

**The power of love:  
Four essays on the relationship between entrepreneurial passion and firm performance**

by

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## DEDICATION

*I dedicate this dissertation to my parents.*

제 박사 학위 논문을 부모님께 바칩니다.

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## **ABSTRACT**

In this dissertation, I present four essays to answer relevant questions on how entrepreneurial passion can influence firm performance. In the first essay, I conducted a systematic review on the topic of entrepreneurial passion and identified several research questions. To address research opportunities in the literature, I implemented three empirical studies to examine the impact of different types of entrepreneurial passion (obsessive, harmonious, developing, and inventing passion) on firm performance and investigated different mechanisms (identity fusion, bricolage, exploitation, and exploration) and boundary conditions (overwork and entrepreneurial autonomy) behind the entrepreneurial passion-firm performance relationships. Specifically, in the second essay, I studied how obsessively passionate entrepreneurs advance firm performance through identity fusion with their firms. In the third essay, I explored the impact of CEOs' harmonious passion on firm performance through bricolage in the context of small- and medium-sized enterprises. In the fourth essay, I investigated the influence of developing and inventing passion on organizational innovation based on the identity theory.

## CHAPTER 1. GENERAL INTRODUCTION

Passion is associated with feelings of love (Reis & Aron, 2008; Sternberg, 1986).

Passionate people have specific domains they fall in love with as in romantic relationships or even work activities. Schumpeter (1951) articulated passion as “an important factor of success and social ascent in every walk of life” (p. 177) and Bird (1989) argued that entrepreneurs are “passionate, full of emotional energy, drive, and spirit” (p. 7-8). Moving beyond general passion, the concept of entrepreneurial passion has received scholarly attention around the past decade and a diverse theoretical framework on entrepreneurial passion has been established, which includes: passion for work (Baum, Locke, & Smith, 2001), a dualistic model of passion (Vallerand, Blanchard, Mageau, Koestner, Ratelle, Léonard, Gagné & Marsolais, 2003), entrepreneurial passion (Cardon, Wincent, Singh, & Drnovsek, 2009), and perceived passion (Chen, Yao, & Kotha, 2009).

This dissertation is composed of four essays. In the first essay, I present the systematic review on the topic of entrepreneurial passion. I first review the literature and summarize the main findings on the different conceptualizations of entrepreneurial passion. I articulate academic definitions and theoretical and empirical works based on each framework of entrepreneurial passion and compare the similarities and differences between the dualistic model of passion (Vallerand et al., 2003) and entrepreneurial passion (Cardon et al., 2009). Second, I explain the motivation of the dissertation and identify what has been done, what we need to know, and what we do not know yet about entrepreneurial passion. Specifically, I found and analyzed 63 published papers in the entrepreneurial passion literature and detected potential areas that could be further investigated. First, the research stream on the entrepreneurial passion-firm performance relationship is limited to certain types of entrepreneurial passion. Moreover,

there are contradictory empirical findings between the dualistic model of passion and firm performance (e.g., Ho & Pollack, 2014; Patel, Thorgren, & Wincent, 2015; Sirén, Patel, & Wincent, 2016). Therefore, we need comprehensive and more nuanced studies on the relationship between entrepreneurial passion and firm performance. Second, distinctive mechanisms of different types of entrepreneurial passion toward firm performance need further examination. Third, scholars need to carefully match the theoretical arguments and measurements based on the frameworks of entrepreneurial passion. Lastly, empirical research of entrepreneurial passion should be applied in various cultural contexts. These four research gaps are further elaborated in the first essay.

The main purpose of this dissertation is to capture these potential opportunities within the entrepreneurial passion literature. Accordingly, I present three empirical papers on the relationship between entrepreneurial passion and firm performance in my dissertation. Specifically, I study the impact of different types of entrepreneurial passion (obsessive, harmonious, developing, and inventing passion) on firm performance and also examine different mechanisms (identity fusion, bricolage, and organizational innovation) and boundary conditions (overwork and entrepreneurial autonomy) of the entrepreneurial passion-firm performance relationships.

In the second essay, I examine the relationships between obsessive passion, identity fusion, and firm performance. Based on the theory of fusion (Swann, Gómez, Seyle, Morales, & Huici, 2009), the affect infusion model (Forgas & George, 2001), and the literature on the dualistic model of passion (Vallerand et al., 2003), I assert that obsessive passion is positively associated with firm performance through identity fusion, which refers to “a visceral feeling of oneness with a group” (Swann, Jetten, Gómez, Whitehouse, & Bastian, 2012, p. 441).

Obsessively passionate entrepreneurs become strongly fused with their organizations because of positive affect and ego-protective behaviors and advance firm performance through strong loyalty and responsibility toward their organizations. Also, I examine overwork as a moderator between identity fusion and firm performance. I argue that spending long hours at work would magnify entrepreneurs' level of identity fusion toward their organizations and advance firm performance through increasing the exposure to organizational colleagues and satisfying self-actualization.

In the third essay, I explore the impact of harmonious passion on firm performance through bricolage. Drawing on the theory of entrepreneurial bricolage (Baker & Nelson, 2005) and the resource-based view (Barney, 1991; Sirmon, Hitt, & Ireland, 2007; Sirmon, Hitt, Ireland, & Gilbert, 2011), I argue that harmonious passion leads to bricolage (i.e., achieving specific goals with existing resources; Baker & Nelson, 2005) and, in turn, bricolage would promote firm performance through effective resource management. I propose that in small and medium-sized enterprises, chief executive officers (CEOs) with high harmonious passion manifest bricolage through characteristics of harmonious passion like deliberate practice, which influences the 'making do' component of bricolage, creative solutions that achieve the 'recombination' component of bricolage, and high levels of awareness of organizational capacity, which promotes the 'at hand' component of bricolage. I also suggest that firms with high levels of bricolage enhance firm performance through creatively recombining accessible resources, acting on without biases to overcome the liability of smallness, and maximizing the firm's potential by use of all possible methods. Additionally, I argue that entrepreneurial autonomy positively strengthens the relationship between bricolage and firm performance by providing freedom of

action and independent decision making on the advancement of bricolage and by encouraging creativity and the completion of bricolage.

In the fourth essay, I investigate the impact of developing and inventing passion on firm innovation and performance. Building on identity theory (Stryker, 1968; Stryker & Burke, 2000), I argue that entrepreneurial passion for developing leads to exploitative innovation and eventually enhances firm performance. Moreover, entrepreneurial passion for inventing promotes exploratory innovation and increases firm performance. Specifically, passionate entrepreneurs are motivated to behave according to their identities (Burke & Reitzes, 1981). I consider passion as a domain-specific concept; entrepreneurs who are passionate about developing identity (or inventing identity) would behave according to their identities.

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## **CHAPTER 2. ENTREPRENEURIAL PASSION: A SYSTEMATIC REVIEW AND RESEARCH OPPORTUNITIES**

A paper to be submitted to a journal

### **Abstract**

In this chapter, I review the literature on entrepreneurial passion and summarize the findings according to different frameworks of entrepreneurial passion. I specifically articulate definitions, theoretical arguments, and empirical findings of four major conceptualizations of passion: passion for work, a dualistic model of passion, entrepreneurial passion, and perceived passion. Moreover, I analyzed 63 published papers in the literature and identified potential research opportunities in this area. First, the research stream on the entrepreneurial passion-firm performance relationship needs further examination. For instance, we need comprehensive and more nuanced studies on this relationship focusing on diverse types of passion. Second, distinctive mechanisms based on different types of passion would enhance our understanding of how passion influences firm performance and other outcomes. Third, a careful match between the theoretical arguments and measurements based on the frameworks of entrepreneurial passion is essential. Lastly, scholars should conduct empirical research on entrepreneurial passion in various cultural contexts.

### **Literature Review**

Entrepreneurial passion has been studied from different theoretical perspectives: passion for work (Baum, Locke, & Smith, 2001), a dualistic model of passion (Vallerand, Blanchard, Mageau, Koestner, Ratelle, Léonard, Gagné & Marsolais, 2003), entrepreneurial passion (Cardon, Wincent, Singh, & Drnovsek, 2009), and perceived passion (Chen, Yao, & Kotha,

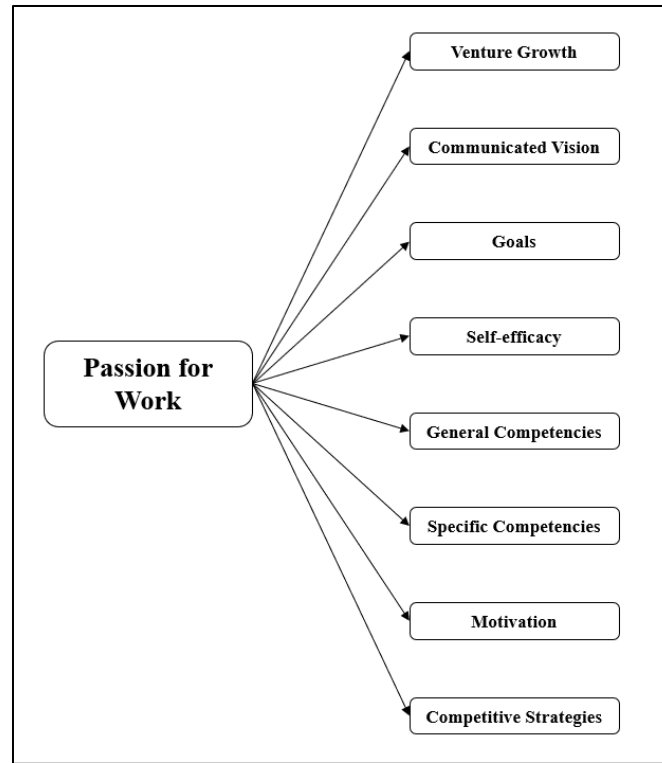


2009). The decision between frameworks should be determined by research questions and by the different conceptualizations of entrepreneurial passion (Collewaert, Anseel, Crommelinck, De Beuckelaer, & Vermeire, 2016; Ho & Pollack, 2014; Murnieks, Mosakowski, & Cardon, 2014). I further explain specific definitions, theoretical arguments, and empirical findings of entrepreneurial passion based on each theoretical framework.

### **Passion for Work**

Early research examined passion for work in the entrepreneurship context (Baum & Locke, 2004; Baum et al., 2001). Baum and his colleagues defined passion as “love of one’s work” (Baum & Locke, 2004, p. 588) or “selfish love of the work” (Shane, Locke, & Collins, 2003, p. 268) and assumed passion as a stable trait that sustains over time. Based on the depictions of entrepreneurs by Locke (1993), Baum and Locke (2004) established five survey items on passion for work. Baum et al. (2001) empirically studied that CEOs’ passion for work indirectly leads to sales, employment, and profit growth through general competencies (i.e., organization and opportunity skill), specific competencies (i.e., industry and technical skill), motivation (i.e., vision, goals, and self-efficacy), and competitive strategies (i.e., differentiation through innovation and quality/service). Baum and Locke (2004) extended this work and found that entrepreneur-CEOs’ passion for work is indirectly related to venture growth through communicated vision, goals, and self-efficacy. Both studies examined the impact of passionate CEOs who love their work and found that passion for work indirectly leads to sales and employment growth through different mediators. De Clercq, Honig, and Martin (2013) utilized this framework and found that passion for work is positively associated with entrepreneurial intentions. They empirically investigated that passion for work strengthens the perceived ability-entrepreneurial intentions and the perceived attractiveness-entrepreneurial intentions

relationships. Baum and his colleagues advanced the entrepreneurship literature by adopting passion into the entrepreneurship domain, by developing theoretical arguments of passion as a trait-based approach, by providing empirical evidence of the positive relationship between passion and firm growth, and by establishing the survey items of passion for work. Figure 2.1 presents the outcome variables utilized in prior empirical research on passion for work.



**Figure 2.1. Outcome Variables of Passion for Work**

### **Dualistic Model of Passion – Harmonious and Obsessive Passion**

Vallerand et al. (2003) proposed the framework of the dualistic model of passion. They defined passion as “a strong inclination toward an activity that people like, that they find important, and in which they invest time and energy” (p. 757) and suggested two types of passion – harmonious and obsessive. The main differences between two passions are 1) internalization and 2) behavioral persistence of a particular activity that people are passionate

about (Vallerand et al., 2003). Harmonious passion refers to “an autonomous internalization that leads individuals to choose to engage in the activity that they like” and obsessive passion means “a controlled internalization of an activity in one’s identity that creates an internal pressure to engage in the activity that the person likes” (Vallerand et al., 2003, p. 756). In other words, harmonious passion is a self-made decision on engagement in the activities with flexible persistence and obsessive passion is a compulsive commitment toward activities with uncontrollable persistence. Vallerand et al. (2003) also established 12 survey items to measure the dualistic model of passion, which has been utilized in different fields and validated across age, gender, language, and activities (Marsh et al., 2013; Vallerand, 2015).

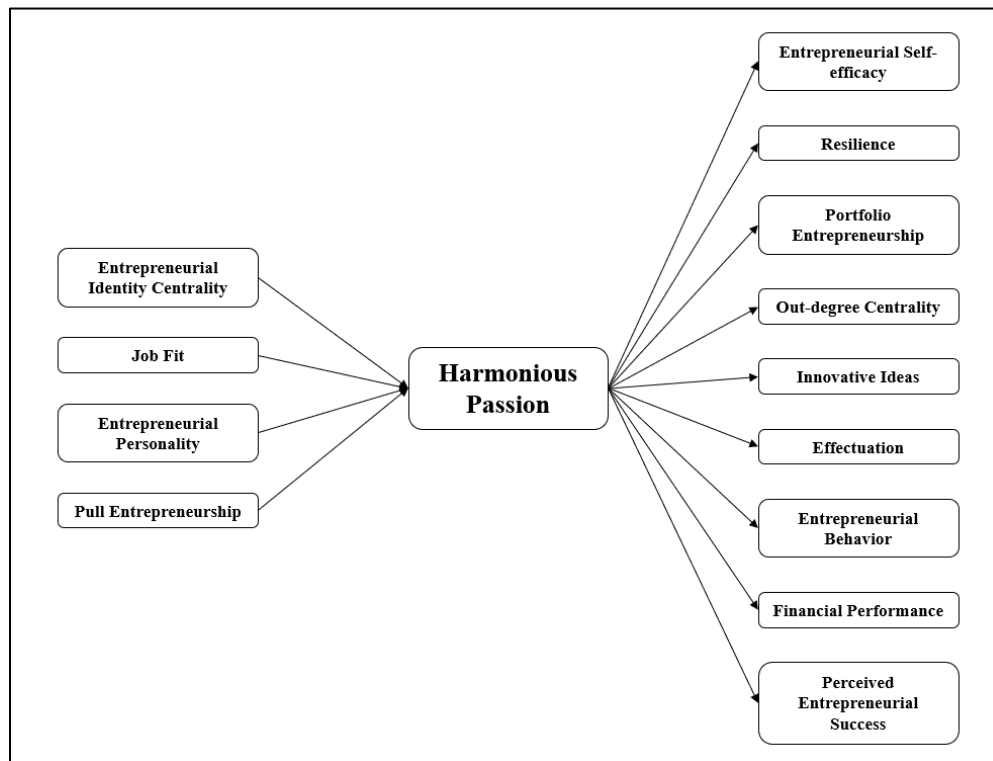
Researchers have applied the dualistic model of passion in the entrepreneurship literature. I summarize below the main empirical findings of this model. Ho and Pollack (2014) found that harmonious entrepreneurial passion indirectly impacts referral and total business income through increased out-degree centrality (i.e., searching for others). Additionally, obsessive entrepreneurial passion negatively influences referral and total business income through decreased levels of in-degree centrality (i.e., less approachable by others). Murnieks et al. (2014) empirically examined the positive impact of harmonious passion on entrepreneurial behavior and self-efficacy. Thorgren and Wincent (2015) argued that entrepreneurs’ obsessive passion is associated with habitual entrepreneurship (i.e., “exposed to multiple venture engagements”, p. 219). Specifically, they found that obsessive passion is related to both serial (i.e., “engaged in a previous start-up”) and portfolio entrepreneurship (i.e., “started another business while running at least one other company”, p. 219). However, harmonious passion only impacts portfolio entrepreneurship among habitual entrepreneurship types (Thorgren & Wincent, 2015). Dalborg

and Wincent (2015) examined that entrepreneurs who are “being pulled toward opportunities to start a business” indirectly nurture harmonious passion through self-efficacy (p. 974).

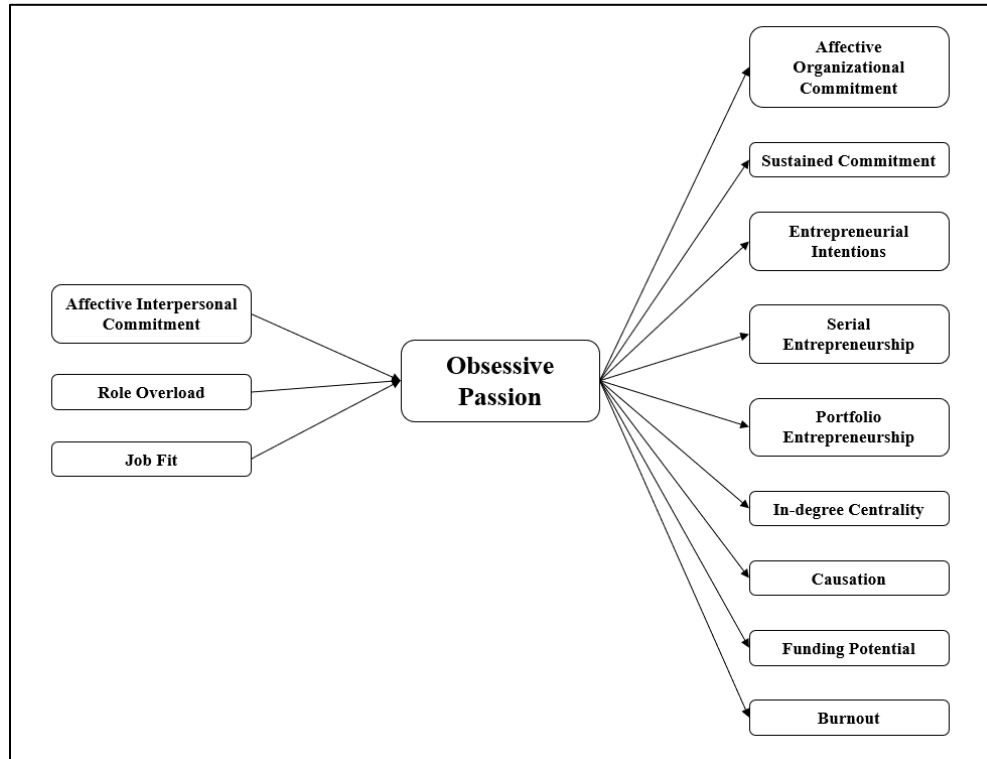
Stroe, Parida, and Wincent (2018) found that harmonious entrepreneurial passion is critical in achieving effectuation when entrepreneurs have a high self-efficacy or perceive high risk in the environment and that obsessive entrepreneurial passion leads to causation when entrepreneurs perceive low risk in the environment. In other words, authors found that harmonious and obsessive passions implement different entrepreneurial decision-making logics under certain conditions. Stroe, Wincent, and Parida (2018) also examined the antecedents of obsessive passion and found that nascent entrepreneurs’ role overload impacts them to become obsessive toward entrepreneurial activities. Fisher, Merlot, and Johnson (2018) argued that entrepreneurs’ obsessive passion leads to sustained commitment and harmonious passion influences entrepreneurs to perceive themselves as successful through resilience. De Mol, Ho, and Pollack (2018) examined that entrepreneurs’ job fit leads to higher burnout through obsessive passion, but harmonious passion is negatively related to burnout.

Schenkel, Farmer, and Maslyn (2019) found that employees’ harmonious passion for being entrepreneurial positively influences them to spend more time on thinking about new ideas, which then leads them to suggest an increased number of job-related innovative ideas. Moreover, employees’ creative self-efficacy negatively moderates the relationship between harmonious passion and time spent on innovating (Schenkel et al., 2019). Obschonka, Moeller, and Goethner (2019) investigated that researchers’ harmonious entrepreneurial passion is positively associated with entrepreneurial behavior. Murnieks, Cardon, and Haynie (2020) studied the antecedents of the dualistic model of passion. Specifically, entrepreneurial identity centrality leads to harmonious entrepreneurial passion and affective interpersonal commitment

drives obsessive entrepreneurial passion (Murnieks et al., 2020). Moreover, the authors examined the gender of entrepreneurs as the moderator of both relationships and found that male entrepreneurs positively strengthen both relationships. Stroe, Sirén, Shepherd, and Wincent (2020) examined different moderating roles of harmonious and obsessive passion on the relationship between fear of failure and negative affect. Entrepreneurs' fear of failure manifests negative affect and harmonious passion reduces this influence; however, obsessive passion shows both positive and negative moderating effects on this relationship in two different studies (Stroe et al., 2020). Figure 2.2 and 2.3 display the antecedent and outcome variables found in prior empirical research on the dualistic model of passion.



**Figure 2.2. Antecedent and Outcome Variables of Harmonious Passion**



**Figure 2.3. Antecedent and Outcome Variables of Obsessive Passion**

### **Entrepreneurial Passion – Inventing, Developing, and Founding passion**

Cardon et al. (2009) introduced a new framework of entrepreneurial passion that focuses on intense positive feelings and identity centrality toward specific roles of entrepreneurship. Entrepreneurial passion is defined as “consciously accessible, intense positive feelings experienced by engagement in entrepreneurial activities associated with roles that are meaningful and salient to the self-identity of the entrepreneur” (Cardon et al., 2009, p. 517). Based on the categorization of entrepreneurial activities (Gartner, Starr, & Bhat, 1999), Cardon et al. (2009) suggested three distinct entrepreneurial role identities: inventing, developing, and founding passion. Specifically, inventing passion is associated with “identifying, inventing, and exploring new opportunities”; developing passion is related to “nurturing, growing, and expanding the

venture”; founding passion involves “establishing a venture for commercializing and exploiting opportunities” (Cardon et al., 2009, p. 516).

Cardon and colleagues’ (2009) framework of entrepreneurial passion has been spread widely in the entrepreneurship field and their establishment of survey items of inventing, developing, and founding passion ignited the empirical research on entrepreneurial passion. Specifically, Cardon, Grégoire, Stevens, and Patel (2013) established 13 survey items of entrepreneurial passion, which include five items for inventing passion, four items for developing passion, and four items for founding passion. Following Cardon and colleagues’ (2009) conceptualization, authors divided each passion into two dimensions: intensive positive feelings and identity centrality. To operationalize each passion, Cardon et al. (2013) recommend using formative measurement. In other words, items for intensive positive feelings need to be averaged and multiplied with one identity centrality item to calculate each passion. They also suggest not to combine all three domains as one entrepreneurial passion construct.

Cardon et al. (2013) not only developed the survey items of entrepreneurial passion, but also empirically found that entrepreneurial passion for founding is associated with creativity and persistence. Moreover, entrepreneurial passion for developing is positively linked to absorption (Cardon et al., 2013). Cardon and Kirk (2015) theorized and discovered that entrepreneurial self-efficacy positively influences persistence and entrepreneurial passion for inventing and founding mediates this relationship. Stenholm and Renko (2016) researched that entrepreneurial passion for inventing and developing indirectly leads to new venture survival through bricolage.

Kang, Matusik, Kim, and Phillips (2016) investigated an antecedent (i.e., organizational climate) and an outcome (i.e., innovative behavior) of entrepreneurial passion for inventing. Specifically, the authors found that a firm’s innovative climate indirectly manifests employees’

innovative behavior through inventing passion. Moreover, proactive climate positively moderates the relationship between innovative climate and inventing passion and risk-taking climate increases the influence of inventing passion on innovative behavior (Kang et al., 2016). Huyghe, Knockaert, and Obschonka (2016) found that inventing passion is positively associated with spin-off and start-up intentions. Drnovsek, Cardon, and Patel (2016) empirically examined founder CEOs' passion for developing impact on sales and employee growth. Moreover, goal commitment mediates developing passion-venture growth relationship (Drnovsek et al., 2016). Collewaert et al. (2016) found that entrepreneurial passion for founding diminishes over time. Specifically, intensive positive feelings decrease over time and identity centrality maintains stable (Collewaert et al., 2016). Biraglia and Kadile (2017) studied that founding passion positively leads to entrepreneurial intentions and that entrepreneurial self-efficacy acts as a partial mediation in this link.

Mueller, Wolfe, and Syed (2017) found that entrepreneurs' developing passion indirectly leads to firm performance through 1) self-regulatory mode (i.e., locomotion and assessment) and 2) grit. Campos (2017) also found that developing passion is positively related to entrepreneurial orientation and that entrepreneurial alertness mediates this relationship. Strese, Keller, Flatten, and Brettel (2018) found that CEOs' inventing passion positively impacts radical innovation in small and medium-sized enterprises and that shared vision moderates this relationship. Costa, Santos, Wach, and Caetano (2018) showed that intensive positive feelings toward developing, inventing, and founding role identities positively moderate the impact of cognitive entrepreneurial training on the accuracy of the business opportunity recognition. Karimi (2020) studied that university students' inventing passion positively increases entrepreneurial intentions through either attitudes toward entrepreneurship or perceived behavioral control. Xiao, Dowejko,



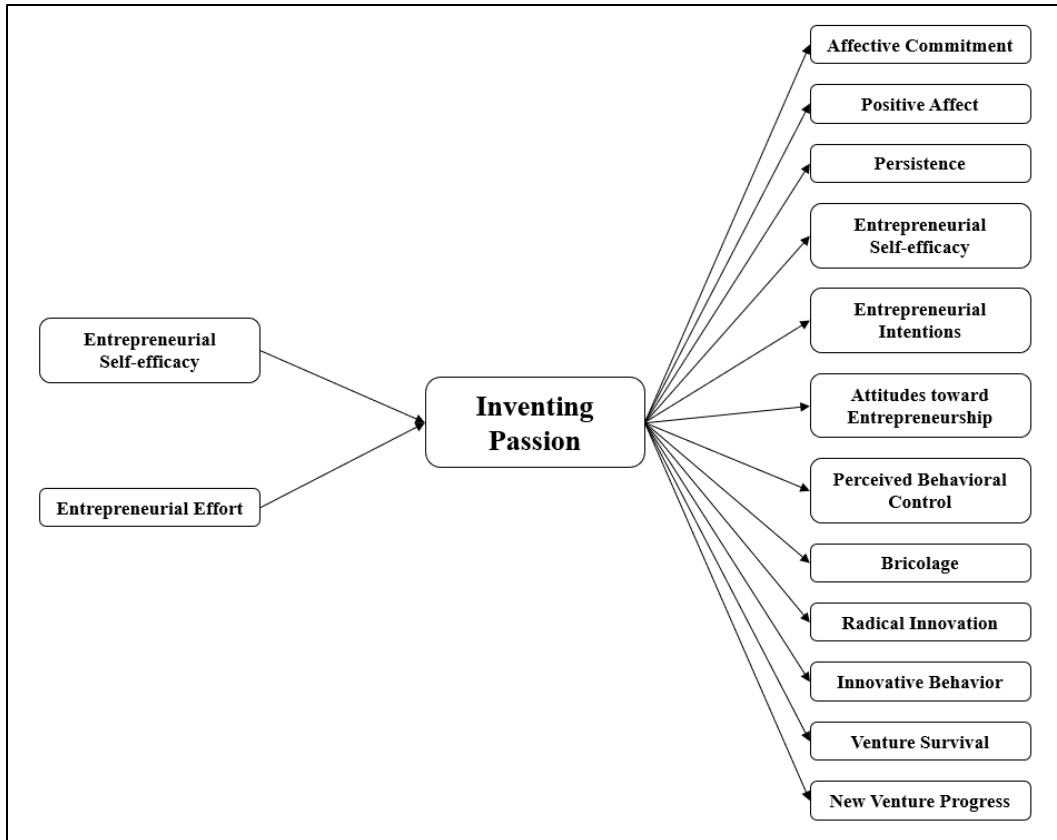
Au, and Hsu (2020) examined that employees' skill variety positively impacts them to form a team and this influence is strengthened by employees' developing passion.

Cardon, Post, and Forster (2017c) proposed the concept of team entrepreneurial passion (TEP; i.e., "the level of shared intense positive feelings for a collective and central team identity for new venture teams", p. 283). They theoretically explained that team passion diversity would positively influence the formation of team entrepreneurial passion. Moreover, team entrepreneurial passion impacts diverse individual- and team-level outcomes like new venture team performance, quality of new venture team processes, and individual entrepreneurial passion (Cardon et al., 2017c). Santos and Cardon (2019) empirically found that TEP for inventing and developing leads to new venture team (NVT) performance. The relationship between TEP for inventing and team performance is moderated by "mono-focal (NVTs with a higher score in one of the domains compared to the others); incomplete poly-focal (NVTs showing higher scores in two of the three domains of TEP); and complete poly-focal (NVTs showing no differences between the scores of the three domains)" (Santos & Cardon, 2019, p. 10).

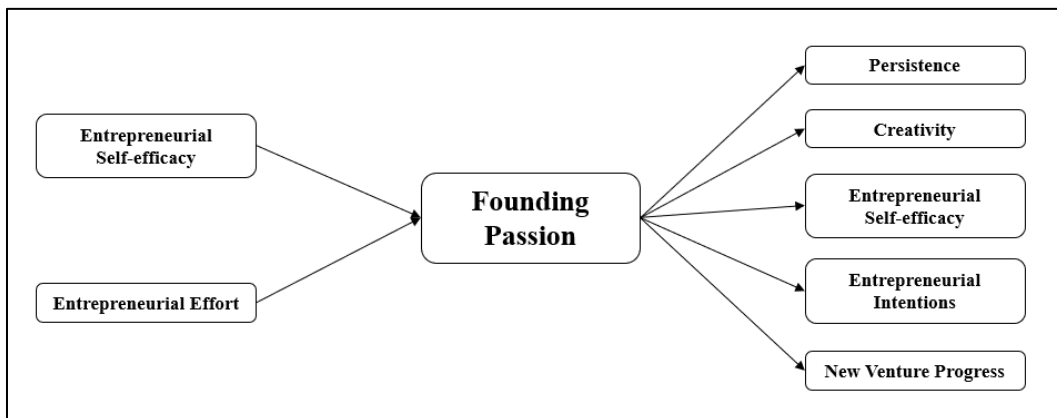
Boone, Andries, and Clarysee (2020) studied new venture teams in different stages and found that, in the commercialization stage, poly-focal team entrepreneurial passion (both high on inventing and founding) is better at achieving high team performance through reduced relationship conflict than mono-focal team entrepreneurial passion (either inventing or founding). De Mol, Cardon, de Jong, Khapova, and Elfring (2020) investigated that average team passion does not lead to both short- and long-term performance. Moreover, entrepreneurial passion diversity (i.e., intensity separation) negatively influences short-term performance (i.e., quality of the business idea) and entrepreneurial passion diversity (i.e., focus variety) negatively impacts long-term performance (i.e., amount of funding that teams will receive) (de Mol et al.,

2020). Figure 2.4, 2.5, and 2.6 summarize the antecedent and outcome variables examined in prior empirical research on entrepreneurial passion.

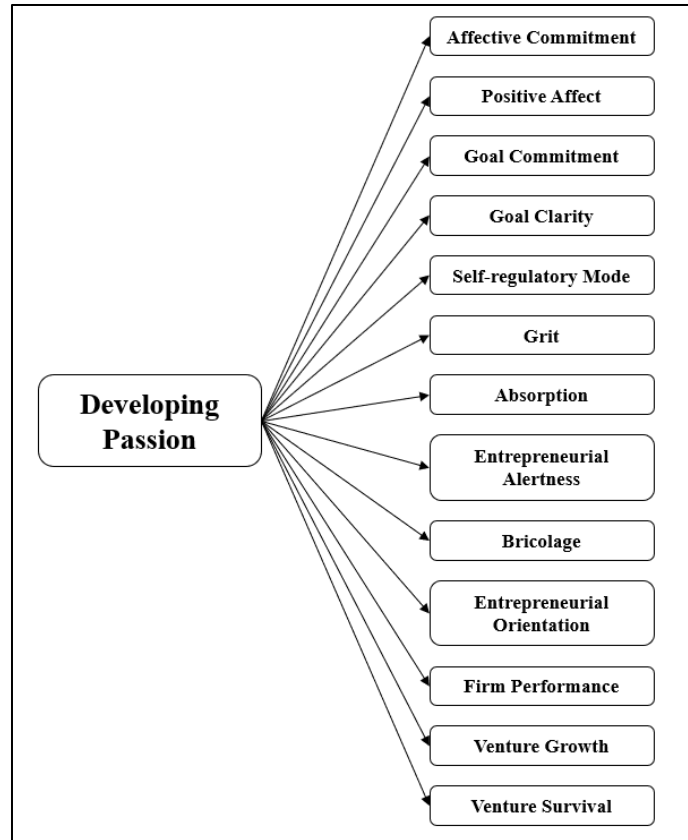
Vallerand and colleagues' (2003) dualistic model of passion and Cardon and colleagues' (2009) entrepreneurial passion are similar in the sense that both include affection and identification as core components of passion. Both frameworks argue that entrepreneurial passion is a strong affection for entrepreneurial activities that are meaningful to their identities. However, the two frameworks differ in their approach toward entrepreneurship and internalization (Collewaert et al., 2016; Ho & Pollack, 2014). First, Vallerand et al. (2003) have a general approach toward entrepreneurial passion. Specifically, scholars who want to examine an entrepreneur's overall passion for entrepreneurship activities should adopt the dualistic model of passion (Ho & Pollack, 2014). Cardon et al. (2009) take a specific approach toward entrepreneurial passion. To elaborate, they assume that entrepreneurs have three specific roles and different levels of affection toward those entrepreneurial roles. Therefore, Cardon et al.'s (2009) approach is domain specific, rather than an overall understanding of passion. Second, Vallerand et al. (2003) further elaborate on how entrepreneurial activities are internalized and differentiate harmonious and obsessive passion in terms of autonomous and controlled internalization toward one's identity.



