater openness to experience (Hofstede, 2013). After the COVID-19 outbreak a shift can be seen. US entrepreneurs show significantly higher scores on negative openness. This may be due to the introduction of significant uncertainty and risk by the pandemic, leading entrepreneurs to adopt more cautious and conservative approaches. In times of crisis, individuals and organizations often prioritize stability and security (Depoux et al., 2020; Dong & Bouey, 2020).

Given the US business culture's emphasis on networking, self-promotion, and extroverted traits, entrepreneurs it is not surprising that US-American entrepreneurs have higher scores in extraversion (Hofstede, 1980; Hofstede & McCrae, 2004; Migliore, 2011). Our results

indicate that Indian entrepreneurs score higher on negative extraversion. This suggests that Indian entrepreneurs may be more reserved and place less emphasis on extraverted traits due to a cultural emphasis on modesty and restraint (Migliore, 2011). After the COVID-19 outbreak, US-American entrepreneurs showed higher scores in positive extraversion. This increase may be a response to prolonged isolation, leading individuals to seek more social interactions and value social connections once restrictions were lifted. Research suggests that individuals with higher levels of extraversion tend to gain more influence in face-to-face groups and have a disproportionate impact on group decisions (Judge et al., 2002).

Future Research Avenues

There are several limitations to this dissertation. While study-specific shortcomings have been addressed in each of the three papers, a more overarching view is provided here to encompass the entire dissertation.

First, the impact of external factors needs to be considered in all our work. Research needs to examine how external factors such as market conditions, regulatory environments, and socioeconomic changes influence the role of passion in entrepreneurship (Paper 1). Similarly, additional studies could examine other external factors beyond COVID-19 that may influence the personality traits and behaviors of entrepreneurs worldwide (Essays 2 and 3).

In addition, although we performed validity checks on the second and third essays, such as manually verifying whether the accounts were managed by professionals or personal accounts, we cannot completely rule out the possibility that some accounts are professionally managed. Moreover, the accuracy of data derived from self-reported measures (e.g., personal values expressed in tweets) can be questioned due to social desirability bias and the tendency of individuals to present themselves in a favorable light online. In addition, the interpretation of linguistic data from social media can be context-dependent, and the nuances of language use

may not be fully understood or accurately captured by linguistic analysis software such as LIWC. There could also be unaccounted external variables influencing the results, such as macroeconomic factors, cultural shifts, or changes in industry trends that were not controlled for in the studies. In addition, the use of specific analytical tools and frameworks (e.g., Schwartz's Values Framework, Big Five Personality Model) may limit the scope of the findings. Different tools or theoretical frameworks may yield different findings.

Practical Implications

Our research about EP can be particularly interesting for entrepreneurship educators and trainers, the findings highlight the importance of cultivating passion in aspiring entrepreneurs. Programs and interventions can be designed to help individuals identify and nurture their passions, thereby increasing their motivation and chances of success. For entrepreneurial leaders, understanding how to instill passion in their teams can create a more cohesive and motivated work environment (Cardon, 2008). Practical strategies include fostering open communication, creating a shared vision, and promoting a culture of enthusiasm and commitment.

Our contribution to investor personality has practical implications for co-investors and local authorities. Understanding the prevailing values of investors is critical not only for entrepreneurs preparing their pitches, but also for investors seeking potential syndicate partners (Duxbury et al., 1996b). The decision to invest independently or to form a syndicate is significantly influenced by the psychology and values of potential co-investors (Block et al., 2019).

The results of our last study highlight the dynamic nature of entrepreneurial personality traits in response to external stressors such as the COVID-19 pandemic. For practitioners, understanding cultural differences in entrepreneurial environments can lead to improved

recruitment, team dynamics, and leadership strategies. Recognizing the impact of crisis on personality traits can guide resilience building and support mechanisms for entrepreneurs facing similar challenges.

In conclusion, this dissertation provides a comprehensive analysis of the interplay between passion, personal values, and personality traits in entrepreneurship, contributing valuable knowledge to both academic research and practical applications. The findings underscore the importance of considering psychological and cultural factors in fostering successful entrepreneurial ventures, especially in the context of global disruptions.

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Affidavit

Ich erkläre hiermit, dass ich die vorgelegten und nachfolgend aufgelisteten Aufsätze selbstständig und nur mit den Hilfen angefertigt habe, die im jeweiligen Aufsatz angegeben oder zusätzlich in der nachfolgenden Liste aufgeführt sind. In der Zusammenarbeit mit den angeführten Koautoren war ich mindestens anteilig beteiligt. Bei den von mir durchgeführten und in den Aufsätzen erwähnten Untersuchungen habe ich die Grundsätze guter wissenschaftlicher Praxis, wie sie in der Satzung der Justus-Liebig-Universität Gießen zur Sicherung guter wissenschaftlicher Praxis niedergelegt sind, eingehalten.

- Engel, E. (2021). Entrepreneurial Passion: A Literature Review and Framework. *Working Paper*
- Engel, E., & Schmidt, C. (2023). Exploring the personal values of entrepreneurial finance investors: A Twitter Analysis. *Working Paper*
- Engel, E. (2024). Exploring Changes in Entrepreneurial Personality Traits: A Big Five Twitter Analysis of Indian and US-American Entrepreneurs Pre- and Post-COVID-19-Outbreak. *Working Paper*