**Figure 2.4. Antecedent and Outcome Variables of Inventing Passion**



**Figure 2.5. Antecedent and Outcome Variables of Founding Passion**



**Figure 2.6. Outcome Variables of Developing Passion**

### **Perceived Passion**

Entrepreneurial finance scholars proposed the concept of perceived passion (Chen et al., 2009). In this area, scholars argue that passion of entrepreneurs is a critical indicator that helps persuade investors to make investment decisions (e.g., Davis, Hmieleski, Webb, & Coombs, 2017; Mitteness, Sudek, & Cardon, 2012). Chen et al. (2009) defined entrepreneurial passion as an “intense affective state accompanied by cognitive and behavioral manifestations of high personal value” (p. 201) and found that entrepreneurs’ preparedness in presentations (i.e., perceived cognitive passion) promotes funding from venture capitalists. Also, Chen et al. (2009) established 12 survey items to capture perceived passion. Specifically, six items are about affective passion which are questions on the body movements, language, gestures, and

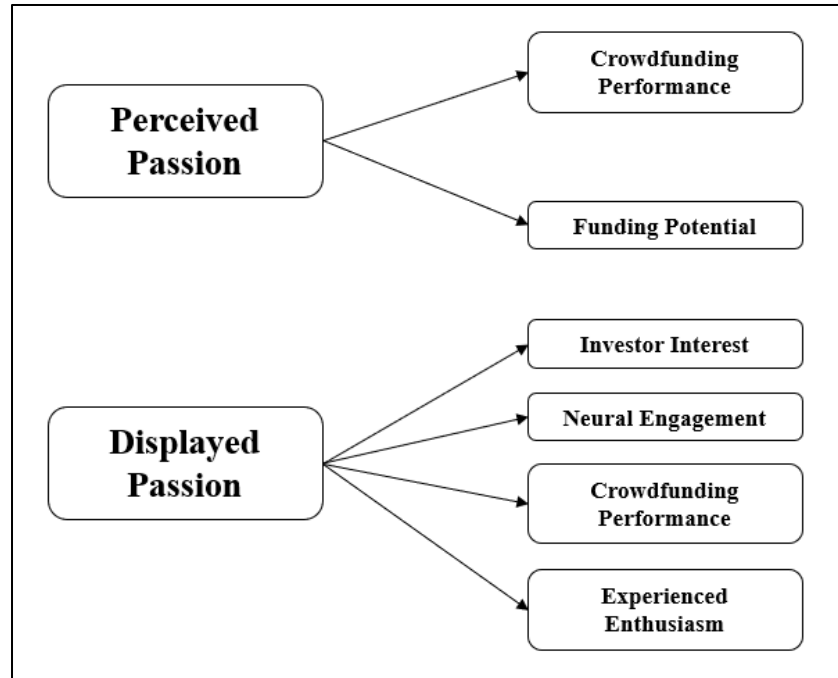
expressions of presenters. The other six items are about cognitive passion (i.e., preparedness) which are questions on logic, fact, and content about presentation.

Scholars have advanced the understanding of perceived passion by examining how diverse investors' (e.g., venture capitalists and angel investors) perceptions of entrepreneurial passion relate to investment, funding, or crowdfunding performance. Empirical findings in this research stream have made significant contributions to our understanding of entrepreneurial passion. Mitteness et al. (2012) utilized 3,502 evaluations of 241 presentations examined by 64 angel investors and found that passion perceived by angel investors positively influences funding potentials. Moreover, angel investors' characteristics like older age, higher intuition, openness, and motivation toward mentor strengthen the perceived passion-funding potential relationship, however, angels who are extraverted and promotion-focused negatively impact the relationship (Mitteness et al., 2012).

Davis et al. (2017) observed that entrepreneurial passion perceived by funders positively moderates the relationship between product creativity and positive affective reactions. Authors found a negative influence of perceived entrepreneurial passion on funders' investment decisions and predicted success (Davis et al., 2017). Li, Chen, Kotha, and Fisher (2017) conducted three studies utilizing surveys and archival data from Indiegogo and Kickstarter and an experiment on 120 MBA students and found that entrepreneurs' displayed passion on crowdfunding video expands the enthusiasm of viewers, which in turn increases funding amount and social media exposure. They also examined the moderating impact of project innovativeness as perceived by viewers, which invigorates both the displayed passion-funding amount and the displayed passion-social media exposure associations (Li et al., 2017). Cardon, Mitteness, and Sudek (2017b) used 1,995 evaluations of 133 presentations completed by 72 angel investors and

discovered that evaluations of funding decisions by angel investors are positively associated with entrepreneurs' level of preparedness. When entrepreneurs commit personal money into their idea, prepared entrepreneurs' chance of obtaining positive evaluations on funding has increased (Cardon et al., 2017b). In other words, angel investors favor prepared entrepreneurs with personal financial commitment in their idea.

Warnick, Murnieks, McMullen, and Brooks (2018) employed 992 decisions on 16 hypothetical investment opportunities evaluated by 31 venture capitalists and 31 angel investors and found that angel investors and venture capitalists perceive both entrepreneurial passion and passion for the product as critical factors for investment decisions. Entrepreneurs' openness to feedback positively moderates both types of passion toward funding potential (Warnick et al., 2018). Interestingly, authors found a three-way interaction among investing experience of investors, openness to feedback, and entrepreneurial passion toward funding potential. Passion for the product also demonstrates a three-way interaction with entrepreneurial experience of investors and openness to feedback toward funding potential, however, a combination of entrepreneurial passion and passion for the product does not predict funding potential (Warnick et al., 2018). Oo, Allison, Sahaym, and Juasrikul (2019) researched that user entrepreneurship leads to crowdfunding performance through perceived passion. Using functional Magnetic Resonance Imaging (fMRI), Shane, Drover, Clingingsmith, and Cerf (2020) empirically found the causal relationship between entrepreneurs' displayed passion and informal investors' interest by analyzing 147 neural responses of 15 informal investors to 20 entrepreneurs' pitches. Figure 2.7 elucidates the antecedent and outcome variables investigated in prior empirical research on perceived passion.



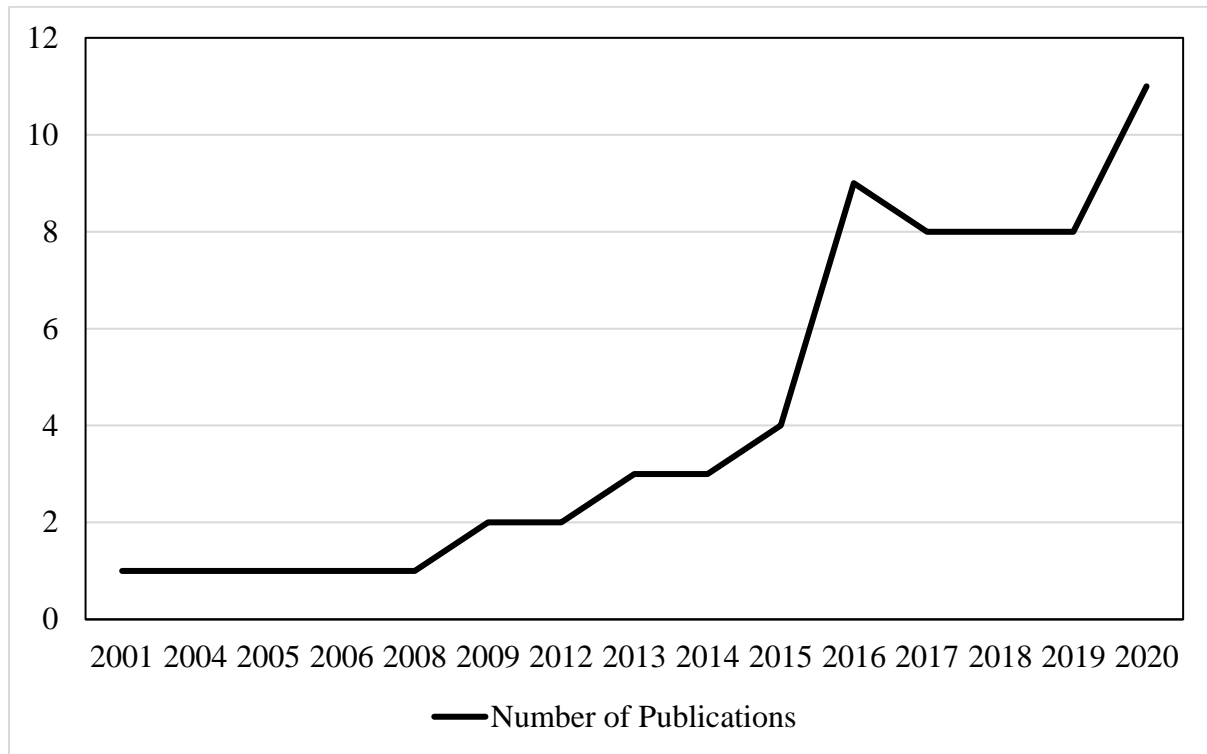
**Figure 2.7. Outcome Variables of Perceived and Displayed Passion**

### **Systematic Review**

To thoroughly understand the current status of studies on entrepreneurial passion, I conducted a systematic review of the journal publications that examined entrepreneurial passion. Specifically, I followed the procedure of previous systematic reviews (e.g., Stephan, 2018; Shepherd, Wennberg, Suddaby, & Wiklund, 2019; Transfield, Denyer, & Smart, 2003). First, I searched online database (i.e., Web of Science) to find journal publications on entrepreneurial passion between 2001 and January 2020. I aimed for articles that mentioned the term, ‘entrepreneurial passion’, in the title, abstract, or keywords at peer-reviewed journals including entrepreneurship (e.g., *Entrepreneurship Theory and Practice*, *Journal of Business Venturing*, and *Strategic Entrepreneurship Journal*) and management (e.g., *Academy of Management Journal*, *Academy of Management Review*, and *Journal of Management*). The search yielded 323 papers.

Second, I read the abstract of each paper to decide on inclusion and exclusion of papers in the review. I deleted conference proceedings, duplicated papers, case studies, and articles that studied passion for non-entrepreneurship domains. As a result, I excluded 260 papers and included 63 journal publications. Table 2.1 shows the number of publications based on each type of entrepreneurial passion and Table 2.2 indicates the number of publications based on each journal. Third, I reviewed each paper thoroughly and coded authors, year of publication, published journal, type of research, type of passion, measurement of passion, variables (i.e., independent, dependent, mediator, and moderator), nature of the sample, country of data collection, theoretical perspectives, and core findings of each paper. I attach the summarized version of coding in Table 2.4. Research on entrepreneurial passion is still in its early stage, however, the attention on the topic is increasing as shown by the number of publications (Figure 2.8). In recent reviews, Murnieks et al. (2014) explained that “to our knowledge, only three published articles have examined passion among entrepreneurs empirically” (p. 1588) and Cardon, Glauser, and Murnieks (2017a) reviewed journal publications on the topic of entrepreneurial passion and found 29 published papers. Recently, Murnieks et al. (2020) marked that “our review indicates ... 14 empirical articles which have examined entrepreneurial passion to date” (p. 5). In our systematic review, I found a total of 63 journal publications in which 9 papers are conceptual and 54 are empirical.





**Figure 2.8. Increasing Scholarship on Entrepreneurial Passion**

**Table 2.1. Number of Publications by Types of Entrepreneurial Passion**

Type of Passion <sup>a</sup>	Publications
Entrepreneurial Passion	27
Dualistic Model of Passion	16
Perceived Passion	8
Passion for Work	3

Note. I also found 10 papers that did not focus on specific types of entrepreneurial passion, but studied passion for overall entrepreneurship.

**Table 2.2. Number of Publications by Journals**

<b>Journal</b>	<b>Publications</b>
JBV	17
JSBM	7
ETP	5
AMJ	3
ISBJ	3
JBR	3
AMR	2
FP	2
IJEER	2
JAP	2
JMS	2
AE	1
AP	1
ERD	1
ERJ	1
HRMR	1
JBVI	1
JOE	1
JOM	1
JSBED	1
JSBS	1
LQ	1
MRR	1
SEJ	1
TASM	1
VC	1
Total	63

Note. AE = Applied Economics, AMJ = Academy of Management Journal, AMR= Academy of Management Review, AP = Applied Psychology, ERD= Entrepreneurship and Regional Development, ERJ= Entrepreneurship Research Journal, ETP= Entrepreneurship Theory and Practice, FP = Frontiers in Psychology, HRMR= Human Resource Management Review, IJEER= International Journal of Entrepreneurial Behavior and Research, ISBJ= International Small Business Journal, JAP= Journal of Applied Psychology, JBR= Journal of Business Research, JBV= Journal of Business Venturing, JBVI= Journal of Business Venturing Insights, JMS= Journal of Management Studies, JOE = Journal of Entrepreneurship, JOM= Journal of Management, JSBED= Journal of Small Business and Enterprise Development, JSBM= Journal of Small Business Management, JSBS= Journal of Small Business Strategy, LQ= Leadership Quarterly, MRR = Management Research Review, SEJ= Strategic Entrepreneurship Journal, TASM = Technology Analysis and Strategic Management, VC= Venture Capital.

### **Research Opportunities**

As a result of systematic review on entrepreneurial passion, I identified areas that could potentially advance the literature: 1) in-depth and more nuanced studies on the relationship between diverse types of entrepreneurial passion and firm performance, 2) importance of examining the specific mechanisms toward firm performance based on each type of entrepreneurial passion, 3) solving the issue of mismatch between theoretical frameworks and measurement of entrepreneurial passion, and 4) application of entrepreneurial passion in different cultural settings.

First, the relationship between entrepreneurial passion and firm performance needs both theoretical and empirical advancement. Firm performance has been a focus of broad management research (Dess & Robinson, 1984). In the entrepreneurship literature, diverse publications on meta-analysis confirm the importance of performance: entrepreneurial orientation-firm performance (Rauch, Wiklund, Lumpkin, & Frese, 2009), personality-entrepreneurial performance (Zhao, Seibert, & Lumpkin, 2010), innovation-firm performance (Rosenbusch, Brinckmann, & Bausch, 2011), human capital-entrepreneurial success (Unger, Rauch, Frese, & Rosenbusch, 2011), and internationalization-firm performance (Schwens, Zapkau, Bierwerth, Isidor, Knight, & Kabst, 2018). Even acknowledging the fact that research on entrepreneurial passion is still in early development, scholars have given limited attention to firm performance. Therefore, I argue that we need to examine the influence of entrepreneurial passion on firm performance in diverse contexts, using different performance measures, and applying different entrepreneurial passion frameworks to further advance the literature. We need to answer research questions like: What are the financial or organizational benefits of entrepreneurs' passion? Would different types of entrepreneurial passion have different performance outcomes? What are the mechanisms and contingencies between entrepreneurial

passion and firm performance relationships? In this dissertation, I intend to answer these questions and empirically discover how different types of entrepreneurial passion impact firm performance through diverse mediators and moderators.

A few studies have examined the entrepreneurial passion and firm performance relationship. Below I analyze their findings and explain gaps that can be studied based on these papers. Baum et al. (2001) and Baum and Locke (2004) examined the indirect effect of passion for work on venture growth (e.g., objective sales and employment). Ho and Pollack (2014) found that harmonious passion indirectly leads to referral and total business income through increased out-degree centrality, but that obsessive passion indirectly and negatively impacts referral and total business income through decreased in-degree centrality. Stenholm and Renko (2016) empirically showed that inventing and developing passion indirectly influence new venture survival (i.e., binary variable; survive or not) through bricolage. Both Drnovsek et al. (2016) and Mueller et al. (2017) examined the impact of developing passion on firm performance. Specifically, Drnovsek et al. (2016) explored the positive and direct impact of founder CEOs' developing passion on venture growth (e.g., objective sales and employee). They also found a mediating impact of goal commitment in the developing passion-venture growth relationship. Mueller et al. (2017) studied entrepreneurs' developing passion indirect influence on firm performance (e.g., subjective sales, profitability, and return on assets) through multiple mediators like self-regulatory mode (i.e., locomotion and assessment) and grit. Santos and Cardon (2019) found empirical evidence that team entrepreneurial passion (TEP) for inventing and developing lead to new venture team performance (e.g., subjective quantity and quality of work), however, TEP for founding is not empirically related to team performance. They also utilized objective performance data (e.g., years of operation) and found that TEP for inventing and founding are

not associated with firm survival. Only TEP for developing is related to firm survival (Santos & Cardon, 2019). Boone et al. (2020) showed that both TEP for inventing and founding do not lead to team performance (i.e., competition scores) and de Mol et al. (2020) examined that average team passion for inventing, founding, and developing do not impact both short-term (i.e., quality of the business idea) and long-term performance (i.e., amount of funding). In addition to these nine papers that directly theorized and examined the influence of entrepreneurial passion on firm performance, the regression results of Sirén, Patel, and Wincent (2016) show that both harmonious and obsessive passions are not related to sales or profit growth.

Based on the analysis of the research stream of entrepreneurial passion-firm performance relationship, one main conclusion is that we have much to learn about the financial outcomes of diverse types of entrepreneurial passion. In other words, we are only certain that developing passion has a high probability of improving firm performance (Drnovsek et al., 2016; Mueller et al., 2017). This skewed distribution of the focus of the studies prevents us to understand whether inventing, founding, harmonious, or obsessive passion relate to firm performance. In this context, Mueller et al. (2017) called for an investigation on the impact of other types of entrepreneurial passion on firm performance.

Moreover, the findings in the literature are contradictory. On the one hand, Ho and Pollack (2014) found that harmonious passion and total business income have positive relationships. However, they found that obsessive passion is negatively related to total business income. Even though both relationships were indirect, it is noteworthy that they asserted and found different performance outcomes of the two types of passion. On the other hand, Sirén et al.'s (2016) regression analysis indicates that both harmonious and obsessive passions are not associated with sales or profit growth. Sirén et al. (2016) did not theorize the direct impact of

both types of passion toward firm performance, therefore, the findings are not a scope of their paper. However, this result contradicts the findings of Ho and Pollack (2014). The difference between these two studies might have emerged from their different natures of data collection. Ho and Pollack (2014) utilized self-reported subjective performance data from the United States of America (USA) and Sirén et al. (2016) collected secondary data of sales and profit growth from Finland. The different empirical results between Ho and Pollack (2014) and Sirén et al. (2016) suggest scholars should clarify the relationships between the dualistic models of passion and firm performance. Specifically, Patel, Thorgren, and Wincent (2015) explained that we are in an early stage to make a conclusion that the dualistic models of passion leads to high firm performance and also suggested scholars to conduct empirical research on these relationships preferentially. To advance our understanding of the entrepreneurial passion-firm performance relationship and clarify the contradictory findings of the dualistic models of passion-firm performance relationship, I examine different types of entrepreneurial passion (i.e., developing, inventing, harmonious, and obsessive passion), apply diverse boundary conditions (i.e., overwork and entrepreneurial autonomy), and develop more nuanced theoretical arguments in this dissertation.

Second, extending the logic that different types of passion yield different outcomes (Cardon et al., 2009; Vallerand et al., 2003), scholars need to examine the specific mechanisms toward firm performance based on the different types of passion. Drnovsek et al. (2016) explained that “looking at specific types of entrepreneurial passion is important because different roles and activities entrepreneurs engage in may elicit different types of passion that are uniquely associated with outcomes of interest” (p. 206). Moreover, Strese et al. (2018) argued that there is “lack of a deeper understanding of different types of CEOs’ passion and their respective consequences” (p. 435). In this context, I assert that different mediating variables link each type

of entrepreneurial passion for firm performance. In this dissertation, I specifically connect obsessive passion and identity fusion, developing passion and exploitation, inventing passion and exploration, and harmonious passion and bricolage as distinctive mediators between entrepreneurial passion and firm performance. Theoretical arguments and empirical findings of unique mechanisms according to each type of passion would extend our understanding of how different types of entrepreneurial passion leads to firm performance distinctively.

Third, we could increase our understanding of entrepreneurial passion by more closely matching the arguments with the measurement of passion. Scholars have utilized the logic from overall entrepreneurial passion citing several frameworks and using measurements of specific passion to empirically test their models. To enable the advancement of the literature, we should match the measures we use with established theory. For example, scholars using Cardon et al.'s (2009) framework of entrepreneurial passion to develop hypotheses should employ Cardon et al.'s (2013) survey items to test their theoretical models. Scholars have theorized using the term 'entrepreneurial passion' in their hypotheses but measured the passion differently. Some have built theoretical arguments based on overall entrepreneurial passion and utilized specific measures to operationalize entrepreneurial passion: harmonious passion (Murnieks et al., 2014), inventing passion (Huyghe et al., 2016), founding passion (Biraglia & Kadile, 2017), developing passion (Mueller et al., 2017) and inventing, founding passion (Gielnik, Spitzmuller, Schmitt, Klemann, & Frese, 2015). The above-mentioned papers provided justifications of the utilization of specific measures and explained their limitations within discussion parts. For instance, Gielnik et al. (2015) justified the use of inventing and founding passion survey items to capture overall entrepreneurial passion arguing that their sample of entrepreneurs are in the pre-launch stage and Mueller et al. (2017) explained the use of developing passion to measure entrepreneurial passion

because the entrepreneurs in their sample are “operating established firms, rather than working through the startup or founding process” (p. 268). Although these scholarly works have created an important body of knowledge, we could benefit by fitting the overall arguments and measurements to accelerate the progression of the field. Careful approach of matching the theoretical arguments and measurements would highly promote the advancement of entrepreneurial passion literature. Contemplating this issue, I match the theoretical framework of entrepreneurial passion and appropriate measures in each paper of this dissertation.

Lastly, the application of entrepreneurial passion in diverse cultural settings is needed. From 63 journal publications that I reviewed, 9 articles are conceptual and 54 are empirical. From those empirical papers, I listed countries where data on entrepreneurial passion have been collected and counted number of times those countries have been chosen (Table 2.3): USA (23 times), Germany (11 times), Finland (4 times), Sweden (3 times), Australia (3 times), China (3 times), Belgium (2 times), Italy (2 times), and other countries were utilized once (Canada, Mexico, Brazil, Slovenia, Switzerland, Netherlands, Spain, Portugal, Russia, Hungary, Israel, Iran, and Singapore). Essentially, many scholars have called for employing entrepreneurial passion in various cultural contexts (e.g., Murnieks et al., 2020; Stenholm & Renko, 2016; Strese et al., 2018). Applying diverse types of entrepreneurial passion in less studied countries and cultural settings would push the literature further. Moreover, I believe contextualized studies that establish country- or cultural-specific hypotheses and empirical examination within those settings would promote fine-grained understanding of entrepreneurship phenomenon (Lee, Howe, & Kreiser, 2019; Miller, 2011). In this dissertation, I collected data from executives of Korean firms to test theorized hypotheses which I believe would provide fruitful implications.



**Table 2.3. Summary of Entrepreneurial Passion Research by Country**

<b>Cluster</b>	<b>Country</b>	<b>Study</b>
America	USA	23
	Canada	1
	Mexico	1
	Brazil	1
Europe	Germany	11
	Finland	4
	Sweden	3
	Belgium	2
	Italy	2
	Slovenia	1
	Switzerland	1
	Netherlands	1
	Spain	1
	Portugal	1
	Russia	1
	Hungary	1
Asia	China	3
	Israel	1
	Iran	1
	Singapore	1
Oceania	Australia	3

### **Conclusion**

In this paper, I attempted to answer the question of what has been studied in the entrepreneurial passion literature and what are the main research opportunities in this area. I summarized the findings based on four major conceptualizations of passion: passion for work, a dualistic model of passion, entrepreneurial passion, and perceived passion. I reviewed 63 journal publications between 2001 and 2020 and detected several important research gaps in the literature. I hope my comprehensive literature review and highlighted research opportunities provide guidance to researchers as a fruitful roadmap for future studies in this area.

**Table 2.4. Literature Review of Entrepreneurial Passion**

<b>Authors</b>	<b>Year</b>	<b>Journal</b>	<b>Type of Research</b>	<b>Type of Passion</b>	<b>Findings</b>
Boone et al	2020	JBV	Empirical	Entrepreneurial passion	In the commercialization stage, poly-focal team entrepreneurial passion is better at achieving high team performance through reduced relationship conflict than mono-focal team entrepreneurial passion for either inventing or founding.
De Mol et al	2020	JBV	Empirical	Entrepreneurial passion	New venture teams' average passion does not lead to both short- and long-term performance. Entrepreneurial passion diversity (i.e., intensity separation) negatively influences the quality of the business idea and entrepreneurial passion diversity (i.e., focus variety) negatively impacts the amount of funding that teams will receive.
Hubner et al	2020	ETP	Empirical	Entrepreneurial passion	Authors empirically studied the contagion effect of entrepreneurial passion. Specifically, they found that entrepreneurs' passion experience (i.e., merging all passion domains) positively impacts employee affective commitment through employee passion response. When they examined the types of passion separately, only developing passion would lead to employee affective commitment through employee passion response.
Karimi	2020	AE	Empirical	Entrepreneurial passion	Based on the theory of planned behavior, authors found that university students' passion for inventing positively increases entrepreneurial intentions through either attitudes toward entrepreneurship or perceived behavioral control.
Kiani et al	2020	TASM	Empirical	Entrepreneurial passion	Authors examined the impact of entrepreneurial passion on radical innovation through exploratory learning.

**Table 2.4. continued**

Murnieks et al	2020	JBV	Empirical	Dualistic model of passion	Authors studied the antecedents of entrepreneurial passion. Specifically, entrepreneurial identity centrality leads to harmonious entrepreneurial passion and affective interpersonal commitment drives obsessive entrepreneurial passion. Moreover, authors examined the gender of entrepreneurs as the moderator of both relationships. As a result, male entrepreneurs positively strengthened both relationships.
Newman et al	2020	AP	Conceptual	All types	Authors review the literature on entrepreneurial passion and summarize the antecedents and outcomes of different types of entrepreneurial passion.
Shane et al	2020	JBV	Empirical	Perceived passion	Using fMRI, authors empirically found the causal relationship between entrepreneurs' displayed passion and informal investors' interest.
Stroe et al	2020	JBV	Empirical	Dualistic model of passion	Entrepreneurs' fear of failure manifests negative affect and harmonious passion reduces this influence. However, obsessive passion showed both positive and negative moderating effects in two different studies.
Türk et al	2020	JSBM	Empirical	Entrepreneurial passion	University students' prior entrepreneurial experience (i.e., role model and entrepreneurial experience) positively influences them to nurture entrepreneurial passion and learning orientation strengthens these relationships.
Xiao et al	2020	JSBM	Empirical	Entrepreneurial passion	Employees' skill variety positively impacts them to form a team and this influence is strengthened by employees' developing passion.
Hou et al	2019	FP	Empirical	Entrepreneurial passion	University students' entrepreneurial passion leads to high levels of entrepreneurial intentions through entrepreneurial self-efficacy.

**Table 2.4. continued**

Iyortsuun et al	2019	MRB	Conceptual	Entrepreneurial passion	Authors theoretically explain direct and indirect influence of entrepreneurial passion on performance through diverse mediators.
Obschonka et al	2019	FP	Empirical	Dualistic model of passion	Researchers' harmonious entrepreneurial passion is positively associated with entrepreneurial behavior.
Oo et al	2019	JBV	Empirical	Perceived passion	User entrepreneurship leads to crowdfunding performance through perceived passion.
Santos & Cardon	2019	ETP	Empirical	Entrepreneurial passion	Team entrepreneurial passion (TEP) for inventing and developing lead to new venture team (NVT) performance. The relationship between TEP for inventing and team performance is moderated by "mono-focal (NVTs with a higher score in one of the domains compared to the others); incomplete poly-focal (NVTs showing higher scores in two of the three domains of TEP); and complete poly-focal (NVTs showing no differences between the scores of the three domains)" (p. 10). TEP for founding is not empirically related to team performance.
Schenkel et al	2019	JSBS	Empirical	Dualistic model of passion	Employees' harmonious passion for being entrepreneurial positively influences them to spend more time on thinking about new ideas, which then leads them to suggest increased number of job-related innovative ideas. Moreover, employees' creative self-efficacy negatively moderates the relationship between harmonious passion and time spent on innovating.
Schulte-Holthaus	2019	JOE	Conceptual	All types	Author proposes a framework to understand passion in entrepreneurial contexts.
Stenholm & Nielsen	2019	IJEER	Empirical	Entrepreneurial passion	Entrepreneurs' perceived emotional support is positively related to entrepreneurial passion and this relationship is strengthened by entrepreneurial experience.

**Table 2.4. continued**

Costa et al	2018	JSBM	Empirical	Entrepreneurial passion	Intensive positive feelings toward developing, inventing, and founding role identities positively moderate the impact of cognitive entrepreneurial training on the accuracy of the business opportunity recognition.
De Mol et al	2018	JSBM	Empirical	Dualistic model of passion	Entrepreneurs' job fit leads to higher burnout through obsessive passion. Destiny beliefs about work strengthen the impact of job fit on obsessive passion. Harmonious passion is negatively related to burnout.
Fisher et al	2018	IJEBr	Empirical	Dualistic model of passion	Entrepreneurs' obsessive passion leads to sustained commitment and harmonious passion influences entrepreneurs to perceive themselves as successful through resilience.
Milanesi	2018	JBR	Empirical	All types	Author suggests hobby-related entrepreneurial process that explains the manifestation of entrepreneurial passion. Entrepreneurs enjoy domain passion (e.g., hobby) and accumulate knowledge and skills related to the domain. With increased exposure and interactions with people in the domain, entrepreneurs find opportunities and nurture entrepreneurial passion to start a company and commercialize the product.
Strese et al	2018	JSBM	Empirical	Entrepreneurial passion	CEOs' inventing passion positively impacts radical innovations in SMEs and shared vision moderates this relationship.
Stroe, Parida, & Wincent	2018	JBR	Empirical	Dualistic model of passion	Harmonious entrepreneurial passion is critical in achieving effectuation when entrepreneurs have a high self-efficacy or a high-risk perception on environment. Obsessive entrepreneurial passion leads to causation when entrepreneurs perceive low risk in the environment. In other words, harmonious and obsessive passions implement different entrepreneurial decision-making logics under certain conditions.

**Table 2.4. continued**

Stroe, Wincent, & Parida	2018	JBR	Empirical	Dualistic model of passion	Nascent entrepreneurs' role overload impacts them to become obsessive toward entrepreneurial activities. Goal challenge and achieved progress strengthen the impact of role overload on obsessive passion.
Warnick et al	2018	JBV	Empirical	Perceived passion	Angel investors and venture capitalists perceive both entrepreneurial passion and passion for product as critical factors for investment decisions. Entrepreneurs' openness to feedback positively moderates both types of passion toward funding potential. Interestingly, there is a three-way interaction among investing experience of investors, openness to feedback, and entrepreneurial passion toward funding potential. Passion for product also demonstrates a three-way interaction with entrepreneurial experience of investors and openness to feedback toward funding potential. However, combination of entrepreneurial passion and passion for product does not predict funding potential.
Biraglia & Kadile	2017	JSBM	Empirical	Entrepreneurial passion	Entrepreneurial passion positively leads to entrepreneurial intentions and entrepreneurial self-efficacy acts as a partial mediation in this link.
Campos	2017	JSBED	Empirical	Entrepreneurial passion	Entrepreneurial developing passion is positively related to entrepreneurial orientation and entrepreneurial alertness mediates this relationship.
Cardon et al	2017a	JBVI	Conceptual	All types	Authors review papers on entrepreneurial passion published in major journals (i.e., 29 papers) and suggest scholars to focus on specific domains of entrepreneurial passion, rather than overall entrepreneurial activity. Based on the analysis of 80 interviews, they propose major sources of entrepreneurial passion (i.e., growth, people, product/ service, inventing, competition, and social cause).

**Table 2.4. continued**

Cardon et al	2017b	ETP	Empirical	Perceived passion	Evaluations of funding decisions by angel investors are positively associated with entrepreneurs' level of preparedness. When entrepreneurs commit personal money into their idea, prepared entrepreneurs' chance of obtaining positive evaluations on funding has increased. In other words, angel investors favor prepared entrepreneurs with personal financial commitment in their idea.
Cardon et al	2017c	AMR	Conceptual	Entrepreneurial passion	Team passion diversity would positively influence the formation of team entrepreneurial passion (i.e., "the level of shared intense positive feelings for a collective team identity that is high in identity centrality for the NVT", p. 286). Moreover, team entrepreneurial passion impact diverse individual- and team-level outcomes like new venture team performance, quality of new venture team processes, and individual entrepreneurial passion.
Davis et al	2017	JBV	Empirical	Perceived passion	Entrepreneurial passion perceived by funders positively moderates the relationship between product creativity and positive affective reactions. Authors empirically find negative influence of perceived entrepreneurial passion on funders' investment decisions and predicted success.
Li et al	2017	JAP	Empirical	Perceived passion	Entrepreneurs' displayed passion on crowdfunding video expands the enthusiasm of viewers, which in turn increases funding amount and social media exposure. Project innovativeness perceived by viewers also invigorates the displayed passion-funding amount and displayed passion-social media exposure relationships.
Mueller et al	2017	JBV	Empirical	Entrepreneurial passion	Entrepreneurs' developing passion indirectly leads to firm performance through 1) self-regulatory mode (locomotion and assessment) and 2) grit.

**Table 2.4. continued**

Collewaert et al	2016	JMS	Empirical	Entrepreneurial passion	Entrepreneurial passion for founding diminishes in the course of time. Specifically, intensive positive feelings decrease over time and identity centrality maintains stable.
Drnovsek et al	2016	SEJ	Empirical	Entrepreneurial passion	Founder CEOs' passion for developing directly impacts sales and employee growth. Moreover, goal commitment mediates developing passion-venture growth relationship.
Huyghe et al	2016	JBV	Empirical	Entrepreneurial passion & Dualistic model of passion	Inventing passion is positively associated with spin-off and start-up intentions. Entrepreneurial self-efficacy indirectly influences inventing passion-intentions relationship. Moreover, obsessive passion positively influences spin-off intentions and affective organizational commitment mediates this influence. As the core findings of the paper, inventing and obsessive passions 'orchestrate' together to impact spin-off intentions.
Kang et al	2016	JBV	Empirical	Entrepreneurial passion	Authors find an antecedent (i.e., organizational climate) and an outcome (i.e., innovative behavior) of entrepreneurial passion for inventing. Specifically, a firm's innovative climate indirectly manifests employees' innovative behavior through inventing passion. Proactive climate positively moderates the relationship between innovative climate and inventing passion and risk-taking climate increases the influence of inventing passion toward innovative behavior.



**Table 2.4. continued**

Murnieks et al	2016	JBV	Empirical	Dualistic model of passion	Perceived obsessive passion and tenacity of entrepreneurs positively influence the funding potential from angel investors. Moreover, a three-way interaction among entrepreneurial experience of angel investors, perceived obsessive passion, and tenacity of entrepreneurs positively predicts funding potential from angel investors.
Ruskin et al	2016	JSBM	Empirical	All types	Entrepreneurial passion act as an emotional antecedents of self-oriented motives (i.e., achievement, autonomy, relatedness, and influence) of social entrepreneurs.
Sirén et al	2016	LQ	Empirical	Dualistic model of passion	Harmonious passion positively moderates the relationship between CEOs' change-oriented leadership and firm performance. Authors empirically find that both harmonious and obsessive passions are not related to sales and profit growth.
Stenholm & Renko	2016	JBV	Empirical	Entrepreneurial passion	Entrepreneurial passion for inventing and developing indirectly leads to new venture survival through bricolage. However, passion for founding neither fosters bricolage nor new venture survival.
Yitshaki & Kropp	2016	ERD	Empirical	All types	High-tech entrepreneurs' passion encompasses "a strong challenge to lead a meaningful activity" and social entrepreneurs' passion embodies "a desire to make a mark" (p. 206).
Cardon & Kirk	2015	ETP	Empirical	Entrepreneurial passion	Authors theorize and empirically find that entrepreneurial self-efficacy positively influences persistence and entrepreneurial passion for inventing and founding mediates this relationship.
Dalborg & Wincent	2015	ISBJ	Empirical	Dualistic model of passion	Entrepreneurs who are "being pulled toward opportunities to start a business" indirectly nurture entrepreneurial passion through self-efficacy (p. 974).

**Table 2.4. continued**

Gielnik et al	2015	AMJ	Empirical	Entrepreneurial passion	Entrepreneurial effort (“intensity of work” toward entrepreneurship-related works) positively manifests entrepreneurial passion. Authors also argue the mediation effect of new venture progress that effort leads to progress of new venture and also eventually forms entrepreneurial passion. Moreover, free choice of entrepreneurs moderates the effort-progress-passion relationship.
Thorgren & Wincent	2015	ISBJ	Empirical	Dualistic model of passion	Entrepreneurs’ obsessive passion is associated with habitual entrepreneurship (i.e., “exposed to multiple venture engagements”). Specifically, obsessive passion is related to both serial (i.e., “engaged in a previous start-up”) and portfolio entrepreneurship (i.e., “started another business while running at least one other company”, p. 219). However, harmonious passion only impacts portfolio entrepreneurship among habitual entrepreneurship types.
Ho & Pollack	2014	JMS	Empirical	Dualistic model of passion	On the one hand, harmonious entrepreneurial passion indirectly impacts referral and total business income through increased out-degree centrality (i.e., searching for others). On the other hand, obsessive entrepreneurial passion negatively influences referral and total business income through decreased levels of in-degree centrality (i.e., less approachable by others).
Hsu et al	2014	VC	Empirical	All types	Passion is a significant factor that predicts funding potentials. Specifically, angel investors put more importance on affective passion of entrepreneurs than venture capitalists when making investment decisions.
Murnieks et al	2014	JOM	Empirical	Dualistic model of passion	Harmonious passion leads to both entrepreneurial behavior and self-efficacy.

**Table 2.4. continued**

Cardon et al	2013	JBV	Empirical	Entrepreneurial passion	Authors developed the survey measurement instruments for entrepreneurial passion. As one of the first empirical paper on entrepreneurial passion, they found that entrepreneurial passion for founding is associated with creativity and persistence. Moreover, entrepreneurial passion for developing is positively linked to absorption.
De Clercq et al	2013	ISBJ	Empirical	Passion for work	Passion for work is positively associated with entrepreneurial intentions. Passion for work also strengthens the perceived ability-entrepreneurial intentions and perceived attractiveness-entrepreneurial intentions relationships.
Fisher et al	2013	ERJ	Empirical	Dualistic model of passion	Based on the clinical literature, authors propose a new framework of entrepreneurial obsession. They explain that entrepreneurs experience high levels of obsession toward their firms. Moreover, they argue that obsessive entrepreneurs achieve aimed performance but might attain anxiety issues.
Breugst et al	2012	ETP	Empirical	Entrepreneurial passion	Perceived inventing and developing passion indirectly form employees' affective commitment through positive affect. Goal clarity mediates the relationship between developing passion and affective commitment. Perceived founding passion negatively impacts affective commitment through low positive affect.
Mitteness et al	2012	JBV	Empirical	Perceived passion	Passion perceived by angel investors positively influences funding potentials. Moreover, angel investors' characteristics like older age, higher intuition, openness, and motivation toward mentor strengthen the perceived passion-funding potential relationship. However, angels who are extraverted and promotion-focused negatively impact the relationship.

**Table 2.4. continued**

Cardon et al	2009	AMR	Conceptual	Entrepreneurial passion	Authors propose the theory of entrepreneurial passion and conceptualize three different role identities of entrepreneurial passion (i.e., founder, inventor, and developer). They also provide theoretical arguments of the direct impact of entrepreneurial passion on opportunity recognition, venture creation, and growth and the mediation influence of creative problem solving, persistence, and absorption in identity-specific activities.
Chen et al	2009	AMJ	Empirical	Perceived passion	Preparedness in presentations promote funding potentials from venture capitalists as a perceived cognitive passion. However, perceived affective passion does not impact funding potentials.
Cardon	2008	HRMR	Conceptual	All types	Explain the contagion effect of entrepreneurial passion on employee passion through transformational leadership.
Ma & Tan	2006	JBV	Conceptual	All types	Authors theoretically argue that passion is one of the main components of entrepreneurship that leads to firm performance.
Cardon et al	2005	JBV	Conceptual	All types	Entrepreneurial passion is related to both positive and negative results. For instance, entrepreneurial passion is positively associated with high levels of persistence and confidence during the difficult times. However, it is also related to negative outcomes like relationship issues with spouse or parents due to the increased commitment toward their venture.
Baum & Locke	2004	JAP	Empirical	Passion for work	Entrepreneur-CEOs' passion for work is indirectly related to venture growth through communicated vision, goals, and self-efficacy. The direct impact of passion on venture growth is not supported.

**Table 2.4. continued**

Baum et al	2001	AMJ	Empirical	Passion for work	CEOs' passion for work indirectly leads to sales, employment, and profit growth through general competencies (i.e., organization and opportunity skill), specific competencies (i.e., industry and technical skill), motivation (i.e., vision, goals, and self-efficacy), and competitive strategies (i.e., differentiation through innovation and quality/service).
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Note. AE = Applied Economics, AMJ = Academy of Management Journal, AMR= Academy of Management Review, AP = Applied Psychology, ERD= Entrepreneurship and Regional Development, ERJ= Entrepreneurship Research Journal, ETP= Entrepreneurship Theory and Practice, FP = Frontiers in Psychology, HRMR= Human Resource Management Review, IJEBR= International Journal of Entrepreneurial Behavior and Research, ISBJ= International Small Business Journal, JAP= Journal of Applied Psychology, JBR= Journal of Business Research, JBV= Journal of Business Venturing, JVBI= Journal of Business Venturing Insights, JMS= Journal of Management Studies, JOE = Journal of Entrepreneurship, JOM= Journal of Management, JSBED= Journal of Small Business and Enterprise Development, JSBM= Journal of Small Business Management, JSBS= Journal of Small Business Strategy, LQ= Leadership Quarterly, MRR = Management Research Review, SEJ= Strategic Entrepreneurship Journal, TASM = Technology Analysis and Strategic Management, VC= Venture Capital.

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### **CHAPTER 3. OBSESSIVE PASSION, IDENTITY FUSION, AND FIRM PERFORMANCE: THE EFFECTS OF OVERWORK**

A paper to be submitted to a journal

#### **Abstract**

In this study, I examine the relationships between obsessive passion, identity fusion, and firm performance. Based on the theory of identity fusion, the affect infusion model, and the literature on the dualistic model of passion, I assert that obsessive passion is positively associated with firm performance through identity fusion. I argue that obsessively passionate entrepreneurs fuse strongly with their organizations because of positive affect and ego protective behaviors, eventually increasing firm performance through high levels of loyalty and responsibility toward their organizations. I also examine overwork as a moderator between identity fusion and firm performance and argue that extreme time investment in work intensifies the level of identity fusion toward firm performance by increasing the exposure to organizational colleagues and fulfilling self-actualization. I utilize a two-stage survey data collected from 196 Korean firms to test the proposed model.

#### **Introduction**

As people who fall in love develop cognitive interdependence with their lover (Agnew, Van Lange, Rusbult, & Langston, 1998), people who fall in love with a group combine their identity with that of the group and develop a sense of unity (Swann & Buhrmester, 2015). This “visceral sense of oneness with a group” is termed identity fusion and has been linked to extreme dedication to the group (Swann, Jetten, Gómez, Whitehouse, & Bastian, 2012, p. 441). Individuals whose identities are highly fused with a group act like people who are blindly in

love; they are willing to die and kill for the sake of their group (Swann, Gómez, Dovidio, Hart, & Jetten, 2010a) and are willing to sacrifice their own benefit to help other group members (Gómez, Brooks, Buhrmester, Vázquez, Jetten, & Swann, 2011). They focus on maximizing the group's outcome regardless of the repercussions on themselves (Buhrmester, Newson, Vázquez, Hattori, & Whitehouse, 2018). High commitment and dedication to the firm have been important themes in the entrepreneurship literature (Cardon, Mitteness, & Sudek, 2017; Chen, Yao, & Kotha, 2009), and constructs such as group identification have been examined in relation to high dedication to the firm. However, previous literature denotes that identity fusion predicts pro-group behavior over and above group identification. Hence, I found it surprising that no previous study has examined identity fusion of entrepreneurs toward their firms.

Little is known about how identity fusion with a group is shaped; to the best of my knowledge, only two antecedents of identity fusion have been investigated. One is the sharing of genes; people tend to display higher fusion with kin compared to non-kin and are willing to engage in extreme sacrifices for kin (Swann et al., 2012; Vázquez, Gómez, Ordoñana, Swann, & Whitehouse, 2017). Another antecedent is the sharing of traumatic events. Jong, Whitehouse, Kavanagh, and Lane (2015) found that individuals within a group that went through negative events together establish a high level of identity fusion with the group. When people experience extreme or traumatic events together with group members (Misch, Fergusson, & Dunham, 2018; Whitehouse et al., 2017), they share the critical history of the group. These powerful memories bond group members together and eventually make individuals to merge their identity toward the group with a strong agency (Misch et al., 2018; Whitehouse et al., 2017). Yet, further investigation is needed as to what factors lead to identity fusion (Misch et al., 2018), since people develop identity fusion with a group without being genetically related to group members

and in the absence of traumatic events. Notably, no individual-level difference has been studied in the literature; what type of people are more prone to fuse their identity with groups? In this respect, I examine an individual aspect that influences the formation of identity fusion with one's group in the context of entrepreneurship. Specifically, I propose that entrepreneurs' high levels of passion would manifest strong identity fusion with their organizations.

Passion is "a strong inclination toward an activity that people like, that they find important, and in which they invest time and energy" (Vallerand, Blanchard, Mageau, Koestner, Ratelle, Léonard, Gagné & Marsolais, 2003, p. 757). Vallerand et al. (2003) proposed a framework of the dualistic model of passion and introduced harmonious and obsessive passion. Harmonious passion is "an autonomous internalization" of activities with flexible consistency, whereas obsessive passion is "a controlled internalization" of a particular activity with a strong pressure to consistently engage on (Vallerand et al., 2003, p. 756). The core differences between the two models are the nature of internalization and persistence of a particular activity (Vallerand et al., 2003). Specifically, harmoniously passionate people make their own decisions on the engagement with a specific role with flexibility and balance the intensity of involvement well with other aspects of their life. In contrast, obsessively passionate individuals have irresistible feelings of participation toward a specific activity and show a strong compulsive commitment.

Among those different types of passion, the decision of which to be investigated in the model should be based on theoretical appropriateness (Ho & Pollack, 2014; Murnieks, Mosakowski, & Cardon, 2014). In this study, I concentrate on obsessive passion because the characteristics of obsessive passion like uncontrollable affection and ego protective behavior play important roles in linking entrepreneurial passion and identity fusion. In the seminal paper of dualistic model of passion, Vallerand et al. (2003) found that obsessive passion is more

strongly associated with identity (i.e., inclusion of others in the self) than harmonious passion. Building on this paper, scholars found that obsessive passion derives higher sense of identity from their professional activities than harmonious passion (Mageau, Vallerand, Charest, Salvy, Lacaille, Bouffard, & Koestner, 2009). Huyghe, Knockaert, and Obschonka (2016) argued that “compared to harmonious passion, obsessive passion takes a more central role in an individual’s identity” (p. 348) and employed obsessive passion solely in their study. Murnieks, Cardon, Sudek, White, and Brooks (2016) also focused on obsessive passion and made an argument that angel investors view obsessive passion as a preferred attribute of entrepreneurs compared to harmonious passion. This research strengthens the arguments of the current study that it is more appropriate to concentrate on obsessive passion when examining core identity, ego-related behavior, and strong affection of entrepreneurial passion.

Only recently has the concept of obsessive passion been applied in the entrepreneurship literature and scholars have examined antecedents and outcomes of obsessively passionate entrepreneurs (e.g., Ho & Pollack, 2014; Murnieks, Cardon, & Haynie, 2020; Patel, Thorgren, & Wincent, 2015; Sirén, Patel, & Wincent, 2016; Stroe, Parida, & Wincent, 2018a; Stroe, Wincent, & Parida, 2018b; Thorgren & Wincent, 2015). Specifically, Thorgren and Wincent (2015) found that entrepreneurs’ obsessive passion is positively associated with habitual entrepreneurship and Stroe et al. (2018a) found that obsessive entrepreneurial passion leads to causation when entrepreneurs perceive low risk in the environment. Scholars also examined the antecedents of obsessive passion in the entrepreneurship context and found that nascent entrepreneurs’ role overload impacts them to become obsessive toward entrepreneurial activities (Stroe et al., 2018b). Murnieks et al. (2020) found that affective interpersonal commitment drives obsessive entrepreneurial passion.

Researchers have examined the relationship between obsessive passion and various types of firm performance, but with contradicting results. Specifically, Patel et al. (2015) found that obsessive passion positively influences project performance (e.g., job creation). In contrast, Ho and Pollack (2014) discovered that obsessive passion decreases the levels of in-degree centrality (i.e., less approachable by others) and eventually negatively impacts referral and total business income. Moreover, the regression results of Sirén et al. (2016) show that obsessive passion is not associated with either sales or profit growth. In this paper, I theorize a specific mechanism (i.e., identity fusion) with which an obsessively passionate entrepreneur could achieve better (or worse) firm performance. I also study a moderator (i.e., overwork) to understand the in-depth context of obsessive passion and firm performance relationship and clarify the contradictory findings in the literature.

I also examine the influence of overworking behavior, which is defined as working extreme hours on the job (Brett & Stroh, 2003; Burke, Singh, & Fiksenbaum, 2010). It is an essential yet underexplored factor that may contribute to the relationship between obsessive passion and performance. An entrepreneur who is obsessively passionate yet does not put as many hours into actual work may not be able to enhance the performance. Further, overworking behavior may be of particular importance to obsessively passionate entrepreneurs to be successful. Not overworking is more likely to be linked to negative outcomes (e.g., guilt) and less likely to be linked to positive outcomes (e.g., inspiration) (Snir & Harpaz, 2012). Unlike harmonious passion, obsessive entrepreneurial passion entails only focusing on the work aspect of life. Therefore, non-working hours may not provide entrepreneurs with many opportunities for being recharged or inspired as they may still be engrossed in work. In addition, not working as much as they hope may lead them to experience negative feelings such as anxiety and guilt

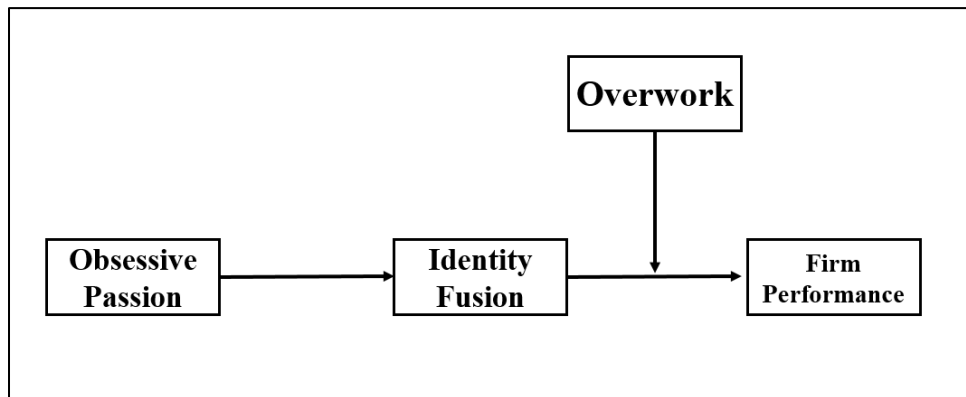


(Bakker, Demerouti, & Burke, 2009). For this reason, I identify overworking behaviors as a boundary condition of the relationship between obsessive passion and performance; I theorize that overworking behavior would magnify the influence of identity fusion on firm performance by increasing the exposure to workplace and satisfying self-actualization. Figure 3.1 shows the overall theoretical model.

The purpose of this study is to investigate the indirect impact of entrepreneurs' obsessive passion on firm performance through identity fusion with a firm. In this respect, I intend to answer three research questions. First, how does an entrepreneur's obsessive passion lead to identity fusion toward a firm? Second, how does identity fusion increase firm performance? Third, would the overworking behavior of entrepreneurs moderate the relationship between identity fusion and firm performance? Based on the dualistic model of passion (Vallerand et al., 2003), I argue that obsessively passionate entrepreneurs nurture high identity fusion with their firms through strong affection and ego-related behaviors. I also propose that entrepreneurs' identity fusion would impact their firms' performance through strong loyalty and a sense of responsibility. In addition, I examine the moderating impact of overworking behavior of entrepreneurs on the relationship between identity fusion and firm performance.

With this study, I intend to make several contributions. First, I contribute to the entrepreneurial passion literature by attempting to clarify the contradictory empirical findings on the relationship between obsessive passion and firm performance (Ho & Pollack, 2014; Patel et al., 2015; Sirén et al., 2016). Specifically, this paper examines a boundary condition (i.e., overwork) through which obsessively passionate entrepreneurs may increase (or decrease) firm performance. Second, this paper also advances the literature on passion by applying identity fusion as a distinct outcome of obsessive passion. I theorize that compulsive affection and ego

protective behavior of obsessively passionate entrepreneurs nurture identity fusion with their organizations. I theorize that compulsive affection and ego protective behavior of obsessively passionate entrepreneurs nurture identity fusion with their organizations. Third, this study contributes to the theory of identity fusion by examining individuals' identity fusion with organizations and by studying the antecedent of identity fusion. Diverse levels of 'groups' have been examined in the past literature of identity fusion (Joo & Park, 2017); however, individuals' identity fusion with organizations has not been applied. In this regard, scholars called for studies on the organizational-level analysis (Buhrmester & Swann, 2015). Moreover, only a few papers have studied the antecedents of identity fusion (e.g., Swann et al., 2012; Whitehouse et al., 2017) and scholars have called for studies on this stream (Misch et al., 2018). In this study, I answer these calls by examining one antecedent (i.e., obsessive passion) of entrepreneurs' identity fusion with their organizations. Lastly, I advance the entrepreneurship literature by examining the overworking behavior of entrepreneurs. It is common to find entrepreneurs who invest an excessive number of hours in their work, but this topic has been disregarded in the literature. I apply the concept of overwork as the boundary condition between identity fusion and firm performance, to study how the relationship will be moderated when entrepreneurs work long hours.



**Figure 3.1. The Theoretical Model**

### **Literature Review and Hypotheses Development**

Identity fusion refers to the feeling of unity with an affiliated group (Swann et al., 2012). Social psychologists theoretically explained the phenomenon of extreme behaviors of individuals for their specific groups and developed the theory of identity fusion (Swann, Gómez, Seyle, Morales, & Huici, 2009). Based on identity fusion theory, individuals who have high fusion with their groups maintain their identity, which they connect toward pro-group behaviors (Swann & Buhrmester, 2015).

Identity fusion theory highlights core principles that lead to pro-group behaviors: agentic personal self and relational ties (Swann et al., 2012). First, this theory emphasizes agentic personal self, which means that a sense of individual agency is the key to promoting extreme pro-group behaviors (Swann et al., 2012). Scholars empirically found that feelings of personal agency explain the behaviors of highly fused individuals. Because highly fused individuals are likely to feel responsible for their group's actions, they are willing to make extreme sacrifices (Gómez, Brooks, Buhrmester, Vázquez, Jetten, & Swann, 2011; Swann, Gómez, Huici, Morales & Hixon, 2010b). Second, a relational tie is another core principle of the theory of identity fusion. Highly fused individuals show emotional attachment toward group members (Swann, Gómez, Buhrmester, López-Rodríguez, Jiménez, & Vázquez, 2014b) and feel family-like bonding with group members (Buhrmester, Fraser, Lanman, Whitehouse, & Swann, 2015; Swann et al., 2014a). Moreover, scholars examined that combatants in the frontline had a strong identity fusion with comrades as if they had familial feelings toward them (Whitehouse, McQuinn, Buhrmester, & Swann, 2014). The theory of identity fusion explains that highly fused individuals share core values with group members, which makes them establish a strong fictive kinship (Atran, 2010). Therefore, both a sense of personal agency and projecting group members

as a ‘family’ motivate highly fused individuals to take extreme behaviors for the group (Swann & Buhrmester, 2015).

It is noteworthy to clarify the difference between identity fusion and identification, which is another form of group alignment. Identification refers to “the perception of oneness or belongingness to some human aggregate” (Ashforth & Mael, 1989, p. 21). Similar to identity fusion, identification is characterized by an alignment between personal and social identities (Swann & Buhrmester, 2015). The concept of organizational identification has been continuously applied in the management field (Ashforth & Mael, 1989; Dutton, Dukerich, & Harquail, 1994; Riketta, 2005; Lee, Park, & Koo, 2015). Organizational identification refers to “perception of oneness with, or belongingness to, an organization where the individual defines him or herself in terms of the organization in which he or she is a member” (Mael & Ashforth, 1992, p. 105).

Social psychologists have compared the similarities between the two forms of group alignment and theoretically and empirically differentiated identity fusion and identification (e.g., Bortolini, Newson, Natividade, Vázquez, & Gómez, 2018; Gómez et al., 2011; Heger & Gaertner, 2018; Joo & Park, 2017; Swann et al., 2012). The main theoretical difference between the two concepts is whether the personal self and subsequent feeling of agency are premised or not. Identification is similar to Le Bon’s (1947) logic on crowd behavior, where individuals collectively become preoccupied with the ‘group mind’ and mechanically pursue directions of the group. However, at the core of identity fusion is a sense of agency. Specifically, individuals with high organizational identification lose their personal self and merge into organizational identity, but individuals with high identity fusion preserve their personal self and have control over agency (Swann & Buhrmester, 2015). As mentioned above, Swann et al. (2012) explained

that a sense of personal agency is the central explanation for the decisions on extreme pro-group behaviors. Joo and Park (2017) clarified that identification is “a unidirectional influence from the group to the individual member in which social identity overrides personal identity”, where identity fusion is about maintaining “personal identity through the bidirectional influence of personal and social identities on each other, resulting in the synergic merging of two identities” (p. 820).

Empirical findings support these theoretical arguments. Identity fusion empirically outperforms identification in predicting extreme pro-group behaviors like self-sacrifice (Gómez et al., 2011; Swann et al., 2010a; Swann et al., 2014b), fighting and dying (Bortolini et al., 2018; Gómez et al., 2011; Swann et al., 2009), and donations (Buhrmester et al., 2015; Swann et al., 2010b) for their groups. Recently, Heger and Gaertner (2018) found that identity fusion is associated with the promotion of group fighting for the self, but in the case of identification, groups did not fight for individuals’ self. Moreover, factor analyses demonstrate that identity fusion and identification load into two distinct factors (Gómez et al., 2011; Swann et al., 2012).

Research on the theory of identity fusion has investigated diverse outcomes of identity fusion. Scholars consistently studied pro-group behaviors of individuals with high identity fusion like ultimate sacrifice for a country (Swann et al., 2014a), for a revolution (Whitehouse et al., 2014), or for romantic partners (Joo & Park, 2017). Moreover, identity fusion increased the aggressiveness of fused individuals to expand the competitive advantage of a national sports team (Buhrmester et al., 2018) and improved efficiency of resource employment through systematic calibration (Paredes, Briñol, & Gómez, 2018). Highly fused individuals also showed pro-social behaviors like donation (Buhrmester et al., 2015; Misch et al., 2018; Segal, Jong, &

Halberstadt, 2018; Swann et al., 2010b) and social or emotional support like distribution of resources toward compatriots (Semnani-Azad, Sycara, & Lewis, 2012).

While past studies have examined identity fusion with different ‘groups’ like a nation (Gómez et al., 2011; Swann et al., 2014a), a religion (Atran, 2010), a sports team (Buhrmester et al., 2018), a political party (Misch et al., 2018), a sibling (Vázquez, Gómez, Ordoñana, & Paredes, 2015), twins (Vázquez et al., 2017), and a lover (Joo & Park, 2017; Walsh & Neff, 2018); to the best of my knowledge, identity fusion with organization has not been researched. An organization is a workplace that comprises a large portion of one’s daily life since the working population spends most of the time within their workplace (Burke & Cooper, 2008). Therefore, it is important to understand the behaviors of individuals with high identity fusion in an organizational context. Buhrmester and Swann (2015) reviewed the literature on the theory of identity fusion and called for future studies to expand the focus of identity fusion to under-investigated groups like organizations. In this respect, I apply the theory of identity fusion in the entrepreneurship literature to investigate an antecedent and an outcome of identity fusion. I theoretically articulate that individuals’ obsessive passion influences them to become highly fused with their organizations, and high identity fusion would eventually increase financial performance.

### **Obsessive Passion and Identity Fusion**

Passionate entrepreneurs desire to become “insanely great” and “make history” for their organizations (Ma & Tan, 2006, p. 711). Based on an affect infusion model (Forgas, 1995) and literature on the dualistic model of passion (Vallerand et al., 2003), I argue that entrepreneurs who have high obsessive passion would manifest identity fusion with their organization.

Specifically, positive affect and ego protective behavior of obsessive passion are the principal reasons that explain how obsessive passion forms identity fusion.

First, passionate people experience an intensive bond with their affiliated organizations (Mannheim, Baruch, & Tal, 1997). Such bond and affection would create positive affect when working for the organization. The affect infusion model (Forgas, 1995) proposes that positive feelings of individuals directly influence their attitudes toward work. Forgas and George (2001) further extend the model and explain that affect predicts a variety of organizational behaviors such as job satisfaction and work motivation. Based on the affect infusion model, I argue that obsessively passionate entrepreneurs would frequently experience positive affect when working for their organization, whereby they incorporate the organization to their identity. Unlike people with harmonious passion who maintain other aspects of their lives as well, obsessively passionate people who ‘put all the eggs in one basket’ have one major aspect of life through which they experience positive affect. Naturally, they grow to infuse the organization into their own identity extensively. Previous studies found that entrepreneurs with a high obsessive passion feel a strong affection toward their role in the firm (Murnieks et al., 2016; Vallerand et al., 2003). This feeling of liking promotes entrepreneurs to experience positive affect while working for their firms facilitates one’s identity to be fused with the firm. Indeed, obsessively passionate entrepreneurs intensively engage in organizational works (Patel et al., 2015) and demonstrate extreme levels of commitment (Ho & Pollack, 2014). Thoresen, Kaplan, Barsky, Chermont, and Warren (2003) conducted a meta-analysis based on the affect infusion model and found that positive affect leads to organizational commitment. Moreover, Huyghe et al. (2016) empirically found that obsessive passion of researchers is positively associated with an affective commitment toward associated universities. Through continuous commitment, obsessively passionate

entrepreneurs retain psychological ownership toward the organizations (Pierce, Kostova, & Dirks, 2001), and organizations become a crucial part of entrepreneurs' identity. In other words, organizations become a focus of obsessively passionate entrepreneurs whereby they feel strong agency. The positive affect of obsessive passion promotes the infusion of self-identity into the organizational values and eventually leads entrepreneurs to make agentic decisions to sacrifice for the organization.

Second, ego-boosting and defensive modes of obsessive passion lead entrepreneurs to project the organizational identity onto their own self-identity (Mageau et al., 2009; Patel et al., 2015). Obsessive passion has been described as a tunnel vision (Huyghe et al., 2016) where people fail to accept disconfirming information, do not acknowledge feedback that contradicts their belief, and become stubborn about their thoughts (Sirén et al., 2016; Vallerand et al., 2003). By aligning their own agentic purpose with organizational identity, obsessively passionate people become emotionally defensive about self-identity (Philippe, Vallerand, Houliort, Lavigne, & Donahue, 2010) and focus on “protecting self-worth and avoiding loss of face” (Ho & Pollack, 2014, p. 439) which leads to decreased flexibility (Sirén et al., 2016). In this respect, entrepreneurs with high obsessive passion have bigoted views on organization and fixate self-identity toward the values of the organization. In other words, they become blind to organizational identity in the justification of activating and fulfilling their self-identities with a strong agency. Thus, I hypothesize that:

*Hypothesis 1: Obsessive passion is positively associated with identity fusion with a firm.*

### **Identity Fusion and Firm Performance**

Individuals with high identity fusion endeavor to accomplish the goals of their organizations (Swann & Buhrmester, 2015). Those people have a sense of personal agency



leaning toward pro-group behaviors and family-like bonding with organizational members, which embolden them to take risks and self-sacrifice (Newson, Buhrmester, & Whitehouse, 2016; Swann et al., 2012). Based on the theory of identity fusion (Swann et al., 2009), I argue that entrepreneurs' high identity fusion with their organization is positively associated with firm performance. Specifically, loyalty and responsibility that arise from strong fusion with organizations explain the link between identity fusion and firm performance.

First, entrepreneurs with high identity fusion demonstrate excessive loyalty toward their organizations (Newson et al., 2016). These entrepreneurs faithfully service their organizations and care about the firm's future. For strongly fused entrepreneurs, organizational benefits override all the other aspects (Swann & Buhrmester, 2015). For instance, these entrepreneurs would abandon other appealing opportunities for personal career and focus on the goals of the organizations (Ellemers, Spears, & Doosje, 1997; Zdaniuk & Levine, 2001). Considering the core principles of identity fusion, abandonment of an associated organization would mean a betrayal of organizational members who are like family and also treachery to themselves (Buhrmester et al., 2015; Swann et al., 2014a; Whitehouse et al., 2014). In other words, the renouncement of their organizations is "tantamount to total rejection of one's present and past self" for entrepreneurs with high identity fusion (Newson et al., 2016, p. 2). With enduring loyalty toward the firm, entrepreneurs dedicate to enhance the performance of the organization. Specifically, strongly fused entrepreneurs carefully establish the strategies to maximize the organizational outcomes (Buhrmester et al., 2018) and allocate the resources toward the organization's goals without considering the personal benefits and office politics.

Second, entrepreneurs who are fused with their organizations have a strong responsibility toward the outcomes of their organizations. These entrepreneurs sense the success (or failure) of

organizations merged into their self and feel obligated to work hard to make positive outcomes (Swann & Buhrmester, 2015). Therefore, identity fused entrepreneurs feel strong vigor and have high conscientiousness to accomplish the organization's objectives. Based on the high levels of energy, these entrepreneurs work aggressively and become absorbed to work (Buhrmester et al., 2018). Moreover, they persist in challenging the organization's goals, even in difficult situations. They not only contain high tolerance for obstacles but also have the mentality of not giving up. In other words, entrepreneurs with high identity fusion do not accept failure easily and persist until they achieve specific goals. The due diligence and mental resilience of identity fused entrepreneurs aroused from strong responsibility would lead to enhanced firm performance. Therefore, I hypothesize that:

*Hypothesis 2: Identity fusion with a firm is positively associated with firm performance.*

### **The Mediation Effect of Identity Fusion**

Synthesizing all the logic from the above-mentioned hypotheses, I propose that an entrepreneur's obsessive passion indirectly impacts firm performance through identity fusion with the organization. Based on the affect infusion model (Forgas, 1995), positive affect aroused from obsessive passion influences the development of identity fusion with an organization. Positive emotion toward an organization promotes entrepreneurs to engage intensively (Patel et al., 2015), make affective commitment (Huyghe et al., 2016), and hold psychological ownership toward the organization (Pierce et al., 2001), leading to heightened fusion with their organizations. Moreover, to defend their identity, obsessively passionate entrepreneurs behave ego-protectively (Patel et al., 2015), fusing their self-identity into organizational identity, which eventually leads to a high level of identity fusion. Further, I suggest that increased identity fusion of obsessively passionate entrepreneurs will be positively associated with firm performance.

Identity fused entrepreneurs have a strong sense of loyalty and responsibility toward their organizations (Newson et al., 2016; Swann & Buhrmester, 2015) which promote them to work aggressively (Buhrmester et al., 2018), feel strong energy, and maintain high tolerance on obstacles to ultimately achieve the organizational goals. Since entrepreneurs with high obsessive passion have strong affection and protect ego diligently, they will likely become identity fused to their organizations. In turn, identity fusion positively influences firm performance through high levels of loyalty and responsibility toward their organizations. Thus, I hypothesize that:

*Hypothesis 3: The relationship between obsessive passion and firm performance is positively mediated by identity fusion with a firm.*

### **The Moderation Effect of Overwork**

Overwork refers to working long hours (Bell & Freeman, 2001; Brett & Stroh, 2003; Burke & Cooper, 2008; Green, 2001; Hochschild, 1997). Scholars emphasized the objective amount of time to explain hard-working people and conceptualized overwork as excessive time spent on the job (Brett & Stroh, 2003; Burke et al., 2010). Therefore, the longer the people invest time within the work, the higher the chance that those people become overworked. People who spend long hours working feel their organizations as ‘home’ because of the sense of competence and recognition received from work (Hochschild, 1997). Scholars have studied that overwork is associated with financial rewards, psychological support, social contagion (Brett & Stroh, 2003), enjoyment of work, reluctance of disengagement from an organization (McMillan & O’Driscoll, 2006), work satisfaction, engagement (Burke et al., 2010), and organizational citizenship behavior (Burke & Cooper, 2008). Contemplating the competitive environment and challenges of job tasks, extreme time investment through overwork has been assumed to be the virtue for success, social recognition, financial and psychological rewards (Brett & Stroh, 2003). Because

it can explain many organizational behaviors and outcomes, scholars have called for examining the overwork among entrepreneurs (Humbert & Lewis, 2008). I apply the overworking behavior of entrepreneurs as the boundary condition between identity fusion and firm performance to show that working long hours heightens the level of positive influence of identity fusion on firm performance. Based on the overwork literature, I argue that higher exposure to workplace and self-actualization from working long hours in the organizations are reasons that help explain the positive moderating impact of overwork on the identity fusion and firm performance relationship.

First, entrepreneurs are naturally exposed to the organization and spend more time with organizational colleagues by investing long hours in the work environment. In turn, higher exposure in the workplace and engagement with co-workers formulate intensified positive emotions toward the organizations (McMillan & O'Driscoll, 2006). Through spending a large number of hours within the organization, overworking entrepreneurs form an in-depth friendship, accumulate knowledge about the organization, and experience meaningfulness in work (Colbert, Bono, & Purvanova, 2016). These emotional benefits established through overwork magnify the impact of entrepreneurs' identity fusion on firm performance. Moreover, through spending more time within the organization, entrepreneurs not only work harder but also think and talk about the work more than other organizational members (McMillan & O'Driscoll, 2006). Therefore, an increased number of objective hours spent within the organization eventually stir entrepreneurs to care more about their organizations.

Second, the overworking behavior of entrepreneurs intensifies the influence of identity fusion on firm performance through a form of self-actualization (Burke & Cooper, 2008). Scholars highlighted the importance of devoting their own time, working extreme hours, and

intertwining these ‘hard-working’ aspects with self-identity for organizational success (Buck, Lee, MacDermid, & Smith, 2000). As an entrepreneur, managing an organization could be an anxious process with high uncertainty (McMullen & Shepherd, 2006). To alleviate these feelings, entrepreneurs could benefit from investing an extensive amount of time in their organizations. Specifically, overwork presents a feeling of belongingness (Burke et al., 2010), and entrepreneurs who work long hours experience elevation of their self-worth and feel relieved by confirming that they are working hard for their organizations. Therefore, overworking functions as a self-fulfilling behavior to satisfy oneself. To sum up, increased exposure and self-actualization attained from working long hours reinforce the impact of entrepreneurs’ identity fusion on firm performance. Therefore, I hypothesize that:

*Hypothesis 4: Overwork positively moderates the relationship between identity fusion and firm performance, such that the relationship is stronger when entrepreneurs overwork than when they do not overwork.*

Combining all the previous arguments, I propose a moderated mediation model (Preacher, Rucker, & Hayes, 2007). I consider the moderation and mediation hypotheses together and suggest that the strength of the indirect effect of obsessive passion on firm performance through identity fusion depends on the entrepreneurs’ overworking behavior. First, identity fusion mediates the relationship between obsessive passion and firm performance; the positive emotion and ego-protective behavior that arose from obsessive entrepreneurial passion would lead entrepreneurs to fuse their identity with their organization. In turn, identity-fused entrepreneurs positively improve firm performance through strong loyalty and sense of responsibility. Further, overworking behaviors of entrepreneurs would positively enhance the

impacts of identity fusion on firm performance by increasing the exposure to workplace and satisfying self-actualization. Hence, it is likely that overwork would moderate the mediation model. Specifically, overworking behavior would increase the magnitude of the mediating role of identity fusion; in other words, the mediating effect of identity fusion on the obsessive passion-firm performance relationship is contingent on the levels of entrepreneurs' overwork. Thus, I argue that:

*Hypothesis 5: Overwork positively moderates the mediating effect of identity fusion on the relationship between obsessive passion and firm performance, such that the indirect effect of obsessive passion on firm performance through identity fusion is stronger when entrepreneurs overwork than when they do not overwork.*

## Methods

### Sample and Data Collection

I collected a two-stage survey from entrepreneurs and executives of Korean firms to test the hypotheses. Specifically, I implemented a six-month lagged, online survey to two different respondents from the same firm. In the first stage, based on the list of firms obtained from the Ministry of Small and Medium-sized Enterprises and Startups of Korea, I sent emails to entrepreneurs to ask questions on independent, mediating, moderating, and control variables. Based on the previous studies on entrepreneurial passion (de Mol, Ho, & Pollack, 2018; Mueller, Wolfe, & Syed, 2017), I defined an entrepreneur as an individual who owns the majority of stock of the firm (i.e., an owner), who started the firm individually, or as one of the founding team members (i.e., a founder) and who is currently responsible for managing the business (i.e., an executive). In the second stage, after six months of the first stage, I sent emails to other

executives (e.g., vice-presidents, top management team members, or co-founders) recommended by the entrepreneurs from the first stage to ask questions on the dependent variable.

For the first stage data collection, I sent the survey to 1,268 randomly selected entrepreneurs from the above-mentioned list and received 468 responses, achieving a response rate of 36.9%. From 468 responses, 300 entrepreneurs provided the contact information of other executives (i.e., 64.1%). Based on previous studies that donated \$20 to charity to increase the survey response rate from executives (e.g., Fernhaber & Patel, 2012), I offered a compensation to the executives in the second stage with \$20 donation to UNICEF per response. As a result of the second stage data collection, I sent the survey to 300 executives and received 248 responses, attaining a response rate of 82.7%. After eliminating responses from unqualified respondents (e.g., executives who are not currently working) and deleting incomplete responses, I was able to use 196 responses. The final response rate for the second stage was 65.3%.

## Measures

The survey was implemented in the Korean language and I conducted a double-back translation to reduce translation errors (Brislin, 1980). The survey was constructed with various response formats (e.g., Likert scale, dichotomous, and open-ended questions) and a preliminary pilot test was implemented with 10 entrepreneurs to identify ambiguous questionnaires, to detect imprecise directions, and to estimate the time to complete the survey. In addition, I provide the list of survey items in Appendix A.

**Independent variable.** Obsessive passion was measured using a six-item scale from Vallerand et al. (2003), which has been applied in diverse domains and validated across different languages (Marsh et al., 2013; Vallerand, 2015). Following previous studies (e.g., Ho & Pollack, 2014; Sirén et al., 2016; Stroe, Sirén, Shepherd, & Wincent, 2020), I adjusted the original

wordings of ‘this activity’ into ‘entrepreneurial activities’ to capture entrepreneurs’ obsessive passion for entrepreneurial activities. A sample item was ‘Entrepreneurial activities are so exciting that I sometimes lose control over them’. Cronbach’s alpha for obsessive passion scale was .80.

**Mediating variable.** Identity fusion was accessed by a seven-item scale developed by Gómez et al. (2011). To capture entrepreneurs’ level of identity fusion with their firms, I modified the original references of ‘my group’ into ‘my firm’. For instance, items included ‘I am one with my firm’ and ‘I feel immersed in my firm’. Cronbach’s alpha for identity fusion scale was .88.

**Moderating variable.** To measure overwork, I used a categorical variable to identify whether the entrepreneur works longer than 52 hours a week or not. Scholars suggest using a cut-off point to capture overwork based on labor standards of each country (Snir & Harpaz, 2012). In 2018, Ministry of Employment and Labor of Korea formally announced that working more than 52 hours a week is an overwork (Ministry of Government Legislation, 2020). The Statistics Korea, which is an official government organization for statistics, informed that average full-time workers in Korea work 41.5 hours a week (Statistics Korea, 2020). Korea has one of the highest labor hours in the World (OECD, 2020) and the Korean Government amended the Labor Standards Act to reduce overwork-related disorders in the working population (Kim, Koo, Lee, Won, & Song, 2019; Nam & Kim, 2019). Based on the context of Korea, I utilized the standard of 52 hours as the cut-off point to measure overworking behavior of entrepreneurs. Specifically, I asked the average working hours in a week and categorized the respondents into two groups.

**Dependent variable.** I collected a six-month lagged firm performance data from executives like vice-presidents, top management team members, or co-founders, utilizing a six-



item scale developed by Schilke (2014), which is widely adopted in the management field (e.g., Côte-Real, Oliveira, & Ruivo, 2017; Fainshmidt, Wenger, Pezeshkan, & Mallon, 2019). This measure captures the firm's financial performance in comparison to major competitors on criteria such as market share and return on sales. Cronbach's alpha for firm performance was .89. Even though scholars suggested that executives are knowledgeable to indicate their firms' performance and that subjective measures of firm performance correlate with objective indicators (Dess & Robinson, 1984; Robinson & Pearce, 1988), I obtained additional objective performance data of sales growth and operating profit for 21 firms of the sample to check for convergent validity. Correlations between subjective firm performance and secondary performance were positive and significant (sales growth:  $r = .58, p < .05$ ; operating profit:  $r = .56, p < .01$ ). Despite the differences in scales and types of performance, this finding supports the convergent validity of current subjective performance data.

**Control variables.** Based on previous studies, I controlled for 14 variables that might influence the overall theoretical model. In highly dynamic and hostile environments, firms operate under uncertain circumstances with intensive competition for scarce resources, which impact their performance (Rosenbusch, Rauch, & Bausch, 2013); as such, I controlled for environmental hostility using six items from Slevin and Covin (1997) and environmental dynamism utilizing five items developed by Miller and Friesen (1982). Cronbach's alpha for environmental hostility and dynamism scales were .75 and .72, respectively. Firms in manufacturing and service industries encounter distinct obstacles and firm performance is variant across the two industries (Dess, Ireland, & Hitt, 1990; Song, Di Benedetto, & Zhao, 1999). Similar to previous studies (e.g., Anderson & Eshima, 2013; Lee, Howe, & Kreiser, 2019; Wales, Wiklund, & McKelvie, 2015), I controlled for industry by categorizing the firms in the

sample into three industries (i.e., manufacturing, service, and others) according to KSIC and dummy coded them. Two dummy variables are calculated using ‘others’ as the referent: manufacturing and service.

At the firm-level, I controlled for firm age (number of years since the establishment of the firm) and firm size (number of full-time employees) because both variables are related to organizational inertia and flexibility (Boeker, 1997; Tushman & Romanelli, 1985). Prior high performance allows firms to attain more resources and bolster current status, whereas prior low performance is related to low resource availability (Greve, 1998; Lubatkin, Simsek, Ling, & Veiga, 2006). Following Gupta and Govindarajan (1986), prior firm performance was measured by a scale of 18 items, which captures both importance and satisfaction on nine financial performance criteria: total sales, sales growth, return on equity, return on investment, return on total assets, operating profits, market share, cash flow, and ability to fund growth from profits. This measure has been adopted in various areas (e.g., Covin, Prescott, & Slevin, 1990; Lubatkin et al., 2006; Lee, Zhuang, Joo, & Bae, 2019). To operationalize prior firm performance, I multiplied importance and satisfaction scores for each criterion for the past three years, and averaged them in one variable. Cronbach’s alpha for prior firm performance was .95. Moreover, firm-level human resources are related with firm performance (Crook, Todd, Combs, Woehr, & Ketchen, 2011). As such, I controlled for human capital using a nine-item scale established by Jin, Hopkins, and Wittmer (2010). Cronbach’s alpha for human capital scale was .87.

At the individual-level, I controlled for entrepreneurs’ age and gender because both are associated with obsessive passion. Specifically, younger entrepreneurs are likely to attain higher levels of obsessive passion than older entrepreneurs (Philippe, Vallerand, & Lavigne, 2009). Relative to male entrepreneurs, female entrepreneurs tend to be more self-worth striving which is

associated with obsessive passion (Curran, Hill, Appleton, Vallerand, & Standage, 2015).

Entrepreneurs' educational level (Unger, Rauch, Frese, & Rosenbusch, 2011) and self-efficacy (Miao, Qian, & Ma, 2017) are highly related with firm performance; accordingly, I controlled for entrepreneurs' education-level by a seven-point scale (Datta & Rajagopalan, 1998; Herrmann & Datta, 2002) and entrepreneurial self-efficacy measured by a four-item scale (Zhao, Seibert, & Hills, 2005). Cronbach's alpha for entrepreneurial self-efficacy scale was .88. Previous studies continuously emphasized the role of entrepreneurs' previous start-up experience on firm performance (Stuart & Abetti, 1990; Toft-Kehler, Wennberg, & Kim, 2014). Moreover, family ownership has been examined to affect entrepreneurs' decisions and firm performance (Amit, Ding, Villalonga, & Zhang, 2015). Thus, two categorical variables were controlled: entrepreneurial experience and family ownership of the firm. Entrepreneurial experience denotes whether the entrepreneurs had previous start-up experience or not and family ownership indicates whether entrepreneurs' family members own stock of the firm or not.

Following previous studies (e.g., Armstrong & Overton, 1977; Datta, Guthrie, & Wright, 2005; Drnovsek, Cardon, & Patel, 2016), I tested for non-response bias by conducting t-tests across variables of interest (i.e., obsessive passion, identity fusion, and overwork). Specifically, I examined whether there were differences in the mean values between firms that 1) responded in the second stage and 2) that only responded in the first stage, but not in the second stage. As a result, I found no significant differences (obsessive passion: mean difference = .08,  $p = .45$ ; identity fusion: mean difference = -.06,  $p = .56$ ; overwork: mean difference = .05,  $p = .29$ ). To test for validity of current measures, I implemented confirmatory factor analysis and found that the proposed model displayed acceptable fit ( $\chi^2[138] = 270.78$ ; CFI = .94; RMSEA = .07; SRMR = .07; TLI = .92) according to suggested scores (Hu & Bentler, 1999; Little, 2013). In contrast,

the one-factor model that encompassed all the variables showed inadequate fit ( $\chi^2[141] = 1176.46$ ; CFI = .51; RMSEA = .19; SRMR = .18; TLI = .41) and the chi-square testing demonstrated that the proposed model is significantly better than one-factor model ( $\Delta\chi^2[3] = 905.67, p < .001$ ).

## Results

Table 3.1 presents the summary statistics (i.e., means and standard deviations) and correlations for variables used in this paper. Average firm size and firm age of the sample were 34.93 employees and 16.57 years, respectively. On average, entrepreneurs' age was 53.03 years, and about 64% of entrepreneurs had previous entrepreneurial experience. The correlations between variables of interest ranged from -.02 to .37, indicating adequate magnitudes. Especially, the correlations between obsessive passion and identity fusion ( $r = .37, p < .01$ ) and identity fusion and overwork ( $r = .27, p < .01$ ) were significant. I checked for multicollinearity by calculating the variance inflation factor (VIF). The highest value of VIF was 2.2, which is lower than the acceptable cut-off value of 5 (O'Brien, 2007), indicating that multicollinearity is not a concern. To help interpret the moderation effect, I standardized all the variables (except overwork) for hypotheses testing (Dawson, 2014).

To test the proposed hypotheses, I implemented three interlinked steps. First, I examined the direct relationships and mediation model (Hypothesis 1, 2, and 3). Second, I tested for the moderation model (Hypothesis 4). Third, I accessed the overall moderated mediation model (Hypothesis 5).

To test the direct relationship models (Hypothesis 1 and 2), I used an ordinary least squares (OLS) regression analysis. Table 3.2 reports the regression results. In Model 1 of the regression analysis, control variables were inserted with identity fusion as the outcome variable.

In Model 2, independent variable (i.e., obsessive passion) was included to Model 1. In Model 3, control variables were added with firm performance as the outcome variable. In Model 4, independent (i.e., obsessive passion), mediating (i.e., identity fusion), and moderating (i.e., overwork) variables were added to Model 3. In Model 5, the interaction variable (identity fusion  $\times$  overwork) was inserted into Model 4. Results showed that obsessive passion is positively associated with identity fusion (Model 2, Table 3.2;  $B = 0.40$ ,  $p < .001$ ), supporting Hypothesis 1. However, identity fusion is not significantly associated with firm performance (Model 4, Table 3.2;  $B = 0.08$ ,  $p = ns$ ), failing to support Hypothesis 2.

To test the mediation model (Hypothesis 3), I applied bootstrapping-based mediation analysis through the PROCESS macro (Hayes, 2013). The results of the mediation model are depicted in Table 3.3. As a result, the indirect effect of obsessive passion on firm performance through identity fusion was not significant (indirect effect = 0.03,  $SE = 0.03$ , 95% CI = -0.03 to 0.10; direct effect = 0.05,  $SE = 0.07$ , 95% CI = -0.09 to 0.18; total effect = 0.08,  $SE = 0.06$ , 95% CI = -0.05 to 0.20), failing to support Hypothesis 3. Not only identity fusion failed to mediate the relationship between obsessive passion and firm performance, but also obsessive passion did not directly link to firm performance.

To test the moderation model (Hypothesis 4), I utilized an OLS moderated regression analysis. The regression results indicated that the interaction variable between identity fusion and overwork significantly predict firm performance (Model 5, Table 3.2;  $B = 0.41$ ,  $p < .01$ ), supporting Hypothesis 4. This interaction effect is plotted in Figure 3.2. Moreover, the simple slope analysis indicated that the relationship between identity fusion and firm performance is positive and significant when entrepreneurs overwork ( $B = 0.34$ ,  $p < .01$ ), but is not significant when entrepreneurs do not overwork ( $B = 0.07$ ,  $p = ns$ ).

**Table 3.1. Summary Statistics and Correlations Matrix**

Variables	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Environmental Hostility	4.59	0.82																	
2. Environmental Dynamism	4.37	0.78	.06																
3. Manufacturing	0.24	0.43	-.13	.09															
4. Service	0.29	0.45	.13	-.09	-.36**														
5. Firm Age	16.57	8.79	-.00	-.02	.16*	-.37**													
6. Firm Size	34.93	53.76	.08	.01	.04	-.18**	.34**												
7. Human Capital	5.21	0.77	-.12	-.11	-.02	.09	-.10	.01											
8. Prior Firm Performance	21.44	7.93	.00	-.01	.06	-.06	.16*	.05	.25**										
9. Age	53.03	10.08	-.05	-.02	.19**	-.34**	.68**	.16*	-.08	.13									
10. Gender <sup>a</sup>	0.95	0.17	.01	-.11	-.06	.04	.10	.05	.09	-.03	.14								
11. Education	4.08	1.30	-.13	-.05	-.14	.07	-.12	.02	-.06	-.04	.06	.05							
12. Entrepreneurial Self-efficacy	5.42	0.87	-.08	.13	.01	.10	-.28**	-.02	.24**	.01	-.21**	-.05	.03						
13. Entrepreneurial Experience <sup>b</sup>	0.64	0.42	.04	.02	-.09	.14*	-.15*	-.05	.12	.04	-.00	.22**	.19**	.19**					
14. Family Ownership <sup>c</sup>	0.51	0.44	.03	-.04	.14**	-.09	.38**	.01	.03	.18*	.35**	.14	-.17*	-.09	-.11				
15. Obsessive Passion	3.78	1.08	.17*	.09	.13	-.22**	.04	-.10	-.02	.00	.14	-.07	-.07	-.02	-.03	.08			
16. Identity Fusion	5.27	0.98	.05	-.04	.13	.01	.07	.04	.16*	-.01	-.00	-.07	-.17*	.16*	-.14*	.11	.37**		
17. Overwork <sup>d</sup>	0.34	0.47	-.03	-.01	.18*	.12	-.10	-.04	.02	-.03	-.16*	.19**	.11	.17*	.05	-.18*	.06	.27**	
18. Firm Performance	4.22	1.05	-.13	.11	.03	-.11	.18*	.15*	.37**	.54**	.14*	.04	-.05	.10	.14	.14	.05	.10	-.02

Note.  $N = 196$ ; \*  $p < .05$ ; \*\*  $p < .01$ .

a. Gender coded as Female = 0, Male = 1

b. Entrepreneurial Experience coded as No = 0, Yes = 1

c. Family Ownership coded as No = 0, Yes = 1

d. Overwork coded as Less than 52 hours = 0, More than 52 hours = 1

**Table 3.2. Regression Results**

	Identity Fusion	Identity Fusion	Firm Performance	Firm Performance	Firm Performance
	Model 1	Model 2	Model 3	Model 4	Model 5
<b>Control Variables</b>					
Environmental Hostility	0.08(0.07)	-0.01(0.07)	-0.13(0.06)*	-0.15(0.06)*	-0.14(0.06)*
Environmental Dynamism	-0.06(0.07)	-0.08(0.07)	0.15(0.06)*	0.15(0.06)*	0.16(0.06)*
Manufacturing	0.12(0.08)	0.10(0.07)	-0.07(0.07)	-0.08(0.07)	-0.07(0.07)
Service	0.07(0.08)	0.16(0.07)*	-0.07(0.07)	-0.06(0.07)	-0.09(0.07)
Firm Age	0.13(0.11)	0.18(0.10)	0.09(0.09)	0.08(0.10)	0.08(0.09)
Firm Size	0.01(0.07)	0.06(0.07)	0.11(0.07)	0.12(0.07)	0.10(0.07)
Human Capital	0.16(0.08)*	0.14(0.07)*	0.27(0.07)***	0.25(0.07)***	0.27(0.07)***
Prior Firm Performance	-0.08(0.07)	-0.07(0.07)	0.47(0.06)***	0.48(0.06)***	0.50(0.06)***
Age	-0.04(0.10)	-0.11(0.09)	0.02(0.09)	0.10(0.09)	-0.00(0.09)
Gender	-0.06(0.07)	-0.04(0.07)	0.01(0.06)	0.02(0.07)	-0.01(0.07)
Education	-0.09(0.07)	-0.08(0.07)	-0.05(0.06)	-0.04(0.07)	-0.04(0.06)
Entrepreneurial Self-efficacy	0.18(0.08)*	0.18(0.07)*	0.02(0.07)	0.01(0.07)	0.01(0.07)
Entrepreneurial Experience	-0.13(0.07)	-0.13(0.07)	0.12(0.07)	0.13(0.07)*	0.15(0.07)*
Family Ownership	0.07(0.08)	0.05(0.07)	0.03(0.07)	0.02(0.07)	0.07(0.07)
<b>Independent Variable</b>					
Obsessive Passion		0.40(0.07)***		0.05(0.07)	0.05(0.07)
<b>Mediating Variable</b>					
Identity Fusion				0.08(0.07)	0.07(0.09)
<b>Moderating Variables</b>					
Overwork				-0.00(0.07)	-0.04(0.15)
Identity Fusion × Overwork					0.41(0.14)**
<b>Constant</b>	5.27(0.07)***	5.27(0.06)***	4.22(0.06)***	4.22(0.06)***	4.18(0.07)***
<b>R<sup>2</sup></b>	.13	.28	.43	.44	.46
<b>Δ R<sup>2</sup></b>		.14		.01	.03

Note.  $N = 196$ ; \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ .

Unstandardized coefficients reported; Standard errors in parentheses.

**Table 3.3. Mediation Results: Indirect Effect of Obsessive Passion on Firm Performance (via Identity Fusion)**

	<i>B</i>	<i>SE</i>	LLCI	ULCI
<b>Indirect Effect</b>	0.03	0.03	-0.03	0.10
<b>Direct Effect (Unmediated)</b>	0.05	0.07	-0.09	0.18
<b>Total Effect</b>	0.08	0.06	-0.05	0.20

Note. *N* = 196; Unstandardized coefficients reported; Bootstrap sample size = 5,000.

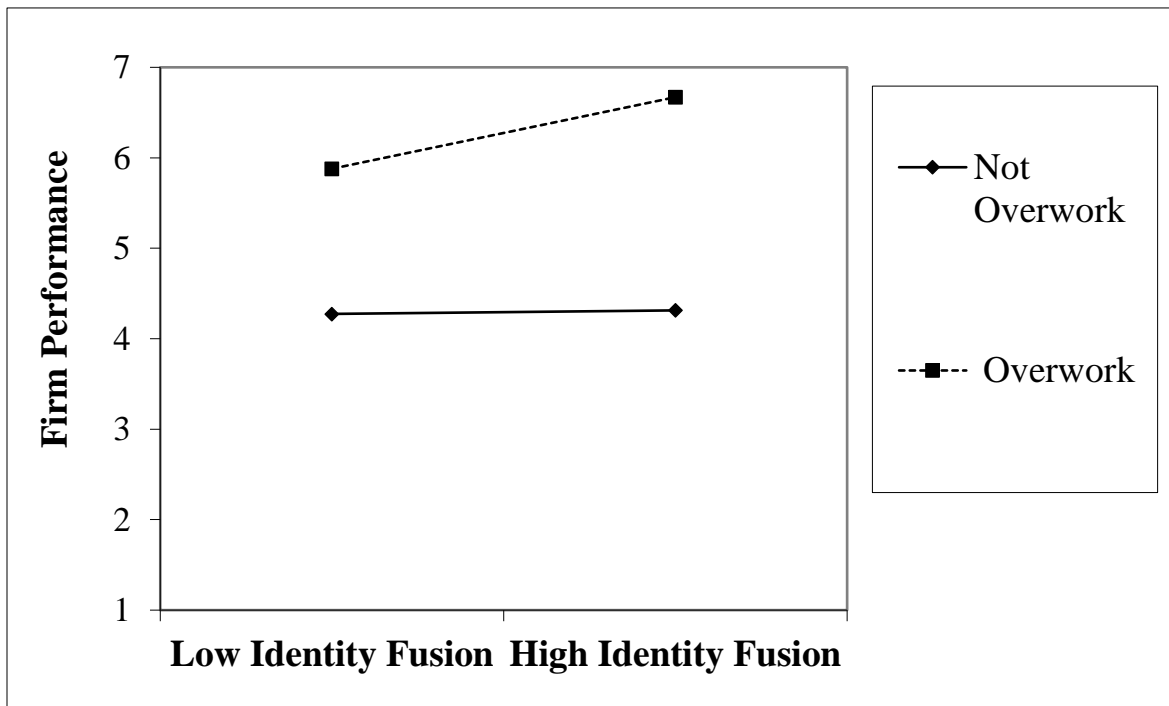
SE = standard error; LLCI = lower limit confidence interval; ULCI = upper limit confidence interval.

**Table 3.4. Moderated Mediation Results: Conditional Indirect Effect of Obsessive Passion on Firm Performance (via Identity Fusion) at Different Values of Overwork**

Values of Overwork	Indirect Effect	<i>SE</i>	LLCI	ULCI
0	-0.03	0.04	-0.11	0.03
1	0.14	0.06	0.04	0.28

Note. *N* = 196; Unstandardized coefficients reported; Bootstrap sample size = 5,000.

SE = standard error; LLCI = lower limit confidence interval; ULCI = upper limit confidence interval.

**Figure 3.2. Interaction Effect of Identity Fusion and Overwork on Firm Performance**



To test the moderated mediation model (Hypothesis 5), I also used bootstrapping-based moderated mediation analysis through the PROCESS macro (Hayes, 2013). The results of moderated mediation model are reported in Table 3.4. For entrepreneurs who overwork, the indirect effect of obsessive passion on firm performance through identity fusion was significant (conditional indirect effect = 0.14,  $SE = 0.06$ , 95% CI = 0.04 to 0.28). For entrepreneurs who do not overwork, the indirect effect of obsessive passion on firm performance through identity fusion was not significant (conditional indirect effect = -0.03,  $SE = 0.04$ , 95% CI = -0.11 to 0.03). The index of moderated mediation was significant (index = 0.17,  $SE = 0.07$ , 95% CI = 0.06 to 0.35). These results fully support Hypothesis 5. Even though obsessive passion does not increase firm performance through identity fusion, this mediated influence is significant when entrepreneurs overwork.

## **Discussion**

Does being obsessively passionate pay off? According to numerous anecdotes, passionate entrepreneurs who followed their heart achieved social and monetary success. Bill Gates, Elon Musk, and Steve Jobs are among those who have spoken about the importance of passion and are themselves characterized by being intensely passionate about their work. Nowadays, many people seem to consider entrepreneurs' passion as the key to their personal and their firms' success. However, whether entrepreneur's passion is linked to financial outcomes of their firms has only been examined in few studies, which have found contradictory results (Ho & Pollack, 2014; Patel et al., 2015; Sirén et al., 2016). I study the influence on entrepreneurial passion on financial performance, which is the reflection of the success of the firm, and a major interest of researchers in the field of management.

The current research extends the existing literature by examining whether obsessive passion of the entrepreneur leads to better (or worse) firm performance, and by investigating the contributing mechanisms and contingencies behind this relationship. I theorized that core elements of obsessive passion, positive emotion and ego-protective behaviors, lead entrepreneurs to fuse their identity with their organizations, which eventually promotes high firm performance. Entrepreneurs' loyalty and responsibility that arise from strong fusion with organizations will positively increase firm performance. Highly fused entrepreneurs feel the success (or failure) of their organizations combined to their self (Swann & Buhrmester, 2015) and they attain high tolerance for obstacles and mental resilience to achieve diverse goals. I also argued that entrepreneurs who overwork naturally spend more time with colleagues, experience meaningfulness in the workplace (Colbert et al., 2016), and stratify self-actualization, which positively strengthens the effect of identity fusion on firm performance. Combining the moderation and mediation hypotheses, I proposed a moderated mediation model where overwork moderates the mediation impact of identity fusion on the relationship between obsessive passion and firm performance.

According to the results of the current study, obsessive passion is indirectly linked to firm performance through identity fusion and overwork. Obsessive passion of entrepreneurs was positively linked to identity fusion to the firm, as hypothesized. However, identity fusion was not directly associated with firm performance. Although highly fused entrepreneurs are loyal to their organizations (Buhrmester et al., 2015; Swann et al., 2014a; Whitehouse et al., 2014) and feel strong responsibility to maximize organizational benefits (Buhrmester et al., 2018), firm performance may not be increased without putting in the actual work.

This indicates the crucial role of overwork in the relationship between obsessive passion, identity fusion, and firm performance; obsessively passionate entrepreneurs were more likely to fuse their identity to their firm, which was in turn related to performance of the firm, only when they overwork. In contrast, when entrepreneurs do not engage in overwork, the level of passion and identity fusion was not associated with firm performance. The role of overwork was stronger than I hypothesized; when overwork was not considered, the degree to which entrepreneurs fused their identities with their firm was not related to firm performance, and accordingly, identity fusion did not explain the relationship between obsessive passion and firm performance.

Another explanation for insignificant relationship between identity fusion and firm performance may be found in what *kind* of extreme behavior fused entrepreneurs engage in. Identity fusion is related to extreme pro-group behaviors such as ultimate sacrifice, aggressiveness, or fighting (e.g., Swann et al., 2014a; Whitehouse et al., 2014). As such, entrepreneurs with high identity fusion with their organizations feel strong needs for self-sacrifice but this extreme behavior does not always lead to financial benefits of the firm. This may be because those behaviors are associated with unethical outcomes, inter-group violence, conflicts between group members, coercive pressure for other members to also be loyal and responsible which may detriment performance outcomes (Bortolini et al., 2018; Buhrmester et al., 2018; Gómez et al., 2011; Swann et al., 2009).

As there was no significant association between identity fusion and firm performance, the mediating influence of identity fusion on the relationship between obsessive passion on firm performance was also insignificant. Insignificance in these hypothesized relationships show the importance of overworking behaviors of entrepreneurs. Obsessively passionate entrepreneurs do not have flexibility to alter their strategies or even seek for feedback from others when needed

(Vallerand et al., 2003); especially, those entrepreneurs who fuse their identity with organizations tend to maintain their stubborn attitudes and miss critical advice or opportunities to adapt new strategies. However, those stubborn attitudes could be alleviated by investing long hours in the workplace. Entrepreneurs who overwork devote large amounts of time in their organizations and naturally spend time with colleagues. By overworking, obsessively passionate entrepreneurs establish a deep friendship, share know-hows and importance information, and learn meanings of job-related tasks (Colbert et al., 2016), which eventually help overcome their weaknesses and achieve performance objectives.

I make several contributions with this research. First, the results of the study provide a possible explanation that accounts for contradictory findings in previous studies on the relationship between obsessive passion and firm performance (Ho & Pollack, 2014; Patel et al., 2015; Sirén et al., 2016), which is based on the effect of overwork. Moving beyond negative connotations of obsessive passion, scholars called for studies on positive outcomes like performance of obsessive passion through examining underlying mechanisms and boundary conditions (Pollack, Ho, O'Boyle, & Kirkman, 2020). I answered this call by examining identity fusion as a mechanism and overworking behavior as a boundary condition. Previous studies have only examined the direct relationship between obsessive passion and firm outcomes, which can be misleading without knowing whether entrepreneurs put in the amount of work that corresponds to their level of passion. That is, if entrepreneurs do not invest a considerable amount of time in their work, merely being obsessively passionate may not lead to any tangible outcomes. Therefore, being obsessively passionate, along with having fused identity with the firm, maybe a necessary but insufficient condition for predicting firm performance, and such nature of the relationship may have resulted in contradictory empirical findings in the literature.

Hence, going forward, overwork would be an important factor to consider when investigating outcomes of obsessive passion.

Another significant contribution of the current research is that identity fusion is introduced as a consequence of obsessive passion, which can, in turn, account for the relationship between obsessive passion and firm performance. Even though researchers have examined the relationship between passion and various types of identity involvement to the firm or work, such as identity centrality (e.g., Murnieks et al., 2020) and organizational identification (Astakhova & Porter, 2015), to my knowledge, this paper is the first to introduce identity fusion in the passion literature. Even though identity fusion and aforementioned constructs have a commonality in that they examine the alignment of a group's and an individual's identity, identity fusion, unlike other similar constructs, premises the intact personal self and feeling of agency. When personal identity is combined with the group's identity, the motivation toward pro-group behaviors is synergistically amplified (Swann et al., 2010b; Swann et al., 2012). In contrast, when an individuals' identities are subsumed under the group's identity, they may be less likely to think that it has to be them who make sacrifice for the group, because they do not feel high agency. Indeed, identity fusion predicted extreme sacrifice for the group with higher fidelity than organizational identification (Gomez et al., 2011). Such result indicates that identity fusion may be a more important predictor than other identity-related constructs in predicting performance or pro-group behaviors. Hence, examining identity fusion in future studies would help to expand our knowledge on various outcomes of obsessive passion.

Third, I extend the theory of identity fusion by focusing on a group that has not been examined in the past literature (Buhrmester & Swann, 2015; Joo & Park, 2017) and by investigating an antecedent of identity fusion (Misch et al., 2018). Social psychologists studied

individuals' identity fusion in diverse groups (Joo & Park, 2017), but not in the professional workplace (Buhrmester & Swann, 2015). The working population spends most of their daily life at workplaces, which makes it essential to understand identity fusion in an organizational context. Moreover, social psychologists found only a few antecedents of identity fusion such as a kinship (Swann et al., 2012; Vázquez et al., 2017) and traumatic events (Jong et al., 2015; Misch et al., 2018; Whitehouse et al., 2017). People nurture identity fusion with diverse groups regardless of sharing genes or negative events. In this paper, I found individual-level differences in the formation of identity fusion that obsessively passionate entrepreneurs prone to develop high levels of identity fusion with their organizations because of compulsive affection and ego protective behavior.

Lastly, I advance the entrepreneurship literature by finding the importance of the overworking behavior of entrepreneurs in the link between obsessive passion, identity fusion, and firm performance. In the Korean context, the empirical results showed that obsessively passionate entrepreneurs can attain high levels of firm performance only when they work more than 52 hours a week through identity fusion with their organizations. Besides arguing for the mediating effect of identity fusion on the relationship between obsessive passion and firm performance, I note the importance of the overworking behavior of entrepreneurs. The mediating effect of identity fusion was not significant as is, but it was significant when entrepreneurs worked more than 52 hours a week. Although entrepreneurs often devote a large number of hours at work, this phenomenon has been neglected in the literature. Scholars have found that overworking at organizations is related to various outcomes such as financial rewards (Brett & Stroh, 2003), reluctance of disengagement from organization (McMillan & O'Driscoll, 2006), and work satisfaction (Burke et al., 2010). However, the overworking behavior of entrepreneurs

has barely been examined (Humbert & Lewis, 2008). Empirical results of the current study imply that working extremely long hours is a critical boundary condition for obsessively passionate entrepreneurs to achieve firm performance. Even though the management of firms is an anxiety-provoking procedure with high uncertainty for entrepreneurs (McMullen & Shepherd, 2006), it is noteworthy to mention that working hard and spending a long time at work could alleviate these feelings and strengthen the influence of entrepreneurs' obsessive passion on firm performance, through fusing their identity with their organizations.

The current paper also provides practical implications. Obsessively passionate entrepreneurs can lead to high firm performance, even though they have been viewed mostly in a negative light in previous literature (de Mol et al., 2018; Ho & Pollack, 2014), especially compared to harmoniously passionate entrepreneurs. Being obsessively passionate fuses one's identity with that of the firm, and the entrepreneur who feels oneness with the firm tends to bring about high firm performance. Interestingly, such implication only holds up when the entrepreneur also engages in an overworking behavior. Only when the passion is accompanied by the dedication to work, those with the fused identity can achieve high performance. Hence, it would be important for entrepreneurs to realize that it may be the actual amount of work they put in, in addition to the passion, that makes the difference. However, it should be noted that I do not predicate that entrepreneurs should overwork for high firm performance. Engaging in overwork behaviors has been linked to numerous negative consequences in one's physical and mental health (Sparks, Cooper, Fried, & Shirom, 1997). Therefore, the results of the current study need to be interpreted with caution, keeping in mind that overworking behaviors can be a double-edged sword.

Several limitations of the present paper are important to mention. First, the cross-sectional nature of the data collection limits the understanding of causality. While I secured six months to obtain data on the dependent variable (i.e., firm performance), the key variables (i.e., obsessive passion, identity fusion, and overwork) were collected in the same period. Therefore, future studies should implement experiments or longitudinal research designs to investigate the direction of the key variables. For instance, I theorized that passion nurtures identity fusion; however, one could also argue that identity fusion might arouse passion. Scholars found that identity centrality drives harmonious passion (Murnieks et al., 2020) and sense of identity from professional activities predicts obsessive passion (Mageau et al., 2009). As such, I encourage further research on the passion-identity relationships to clarify the nature of causality.

Second, there are constraints on the generalizability of the empirical results; as such, interpretation of this study must be taken with caution. Specifically, the data collection was conducted in Korea where overworking is “a normalized part of work culture” (Nam & Kim, 2019, p. 12). Korea is ranked as one of the highest in the World in the categories of working hours and labor productivity (OECD, 2020). Through socialization, national values of long working hours may have influenced the behavior of Korean entrepreneurs in my sample (Snir & Harpaz, 2012). Although the empirical context in this paper was carefully chosen to understand the influence of the overworking behaviors of entrepreneurs, scholars could extend the generalizability of the paper by investigating entrepreneurs who work in different cultural contexts.

Third, I used self-reported values to empirically test the model, which might have increased common method bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). To reduce this bias, I supplemented subjective performance measures with an accounting dataset (i.e., sales



growth and operating profit) of a subset of the total sample. Despite this effort, I recommend future studies to examine various performance indicators of obsessive passion using objective datasets. Moreover, I suggest using multi-source (e.g., self and supervisor; Aziz & Zickar, 2006) or objective datasets (e.g., systematic attendance histories or work schedules) to measure more accurate working hours than self-reported values. Due to the unavailability of objective data on working hours, most studies that examined overwork used self- or observer-reports (Snir & Harpaz, 2012). However, an increasing number of firms adopt attendance management technologies to manage the working hours of employees. Scholars could benefit from these technologies to capture precise overworking behaviors of entrepreneurs.

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## **CHAPTER 4. HARMONIOUS PASSION, BRICOLAGE, AND FIRM PERFORMANCE: THE ROLE OF ENTREPRENEURIAL AUTONOMY**

A paper to be submitted to a journal

### **Abstract**

Drawing from, the theory of entrepreneurial bricolage and the resource-based view, I study the indirect influence of harmonious passion on firm performance through bricolage, i.e., achieving specific goals with existing resources. I propose that in small and medium-sized enterprises (SMEs), CEOs with high harmonious passion establish bricolage through deliberate practice, creative solutions, and awareness of organizational capacity. Moreover, firms with high levels of bricolage enhance firm performance through creatively recombining accessible resources, acting on without biases to overcome the liability of smallness, and maximizing the firm's potential by use of all possible methods. Entrepreneurial autonomy positively strengthens this mediation model by providing independent decision-making and promoting organizational creativity. I test the proposed model using a six-month lagged survey data collected from 237 CEOs of Korean SMEs.

### **Introduction**

Small and medium-sized enterprises (SMEs) suffer from liability of smallness, which impedes them from having positive outcomes and that even threatens their survival (Stinchcombe, 1965). Specifically, SMEs do not have abundant resources, capabilities, networks, and knowledge to attain competitive advantages. Due to their limited size, SMEs have resource constraints that may restrict their choices and weaken their performance. Contemplating that resources are the main sources for competitive advantage, firm survival, and growth (Barney,

1991; Penrose, 1959; Wernerfelt, 1984), how could SMEs achieve high performance with limited resources? Building on the theory of entrepreneurial bricolage and the resource-based view, I argue that it is not only *what* resources firms possess, but also *how* they make use of them, what helps firms obtain successful outcomes. Penrose (1959) explained that different uses of resources could render heterogeneous results. She outlined that resources could be idiosyncratic depending on diverse bundling directions of those resources. Wernerfelt (1984) continued Penrose's argument and asserted that firm resources could be beneficial or detrimental for a given firm in terms of their utilization. In a resource-constrained context like SMEs, some firms could prosper and survive while others might fail to maintain the business. Accordingly, SMEs need to use their limited resources effectively and efficiently to achieve high performance. In this paper, I apply the concept of entrepreneurial passion and bricolage to explain the mechanism of how CEOs of SMEs could improve firm performance through effective resource management.

Compared to large firms, SMEs have a flexible hierarchical system and authority structure; therefore, the influence of a CEO on firm behavior (Hambrick & Mason, 1984) in SMEs is stronger than in large firms (Kammerlander, Burger, Fust, & Fueglistaller, 2015; Man, Lau, & Chan, 2002). In this respect, I theorize about the importance of CEOs' passion for promoting firm performance in SMEs. Social psychologists defined passion as "a strong inclination toward an activity that people like, that they find important, and in which they invest time and energy" (Vallerand, Blanchard, Mageau, Koestner, Ratelle, Léonard, Gagné & Marsolais, 2003, p. 757). The concept of passion has been applied in the entrepreneurship literature (e.g., Cardon, Wincent, Singh, & Drnovsek, 2009; Chen, Yao, & Kotha, 2009); however, findings in studies of the entrepreneurial passion and firm performance relationship are

mixed. Specifically, scholars have found both positive (Ho & Pollack, 2014; Patel, Thorgren, & Wincent, 2015) and insignificant associations (Sirén, Patel, & Wincent, 2016) in this relationship. The confusion caused by these inconsistent findings prevents theoretical advancement, and may raise doubts about whether passion is beneficial or detrimental for organizations. To resolve this inconsistency, further investigation is needed to determine when entrepreneurial passion is positively linked to firm performance and when it is not. Previous studies examined the influence of passion on firm performance without incorporating the organizational context, which could act as a critical boundary condition. To complement those studies, I provide new insights on how and when CEOs' entrepreneurial passion could increase (or decrease) firm performance by investigating a contingency (i.e., entrepreneurial autonomy) and a mechanism (i.e., bricolage) in the context of SMEs.

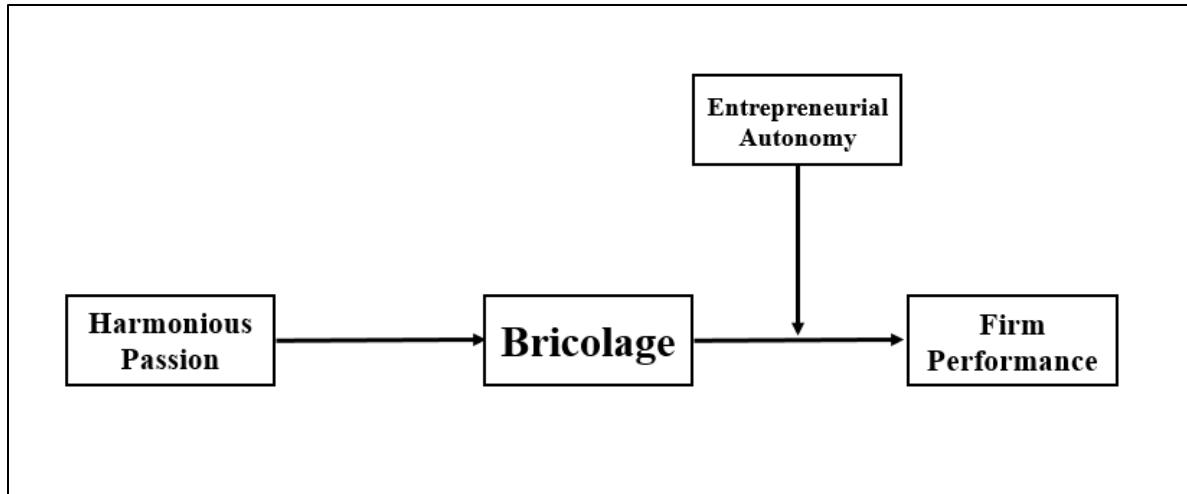
Based on the entrepreneurial passion literature, I theorize that the core characteristics of passion influence CEOs to effectively manage resources to achieve specific goals (i.e., bricolage). These characteristics include deliberate practice like repeating a behavior, mastering goals, and working hard (Murnieks, Mosakowski, & Cardon, 2014; Vallerand et al., 2003), creativity and feedback-seeking behavior (Ho & Pollack, 2014; Liu, Chen, & Yao, 2011; Sirén et al., 2016), and high awareness of organizational capacity. Baker and Nelson (2005) built on seminal work on bricolage (Levi-Strauss, 1966) and termed entrepreneurial bricolage the capability to accomplish objectives by creatively combining existing resources. Bricolage means that firms take advantage of all available resources, knowledge, abilities, and information to achieve firms' specific goals, survive, and grow in harsh competitive environments. The core elements of bricolage are an unusual combination and creative utilization of whatever skills and resources are at hand (Baker & Nelson, 2005). Bricolage makes firms overcome scarce amounts

of available slack resources, challenge limitations, and achieve unprecedented results. Those firms attain efficiency and effectiveness in the resource-seeking procedure by accomplishing their goals with limited resources (Baker & Nelson, 2005). Therefore, I suggest that SMEs with high bricolage can cancel out the liabilities of smallness in achieving positive performance by recombination of possessed resources in a creative way (Baker, Miner, & Eesley, 2003; Senyard, Baker, Steffens, & Davidsson, 2014), action-orientation without any biases on limitations (Baker & Nelson, 2005; Garud & Karnøe, 2003), and maximization of firm potentials through applying all the possible approaches (Desa & Basu, 2013). I also assert that entrepreneurial autonomy act as a boundary condition for the relationship between bricolage and firm performance.

Entrepreneurial autonomy brings organizational members to take independent actions, make key decisions, and carry self-directed work to completion (Kanter, 1983; Lumpkin & Dess, 1996; Lumpkin, Coglisier, & Schneider, 2009). Autonomous firms would provide freedom to act independently and make decisions on resource management (Hessels, Van Gelderen & Thurik, 2008; Lumpkin et al., 2009), and promote creative ideas of organizational members (Kanter, North, Richardson, Ingols, & Zolner, 1991; Lumpkin & Dess, 1996). These aspects of firm-level autonomy intensify the effects of bricolage capability on firm performance.

The main purposes of this study are to examine the indirect impact of CEOs' entrepreneurial passion on firm performance through bricolage and to study the moderated mediation influence of entrepreneurial autonomy on this mediation relationship (see Figure 4.1). In this regard, I aim to answer three research questions. First, how does a CEO's entrepreneurial passion manifest bricolage? Second, how do SMEs with high bricolage attain better firm performance? Third, does entrepreneurial autonomy moderate the relationship between bricolage and firm performance?

With this study, I make several contributions. First, I advance the entrepreneurial passion literature by studying the influence of harmonious passion on firm performance. Scholars have called for in-depth studies on the relationship between passion and firm performance (Mueller, Wolfe, & Syed, 2017; Patel et al., 2015). I answer this call by developing more nuanced theoretical arguments and by empirically testing the indirect impact of CEOs' entrepreneurial passion on firm performance through bricolage in the context of SMEs. Most importantly, I clarify the mixed findings on the relationship between passion and firm performance (Ho & Pollack, 2014; Patel et al., 2015; Sirén et al., 2016) by applying entrepreneurial autonomy as the moderator that change the strength of the indirect effect of harmonious passion on firm performance through bricolage. Second, I contribute to the literature on bricolage by examining performance outcomes of bricolage. Scholars have called for more empirical studies on bricolage (Senyard et al., 2014; Welter, Mauer, & Wuebker, 2016) and for the study outcomes of bricolage, including firm performance (Desa & Basu, 2013). In this regard, I address these research calls by proposing a link between bricolage and firm performance and empirically testing it. Lastly, I extend the understanding of entrepreneurial autonomy by linking it to bricolage and firm performance. Firm-level autonomy has been a missing link in entrepreneurship research (Lumpkin et al., 2009; Short, Payne, Brigham, Lumpkin, & Broberg, 2009; Van Gelderen, 2016; Van Gelderen, Shirokova, Shchegolev, & Beliaeva, 2020; Yu, Lumpkin, Parboteeah, & Stambaugh, 2019). Despite being a core element of entrepreneurial orientation (Lumpkin & Dess, 1996), autonomy has been neglected in the literature, and scholars have called for further studies connecting autonomy to the entrepreneurial phenomenon (Lumpkin et al., 2009). Accordingly, I explain how entrepreneurial autonomy positively strengthens the influence of bricolage on firm performance.



**Figure 4.1. The Theoretical Model**

### **Literature Review and Hypotheses Development**

#### **Harmonious Passion**

In the social psychology literature, scholars introduced the concept of a dualistic model of passion (Vallerand et al., 2003) and suggested two types of passion – harmonious and obsessive. The main differences between two passions are 1) internalization and 2) behavioral persistence of a particular activity that people are passionate about (Vallerand et al., 2003). Harmonious passion is “an autonomous internalization that leads individuals to choose to engage in the activity that they like” whereas obsessive passion is “a controlled internalization of an activity in one’s identity that creates an internal pressure to engage in the activity that the person likes” (Vallerand et al., 2003, p. 756). In other words, harmonious passion is a self-made decision on engagement in the activities with flexible persistence, and obsessive passion is a compulsive commitment toward activities with rigid persistence. The decision to study one of the two conceptualizations of passion should consider these differences and be determined by research questions (Ho & Pollack, 2014; Murnieks et al., 2014). Based on the theoretical appropriateness of harmonious passion as the voluntary engagement and persistence in entrepreneurial activities,



I apply harmonious passion in this paper to explain how CEOs effectively manage limited resources and attain high firm performance.

In the entrepreneurship literature, scholars have utilized harmonious passion (e.g., de Mol, Ho, & Pollack 2018; Ho & Pollack, 2014; Murnieks et al., 2014; Murnieks, Cardon, & Haynie, 2020; Patel et al., 2015; Sirén et al., 2016; Stroe, Parida, & Wincent, 2018). Specifically, Murnieks et al. (2014) empirically examined the positive impact of harmonious passion on entrepreneurial behavior and self-efficacy. Stroe et al. (2018) found that harmonious entrepreneurial passion is critical in achieving effectuation when entrepreneurs have a high self-efficacy or perceive high risk in the environment. Moreover, de Mol et al. (2018) found that harmonious passion is negatively related to individual burnout, and Murnieks et al. (2020) found that identity centrality acts as the antecedent of harmonious entrepreneurial passion.

Scholars have also studied the relationship between harmonious passion and different forms of performance. However, findings are mixed in this stream of research. On the one hand, Ho and Pollack (2014) found that harmonious passion and total business income have positive relationships. Moreover, Patel et al. (2015) found a positive relationship between harmonious passion and project performance (i.e., job creation). On the other hand, Sirén et al.'s (2016) regression analysis indicates that harmonious passion is not associated with sales or profit growth. Sirén et al. (2016) did not theorize the direct impact of passion toward firm performance; therefore, these findings were not part of the scope of their paper. However, this result contradicts the findings of Ho and Pollack (2014) and Patel et al. (2015). The different empirical results between these studies suggest that the relationship between harmonious passion and firm performance needs to be clarified. The mixed findings in the literature may lead readers to misinterpret the consequences of harmonious passion. Building predictions and theories upon the

misinterpretation may obstruct the advancement of the literature. As such, Patel et al. (2015) articulated that we are still in the early stage to conclude that harmonious passion leads to high firm performance and suggested scholars to conduct more empirical research on these relationships. To clarify the contradictory findings in the literature, I investigate a more nuanced relationship between harmonious passion and firm performance by applying a mediator (i.e., bricolage) and a moderator (i.e., entrepreneurial autonomy). Specifically, I propose that bricolage is a core mechanism for passionate CEOs to attain higher firm performance through effective resource management and that this mechanism is strengthened by entrepreneurial autonomy.

### **Bricolage**

Bricolage refers to making something happen with “whatever is at hand” (Levi-Strauss, 1966, p. 5). Entrepreneurial bricolage is defined as using and combining the available resources ‘at hand’ to find possible approaches to opportunities and solutions to overcome obstacles (Baker, 2007). Based on the most widely accepted definition of entrepreneurial bricolage, “making do by applying combinations of the resources at hand to new problems and opportunities” (Baker & Nelson, 2005, p. 333), scholars have interpreted the nature of bricolage (e.g., Phillips & Tracey, 2007). First, ‘making do’ means achieving objectives and creating opportunities by active engagement toward innovative solutions. Second, ‘by applying combinations of the resources’ refers to new ways of utilizing resources other than the intended usage. Lastly, ‘at hand’ describes possession of available resources and free or cheap resources that firms could acquire easily. In other words, when firms refuse to give up in front of negative circumstances due to resource-shortage limitations and instead create new possibilities by integrating and making abandoned or less noticed resources in unconventional ways (Baker & Nelson, 2005; Rönkkö, Peltonen, & Arenius, 2014), then those companies are enacting bricolage.

Large firms tend to have many more available resources than smaller firms do. Scholars have emphasized the importance of slack resources, “relative freedom from resource constraints” (Senyard et al., 2014, p. 213), on organizational goals (e.g., George, 2005). However, firms with high levels of bricolage disregard this slack-related and socially constructed environment, view the environment differently and do not avoid confronting poor conditions with limited resources (Baker & Nelson, 2005; Fisher, 2012; Stinchfield, Nelson, & Wood, 2013; Weick, 1993). Bricolage is a capability that promotes firms to react to different severe resource scarcity scenarios effectively. Severe resource scarcity includes pressures from limited financing, lack of expertise, shortage of time and technologies for necessary tasks. Therefore, firms with high bricolage seek to utilize all the available resources they own. For instance, those firms use previously under-evaluated technologies, private networks, or even more individual free time for creative innovations (Anderson, 2008; Baker & Nelson, 2005; Baker et al., 2003).

Extending the resource-based view (Barney, 1991), scholars have emphasized the importance of resource management (Helfat, Finkelstein, Mitchell, Peteraf, Singh, Teece, & Winter, 2007; Sirmon, Hitt, & Ireland, 2007; Sirmon, Hitt, Ireland, & Gilbert, 2011). These scholars argued that a specific firm-level capability that promotes effective resource management would ensure firms to obtain strategic objectives (Sirmon et al., 2011). Therefore, understanding how firms deal with their resources is as important as which resources they own (Hansen, Perry, & Reese, 2004). Given the importance of having a specific resource management-related capability, I suggest that the function of bricolage is associated with effective resource management. The key function of bricolage is the recombination and reuse of resources for specific objectives rather than the use of resources according to their original intentions (Baker & Nelson, 2005; Desa, 2012). Firms with this capability have a high tendency to “structure

resources by focusing on accumulating discarded, slack, or undervalued resources” (Desa & Basu, 2013, p. 31). Therefore, bricolage is about the creative bundling of scarce resources and mobilizing internal and external resources (Halme, Lindeman, & Linna, 2012). Scholars have theorized bricolage as a process of creative reinvention of establishing ‘something from nothing’ by repackaging, transposing, and recombining resources (Baker & Nelson, 2005; Rice & Rogers, 1980). Bricolage is also the primary tactic for resource mobilization. In other words, bricolage enables firms to focus on the optimization of existing resources to achieve specific goals (Desa & Basu, 2013).

### **Harmonious Passion and Bricolage**

Entrepreneurial passion is the key to overcome resource barriers during the entrepreneurial process (Baum & Locke, 2004). Through building bricolage, passionate CEOs challenge uncertain conditions and concentrate on achieving specific goals, “without necessarily considering any contingencies or obstacles attached to it” (Biraglia & Kadile, 2017, p. 173). I build arguments on the following specific characteristics of harmonious passion that promote manifestation of bricolage: 1) deliberate practice like repeating behavior, mastering goals, and working hard (‘making do’), 2) creative solutions and feedback seeking behavior (‘by applying combinations of the resources’), and 3) enlarged selection of resources and awareness of organizational capacity (‘at hand’).

First, harmonious passion is associated with the ‘making do’ component of bricolage. From early studies on entrepreneurial passion, scholars have explained that passionate CEOs have intensive “zeal for work,” which drives “goal-directed action” in resource-constrained circumstances (Baum & Locke, 2004, p. 588). Such a zest pushes action orientation toward specific domains on which people want to focus. Empirical evidence from diverse samples

confirms the positive link between harmonious passion and persistence, repeated engagement, mastering goals, deliberate practice, and working hard. Specifically, scholars have found that harmonious passion increases the amount of practice and persistence not only among entrepreneurs (Murnieks et al., 2014), but also among musicians (Bonneville-Roussy, Lavigne, & Vallerand, 2011), swimmers, skiers (Mageau, Vallerand, Charest, Salvy, Lacaille, Bouffard, & Koestner, 2009), basketball players, water-polo athletes (Vallerand, Mageau, Elliot, Dumais, Demers, & Rousseau, 2008), football players, cyclists (Vallerand et al., 2003), students studying dramatic arts, psychology (Vallerand, Salvy, Mageau, Elliot, Denis, Grouzet, & Blanchard, 2007), and modern-jazz dance (Rip, Fortin, & Vallerand, 2006). In this context, harmonious passion is associated with a deliberate practice where people continuously repeat to learn their moves, acquire skills, and advance performance. As mentioned above, professions with high harmonious passion practice hard to master their performance (e.g., artists; Bonneville-Roussy et al., 2011) and also repeat specific movements to overcome their weakness and become familiar with techniques (e.g., sports players; Vallerand et al., 2008).

Through intrinsic pleasure generated from free choice, people with high harmonious passion are motivated to continuously propel in a chosen activity (Vallerand et al., 2003). Based on identity theory (Burke, 1980; Burke & Reitzes, 1981), I argue that harmoniously passionate CEOs persistently engage and work hard on entrepreneurial activities to maintain and protect their identity. In other words, those CEOs confirm and reinforce their identities by deliberately working and accomplishing goals (Murnieks et al., 2014). As a result, CEOs with high harmonious passion fulfill their identity through persistently seeking solutions even in a resource-constrained environment. The literature on deliberate practice has demonstrated that active engagement and continuous attention toward a specific area lead to the achievement of

targeted goals (Ericsson & Charness, 1994). Therefore, CEOs' harmonious passion leads them to repeat behaviors, master goals, and work hard toward 'making do' on entrepreneurial activities.

Second, harmonious passion is related to the 'recombination' component of bricolage. Harmonious passion generates creative solutions and new ideas for job-related tasks (Liu et al., 2011). Specifically, positive affect from harmonious passion promotes CEOs to connect varied resources and experiment with novel approaches (Bonneville-Roussy et al., 2011; Isen, 2000) and supports effective resource management on competing needs (Patel et al., 2015). Another characteristic of harmonious passion that encourages the recombination of resources is feedback-seeking behavior. Harmoniously passionate CEOs willingly internalize strategic decisions into their identity and adjust those decisions to accomplish targeted goals based on feedback (Sirén et al., 2016). Passionate leaders who stubbornly maintain their strategy without a flexible mindset fail to accept critical advice and miss the chance to disengage from their decisions (Vallerand et al., 2003). One of the core advantages of harmonious passion is "being open to feedback and new ideas" (Sirén et al., 2016, p. 4), which leads to a non-defensive attitude and learning-orientation toward novel methods. Based on this openness and flexibility, harmonious passionate CEOs pursue advice, new information, and resources (Ho & Pollack, 2014) to bolster and modify their strategic decisions on resource management. Therefore, CEOs with high harmonious passion implement unexpected combinations of resources through feedback-seeking behavior and a creative approach to resource utilization.

Third, harmonious passion is linked to the 'resources at hand' component of bricolage. Most importantly, harmonious passion enlarges the scope of resources that CEOs can utilize and promotes awareness of overall organizational capacity. Entrepreneurial passion broadens creative cognition through positive affect on entrepreneurial activities where CEOs feel intrinsically

motivated (Mueller et al., 2017). Creative cognition is critical not only for accurate awareness of one's capacity but also for the attainment of enlarged options for prospective pathways toward goal achievement (Finke, Ward, & Smith, 1992; Ward, 2004). Based on a broaden-and-build theory of positive emotions (Fredrickson, 1998, 2001), positive affect increases the scope of thought-action selections and expands available resources. In this context, CEOs with high harmonious passion compare the various routes with limited resources to pursue specific goals. Specifically, positive affect within harmonious passion magnifies "attention, cognition, and action" toward accumulating "physical, intellectual, and social resources" (Fredrickson, 2001, p. 220). In other words, CEOs with positive affect proactively attain and explore new information and resources and motivate themselves toward action orientation to go beyond their resource capacity. This enlarged selection of resources attained by positive affect improves CEOs to deploy resources that fit the firm's strategy.

Harmoniously passionate CEOs exhibit extensive knowledge of organizational capacity, which would lead to the effective operation of limited resources. Through "intensive and systematic knowledge processing" (De Clercq, Honig, & Martin, 2013, p. 653), passionate CEOs are likely to consider all the approaches to manage available resources. These CEOs continuously endeavor to accomplish goals and invest their time and energy into organizational objectives (Vallerand et al., 2003); therefore, they have a high awareness of overall organizational capacity. In this respect, harmoniously passionate CEOs know the location of resources and how to maximize the usages of available resources. For instance, through an extensive commitment to the organization, they understand their employees' key capabilities and abandoned resources that are not applied. Therefore, I contend that:

*Hypothesis 1: Harmonious passion is positively associated with bricolage.*

## **Bricolage and Firm Performance**

Strategic resource management of bricolage could help firms to overcome the scarce resources SMEs possess to achieve high firm performance. Specifically, I argue that SMEs with high bricolage can cancel out the liabilities of smallness in achieving positive performance through 1) recombination of resources at hand in an unconventional approach, 2) action-oriented posture to overcome internal biases of limitations, and 3) maximization of a firm's potential by utilizing all possible methods.

First, “recombination of existing elements” is the core characteristic of bricolage (Senyard et al., 2014, p. 214). I argue that bricolage encourages firms to overcome resource limitations and develop creative solutions to problems as well as to accomplish high performance through recombination mechanisms. Firms with high levels of bricolage recombine and reuse existing resources to mobilize them via unusual methods (Baker et al., 2003). Since companies cannot always access or utilize resources to achieve high performance via rational means (Aldrich & Baker, 1997; Duymedjian & Rüling, 2010), they occasionally attempt new combinations of resources to achieve positive results. Levi-Strauss called this phenomenon as “brilliant unforeseen results” (1966, p. 17). More specifically, SMEs could benefit from ‘agility’ and ‘freedom of action’ through recombination (Senyard et al., 2014) and from improvising new composites of resources through ‘making it up as they go along’ (Baker, 2007; Miner, Bassof, & Moorman, 2001). Firms that realize the hidden opportunities from undervalued and discarded resources are better off in attaining high performance since they tend to focus on idiosyncratic combinations from what they already possess (Desa & Basu, 2013). Moreover, bricolage brings firms into novel solutions (Senyard et al., 2014) and new alternatives through experimentation processes of recombination (Baker & Nelson, 2005).



Second, bricolage is action-orientation without any biases or limitations. In other words, firms with high bricolage make unbiased bold movements (Senyard et al., 2014), rejecting institutional constraints and viewing these socially constructed negative circumstances as new opportunities (Baker & Nelson, 2005). Firms usually do not attempt to challenge and move beyond their positions when they face resource shortages (Baker et al., 2003). However, firms with high bricolage show different actions (Garud & Karnøe, 2003). Those firms, instead of giving up, move forward to overcome obstacles and have a strong willingness to engage in the uncertain situations through making do with the resources they have (Senyard et al., 2014). I contend that those firms think differently because bricolage is about treating resources in a remarkable way that other firms have not thought about and even thought as worthless to reuse (Garud & Karnøe, 2003).

Third, one of the main advantages of bricolage is the maximization of a firm's potential by applying all possible approaches. Bricolage widens the firm's vision by improving the understanding of its capabilities, which enables the firm to identify its potential slack and maximize its capacity. Firms with high bricolage understand the values of abandoned or slack resources (Desa & Basu, 2013), which signals that those firms comprehend their potentials and have an in-depth understanding of how to use them. When firms effectively manage their resources, they can enable diverse strategies and eventually maximize their possible potentials. Effective resource management is essential to attain competitive advantage (Sirmon et al., 2011). In other words, a firm-level bricolage is critical in strategic resource management and implementation of diverse methods to achieve firm performance, especially when dealing with the resource constraints that SMEs typically face. Therefore, bricolage positively affects firms by

allowing them to take advantage of every possible method. Considering these arguments, I contend that:

*Hypothesis 2: Bricolage is positively associated with firm performance.*

### **The Mediation Effect of Bricolage**

By integrating the above-proposed theoretical arguments, I suggest that a CEO's harmonious passion indirectly increases firm performance through bricolage. Based on the theory of entrepreneurial bricolage (Baker & Nelson, 2005) and on the dualistic model of passion (Vallerand et al., 2003), I associate the core characteristics of harmonious passion with components of bricolage. Specifically, deliberate practices of repeating behavior, mastering goals, and working hard influence the 'making do' component of bricolage; creative solutions and feedback-seeking behavior promote the 'recombination of the resources' component of bricolage; and enlarged selection of resources and awareness of organizational capacity increase the 'at hand' component of bricolage. These characteristics of harmonious passion influence a CEO to develop higher levels of bricolage. In turn, SMEs with high levels of bricolage enhance firm performance through recombination of resources at hand in unconventional approaches, action-oriented postures to overcome internal biases of limitations, and maximization of firms' potentials by utilizing all available methods. Contemplating the theoretical arguments of the link between 1) harmonious passion-bricolage and 2) bricolage-firm performance, I hypothesize that:

*Hypothesis 3: Bricolage positively mediates the relationship between harmonious passion and firm performance.*

### **The Moderation Effect of Entrepreneurial Autonomy**

Entrepreneurial autonomy is an “action taken free of stifling organizational constraints” (Lumpkin & Dess, 1996, p. 140), which brings organizational members to act independently to develop, enact, and complete a specific idea or vision (Lumpkin et al., 2009). The main aspects of entrepreneurial autonomy are making key decisions, proceeding without organizational restrictions, and establishing strategic directions independently. CEOs in SMEs have a stronger organizational impact than in larger firms (Kammerlander et al., 2015; Man et al., 2002). Specifically, larger firms’ CEOs tend to focus on the overall picture of firm management and on decisions related to key strategies, while CEOs in SMEs tend to influence more on details related to employees and teams. These differences are based on the different nature of the hierarchical system and structure of authority (Kammerlander et al., 2015). Therefore, entrepreneurial autonomy would be more valuable in SMEs because organizational members are likely to have higher freedom to utilize their own capabilities and implement diverse ideas.

I draw from the entrepreneurial orientation literature (Lumpkin & Dess, 1996), to argue that entrepreneurial autonomy would positively moderate the relationship between bricolage and firm performance, such that stronger entrepreneurial autonomy would intensify the level of bricolage to achieve higher firm performance. There are two main arguments for this: 1) freedom of choice and independent decision making on bricolage and 2) creativity and completion of bricolage.

First, entrepreneurial autonomy provides freedom of independent action and decision making on the progression of bricolage. To enhance the successful enactment of bricolage, firms should not restrict their choices or even behaviors. Autonomous firms ease the tension of making perfect consensus and ‘buy time’ by providing freedom on independent actions and decisions to organizational members. Such freedom promotes flexibility, motivation, confidence, and speed

of implementation of the bricolage activities. Firms that grant entrepreneurial autonomy have flexibility when faced with new methods. In other words, autonomous firms protect independent actions and decisions that might contradict conventional methods. Shane (1994) explained that autonomy is related to actions that bend the rules and bypass procedures. Specifically, autonomous firms operate beyond organizations norms and regulations, which would eventually enhance the effect of bricolage. Entrepreneurial autonomy brings flexibility into the firm, which would reduce the complex procedures within the firm that might prohibit the implementation of bricolage. Therefore, entrepreneurial autonomy secures firms to operate beyond their constraints and assures the effective implementation of the bricolage and the accomplishment of specific objectives (Lumpkin et al., 2009).

Moreover, autonomous firms would also promote motivation and confidence of organizational members by providing them the authority to choose and make decisions (Hessels et al., 2008). When organizational members make decisions on various recombination choices from limited resources (i.e., bricolage), strong confidence rooted from firms' autonomy-based trust and motivation from increased self-directed projects would positively enhance the successful implementation. Entrepreneurial autonomy also enhances the effective implementation of bricolage by increasing speed-related efficiency. When bricolage implementation is authorized to organizational members or teams, they are likely to reduce delays and concentrate on unique recombination for solutions to achieve specific goals. When firms are not hindered by unnecessary internal procedures and political issues to implement their own ideas of bricolage, the efficiency of implementation will increase. The degree of autonomy is positively related to effective resource management, such that high levels of autonomy contribute to resource transfer and application (Janz & Prasarnphanich, 2005; Smith, 2001).

Entrepreneurial autonomy eventually facilitates sharing resources within the firm and applying them to diverse uses. In this context, entrepreneurial autonomy would strongly promote the process of bricolage (i.e., resource transfer and application) toward higher firm performance.

Second, entrepreneurial autonomy inspires creative aspects of bricolage and advances the completion of bricolage. The essence of autonomy is leveraging a firm's current capabilities or existing strength (Kanter, North, Richardson, Ingols, & Zolner, 1991). Assuming bricolage is a firm's main capability and strength, having high entrepreneurial autonomy would promote the level of creative recombination of existing resources. Specifically, autonomous organizations support their members' vision and promote their creativity (Burgelman & Sayles, 1986). In addition, those firms encourage creative utilization of organizational members' resources through a flattening process or a flexible structural arrangement (Lumpkin & Dess, 1996). Following the entrepreneurial orientation perspective, Lumpkin and colleagues (2009) argued that autonomy enables organizational members to define, set, and cope with problems themselves and with the most effective methods. This process also provides impetus to apply their bricolage at best to achieve enhanced performance. Another important essence of entrepreneurial autonomy is completion. Entrepreneurial autonomy promotes not only the development and enactment but also the completion of organizational members' independent ideas. Thus, I argue that the level of bricolage will be magnified toward firm performance by solving diverse problems and carrying particular projects into completion with high levels of entrepreneurial autonomy. Based on these arguments, I hypothesize that:

*Hypothesis 4: Entrepreneurial autonomy positively moderates the relationship between bricolage and firm performance, such that the relationship is stronger when entrepreneurial autonomy is high than when it is low.*

Based on the arguments mentioned above, I suggest a moderated mediation model (Preacher, Rucker, & Hayes, 2007), where entrepreneurial autonomy positively moderates the mediating effect of bricolage on harmonious passion-firm performance relationship. In the mediation hypothesis (Hypothesis 3), I theorized that harmoniously passionate CEOs deliberately work, continuously seek and accept diverse feedback, and attain in-depth knowledge about their organizational capacity, which positively impact the overall firm to use the resources effectively to achieve organizational goals. In turn, SMEs with high bricolage attain high firm performance by recombining resources, acting without biases, and extending their own capacity. In the moderation hypothesis (Hypothesis 4), I proposed that entrepreneurial autonomy strengthens the impact of bricolage on firm performance by supporting independent decision making of organizational members and encouraging creative ideas. Contemplating the mediation and moderation effects together, I propose a moderated mediation effect of entrepreneurial autonomy on the harmonious passion, bricolage, and firm performance relationship. In other words, the strength of the indirect relationship between harmonious passion and firm performance via bricolage would be conditional on the levels of entrepreneurial autonomy. Therefore, I suggest that:

*Hypothesis 5: Entrepreneurial autonomy positively moderates the mediating effect of bricolage on the relationship between harmonious passion and firm performance, such that the indirect effect of harmonious passion on firm performance through bricolage is stronger when entrepreneurial autonomy is high than when it is low.*

## Methods

### **Korean Small- and Medium-sized Enterprise (SME) Context**

To empirically test the theoretical model, I collected data from CEOs of Korean small- and medium-sized enterprises (SMEs) for several reasons. First, 99.9 percent of firms in Korea are SMEs (MSS, 2020) and most of SMEs suffer from the liability of smallness (Stinchcombe, 1965). These firms typically operate under resource constraints which invigorate the importance of leaders within those firms. Therefore, empirical examination of the impact of CEOs' entrepreneurial passion and the effective resource management of SMEs in Korea is a suitable context. Second, CEOs of SMEs attain higher levels of managerial discretion compared to executives in large firms due to smaller firm sizes and privately-operated governance systems (Cole & Mehran, 2016; Finkelstein, Hambrick, & Cannella, 2009). SMEs suffer less from independence from external factors like influential board of directors and maintain higher flexibility and congruence than large firms (Ling, Simsek, Lubatkin, & Veiga, 2008), increasing the influence of CEOs of SMEs on organizational resource management. Moreover, CEOs' entrepreneurial passion is contagious on overall firm (Cardon, 2008; Hubner, Baum, & Frese, 2020) and this contagion effect of CEOs is likely to be considerable for SMEs, influencing the firm to effectively manage the resources. In this respect, I consider the Korean SME context is an appropriate context to study current theoretical relationships.

### **Data Collection**

Based on the list of firms provided by the Ministry of Small and Medium-sized Enterprises and Startups (MSS) of Korea, a two-wave survey from two different respondents (i.e., CEOs and top executives) of Korean SMEs was conducted to test the proposed hypotheses. In the first wave, I collected from CEOs, data on the independent (i.e., harmonious passion) and

control variables. In this wave, I asked the CEOs to suggest top executives like vice-president or top management team members who directly report to them (Herrmann & Nadkarni, 2014).

After six months, the second wave was implemented to collect data on mediating (i.e., bricolage), moderating (i.e., entrepreneurial autonomy), and dependent (i.e., firm performance) variables from top executives recommended by the CEOs. When survey data for dependent and independent variables of a theoretical model are collected in the same period, it will yield an artifactual covariance (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Accordingly, I secured temporal separation between dependent and independent variables by conducting a two-wave research design to ease the issues of common method bias and test for stronger causality compared to a cross-sectional design (e.g., Mueller et al., 2017; Nadkarni & Herrmann, 2010).

For the first wave data collection, I sent an online survey to 966 CEOs and attained 316 responses (32.7% response rate). From these 316 responses, 301 CEOs recommended other executives who directly report to them (95.3% response rate). To increase the response rate in the second wave data collection, I compensated the executives who finished the online survey with a \$20 donation to a charity, a method that has been applied in the entrepreneurship literature (Drnovsek, Cardon, & Patel, 2016). For the second wave data collection, I sent the survey to 301 executives and collected 243 responses (80.7% response rate). I chose the widely utilized definition of SMEs by having firms with less than 500 employees and, from 243 responses, I eliminated firms that had more employees than this limit. After deleting these firms and incomplete responses, the final sample size was 237, attaining a 78.7% response rate.



## Measures

I implemented a double-back translation to change the English version of the survey into the Korean language (Brislin, 1980). First, the original version of the survey was established in English, translated into the Korean language by a native Korean fluent in English, and then a second native Korean back-translated the Korean version of the survey into English. I then checked the differences of words and meanings between those two different versions of the translated surveys and finalized the Korean translation scales. Moreover, I conducted a pilot test with 10 executives of Korean SMEs (not included in the main sample) to validate the scales and improve the quality of instruction. Appendix A includes the final English version of the survey items.

**Independent variable.** I measured *harmonious passion* by adopting a six-item scale developed by Vallerand et al. (2003). The dualistic model of passion is a domain-specific construct; therefore, I altered the focus of domain from the original survey items to entrepreneurial context. A sample item includes ‘Entrepreneurial activities are in harmony with the other activities in my life.’ The measure showed a Cronbach’s alpha score of .81.

**Mediating variable.** *Bricolage* was measured utilizing an eight-item scale of Senyard et al. (2014), which is based on the conceptualization of bricolage (Baker & Nelson, 2005), and has three components: making do, recombination, and resources at hand. For instance, items were ‘We deal with new challenges by applying a combination of our existing resources and other resources inexpensively available to us’ and ‘when dealing with new problems or opportunities we take action by assuming that we will find a workable solution’. This scale was validated by Davidsson, Baker, and Senyard (2017). The measure showed a Cronbach’s alpha score of .92.

**Moderating variable.** *Entrepreneurial autonomy* was captured using a three-item scale of Lumpkin et al. (2009).<sup>1</sup> Example items are ‘My firm supports the efforts of individuals and/or teams that work autonomously’ and ‘Individuals and/or teams pursuing business opportunities make decisions on their own without constantly referring to their supervisors.’ The measure showed a Cronbach’s alpha score of .73.

**Dependent variable.** *Firm performance* was measured by a six-item scale following Schilke (2014). This perceptual measure captures firms’ performance compared to close competitors on various criteria like market share, strategic advantages, return on investment, and return on sales. The measure showed Cronbach’s alpha score of .88. Privately held SMEs are not required to release their financial statements. According to MSS (2020), less than 0.01% of SMEs in Korea are listed on major stock markets. Because of the inaccessibility of accounting information of SMEs, perceptual measures of firm performance have been continuously adopted in studies of SMEs (e.g., Arunachalam, Ramaswami, Herrmann, &, Walker, 2018; Covin & Slevin, 1989; Keh, Nguyen, & Ng, 2007). Even though scholars advocate that subjective performance measures highly correlate with objective measures (Dess & Robinson, 1984), I tested for convergent validity of subjective performance data by collecting additional objective performance measures from a subsample of 29 firms. Specifically, an accounting dataset was obtained from the National Information and Credit Evaluation (NICE), one of the major credit

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<sup>1</sup> One item (i.e., ‘Employee initiatives and input play a major role in identifying and selecting the entrepreneurial opportunities my firm pursues’) of Lumpkin et al.’s (2009) original survey questionnaire was excluded from the analysis because of its low factor loading and low item-total correlation coefficient.

rating companies in Korea. NICE operates its own database called KISLINE, which releases financial statements of Korean firms, including privately held SMEs. I obtained information on sales growth and operating profit. The archival data and perceptual performance measures had positive and significant correlations (sales growth:  $r = .43, p < .05$ ; operating profit:  $r = .47, p < .05$ ).

**Control variables.** In total, 10 variables are controlled for potential influences on the theoretical relationships. For industry-level influences, I included *environmental hostility*, *environmental dynamism*, *manufacturing industry*, and *service industry* as control variables. The level of competition and resource availability within an industry impact the market growth and performance of SMEs (Rosenbusch, Brinckmann, & Bausch, 2011). As such, I controlled for environmental hostility measured by a six-item scale (Slevin & Covin, 1997) and environmental dynamism measured by a five-item scale (Miller & Friesen, 1982). These environmental measures showed Cronbach's alpha scores of .77 and .73, respectively. SMEs operating in manufacturing and service industries demonstrate dissimilar aspects regarding diverse resource management, market share, and profitability (Song, Di Benedetto, & Zhao, 1999). According to the Korean Standard Industrial Classification, I categorized major industries into three types: manufacturing, service, or others. Others was used as the referent and two dummy variables are established (i.e., manufacturing industry and service industry).

For firm-level influences, I controlled for *firm age*, *firm size*, and *slack resources*. CEOs' managerial discretion is generally stronger for younger and smaller firms than older and larger firms (Miller & Dröge, 1986). Firm age was estimated by asking the establishment year of the firm and firm size was measured by total number of full-time employees. Amount of resources might influence the enactment of bricolage. Even though I focused on SMEs and controlled the

firm size in the sampling procedure, I also controlled for organizational slack resources. Slack resources were measured by a four-item scale developed by De Luca and Atuahene-Gima (2007). Sample item was ‘Our firm has a large amount of resources available in the short run to fund our initiatives’. This measure showed a Cronbach’s alpha score of .83.

For individual influences, I controlled for CEOs’ *age*, *tenure*, and *obsessive passion*. Younger CEOs are more open to new environment and aggressively accept strategic changes than older CEOs (Wiersema & Bantel, 1992). Moreover, CEOs with long tenure tend to repeat previous decisions and show rigidity toward new systems (Finkelstein et al., 2009). As such, I controlled for both CEOs’ age and tenure. Lastly, I controlled for obsessive passion to account for potential effects of another type of passion. I measured obsessive passion by a six-item scale of Vallerand et al. (2003) and Cronbach’s alpha for this measure was .80. To further understand the factor structure between harmonious and obsessive passion, I compared a two-factor model where harmonious and obsessive passion were examined separately and a one-factor model where two passion variables are merged into one overall passion variable. As a result of confirmatory factor analysis (CFA), a two-factor model was significantly better than a one-factor model ( $\Delta\chi^2[1] = 188.74, p < .001$ ).

To test for non-response bias, I accessed *t*-tests among CEOs in the first wave by dividing them into two groups (respondents versus nonrespondents in the second wave). Accordingly, there were no significant differences between focal variables of current study (e.g., harmonious passion: mean difference = .07,  $p = .47$ ). To test for convergent validity of current measures, I also conducted CFA. By loading items onto their particular constructs, the proposed model showed satisfactory fit ( $\chi^2[177] = 345.90$ ; CFI = .95; RMSEA = .06; SRMR = .07; TLI = .93). Moreover, I compared the proposed model to a single-factor baseline model where all the

variables were forced into one latent construct. As a result, the proposed model revealed better fit compared to the one-factor measurement model ( $\chi^2[183] = 1389.74$ ; CFI = .62; RMSEA = .17; SRMR = .22; TLI = .52) and there were also significant differences in the chi-square testing ( $\Delta\chi^2[6] = 1043.8$ ,  $p < .001$ ), indicating that current proposed model reflects a better fit.

## Results

The correlations, means, and standard deviations of all the variables are shown in Table 4.1. Firms in the sample had an average firm size of 44 employees and firm age of 19 years. All the firms met the standard for SMEs, with the largest firm size being 500 employees (MSS, 2020). On average, CEOs were about 52 years old and had 14 years of tenure. Correlations between key study variables displayed significant levels ranging from .14 to .49. For instance, harmonious passion and bricolage were positively related ( $r = .14$ ,  $p < .05$ ) and bricolage and firm performance were also correlated ( $r = .24$ ,  $p < .01$ ). To test for multicollinearity, I calculated the variance inflation factor (VIF) and the values of VIF ranged from 1.08 to 1.47, which are acceptable values (O'Brien, 2007). All the variables examined in this study were standardized before the hypothesis testing to ease multicollinearity and help interpret the moderation results (Aiken & West, 1991).

To test the hypotheses, I conducted three interrelated steps. In the first one, the direct influences and mediation were tested to examine Hypothesis 1, 2, and 3. In the second step, the moderation model was analyzed to evaluate Hypothesis 4. In the third step, the moderated mediation model was examined to test Hypothesis 5.

To examine Hypothesis 1 and 2, ordinary least squares (OLS) regression was implemented. With bricolage as the outcome variable, control variables were added as the first step of the regression analysis (Model 1) and harmonious passion was inserted as the second step

(Model 2). With firm performance as the main dependent variable, control variables were entered in Model 3 and independent (i.e., harmonious passion), mediating (i.e., bricolage), and moderating (i.e., entrepreneurial autonomy) were included in Model 4. Lastly, the interaction term (i.e., bricolage  $\times$  entrepreneurial Autonomy) was added in Model 5. The regression results are displayed in Table 4.2. As a result, harmonious passion is positively associated with bricolage (Model 2, Table 4.2;  $B = 0.17, p < .05$ ), supporting Hypothesis 1. Bricolage is also positive and significant in predicting firm performance (Model 4, Table 4.2;  $B = 0.24, p < .01$ ), supporting Hypothesis 2.

In Hypothesis 3, I used bootstrapping methods to test the mediation model. Specifically, I examined 95% bias-corrected confidence intervals of indirect effect with 5,000 bootstrap samples (Preacher & Hayes, 2008). Table 4.3 indicates the results of the mediation analysis. As a result, the indirect effect of harmonious passion on firm performance via bricolage was positive and significant (indirect effect = 0.05,  $SE = 0.03$ , 95% CI = 0.01 to 0.11; direct effect = 0.13,  $SE = 0.07$ , 95% CI = -0.01 to 0.26; total effect = 0.14,  $SE = 0.07$ , 95% CI = -0.00 to 0.28), suggesting that bricolage fully mediates the relationship between harmonious passion and firm performance. This supports Hypothesis 3.

Hypothesis 4 predicted a positive moderation influence of entrepreneurial autonomy on the relationship between bricolage and firm performance. As a result of a moderated OLS regression, the interaction term between bricolage and entrepreneurial autonomy was positively associated with firm performance (Model 5, Table 4.2;  $B = 0.12, p < .05$ ), supporting Hypothesis 4. To further analyze the pattern of the moderation effect, I plotted simple slopes at one standard deviation above and below the mean of entrepreneurial autonomy (Figure 4.2). The simple slope test revealed that the relationship between bricolage and firm performance was positive and

significant when the value of entrepreneurial autonomy was high ( $B = 0.38, p < .001$ ), whereas the relationship was insignificant when the value of entrepreneurial autonomy was low ( $B = 0.14, p = ns$ ).

Lastly, I analyzed the moderated mediation model by utilizing a conditional indirect effect testing based on 5,000 bias-corrected bootstrap samples (Hayes, 2013). Specifically, I examined the conditional indirect effect of harmonious passion on firm performance through bricolage at three different levels of entrepreneurial autonomy (one standard deviation above the mean, the mean, and one standard deviation below the mean). The results indicated that the effect of harmonious passion on firm performance was mediated by bricolage when firms had the mean (conditional indirect effect = 0.04,  $SE = 0.03$ , 95% CI = 0.01 to 0.11) and one standard deviation above the mean of entrepreneurial autonomy (conditional indirect effect = 0.06,  $SE = 0.04$ , 95% CI = 0.01 to 0.16), but was not mediated when firms had one standard deviation below the mean of entrepreneurial autonomy (conditional indirect effect = 0.02,  $SE = 0.02$ , 95% CI = -0.00 to 0.11). The overall index of moderated mediation showed significant results (index = 0.02,  $SE = 0.02$ , 95% CI = 0.001 to 0.069). Thus, Hypothesis 5 is supported. The indirect effect of harmonious passion on firm performance through bricolage was observed when values of entrepreneurial autonomy are moderate to high, but not when the values are low. Table 4.4 reports the results of the moderated mediation analysis based on bootstrapping.

**Table 4.1. Summary Statistics and Correlations Matrix**

Variables	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Environmental Hostility	4.59	0.84													
2. Environmental Dynamism	4.38	0.80	.04												
3. Manufacturing Industry	0.29	0.45	-.12	.07											
4. Service Industry	0.26	0.44	.12	-.07	-.38**										
5. Firm Age	18.64	11.68	-.04	.08	.23**	-.28**									
6. Firm Size	43.58	71.84	.10	.01	.09	-.17**	.28**								
7. Slack Resources	3.64	1.05	-.03	.14*	-.03	-.11	.01	-.07							
8. Age	51.85	10.25	-.01	-.01	.10	-.23**	.38**	.07	.07						
9. Tenure	14.29	9.01	-.13*	.00	.12	-.25**	.62**	.11	.09	.71**					
10. Obsessive Passion	3.74	1.10	.20**	.08	.09	-.15*	.06	-.04	-.10	.15*	.11				
11. Harmonious Passion	5.63	0.70	-.18**	.09	-.06	.09	.00	-.09	.25**	.11	.18**	.03			
12. Bricolage	5.15	1.05	-.04	-.03	-.04	-.03	-.12	-.02	-.03	-.12	-.04	.02	.14*		
13. Entrepreneurial Autonomy	4.93	1.03	-.03	-.09	-.05	.14*	-.19**	-.04	-.00	.02	-.03	-.04	.16*	.49**	
14. Firm Performance	4.28	1.09	-.10	.17**	.08	-.09	.24**	.18**	.17**	.17*	.19**	.06	.21**	.24**	.19**

Note.  $N = 237$ ; \*  $p < .05$ ; \*\*  $p < .01$ .



**Table 4.2. Regression Results**

	<b>Bricolage</b>	<b>Bricolage</b>	<b>Firm Performance</b>	<b>Firm Performance</b>	<b>Firm Performance</b>
	Model 1	Model 2	Model 3	Model 4	Model 5
<b>Control Variables</b>					
Environmental Hostility	-0.03(0.07)	0.00(0.07)	-0.15(0.07)*	-0.12(0.07)	-0.11(0.07)
Environmental Dynamism	-0.02(0.07)	-0.03(0.07)	0.15(0.07)*	0.15(0.07)*	0.17(0.07)*
Manufacturing Industry	-0.05(0.08)	-0.04(0.08)	0.02(0.07)	0.02(0.07)	0.02(0.07)
Service Industry	-0.09(0.08)	-0.12(0.08)	0.07(0.08)	0.05(0.08)	0.05(0.07)
Firm Age	-0.18(0.09)	-0.17(0.09)	0.18(.09)	0.26(0.09)**	0.25(0.09)**
Firm Size	0.01(0.07)	0.02(0.07)	0.18(0.07)*	0.18(0.07)*	0.17(0.07)*
Slack Resources	-0.04(0.07)	-0.08(0.07)	0.19(0.07)**	0.17(0.07)*	0.17(0.07)*
Age	-0.23(0.10)*	-0.22(0.10)*	0.11(0.10)	0.16(0.09)	0.16(0.09)
Tenure	0.21(0.12)	0.17(0.12)	-0.03(0.12)	-0.12(0.11)	-0.11(0.11)
Obsessive Passion	0.04(0.07)	0.02(0.07)	0.09(0.07)	0.08(0.07)	0.07(0.07)
<b>Independent Variable</b>					
Harmonious Passion		0.17(0.07)*		0.12(0.07)	0.13(0.07)
<b>Mediating Variable</b>					
Bricolage				0.24(0.08)**	0.26(0.08)***
<b>Moderating Variables</b>					
Entrepreneurial Autonomy				0.13(0.08)	0.14(0.08)
Bricolage × Entrepreneurial Autonomy					0.12(0.06)*
<b>Constant</b>	5.15(0.68)***	5.15(0.68)***	4.28(0.07)***	4.28(0.06)***	4.22(0.07)***
<b>R<sup>2</sup></b>	.05	.07	.15	.25	.26
<b>Δ R<sup>2</sup></b>		.02		.10	.01

Note.  $N = 237$ ; \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ .

Unstandardized coefficients reported; Standard errors in parentheses.

**Table 4.3. Mediation Results: Indirect Effect of Harmonious Passion on Firm Performance (via Bricolage)**

	<i>B</i>	<i>SE</i>	LLCI	ULCI
<b>Indirect Effect</b>	0.05	0.03	0.01	0.11
<b>Direct Effect (Unmediated)</b>	0.13	0.07	-0.01	0.26
<b>Total Effect</b>	0.14	0.07	-0.00	0.28

Note.  $N = 237$ ; Unstandardized coefficients reported; Bootstrap sample size = 5,000.

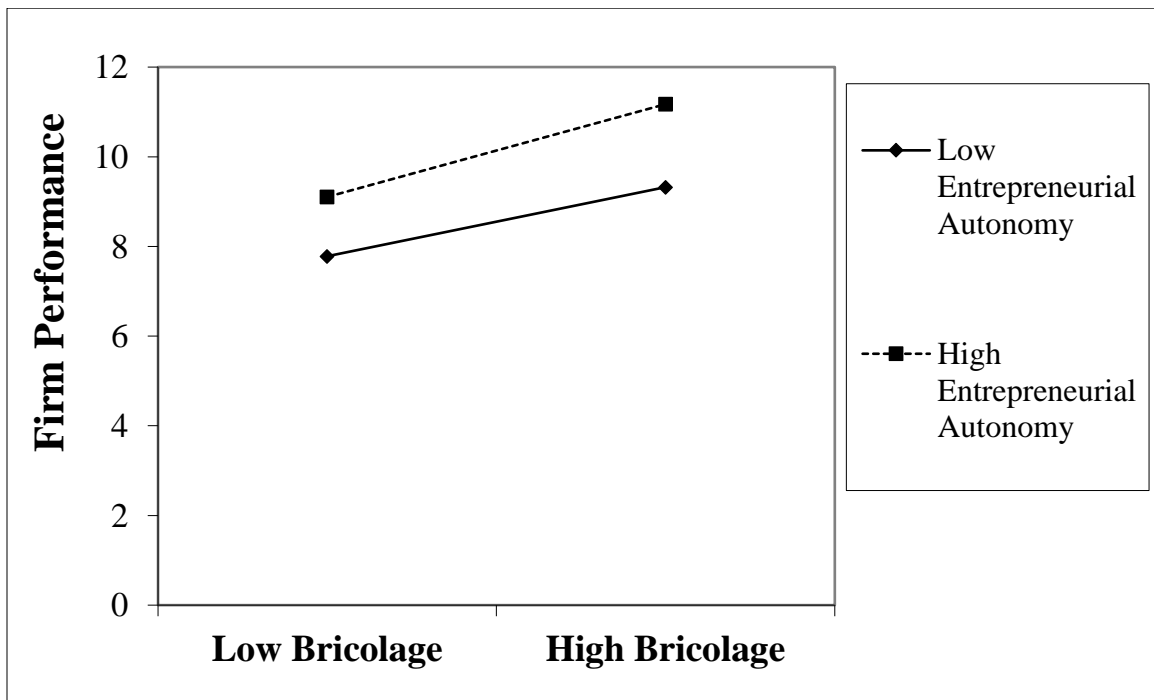
SE = standard error; LLCI = lower limit confidence interval; ULCI = upper limit confidence interval.

**Table 4.4. Moderated Mediation Results: Conditional Indirect Effect of Harmonious Passion on Firm Performance (via Bricolage) at Different Values of Entrepreneurial Autonomy**

Values of Entrepreneurial Autonomy	Indirect Effect	<i>SE</i>	LLCI	ULCI
-1 <i>SD</i> (-1.00)	0.02	0.02	-0.00	0.11
M (.00)	0.04	0.03	0.01	0.11
+1 <i>SD</i> (1.00)	0.06	0.04	0.01	0.16

Note.  $N = 237$ ; Unstandardized coefficients reported; Bootstrap sample size = 5,000.

SE = standard error; LLCI = lower limit confidence interval; ULCI = upper limit confidence interval.

**Figure 4.2. Interaction Effect of Bricolage and Entrepreneurial Autonomy on Firm Performance**

## **Discussion**

The main purpose of this paper was to understand how and when harmoniously passionate CEOs of SMEs could achieve high firm performance. Although harmonious entrepreneurial passion holds a positive connotation in general (Pollack, Ho, O’Boyle, & Kirkman, 2020), previous studies provided inconsistent results on the relationship between harmonious passion and firm performance (Ho & Pollack, 2014; Patel et al., 2015; Sirén et al., 2016). Such mixed findings prevented entrepreneurship scholars to fully understand whether harmonious passion is advantageous or disadvantageous for entrepreneurs, leading to questions on the mechanisms and boundary conditions for this relationship. To elucidate the effects of harmonious passion on firm performance, I utilized a more nuanced and in-depth theoretical perspective of bricolage as the specific link on this effect and suggested entrepreneurial autonomy as a boundary condition that ignite passionate CEOs of SMEs to strategically manage the resources for higher performance.

With scarce resources, SMEs need to manage their possessed resources strategically to survive and thrive (Sirmon et al., 2011). Idiosyncratic utilization of resources could produce different results (Penrose, 1959; Wernerfelt, 1984). Accordingly, the creative combination of resources is a key success factor for SMEs to prosper in resource-constrained circumstances (Baker & Nelson, 2005). Especially in SMEs, CEOs have strong managerial discretion on the overall firm (Finkelstein et al., 2009) and CEOs’ passion has a contagion effect on employees (Cardon, 2008; Hubner et al., 2020). Therefore, harmoniously passionate CEOs of SMEs have a considerable impact on effective resource management of their firms, which would eventually increase firm performance.

Based on the theory of dualistic model of passion (Vallerand et al., 2003), I theorized that CEOs with high harmonious passion deliberately practice and work hard to ‘make do’, seek for

feedback with flexible attitude to ‘creatively recombine resources’, and understand their own capacity to use ‘at hand’ resources effectively. Moreover, based on the theory of entrepreneurial bricolage and resource management literature, I argued that firms with bricolage capability would recombine resources creatively, make actions without biases on resource constraints, and maximize their potentials by applying all feasible means. Accordingly, I contended and empirically found that harmoniously passionate CEOs indirectly increase firm performance through bricolage capability. Moreover, entrepreneurial autonomy positively strengthened this mediation relationship by assisting independent decisions on bricolage and by promoting creative ideas.

In a sample of 237 CEOs of Korean SMEs, and with a six-month lagged performance data collected from top executives, I found that the direct influences of harmonious passion on bricolage, and bricolage on firm performance were both positive and significant. Moreover, harmonious passion has an indirect effect on firm performance via bricolage. As a boundary condition, entrepreneurial autonomy positively moderated the impact of bricolage on firm performance. The moderated mediation effect of entrepreneurial autonomy on the harmonious passion-bricolage-firm performance relationship was also significant.

This paper contributes to diverse areas of the entrepreneurship literature. First, this paper advances the entrepreneurial passion literature by examining a specific mechanism and boundary condition underlying the relationship between harmonious passion and firm performance. As the main motivation of the paper, I attempted to disentangle mixed findings in the literature. As articulated, scholars found both positive (Ho & Pollack, 2014; Patel et al., 2015) and insignificant relationships (Sirén et al., 2016) between harmonious passion and firm performance. This result is in agreement with Sirén et al. (2016) analysis of their insignificant

results, which led them to suggest that, “passion should be considered an indirect predictor of firm performance instead of a direct one” (p. 665). Moreover, scholars called for further studies on performance outcomes of harmonious passion by applying moderators and mediators (Pollack et al., 2020). In conjunction with these suggestions, empirical studies that examined the direct impact of a CEO’s passion on diverse forms of performance continuously found insignificant results (Baum & Locke, 2014; Ho & Pollack, 2014; Sirén et al., 2016), which indicates the importance of mediators and moderators. Indeed, previous studies have searched for mechanisms and boundary conditions to this relationship. Ho and Pollack (2014) argued that harmoniously passionate entrepreneurs could attain high total business income through out-degree centrality. Specifically, these entrepreneurs tend to strive for help from their networks to discuss work-related advice, which promotes referral income from peers (Ho & Pollack, 2014). Patel et al. (2015) used environmental complexity as a boundary condition for the harmonious passion and job creation relationship and emphasized harmoniously passionate leaders’ ability to combine multiple ideas and adopt to new environments. Building on this stream of research, I extended the conversation to the firm-level capability and argued that aspects of harmonious passion such as deliberate practice, feedback seeking behavior, and awareness of organizational capacity would develop a firm’s bricolage capability, which in turn positively impact firm performance. In this regard, I clarified the contradictory findings by theorizing how (i.e., bricolage) and when (i.e., entrepreneurial autonomy) harmoniously passionate CEOs could increase (or decrease) firm performance in the context of SMEs. This suggests that contingencies and mechanisms are important factors to consider when studying entrepreneurial passion and firm performance relationships.

Second, this paper extends the bricolage literature by studying performance as the outcome of bricolage. Despite the increasing attention to bricolage in entrepreneurship research, most studies have focused on the conceptualization of bricolage through qualitative approaches (Di Domenico, Haugh, & Tracey, 2010; Fisher, 2012; Stinchfield et al., 2013; Visscher, Heusinkveld, & O'Mahoney, 2018); accordingly, scholars called for more quantitative studies (Senyard et al., 2014; Welter et al., 2016). Moreover, scholars called for exploring an understudied area in the bricolage literature, which is performance (Desa & Basu, 2013).

Previous empirical studies on bricolage examined diverse outcomes like innovativeness (Senyard et al., 2014), survival (Stenholm & Renko, 2016), new product development speed (Wu, Liu, & Zhang, 2017), opportunity identification, and corporate entrepreneurship (An, Zhao, Cao, Zhang, & Liu, 2018). However, in my knowledge, performance has not been researched in the bricolage literature. In the area of the resource-based view, scholars continuously studied the importance of resource management (Sirmon et al., 2007; Sirmon et al., 2011); however, few studies have empirically measured specific resource management-related capabilities (e.g., Wales, Patel, Parida, & Kreiser, 2013) such as bricolage. Accordingly, this study is one of the first to theorize and empirically measure performance outcomes of a firm-level resource management capability (i.e., bricolage).

Lastly, this paper contributes to the entrepreneurship literature by applying entrepreneurial autonomy as the boundary condition of the bricolage-performance relationship. Different to individual-level concepts of autonomy in the workplace such as job autonomy, a firm-level construct like entrepreneurial autonomy has been neglected in the entrepreneurship literature (Lumpkin et al., 2009; Short et al., 2009; Van Gelderen, 2016; Van Gelderen et al., 2020; Yu et al., 2019) due to the fact that it was excluded from the original entrepreneurial

orientation survey items (Covin & Slevin, 1989) and that it was also not theorized in the seminal paper on entrepreneurial orientation (Miller, 1983). Entrepreneurial autonomy is one of the fundamental element of entrepreneurial orientation (Lumpkin & Dess, 1996); accordingly, scholars have continuously called for applying this firm-level autonomy concept to explain the entrepreneurship phenomenon (Lumpkin et al., 2009; Van Gelderen et al., 2020). In this paper, I answered this call by utilizing entrepreneurial autonomy as the contingent factor in the harmonious passion-bricolage-firm performance relationship. Specifically, I argued that entrepreneurial autonomy positively intensifies the indirect influence of harmonious passion on firm performance through bricolage by increasing the efficiency of decision making on resource applications and facilitating creative resource combinations with flattened processes and flexible structures. The moderated mediation role of entrepreneurial autonomy was critical in my model; harmoniously passion CEOs would increase firm performance through bricolage capability when their firms attain high levels of entrepreneurial autonomy in the context of SMEs.

The current paper offers several practical implications. First, CEOs should be mindful of the influence of their passion on important organizational outcomes. As I have shown, CEO's passion has an identifiable influence on firm-level resource-management skills, which was found to enhance firm performance. Second, my findings are essential to CEOs in specifying the dimensions of passion that should be stimulated to meet specific performance goals. Specifically, harmonious passion could direct CEOs to achieve their performance objectives through effective resource management. Third, I provide nuanced theoretical arguments regarding the manner in which bricolage and entrepreneurial autonomy jointly influence firm performance. SMEs need to build and maintain systems that simultaneously allow them to pursue creative combinations of all the available resources and to make autonomous decisions on diverse resource applications.

Taken together, the most important conclusion that practitioners should draw from my research is the potentially synergistic influence of bricolage and entrepreneurial autonomy in enhancing a firm's performance. Therefore, establishing policies, support systems, and reward structures that promote both effective resource management and organizational autonomous values will likely maximize the benefits derived from a CEO's passion.

Limitations of the current paper provide important future research opportunities. First, a self-reported survey was used to measure study variables which creates common methods bias concerns (Podsakoff et al., 2003). Although I collected data from multiple sources to ease this bias, future investigation could apply accounting datasets to examine firm performance, which would increase the credibility of the measurement and verify the findings of this paper. Second, the current empirical design has limitations to provide strong causal inferences. Although performance data was accessed six months after passion and bricolage were captured, this does not exclude third-variable confounds and also does not provide a clear understanding of the causal relationships. Scholars could apply longitudinal and experimental studies to further extend our knowledge on the directions of the current model.

Scholars could benefit from examining the influence of other types of passion on bricolage. Based on my empirical results, obsessive passion was not associated with bricolage. This strengthens my theoretical arguments that characteristics of harmonious passion have a strong influence on the formation of bricolage capability. In addition to my findings, studying other types like passion for work (Baum, Locke, & Smith, 2001) would help us understand an antecedent role of passion for the development of bricolage (Stenholm & Renko, 2016). Moreover, the influence of bricolage on various performance indicators could advance the bricolage literature. Even acknowledging the fact that the importance of resource management



been theoretically explained consistently (Baker & Nelson, 2005; Barney, 1991; Sirmon et al., 2007; Sirmon et al., 2011), empirical examination on this stream needs attention. Only recently, scholars tested performance-related outcomes like innovativeness (Senyard et al., 2014) and firm survival (Stenholm & Renko, 2016). As such, whether bricolage capability could increase (or decrease) various indicators of performance outcomes is a critical remaining research question to answer.

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## **CHAPTER 5. THE IMPACT OF DEVELOPING AND INVENTING PASSION ON ORGANIZATIONAL INNOVATION**

A paper to be submitted to a journal

### **Abstract**

Building on identity theory, I investigate the impact of developing and inventing passion on organizational innovation and performance. Passionate entrepreneurs are motivated to behave according to their identities. Specifically, considering passion as a domain-specific concept, entrepreneurs who are passionate about developing (or inventing) would behave according to their identities. Accordingly, I argue that entrepreneurial passion for developing leads to exploitative innovation and eventually enhances firm performance. Moreover, entrepreneurial passion for inventing promotes exploratory innovation and increases firm performance. To test the proposed hypotheses, I apply a two-round survey data collected from 150 entrepreneurs of Korean venture firms.

### **Introduction**

Innovation is a key factor in the success of ventures, that is manifested in diverse forms such as exploration and exploitation. Innovation has been identified as playing an important role in the sustainability, performance, and survival of firms (Benner & Tushman, 2003; Lavie, Stettner, & Tushman, 2010; March, 1991). As entrepreneurs are often the agents who bring about innovation in firms, studies examining entrepreneurs and innovation have received continuous attention in the entrepreneurship literature (Hagedoorn, 1996; Maidique, 1980; Schumpeter, 1942). Schumpeter (1942) notes that entrepreneurs “reform or revolutionize the pattern of production by exploiting an invention or, more generally, an untried technological possibility for

producing a new commodity or producing an old one in a new way” (p. 132). Maidique (1980) also highlights the critical roles of entrepreneurs on technological innovation; as such, entrepreneurs turn ideas into products and services and commercialize innovation in new markets. Because firms’ leaders exert a strong impact on firm-level outcomes (e.g., Hambrick & Mason, 1984; Nadkarni & Herrmann, 2010), prior research found that firms mainly depend on their entrepreneur’s positive affect and creativity (Ahlin, Drnovšek, & Hisrich, 2014; Baron & Tang, 2011), prior knowledge (Tang & Murphy, 2012), inspirational leadership, negotiation style (Dunne, Aaron, McDowell, Urban, & Geho, 2016), risk tolerance, entrepreneurial alertness, and education-level (Fuentelsaz, Maicas, & Montero, 2018) to innovate.

Despite this large body of work, studies have not been extended further beyond general innovation; exploitative and exploratory innovation of entrepreneurs have barely been investigated. This overlook is critical because these two dimensions are very different and have significant organizational effects (Jansen, van den Bosch, & Volberda, 2006). Exploitative innovation refers to incremental activities that are related to the improvement of existing products and services and the refinement of current procedures, whereas exploratory innovation refers to radical activities that are associated with the establishment of new products and services and experimentation of new procedures (Benner & Tushman, 2003; March, 1991). Exploitative and exploratory innovation are firm-level activities that are necessary for organizational adaptation (March, 1991), organizational changes (Kelly & Amburgey, 1991), and organizational learning (Cyert & March, 1963; Miner & Mezias, 1996). Acknowledging the importance of these two types of innovation, it is surprising that the link between specific factors of entrepreneurs that influence the manifestation of exploration and exploitation has been missing from the current literature (e.g., Baron & Tang, 2011; Block, Fisch, & van Praag, 2017).

In addition to the lack of studies on microfoundational reasoning behind exploitation and exploration, especially from the perspectives of entrepreneurs (Martin, Keller, & Fortwengel, 2019), there is also a limited understanding on the idiosyncratic formation of each type of innovation. On the one hand, antecedent studies have been of great interest to researchers; scholars have examined environmental, organizational, and top management team-level antecedents of exploitation and exploration (Lavie et al., 2010) such as environmental dynamism, competitiveness (Chang, Hughes, & Hotho, 2011; Jansen, van den Bosch, & Volberda, 2005), organizational slack (Voss, Sirdeshmukh, & Voss, 2008), firm-level innovativeness, proactiveness (Kollmann & Stöckmann, 2014), top management teams' heterogeneity (Koryak, Lockett, Hayton, Nicolaou, & Mole, 2018), and CEOs' regulatory focus (Kammerlander, Burger, Fust, & Fueglistaller, 2015). On the other hand, despite the advancement of the literature on the antecedents of organizational innovation, most studies have focused on an antecedent that could explain the formation of both innovations simultaneously. Hence, acknowledging the different characteristics of these two innovation types, scholars have continuously called for research on the distinct antecedents of exploitation and exploration (Beckman, 2006; Koryak et al., 2018; Lavie et al., 2010). To address the calls for studying the role of entrepreneurs and distinctive antecedents of organizational innovation, I incorporate the concept of entrepreneurial passion and examine more nuanced individual-level aspects of entrepreneurs that may uncover how unique types of passion idiosyncratically develop exploitative and exploratory innovation.

Passion is a strong force toward a specific identity (Vallerand, Blanchard, Mageau, Koestner, Ratelle, Léonard, Gagné & Marsolais, 2003). Early entrepreneurship research explained passion as “an important factor of success” (Schumpeter, 1951, p. 177) and “perhaps

the most observed phenomenon of the entrepreneurial process” (Smilor, 1997, p. 342). Cardon, Wincent, Singh, and Drnovsek (2009) established a framework of entrepreneurial passion, which has attracted academic attention for the past decade. They defined entrepreneurial passion as “consciously accessible, intense positive feelings experienced by engagement in entrepreneurial activities associated with roles that are meaningful and salient to the self-identity of the entrepreneur” (Cardon et al., 2009, p. 517). By this definition, entrepreneurial passion has two important dimensions: intensive positive feelings and identity centrality toward specific roles of entrepreneurship. Conforming to the roles of entrepreneurs (Gartner, Starr, & Bhat, 1999), Cardon et al. (2009) specified three distinct types of entrepreneurial passion which are developing, inventing, and founding passion. Applying two dimensions (i.e., positive feelings and identity centrality) to the roles of entrepreneurs, the nature of entrepreneurial passion is categorized as: positive affect and identity centrality toward expanding and growing a current firm (i.e., developing passion), toward creating new products or services (i.e., inventing passion), or toward establishing a new firm (i.e., founding passion) (Cardon et al., 2009). Scholars have adopted Cardon et al.’s (2009) framework and empirically examined diverse outcomes of entrepreneurial passion like persistence (Cardon & Kirk, 2015), spin-off and start-up intentions (Huyghe, Knockaert, & Obschonka, 2016), innovative behavior (Kang, Matusik, Kim, & Phillips, 2016), goal commitment (Drnovsek, Cardon, & Patel, 2016), self-regulatory mode (Mueller, Wolfe, & Syed, 2017), and radical innovation (Strese, Keller, Flatten, & Brettel, 2018).

Entrepreneurship scholars have continuously argued that different types of passion are linked to distinctive outcomes (Cardon et al., 2009; Drnovsek et al., 2016; Strese et al., 2018; Vallerand et al., 2003). In other words, scholars elucidated that “looking at specific types of entrepreneurial passion is important because different roles and activities entrepreneurs engage

in may elicit different types of passion that are uniquely associated with outcomes of interest” (Drnovsek et al., 2016, p. 206). Yet, little is known about the corresponding consequences of each form of entrepreneurial passion. Accordingly, scholars have called for more nuanced studies on entrepreneurial passion that examine unique constructs that are distinctively linked to each type of passion (Drnovsek et al., 2016; Strese et al., 2018). This paper answers the call by applying different types of entrepreneurial passion that promote the formation of exploitative and exploratory innovation.

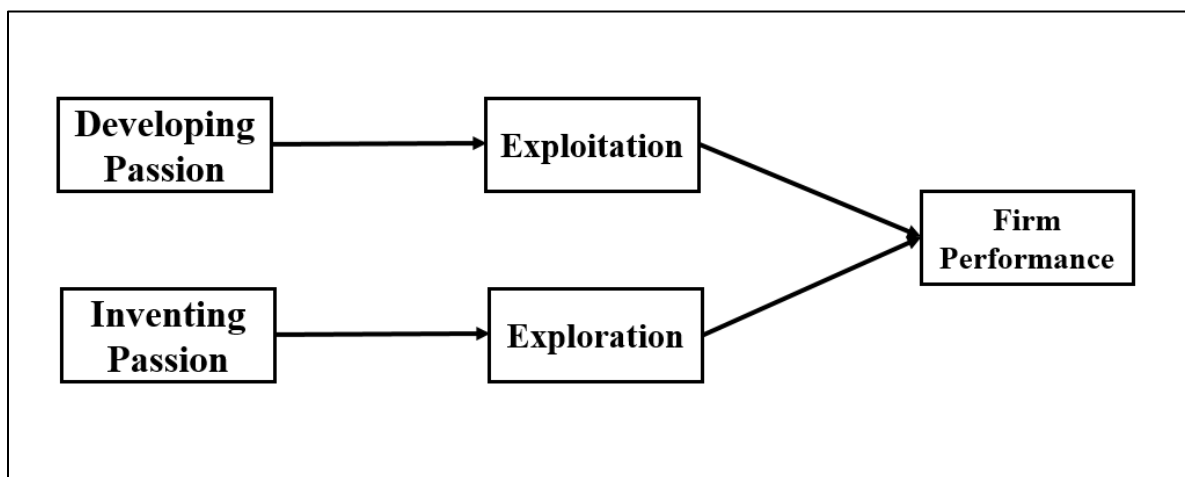
The purpose of this study is to examine the influence of entrepreneurs’ developing and inventing passion<sup>2</sup> on firm performance through distinctive organizational innovation. I attempt to answer two research questions in this paper. First, how do different types of entrepreneurial passion increase firm performance? Second, how do different types of organizational innovation mediate the relationship between entrepreneurial passion and firm performance? Based on identity theory (Burke, 1991; Burke & Reitzes, 1981; Stryker & Burke, 2000), I explain that entrepreneurial passion directs the behaviors of entrepreneurs. A particular identity that occupies

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<sup>2</sup> Entrepreneurs hold different levels of entrepreneurial passion and the degree and impact of passion differs according to the stages of the firm (Cardon, Grégoire, Stevens, & Patel, 2013). In this paper, I focus on entrepreneurs who have already established the firm. Scholars have applied single or multiple types of passion depending on the stages of the firm (e.g., Gielnik, Spitzmuller, Schmitt, Klemann, & Frese, 2015; Huyghe et al., 2016; Mueller et al., 2017). I consider the importance of post-founding activities and focus on developing and inventing passion and exclude founding passion, which is more related to entrepreneurs in the early stages of launching a firm.

the majority of the space within entrepreneurs may predict their future behaviors because they are motivated to align their behavior consistent with that specific identity (Burke, 1991; Burke & Reitzes, 1981). Specifically, entrepreneurs with high developing passion have identity centrality and positive emotions toward the expansion of their firms and improvement of current products or services and entrepreneurs with high inventing passion have salient identity and positive affect toward exploration of new opportunities and creation of new markets by experimenting with new products or services (Cardon et al., 2009). Moreover, exploitative innovation increases firm performance by focusing on the development of current competencies and investing resources on the improvement of current production and quality of products or services (Benner & Tushman, 2003; March, 1991) and exploratory innovation increases firm performance by establishing new innovative technologies, pioneering new markets, and capturing the needs of new customers (Kollmann & Stöckmann, 2014; Raisch & Birkinshaw, 2008). As such, I propose that developing passion would positively influence firm performance through exploitative innovation and inventing passion would positively increase firm performance through exploratory innovation.

Figure 5.1 depicts the overall theoretical model.



**Figure 5.1. The Theoretical Model**

In this study, I attempt to make several contributions. First, I advance the entrepreneurial passion literature (Cardon et al., 2009; Vallerand et al., 2003) by examining unique mechanisms of each type of passion toward firm performance. I extend our understanding of how developing and inventing passion increase firm performance through exploitative and exploratory innovation, respectively. Scholars have called for in-depth research on distinctive outcomes of each type of entrepreneurial passion (Cardon et al., 2009; Drnovsek et al., 2016; Strese et al., 2018; Vallerand et al., 2003). In this paper, I respond to this call by examining the idiosyncratic mediators that link specific types of entrepreneurial passion and firm performance. Second, I contribute to identity theory (Burke, 1991; Burke & Reitzes, 1981; Stryker & Burke, 2000) by making arguments on specific role identities of entrepreneurs and how they are linked to particular behaviors. Specifically, I integrate the identity-behavior fit literature (Stets & Burke, 2000) into entrepreneurship research (e.g., Huyghe et al., 2016; Murnieks & Mosakowski, 2007) by theoretically explaining and empirically testing the developing passion-exploitative innovation and the inventing passion-exploratory innovation relationships. Third, I contribute to organizational innovation literature by examining corresponding antecedents of exploitative and exploratory innovation and by applying individual-level factors of entrepreneurs that promote organizational innovation. Most studies concentrated on the examination of a single antecedent to explain the development of both exploitative and exploratory innovation and the influence of entrepreneurs' individual-level factors has been missing from the literature. I address these research gaps by applying two different types of entrepreneurs' passion as unique antecedents of exploitative and exploratory innovation.

## **Literature Review and Hypotheses Development**

### **Entrepreneurial Passion**

Passion has been treated as a sense of love toward certain domains such as romantic relationships (Reis & Aron, 2008; Sternberg, 1986) and work (Baum & Locke, 2004; Baum, Locke, & Smith, 2001). Moving beyond general passion, Cardon et al. (2009) suggested the framework of entrepreneurial passion that concentrates on intensive positive feelings and identity centrality toward specific roles of entrepreneurship: developing, inventing, and founding. Next, I review the literature on entrepreneurial passion, summarize the empirical findings according to the types of passion, and discuss the gap in the literature.

In one of the first empirical studies on entrepreneurial passion, Cardon, Grégoire, Stevens, and Patel (2013) found that entrepreneurial passion for developing is associated with absorption. Cardon and Kirk (2015) theorized and discovered that entrepreneurial self-efficacy positively influences persistence and entrepreneurial passion for inventing mediates this relationship. Huyghe et al. (2016) found that inventing passion is positively associated with the spin-off and start-up intentions, and Kang et al. (2016) found that a firm's innovative climate indirectly manifests employees' innovative behavior through inventing passion. Recently, Strese et al. (2018) found that CEOs' inventing passion positively impacts radical innovation in small and medium-sized enterprises, and that shared vision moderates this relationship.

A few studies have examined the impact of entrepreneurial passion on firm performance (Drnovsek et al., 2016; Mueller et al., 2017; Santos & Cardon, 2019). Both Drnovsek et al. (2016) and Mueller et al. (2017) employed developing passion for studying this relationship. Specifically, Drnovsek et al. (2016) explored the positive and direct impact of founder CEOs' developing passion on venture growth (e.g., objective sales and employee). They also found a mediating impact of goal commitment between the developing passion-venture growth



relationship. Mueller et al. (2017) found that entrepreneurs' developing passion indirectly influences firm performance (e.g., subjective sales, profitability, and return on assets) through multiple mediators like self-regulatory mode (i.e., locomotion and assessment) and grit. Recently, Santos and Cardon (2019) provided empirical evidence that team entrepreneurial passion (TEP) for inventing and developing lead to new venture team performance (e.g., subjective quantity and quality of work). They also utilized objective performance data (e.g., years of operation) and found that only TEP for developing is related to firm survival, but TEP for inventing is not associated with firm survival (Santos & Cardon, 2019).

The research stream on the entrepreneurial passion-firm performance relationship needs both theoretical and empirical advancement for several reasons. Even acknowledging the fact that research on entrepreneurial passion is still in an early stage, scholars have given limited attention to firm performance. First, we need to advance our understanding of how each type of entrepreneurial passion could increase (or decrease) firm performance. Specifically, we are only confident that developing passion has a high probability of enhancing firm performance (Drnovsek et al., 2016; Mueller et al., 2017; Santos & Cardon, 2019). This skewed distribution of the focus of the studies prevents us from understanding whether other types of passion are also related to firm performance. Second, distinctive mechanisms on the relationship between different types of entrepreneurial passion and firm performance need further examination. Extending the logic that different types of passion yield discrete outcomes (Cardon et al., 2009; Vallerand et al., 2003), scholars need to study the specific mechanisms of improving firm performance based on the various types of passion. Strese et al. (2018) argued that there is a "lack of a deeper understanding of different types of CEOs' passion and their respective consequences" (p. 435). Accordingly, I assert that different mediating variables link each type of

entrepreneurial passion with firm performance. In this paper, I focus on organizational innovation dimensions as distinctive mediators between entrepreneurial passion and firm performance. Theoretical arguments and empirical findings of unique mechanisms according to each type of passion would extend our understanding of how different types of entrepreneurial passion lead to firm performance distinctively.

### **Organizational Innovation: Exploitation and Exploration**

In the seminal paper on organizational innovation, March (1991) defined exploitation as “refinement, choice, production, efficiency, selection, implementation, (and) execution” and exploration as “search, variation, risk-taking, (and) experimentation” (March, 1991, p. 71). Levinthal and March (1993) specified that exploitation is “the use and development of things already known,” and exploration is “a pursuit of new knowledge” (p. 105). Scholars extended this concept from the knowledge domain into the innovation literature and treated both as firm-level innovation where exploitative innovation is a firm-level behavioral tendency toward refining and developing current capabilities, products, technologies, and resources, and exploratory innovation is a behavior of experimenting with completely new technologies, skills, and resources (e.g., Benner & Tushman, 2003; Jansen et al., 2006; Zhou & Wu, 2010). In other words, the core of exploitation is an incremental modification of current products or services, and the essence of exploration is associated with the development of radical innovation (Voss et al., 2008).

The literature on exploitation and exploration has attempted to answer fundamental questions on the nature of both innovations. One domain of discussion is the form of two innovations. For instance, some scholars assert that exploitation and exploration should be considered as one construct in a continuum form while others affirm the orthogonal existence of

two constructs (for review, see Gupta, Smith, & Shalley, 2006; Lavie et al., 2010; Raisch, Birkinshaw, Probst, & Tushman, 2009). In the organizational-level research, scholars have explained that different domains of a firm could enact both innovations separately and defined two independent dimensions (e.g., Baum, Li, & Usher, 2000; Beckman, Haunschild, & Phillips, 2004; Katila & Ahuja, 2002; Koza & Lewin, 1998; Nerkar, 2003; Rothaermel, 2001). Assuming that exploitation and exploration are distinct activities, scholars found different antecedents that develop those two types of innovation (e.g., Beckman, 2006; Koryak et al., 2018). Following this stream, I argue that exploitation and exploration are conceptually two different forms of innovation and that it is a discrete decision on what innovation a firm wants to build on (i.e., exploitation and/ or exploration), not a competition between two (i.e., exploitation versus exploration). Therefore, I apply an orthogonal view on exploitation and exploration and propose separate hypotheses with different antecedents for each one of those innovations.

### **Identity Theory**

Identity theory (Stets & Burke, 2000; Stryker, 1968; Stryker & Burke, 2000) suggests that individuals behave in concordance with their identities. Identity refers to the internalization of behavioral expectations of specific roles into one's self-concept (Burke & Reitzes, 1981; Cast, 2004). These roles represent certain positions in society and indicate a set of behavior, for instance, as a mother, a professor, or an entrepreneur, based on societal expectations (Stryker & Statham, 1985). In this respect, identities are "meanings a person attributes to the self" (Burke, 1980, p. 18) that are central and enduring to those individuals (McCall & Simmons, 1978).

The essence of identity theory is that the central identity of individuals signals future actions through a strong motivation for self-verification (Burke, 1991; Burke & Reitzes, 1981; McCall & Simmons, 1978). Specifically, by conducting an action that matches one's identity,

individuals meet the needs for self-verification (Swann, Pelham, & Krull, 1989). Individuals have a sense of desire to confirm their identity through specific behaviors to protect one's self-concept (Stets & Burke, 2000), to maintain self-consistency (Burke, 2004), to foster psychological and emotional stability (Swann et al., 1989), and to prevent cognitive dissonance (Festinger, 1957). When individuals feel their behavior or action does not comply with their identity, they modify their behavior to fulfill their standards of self-concept (Burke, 1991). The fact that individuals neglect the actions related to central identity is "denial of them, calling their validity into question" (Stryker, 2004, p. 14). In other words, individuals have a strong desire to accomplish an identity-behavior fit (Huyghe et al., 2016; Murnieks & Mosakowski, 2007).

Moreover, individuals have a "structure of differentiated identities organized in a hierarchy of salience" (Stryker, 1989, p. 54). In this study, I focus on the Cardon et al.'s (2009) conceptualization of entrepreneurial passion, which is a domain-specific framework, meaning that entrepreneurs would have a central identity in a specific type of passion (Cardon, Glauser, & Murnieks, 2017; Strese et al., 2018). Scholars have emphasized that entrepreneurial passion must have a specific domain where individuals focus on (Cardon et al., 2009; Chen, Yao, Kotha, 2009; Murnieks, Mosakowski, & Cardon, 2014). In other words, a specific domain (e.g., developing or inventing) of entrepreneurial passion is a place where individuals feel positive affect and at which they have a strong salient identity (Cardon et al., 2009; Mueller et al., 2017) and this domain indicates the direction of future behaviors or actions of entrepreneurs. Cardon et al. (2017) explained that "the object of one's passion can have important implications for the types of behaviors entrepreneurs engage in" (p. 25). Therefore, understanding a particular domain of entrepreneurial passion implies specific targets and inclinations toward engaging in one particular behavior or activity (Murnieks et al., 2014). In this paper, I specifically examine

entrepreneurs' developing and inventing passion and their respective mechanisms toward innovation and firm performance.

### **Entrepreneurial Passion and Organizational Innovation**

Based on the entrepreneurial passion literature and identity theory, I expect that entrepreneurial passion for developing and inventing would lead to exploitative and exploratory innovation, respectively. Entrepreneurial passion motivates entrepreneurs to make decisions consistent with their salient identity (Burke & Reitzes, 1981; Huyghe et al., 2016). Identity theory explains that highly passionate entrepreneurs will desire to verify their self-concept by engaging in activities that fit their salient identity (Huyghe et al., 2016; Murnieks & Mosakowski, 2007; Stets & Burke, 2000). In this respect, central identity directs and motivates the future behaviors or actions of entrepreneurs, who also make strategic decisions based on their central identity because of self-verification needs (Collewaert, Anseel, Crommelinck, De Beuckelaer & Vermeire, 2016; Strese et al., 2018). Therefore, I argue that highly passionate entrepreneurs may focus on a particular type of innovation in concordance with their identities.

The literature on entrepreneurial passion provides evidence that the positive affect component of passion may also influence the development of a particular firm-level innovation. Scholars have explained that positive feelings of passionate entrepreneurs act as strong motivators of specific actions (Cardon et al., 2009; De Clercq, Honig, & Martin, 2013; Mueller et al., 2017). Based on the literature on emotions (e.g., Forgas, 2000; Pham, 2004), these entrepreneurs truly enjoy and devote most of the energy into the activities they feel strongly intrinsic (Baron & Tang, 2011; Mueller et al., 2017). Moreover, positive emotions of entrepreneurial passion impact entrepreneurs to not only input cognitive effort into that activities, but also ultimately accomplish the specific goals of those activities (De Clercq et al., 2013; Foo,

Uy, & Baron, 2009). Therefore, I assert that entrepreneurs' passion influences specific innovative behaviors where they sense attractiveness through investing vitality and cognitive effort.

Following this logic, entrepreneurs with high developing passion would promote exploitative innovation. Entrepreneurs' developing passion directs their identity centrality and positive affect toward activities on the expansion of a current firm (Cardon et al., 2009). These expansion-related activities reflect exploitation, which is incremental innovation of current technologies, products, or services (Benner & Tushman, 2003; Jansen et al., 2006). The focus of developing passion is nurturing and growing the firm (Cardon et al., 2013); therefore, entrepreneurs with high developing passion develop strong behavioral propensity toward activities that enlarge the share within a current market where the firm is located. For instance, these entrepreneurs modify the existing resources and improve the efficiency of the firm to survive in the current market and eventually win from the competition. Besides, they enjoy refining and improving ideas or capabilities to develop the current status of the firm. Entrepreneurs with high developing passion fit their identity centrality and sense positive affect toward exploitative innovation. Therefore, I suggest that:

*Hypothesis 1: Entrepreneurial passion for developing is positively associated with exploitative innovation.*

Entrepreneurial passion for inventing would be associated with exploratory innovation because inventing passion reflects a salient identity and positive feelings toward exploring new opportunities and even creating a new market (Cardon et al., 2009). Entrepreneurs with high inventing passion experiment with new ideas, products, or services (Cardon et al., 2009). These

actions are an exploration of a completely new area that is related to radical innovation (Benner & Tushman, 2003; Jansen et al., 2006). Inventing passion includes a behavioral tendency toward exploitative activities like delivering new solutions to fulfill the diverse needs of customers, generating new ideas for product development, designing new prototypes, and exploring the application of these designs (Cardon et al., 2013). Entrepreneurs with high inventing passion implement corporate strategies focusing on exploration to align their self-concept with organizational decisions (Collewaert et al., 2016; Strese et al., 2018). They also allocate resources toward radical innovation and even change the firm structure to concentrate on exploring new technologies, products, or resources (Strese et al., 2018). In other words, the strategic focus of entrepreneurs with high inventing passion leads toward exploratory innovation. Therefore, I hypothesize that:

*Hypothesis 2: Entrepreneurial passion for inventing is positively associated with exploratory innovation.*

### **Organizational Innovation and Firm Performance**

Previous studies have examined the positive influence of both exploration and exploitation on firm performance (for a meta-analysis, see Junni, Sarala, Taras, & Tarba, 2013). Based on the innovation literature, I explain how both exploitation and exploration positively increase firm performance. Exploitative innovation is positively associated with firm performance by taking advantage of current competencies. Firms with high exploitative innovation focus on predictable performance (Levinthal & March, 1993) by improving the efficiency of current production and quality of existing products, services, or technologies (Benner & Tushman, 2003; March, 1991). I argue that incremental development of what firms are currently competent at highly assures performance improvement. Exploitation leads firms to

achieve better firm performance by maintaining consistency in their strategy (Lamberg, Tikkanen, Nokelainen, & Suur-Inkeroinen, 2009). These firms benefit by continuing on the development of their existing strategy without losing sight of other markets where they do not know. In other words, firms with high exploitative innovation make the most of opportunities by concentrating resources on the strategies that have worked before. As an example of exploitative innovation, implementation of automation in a firm's current production line promotes cost-reducing and quality improvement (Lubatkin, Simsek, Ling, & Veiga, 2006). In contrast, firms with less exploitative innovation may not be able to recoup the previous investment and survive the competition in the current market (March, 1991; Levinthal & March, 1993). Therefore, I suggest that:

*Hypothesis 3: Exploitative innovation is positively associated with firm performance.*

Exploratory innovation also positively impacts firm performance. Firms with high exploration attempt to develop innovations and achieve better positions in the future. Specifically, those firms not only explore new technologies, products, or competencies but also lead the new market by introducing them in advance (Kollmann & Stöckmann, 2014). These firms may prevail in the competition by attaining new technologies and satisfying new customers, which eventually helps them to achieve increased firm performance. Exploratory innovation is about firms' taking a future-orientation that focuses on adapting to new trends (Raisch & Birkinshaw, 2008); therefore, those firms benefit by carefully preparing for the future and experimenting on radical innovation. An example of exploratory innovation is the establishment of an online distribution channel to a retailing firm's offline supply chains, which helps the firm enter new markets and attract new customers (Abernathy & Clark, 1985). On the



contrary, firms that embrace less exploratory innovation may face the effects of obsolescence (Levinthal & March, 1993), where firms lose portions in a market by holding on to outmoded technologies (Kollmann & Stöckmann, 2014). Therefore, I hypothesize that:

*Hypothesis 4: Exploratory innovation is positively associated with firm performance.*

### **The Mediation Effect of Organizational Innovation**

Based on the above arguments, I propose that entrepreneurial passion indirectly influences firm performance through organizational innovation. Following the logic of identity-behavior fit, entrepreneurs with high developing passion would target to expand their current products or services (i.e., exploitation), which in turn leads to higher firm performance.

Developing passion reflects a salient identity and positive feelings toward nurturing and growing the firm to incrementally secure and expand current market shares (Cardon et al., 2009). In turn, firms that promote exploitative innovation maintain consistency in their main strategy (Lamberg et al., 2009) and direct their resources to improve production efficiency and the quality of products or services (Benner & Tushman, 2003; March, 1991), which eventually increase firm performance. In this regard, I suggest that exploitative innovation positively links the relationship between entrepreneurial passion for developing and firm performance. Therefore, I hypothesize that:

*Hypothesis 5: Exploitative innovation positively mediates the relationship between entrepreneurial passion for developing and firm performance.*

Entrepreneurs with high inventing passion focus on establishing new products or services (i.e., exploration), which eventually increases firm performance. Inventing passion signifies identity centrality and positive affect toward exploring new products or services to radically

enter new markets and attain new customers (Cardon et al., 2009). In turn, firms that focus on exploratory innovation enter new markets in advance and lead the trend in an industry by introducing new technologies and fulfilling the new customers' needs (Kollmann & Stöckmann, 2014; Raisch & Birkinshaw, 2008), which leads to better firm performance. Accordingly, I suggest that exploratory innovation positively links the relationship between entrepreneurial passion for inventing and firm performance. Therefore, I hypothesize that:

*Hypothesis 6: Exploratory innovation positively mediates the relationship between entrepreneurial passion for inventing and firm performance.*

## **Methods**

### **Korean Venture Context**

In this paper, I utilized the Korean venture context to test the theoretical model, for several reasons. In 2018, Korea invested about 4.5% of GDP on R&D (OECD, 2020) which is the second highest expenditure percentages in the world. For seven consecutive years, Korea is ranked as one of the top ten economies in R&D intensity, manufacturing value-added, researcher concentration, and high-tech density (Bloomberg, 2020), and has been classified as one of the most innovative countries, ranking number one in information and communication technologies, and high-tech net exports (Global Innovation Index, 2019). Moreover, Korea has strong intellectual property protection, which promotes R&D investments (Brown, Martinsson, & Petersen, 2017). Accordingly, Korea is a high-technology leader, as shown for instance, by having the main technological center of the world in the semiconductor and electronics industries (Lee, Howe, & Kreiser, 2019; Lee & Ungson, 2008). Therefore, Korea is an appropriate context to examine antecedents of innovation.

I specifically focused on venture firms registered in the Korea Venture Business Association (KOVA). The list of firms from KOVA has been utilized in entrepreneurship research (Anderson, Kreiser, Kuratko, Hornsby, & Eshima, 2015; Eshima & Anderson, 2017). KOVA lists ventures from government agencies such as Korea SMEs and Startups Agency and Korea Technology Finance Corporation. These agencies verify ventures with technological competencies 1) that received more than 10% of capital from venture capital firms or 2) that invested 5 to 10% of total sales on R&D. Although a different standard is used by the Korean Standard Industrial Classification (KSIC), the Korean government uses this venture approval system to provide diverse benefits to ventures, such as tax reduction (e.g., 50 percent reduction in corporate and income tax and 75 percent reduction in acquisition tax), incentives for patent applications, and incentives for Korea Securities Dealers Automated Quotations (KOSDAQ) listing, which is one of the major stock markets in Korea. Given the standards and completeness of the list of ventures, the Korean venture context is suitable to empirically test the influence of entrepreneurial passion on organizational innovation and firm performance.

## **Data Collection**

I conducted a two-round survey to collect data from two different respondents: entrepreneurs and top executives (e.g., co-founders and vice presidents) of venture firms. In the first round of data collection, I sent emails to 1,397 entrepreneurs registered in the KOVA list to obtain data on independent and control variables. Entrepreneurs are defined as individuals who established the firm individually or collectively (i.e., founders), who actively make strategic decisions (i.e., CEOs), and who hold more than 51% share of the firm (i.e., owners) (e.g., Busenitz & Barney, 1997; de Mol, Ho, & Pollack, 2018; Mueller et al., 2017). I obtained 555 responses (39.7% response rate) from entrepreneurs, of whom 302 recommended top executives

eligible to answer questions on organizational innovation and firm performance for the second-round survey.

Six months after the first round of data collection, I sent emails to 302 top executives like co-founders or vice presidents to ask questions about the mediating and dependent variables. To improve the response rate, I provided a \$20 charity donation as compensation per completed survey. Of 302 referrals, I received 200 responses (66.2% response rate), from which, I deleted those of who were not senior managers or department heads, and excluded incomplete surveys. The final sample size was 150, reflecting a 49.7% response rate.

The main purpose of second-round data collection was to acquire a six-month lagged survey data on organizational innovation and firm performance. These temporal differences between the independent and the dependent variables help understand better causal inference (Schilke, 2014; Herrmann & Nadkarni, 2014) and secure time for organizational innovation and performance to emerge from entrepreneurs' passion. Moreover, the time-lagged empirical design reduces common method bias caused by collecting the predictor and outcome variables simultaneously (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003).

## Measures

Double-back translation was used to translate the English version of the survey into the Korean language by two native Korean speakers who are fluent in English (Brislin, 1980). I pilot tested the survey with 10 entrepreneurs of Korean ventures (excluded from the final sample) to modify ambiguous directions, to manage the overall length of the survey, and to enhance the face validity of the survey items. Appendix A provides key survey items used in this paper.

**Independent variable.** *Developing passion* was measured using a four-item scale, and *inventing passion* was measured utilizing a five-item scale, both established by Cardon et al.

(2013). Based on Cardon et al.'s (2009) definition of entrepreneurial passion, Cardon et al. (2013) included both subdimensions of entrepreneurial passion (i.e., intensive positive feelings and identity centrality) for developing and inventing passion. Specifically, two items for developing passion capture intensive positive feelings and one item indicates identity centrality. Likewise, four items for inventing passion denote intensive positive feelings, and one item refers to identity centrality. Cardon et al. (2013) suggest a formative operationalization of each type of passion. It is important to note that Cardon et al. (2013) specifically emphasize not to combine these survey items into one entrepreneurial passion construct. To calculate developing passion, two survey items<sup>3</sup> for intensive positive feelings were averaged (Cronbach's alpha = .71) and multiplied with one identity centrality item. A sample item for developing passion is 'I really like finding the right people to market my product/service to'. Similarly, inventing passion was calculated by multiplying the average value of four items of intensive positive feelings (Cronbach's alpha = .74) and one identity centrality item. A sample item for inventing passion is 'Searching for new ideas for products/services to offer is enjoyable to me'.

**Mediating variable.** *Exploitation* and *exploration* were measured using a 12-item scale of Lubatkin et al. (2006) initially developed by He and Wong (2004), which is one of the most utilized survey items in organizational innovation research (Junni et al., 2013; Lee & Kreiser, 2018). A sample item for exploitation is 'My firm continuously improves the reliability of its products and services.' Cronbach's alpha for exploitation was .80. A sample item for exploration

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<sup>3</sup> I removed one item (i.e., 'Pushing my employees and myself to make our company better motivates me') from Cardon et al.'s (2013) original survey items for developing passion because of significant cross-loading and low coefficient of item-total correlation.

is 'My firm creates products or services that are innovative to the firm.' Cronbach's alpha for exploration was .83.

**Dependent variable.** *Firm performance* was measured employing an 18-item scale of Gupta and Govindarajan (1986), asking importance and satisfaction on nine performance criteria (i.e., total sales, sales growth, operating profits, return on total assets, return on equity, return on investment, market share, cash flow, and ability to fund growth from profits). This measure has been broadly applied in the management and entrepreneurship literatures (e.g., Covin & Slevin, 1989; Lee, Howe, & Kreiser, 2019; Lubatkin et al., 2006). First, importance and satisfaction scores were multiplied to create nine performance factors. Second, those nine factors were averaged into one firm performance variable. Cronbach's alpha for firm performance was .96.

To validate the existing perceptual measurement of firm performance, I collected accounting data of a subset of firms in the original sample. Specifically, I was able to obtain objective operating profit information of 19 firms in my sample from a large database company in Korea, which releases accounting data of diverse types of firms, including ventures. Since privately-held ventures are not obligated to announce accounting information publicly, there was a limited number of available objective datasets for my sample. Because subjective and objective performance measures are highly correlated (Dess & Robison, 1984), scholars have continuously adopted perceptual measures to capture firm performance. They have also supplemented their studies with subsamples containing objective data (e.g., Arunachalam, Ramaswami, Herrmann, & Walker, 2018; Lubatkin et al., 2006; Schilke, 2014). As a result, the correlation between objective operating profit and perceived firm performance was positive and significant ( $r = .57, p < .05$ ). Also, I established an average value of subjective firm performance between the first and

second round datasets. The correlations between the average subjective firm performance and secondary operating profit were also positive and significant ( $r = .52, p < .05$ ).

**Control variables.** 11 variables are controlled for in the empirical analysis. At the environmental-level, I controlled for *technology industry*, *environmental hostility*, and *environmental dynamism*. Due to the requirement for Korean ventures to reinvest certain amount of sales on R&D, most ventures are technology-based firms associated in high-technology industries (e.g., KSIC 13 – professional, scientific, and technical activities). Therefore, I used a categorical variable to determine whether the firm is in technology industry or not, according to KSIC. Resource availability and strength of competition are critical environmental factors for innovation and firm performance (Jansen et al., 2005; Mueller, Rosenbusch, & Bausch, 2013). Specifically, firms in hostile and dynamic environments tend to focus more on both exploitation and exploration than firms in less competitive and dynamic environments (Jansen et al., 2005). Environmental hostility was measured applying a six-item scale (Slevin & Covin, 1997) and environmental dynamism was measured utilizing a five-item scale (Miller & Friesen, 1982). Cronbach's alpha for environmental hostility was .75 and Cronbach's alpha for environmental dynamism was .72.

At the firm-level, I controlled for *past firm performance*, *firm age*, and *firm size*. Ventures with high past performance are likely to reinforce existing innovation directions, whereas ventures with low past performance might seek radical strategies (Greve, 1998). Past firm performance was measured by the same survey items used to measure firm performance (i.e., an 18-item scale of Gupta and Govindarajan, 1986) in the second-round data collection. I asked for importance and satisfaction on nine performance criteria for the previous three years. I used the same procedure to operationalize past firm performance. Cronbach's alpha for this

measure was .95. Ventures with long history and large number of employees could benefit from extensive network and access more resources than new and small ventures (Jansen, Simsek, & Cao, 2012). Firm age indicates years since the establishment of the firm, and firm size denotes number of people working as full-time employees.

At the individual-level, I controlled for entrepreneurs' *education, age, gender, tenure, and family ownership*. Previous studies found that highly educated executives are receptive to strategic changes (Wiersema & Bantel, 1992). As such, entrepreneurs with higher levels of education would prefer innovation than entrepreneurs with lower levels of education (Marvel & Lumpkin, 2007). Education was accessed by asking the highest formal education of entrepreneurs on a seven-point scale (1 = high school, 7 = doctoral degree; Herrmann & Datta, 2002; Mueller et al., 2017). Entrepreneurs with experience attain knowledge to deal with exploitation and exploration (Jansen, George, van den Bosch, & Volberda, 2008; Mom, Fourné, & Jansen, 2015). As such, previous innovation studies controlled for age and tenure as determinants of experience (Zimmermann, Hill, Birkinshaw, & Jaeckel, 2020). Tenure was accessed by the number of years working in the firm. Entrepreneurs' gender indicates dissimilar association with innovation (Marvel, Lee, & Wolfe, 2015) and firm performance (Lee & Marvel, 2014). Family firms present different decision making aspects from non-family firms such as investment decisions on innovation (Gomez-Mejia, Cruz, Berrone, & De Castro, 2011). Family ownership is a categorical variable indicating whether family members of the entrepreneur hold shares of the firm.

Considering the six-month lagged design of data collection, I inspected for non-response bias by comparing the mean values of key study variables between respondents and nonrespondents of the second round. As a result, there was no evidence of significant differences



(e.g., developing passion: mean difference = .79,  $p = .35$ ; inventing passion: mean difference = .01,  $p = .99$ ). Using confirmatory factor analysis, I validated the scales by loading survey items onto their corresponding constructs and the overall model fit revealed acceptable scores ( $\chi^2[231] = 426.40$ ; CFI = .93; RMSEA = .07; SRMR = .09; TLI = .90). Compared to a one-factor model ( $\chi^2[235] = 887.75$ ; CFI = .75; RMSEA = .14; SRMR = .17; TLI = .68), the proposed model also showed better fit ( $\Delta\chi^2[4] = 461.35$ ,  $p < .001$ ).

## Results

Table 5.1 displays the correlations and descriptive statistics of all the variables. As I expected, 69% of ventures in my sample were affiliated with a technology industry. Also, they were relatively well-established firms compared to start-ups; on average, firm age and firm size of my sample were about 16 years old and 31 employees, respectively. On average, entrepreneurs were about 54 years old and had worked for about 15 years in their firms. The correlations among key study variables were low to moderate. Particularly, developing passion and exploitation ( $r = .27$ ,  $p < .01$ ) and inventing passion and exploration ( $r = .46$ ,  $p < .01$ ) were positively correlated. I tested for the existence of multicollinearity by computing the variance inflation factor (VIF), and the highest VIF was 2.44. Based on the standard limit of 5 (O'Brien, 2007), multicollinearity did not threaten the results of current models.

To test the proposed hypotheses, I used the PROCESS macro (Hayes, 2013), which utilizes bootstrapping-based methods to analyze direct and mediation models. To further understand specific steps of different regression models, I used ordinary least squares (OLS) regression analysis. Through OLS, I was able to include different variables in each step to analyze whether variables are statistically significant or not, compared through total variance explained (i.e.,  $R^2$ ). The results of bootstrapping and OLS of direct models were consistent.

Table 5.2 shows the regression results of the direct impact of developing passion on exploitation and firm performance. With exploitation as an outcome variable, I inserted different variables in each step: control variables (Model 1), inventing passion (Model 2), and developing passion (Model 3). With firm performance as an outcome variable, I also added different variables in each step: control variables (Model 4), inventing and developing passion (Model 5), and exploitation (Model 6). Table 5.3 displays the regression results of direct impact of inventing passion on exploration and firm performance. With exploration as an outcome variable, I inserted different variables in each step: control variables (Model 7), developing passion (Model 8), and inventing passion (Model 9). With firm performance as an outcome variable, I also added different variables in each step: control variables (Model 10), developing and inventing passion (Model 11), and exploration (Model 12).

As a result of the regression analyses, developing passion positively influences exploitation (Model 3, Table 5.2;  $B = 0.16, p < .05$ ), supporting Hypothesis 1. It is noteworthy to mention that inventing passion also positively influences exploitation (Model 2, Table 5.2;  $B = 0.23, p < .01$ ), but this influence was insignificant once developing passion was added (Model 3, Table 5.2;  $B = 0.15, p = ns$ ), suggesting the importance of developing passion in promoting exploitation. Inventing passion positively impacts exploration (Model 9, Table 5.3;  $B = 0.36, p < .001$ ), supporting Hypothesis 2. A similar pattern was found in that developing passion also impacts exploration (Model 8, Table 5.3;  $B = 0.20, p < .01$ ), but this impact was insignificant once inventing passion was inserted (Model 9, Table 5.3;  $B = 0.03, p = ns$ ), implying the importance of inventing passion in achieving exploration. Exploitation is positively associated with firm performance (Model 6, Table 5.2;  $B = 1.89, p < .01$ ), supporting Hypothesis 3.

Exploration is positively associated with firm performance (Model 12, Table 5.3;  $B = 1.77$ ,  $p < .05$ ), supporting Hypothesis 4.

I tested for mediation models by examining the significance of indirect effects and 95% bias-corrected confidence intervals based on 5,000 bootstrapped samples. The results of mediation analyses are listed in Table 5.4 and 5.5. The mediation effect of exploitation between developing passion and firm performance was positive and significant (indirect effect = 0.35,  $SE = 0.26$ , 95% CI = 0.01 to 1.06; direct effect = 0.10,  $SE = 0.73$ , 95% CI = -1.35 to 1.55; total effect = 0.46,  $SE = 0.74$ , 95% CI = -1.01 to 1.92), supporting Hypothesis 5. This result further indicates that the indirect effect of developing passion on firm performance via exploitation is a full mediation model. The mediation effect of exploration between inventing passion and firm performance was positive and significant (indirect effect = 0.82,  $SE = 0.40$ , 95% CI = 0.15 to 1.75; direct effect = -1.94,  $SE = 0.81$ , 95% CI = -3.54 to -0.35; total effect = -1.13,  $SE = 0.75$ , 95% CI = -2.60 to 0.35), supporting Hypothesis 6. The direct effect of inventing passion on firm performance (exploration as a control variable) was also significant. Therefore, this result further informs that the indirect effect of inventing passion on firm performance via exploration is a partial mediation model.

### **Post Hoc Analyses**

I conducted several post hoc analyses to test alternative models. Specifically, I checked the moderation and moderated mediation impact of developing and inventing passion on organizational ambidexterity and firm performance. Ambidexterity refers to the organizational implementation of exploitation and exploration simultaneously (Tushman & O'Reilly, 1996). Based on Huyghe et al. (2016), different types of passion could orchestrate together to influence diverse outcomes. As the results of the hypothesized models show the importance of each type of

entrepreneurial passion for achieving exploitation and exploration, I decided to also test the influence of both types of passion on ambidexterity. I adopted two major operationalizations of ambidexterity<sup>4</sup> (Cao, Gedajlovic, & Zhang, 2009; Fernhaber & Patel, 2012; Heavey & Simsek, 2017; Zimmermann et al., 2020): 1) summation measure and 2) multiplication measure. I used the PROCESS macro (Hayes, 2013) to test moderation and moderated mediation models. The results of direct and moderation models are shown in Table 5.6 and 5.7. The results of moderated mediation models are displayed in Table 5.8, 5.9, and 5.10.

Results indicate that the interaction term between developing and inventing passion positively predicts the summation measure of ambidexterity (Model 15, Table 5.6;  $B = 0.27$ ,  $p < .05$ ) and multiplication measure of ambidexterity (Model 21, Table 5.7;  $B = 1.45$ ,  $p < .05$ ). Moreover, moderated mediation models, where ambidexterity mediates the relationship between the interaction term (developing passion  $\times$  inventing passion) and firm performance, were positive and significant for both summation (index: 0.31,  $SE$ : 0.22, 95% CI: 0.03 to 0.88) and multiplication (index: 0.32,  $SE$ : 0.22, 95% CI: 0.03 to 0.88) measures of ambidexterity. Even though ambidexterity is not the focus of the current paper and that I did not hypothesized any relationships, these post hoc analyses would extend our understanding of passion orchestration. Further theoretical and empirical implications are explained in the discussion section.

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<sup>4</sup> I did not include absolute difference measure of ambidexterity because I assume that exploitation and exploration are two different innovations not a continuum-based opposite innovation.

**Table 5.1. Summary Statistics and Correlations Matrix**

Variables	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Environmental Hostility	4.59	0.94															
2. Environmental Dynamism	4.37	0.88	.06														
3. Technology Industry <sup>a</sup>	0.69	0.47	.13	-.10													
4. Past Firm Performance	21.77	8.25	.00	-.01	-.05												
5. Firm Age	15.93	9.97	-.00	-.02	-.22*	.19*											
6. Firm Size	30.99	60.96	.08	.01	-.09	.07	.33**										
7. Education	4.09	1.35	-.14	-.05	.16	-.00	-.12	.02									
8. Age	53.39	11.50	-.05	-.02	-.18*	.14	.70**	.17*	.06								
9. Gender <sup>b</sup>	0.96	0.20	.01	-.12	.08	-.04	.11	.06	.06	.13							
10. Tenure	15.05	10.42	-.12	-.04	-.16	.12	.86**	.30**	-.12	.73**	.13						
11. Family Ownership <sup>c</sup>	0.50	0.50	.03	-.04	-.15	.20*	.38**	.01	-.19*	.35**	.14	.43**					
12. Developing Passion	40.73	7.88	-.16*	-.08	-.09	.03	.04	.02	-.01	.01	-.08	.06	.02				
13. Inventing Passion	39.89	7.34	-.02	-.03	.06	.08	-.05	.04	-.04	-.06	-.15	-.03	.10	.48**			
14. Exploitation	5.40	0.84	-.04	.21**	-.11	.01	.05	.07	-.10	-.02	-.11	-.01	-.05	.27**	.24**		
15. Exploration	5.72	0.78	-.04	.09	-.10	.02	-.07	-.03	-.09	-.06	-.18*	-.05	-.07	.27**	.46**	.51**	
16. Firm Performance	22.13	8.79	-.04	.06	.13	.41**	.16	.04	.06	.08	.01	.22**	.22**	.00	-.03	.14	.09

Note.  $N = 150$ ; \*  $p < .05$ ; \*\*  $p < .01$ .

a. Technology Industry coded as No = 0, Yes = 1

b. Gender coded as Female = 0, Male = 1

c. Family Ownership coded as No = 0, Yes = 1

**Table 5.2. Regression Results (Exploitation)**

	Exploitation	Exploitation	Exploitation	Firm Performance	Firm Performance	Firm Performance
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<b>Control Variables</b>						
Environmental Hostility	-0.07(0.07)	-0.07(0.07)	-0.05(0.07)	-0.09(0.68)	-0.06(0.69)	0.04(0.67)
Environmental Dynamism	0.16(0.07)*	0.17(0.07)*	0.18(0.07)**	0.90(0.64)	0.89(0.64)	0.50(0.64)
Technology Industry	-0.04(0.07)	-0.05(0.07)	-0.04(0.07)	1.37(0.68)*	1.48(0.69)*	1.57(0.67)*
Past Firm Performance	-0.00(0.07)	-0.02(0.07)	-0.02(0.07)	3.53(0.66)***	3.58(0.66)***	3.62(0.64)***
Firm Age	0.20(0.15)	0.22(0.14)	0.21(0.14)	-1.29(1.35)	-1.40(1.35)	-1.88(1.33)
Firm Size	0.06(0.08)	0.04(0.07)	0.04(0.07)	-0.27(0.69)	-0.18(0.69)	-0.27(0.68)
Education	-0.09(0.07)	-0.10(0.07)	-0.10(0.07)	1.06(0.69)	1.12(0.69)	1.35(0.68)
Age	0.00(0.11)	0.02(0.10)	0.02(0.10)	-2.00(0.99)*	-2.05(0.99)*	-2.09(0.97)*
Gender	-0.06(0.07)	-0.02(0.07)	-0.02(0.07)	-0.14(0.65)	-0.30(0.66)	-0.25(0.65)
Tenure	-0.19(0.16)	-0.20(0.15)	-0.20(0.15)	4.07(1.46)**	4.07(1.45)**	4.53(1.43)**
Family Ownership	-0.04(0.08)	-0.09(0.08)	-0.07(0.08)	1.18(0.74)	1.38(0.75)	1.54(0.73)*
<b>Independent Variables</b>						
Inventing Passion		0.23(0.07)**	0.15(0.08)		-1.13(0.75)	-1.47(0.74)
Developing Passion			0.16(0.08)*		0.46(0.74)	0.10(0.73)
<b>Mediating Variable</b>						
Exploitation						1.89(0.68)**
<b>Constant</b>	5.40(0.07)***	5.40(0.07)***	5.40(0.07)***	22.13(0.63)***	22.13(0.63)***	22.13(0.61)***
<b>R<sup>2</sup></b>	.09	.16	.18	.29	.30	.34
<b>Δ R<sup>2</sup></b>		.07	.03		.01	.04

Note.  $N = 150$ ; \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ .

Unstandardized coefficients reported; Standard errors in parentheses.

**Table 5.3. Regression Results (Exploration)**

	Exploration	Exploration	Exploration	Firm Performance	Firm Performance	Firm Performance
	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
<b>Control Variables</b>						
Environmental Hostility	-0.02(0.07)	0.01(0.07)	-0.01(0.06)	-0.09(0.68)	-0.06(0.69)	-0.04(0.68)
Environmental Dynamism	0.05(0.07)	0.07(0.06)	0.06(0.06)	0.90(0.64)	0.89(0.64)	0.75(0.63)
Technology Industry	-0.07(0.07)	-0.05(0.07)	-0.09(0.06)	1.37(0.68)*	1.48(0.69)*	1.69(0.68)*
Past Firm Performance	0.03(0.07)	0.03(0.07)	0.01(0.06)	3.53(0.66)***	3.58(0.66)***	3.56(0.65)***
Firm Age	-0.10(0.14)	-0.11(0.13)	-0.07(0.12)	-1.29(1.35)	-1.40(1.35)	-1.24(1.33)
Firm Size	-0.01(0.07)	-0.01(0.07)	-0.04(0.06)	-0.27(0.69)	-0.18(0.69)	-0.08(0.68)
Education	-0.07(0.07)	-0.07(0.07)	-0.09(0.06)	1.06(0.69)	1.12(0.69)	1.34(0.68)
Age	0.00(0.10)	0.02(0.10)	0.03(0.09)	-2.00(0.99)*	-2.05(0.99)*	-2.11(0.97)*
Gender	-0.11(0.07)	-0.09(0.07)	-0.05(0.06)	-0.14(0.65)	-0.30(0.66)	-0.19(0.65)
Tenure	0.07(0.15)	0.06(0.14)	0.06(0.13)	4.07(1.46)**	4.07(1.45)**	3.94(1.43)**
Family Ownership	-0.05(0.08)	-0.05(0.07)	-0.12(0.07)	1.18(0.74)	1.38(0.75)	1.65(0.74)*
<b>Independent Variables</b>						
Developing Passion		0.20(0.06)**	0.03(0.07)		0.46(0.74)	0.38(0.73)
Inventing Passion			0.36(0.07)***		-1.13(0.75)	-1.94(0.81)*
<b>Mediating Variable</b>						
Exploration						1.77(0.73)*
<b>Constant</b>	5.72(0.06)***	5.72(0.06)***	5.72(0.06)***	22.13(0.63)***	22.13(0.63)***	22.13(0.62)***
<b>R<sup>2</sup></b>	.06	.12	.27	.29	.30	.33
<b>Δ R<sup>2</sup></b>		.07	.15		.01	.03

Note.  $N = 150$ ; \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ .

Unstandardized coefficients reported; Standard errors in parentheses.

**Table 5.4. Mediation Results: Indirect Effect of Developing Passion on Firm Performance (via Exploitation)**

	<i>B</i>	<i>SE</i>	LLCI	ULCI
<b>Indirect Effect</b>	0.35	0.26	0.01	1.06
<b>Direct Effect (Unmediated)</b>	0.10	0.73	-1.35	1.55
<b>Total Effect</b>	0.46	0.74	-1.01	1.92

Note.  $N = 150$ ; Unstandardized coefficients reported; Bootstrap sample size = 5,000.

SE = standard error; LLCI = lower limit confidence interval; ULCI = upper limit confidence interval.

**Table 5.5. Mediation Results: Indirect Effect of Inventing Passion on Firm Performance (via Exploration)**

	<i>B</i>	<i>SE</i>	LLCI	ULCI
<b>Indirect Effect</b>	0.82	0.40	0.15	1.75
<b>Direct Effect (Unmediated)</b>	-1.94	0.81	-3.54	-0.35
<b>Total Effect</b>	-1.13	0.75	-2.60	0.35

Note.  $N = 150$ ; Unstandardized coefficients reported; Bootstrap sample size = 5,000.

SE = standard error; LLCI = lower limit confidence interval; ULCI = upper limit confidence interval.



**Table 5.6. Regression Results (Ambidexterity A<sup>a</sup>)**

	Ambidexterity A	Ambidexterity A	Ambidexterity A	Firm Performance	Firm Performance	Firm Performance
	Model 13	Model 14	Model 15	Model 16	Model 17	Model 18
<b>Control Variables</b>						
Environmental Hostility	-0.09(0.12)	-0.05(0.11)	-0.06(0.11)	-0.09(0.68)	-0.10(0.69)	-0.07(0.68)
Environmental Dynamism	0.20(0.12)	0.24(0.11)	0.23(0.10)	0.90(0.64)	0.89(0.65)	0.61(0.65)
Technology Industry	-0.10(0.12)	-0.13(0.11)	-0.14(0.11)	1.37(0.68)*	1.36(0.69)*	1.44(0.67)*
Past Firm Performance	0.03(0.12)	-0.01(0.11)	-0.05(0.11)	3.53(0.66)***	3.53(0.66)***	3.51(0.65)***
Firm Age	0.10(0.25)	0.14(0.22)	0.23(0.22)	-1.29(1.35)	-1.29(1.35)	-1.39(1.33)
Firm Size	0.05(0.13)	-0.00(0.11)	-0.01(0.11)	-0.27(0.69)	-0.27(0.69)	-0.31(0.68)
Education	-0.15(0.13)	-0.18(0.11)	-0.21(0.11)	1.06(0.69)	1.06(0.69)	1.24(0.68)
Age	0.00(0.18)	0.05(0.16)	0.10(0.16)	-2.00(0.99)*	-2.01(1.00)*	-2.04(0.98)*
Gender	-0.18(0.12)	-0.07(0.11)	-0.06(0.11)	-0.14(0.65)	-0.15(0.66)	0.01(0.65)
Tenure	-0.12(0.27)	-0.14(0.24)	-0.25(0.24)	4.07(1.46)**	4.07(1.46)**	4.23(1.44)**
Family Ownership	-0.10(0.13)	-0.19(0.12)	-0.11(0.13)	1.18(0.74)	1.18(0.74)	1.30(0.73)
<b>Independent Variable</b>						
Developing Passion		0.20(0.12)	0.29(0.13)*		-0.08(0.65)	-0.59(0.67)
<b>Mediating Variable</b>						
Ambidexterity A						1.63(0.68)*
<b>Moderating Variables</b>						
Inventing Passion		0.20(0.12)***	0.54(0.12)***			
Developing Passion × Inventing Passion			0.27(0.11)*			
<b>Constant</b>	11.12(0.12)***	11.12(0.10)***	10.99(0.11)***	22.13(0.63)***	22.13(0.63)***	22.13(0.62)***
<b>R<sup>2</sup></b>	.08	.26	.29	.29	.29	.32
<b>Δ R<sup>2</sup></b>		.18	.03		.00	.03

Note.  $N = 150$ ; \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ .

Unstandardized coefficients reported; Standard errors in parentheses.

a. Ambidexterity A indicates summation of exploitation and exploration

**Table 5.7. Regression Results (Ambidexterity B<sup>a</sup>)**

	Ambidexterity B	Ambidexterity B	Ambidexterity B	Firm Performance	Firm Performance	Firm Performance
	Model 19	Model 20	Model 21	Model 22	Model 23	Model 24
<b>Control Variables</b>						
Environmental Hostility	-0.47(0.69)	-0.23(0.63)	-0.26(0.62)	-0.09(0.68)	-0.10(0.69)	-0.07(0.68)
Environmental Dynamism	1.07(0.65)	1.26(0.59)*	1.24(0.58)*	0.90(0.64)	0.89(0.65)	0.61(0.64)
Technology Industry	-0.48(0.69)	-0.61(0.63)	-0.68(0.62)	1.37(0.68)*	1.36(0.69)*	1.43(0.67)*
Past Firm Performance	-0.02(0.67)	-0.20(0.61)	-0.45(0.60)	3.53(0.66)***	3.53(0.66)***	3.54(0.65)***
Firm Age	0.66(1.37)	0.89(1.24)	1.40(1.23)	-1.29(1.35)	-1.29(1.35)	-1.42(1.33)
Firm Size	0.22(0.70)	-0.05(0.64)	-0.11(0.62)	-0.27(0.69)	-0.27(0.69)	-0.31(0.68)
Education	-0.83(0.70)	-1.03(0.63)	-1.14(0.62)	1.06(0.69)	1.06(0.69)	1.25(0.68)
Age	0.03(1.01)	0.27(0.91)	0.54(0.90)	-2.00(0.99)*	-2.01(1.00)*	-2.04(0.98)*
Gender	-0.98(0.66)	-0.40(0.61)	-0.35(0.60)	-0.14(0.65)	-0.15(0.66)	0.02(0.65)
Tenure	-0.82(1.48)	-0.91(1.34)	-1.50(1.33)	4.07(1.46)**	4.07(1.46)**	4.27(1.44)**
Family Ownership	-0.54(0.75)	-1.06(0.69)	-0.63(0.70)	1.18(0.74)	1.18(0.74)	1.30(0.73)
<b>Independent Variable</b>						
Developing Passion		1.05(0.68)	1.55(0.70)*		-0.08(0.65)	-0.60(0.67)
<b>Mediating Variable</b>						
Ambidexterity B						1.70(0.68)*
<b>Moderating Variables</b>						
Inventing Passion		2.80(0.69)***	3.00(0.68)***			
Developing Passion × Inventing Passion			1.45(0.60)*			
<b>Constant</b>	31.20(0.64)***	31.20(0.58)***	30.52(0.63)***	22.13(0.63)***	22.13(0.63)***	22.13(0.62)***
<b>R<sup>2</sup></b>	.07	.25	.28	.29	.29	.32
<b>Δ R<sup>2</sup></b>		.18	.03		.00	.03

Note.  $N = 150$ ; \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ .

Unstandardized coefficients reported; Standard errors in parentheses.

a. Ambidexterity B indicates multiplication of exploitation and exploration

**Table 5.8. Moderated Mediation Results: Conditional Indirect Effect of Developing Passion on Firm Performance (via Ambidexterity A<sup>a</sup>) at Different Values of Inventing Passion**

Values of Inventing Passion	Indirect Effect	SE	LLCI	ULCI
-1 SD (-1.00)	0.03	0.17	-0.31	0.38
M (.00)	0.34	0.23	0.03	0.98
+1 SD (1.00)	0.65	0.65	0.08	1.70

Note. N = 150; Unstandardized coefficients reported; Bootstrap sample size = 5,000.

SE = standard error; LLCI = lower limit confidence interval; ULCI = upper limit confidence interval.

a. Ambidexterity A indicates summation of exploitation and exploration

**Table 5.9. Moderated Mediation Results: Conditional Indirect Effect of Developing Passion on Firm Performance (via Ambidexterity B<sup>a</sup>) at Different Values of Inventing Passion**

Values of Inventing Passion	Indirect Effect	SE	LLCI	ULCI
-1 SD (-1.00)	0.02	0.17	-0.34	0.35
M (.00)	0.34	0.24	0.04	1.01
+1 SD (1.00)	0.65	0.42	0.08	1.73

Note. N = 150; Unstandardized coefficients reported; Bootstrap sample size = 5,000.

SE = standard error; LLCI = lower limit confidence interval; ULCI = upper limit confidence interval.

a. Ambidexterity B indicates multiplication of exploitation and exploration

**Table 5.10. Index of Moderated Mediation**

	Index of Moderated Mediation	SE	LLCI	ULCI
<b>Ambidexterity A<sup>a</sup></b>	0.31	0.22	0.03	0.88
<b>Ambidexterity B<sup>b</sup></b>	0.32	0.22	0.03	0.88

Note. N = 150; Unstandardized coefficients reported; Bootstrap sample size = 5,000.

SE = standard error; LLCI = lower limit confidence interval; ULCI = upper limit confidence interval.

a. Ambidexterity A indicates summation of exploitation and exploration

b. Ambidexterity B indicates multiplication of exploitation and exploration

## **Discussion**

The main objective of the study was to research the indirect influence of entrepreneurial passion on firm performance through organizational innovation. Exploitative and exploratory innovation are essential organizational activities for firms to adapt (March, 1991), change (Kelly & Amburgey, 1991), and learn (Cyert & March, 1963; Miner & Mezias, 1996). Entrepreneurs are the core agents that promote innovation, and therefore, scholars have attempted to link various characteristics of entrepreneurs to general innovation such as new product development or innovativeness (e.g., Baron & Tang, 2011; Fuentelsaz et al., 2018). Contemplating the strong impact of entrepreneurs on firm-level outcomes (e.g., Hambrick & Mason, 1984; Nadkarni & Herrmann, 2010) and the importance of exploitative and exploratory innovation for firms, it is important to focus on microfoundational explanations on the formation of both organizational innovations. Accordingly, I have attempted to increase the understanding of specific individual-level factors of entrepreneurs that advance firm-level exploitative and exploratory innovation.

Based on identity theory (Burke, 1991; Burke & Reitzes, 1981; Stryker & Burke, 2000), I theorized that entrepreneurs' passion for certain domains would direct their behaviors toward specific types of organizational innovation. Entrepreneurs with passion have a dominant identity and positive feelings toward specific entrepreneurial roles (Cardon et al., 2009), and they align their domain of passion with their behaviors (Burke, 1991; Burke & Reitzes, 1981). Accordingly, entrepreneurs with developing passion and inventing passion would promote exploitative and exploratory innovation, respectively. Data from entrepreneurs and executives of 150 Korean ventures suggest that these direct relationships (developing passion-explorative innovation and inventing passion-exploratory innovation) are positive and significant. Even though the direct influence of explorative and exploratory innovation on firm performance has been studied previously (e.g., Junni et al., 2013), I theorized and empirically tested this to further examine the

mediation influence of entrepreneurial passion on firm performance through two different types of organizational innovation. As a result, the mediation role of organizational innovation between entrepreneurial passion and firm performance is positive and significant. Building on the logic of identity-behavior fit, entrepreneurs with high developing passion focus on advancing their existing products or services (i.e., exploitation), which in turn increases firm performance. Moreover, entrepreneurs with high inventing passion put the most effort into expanding new products or services (i.e., exploration), which then improves firm performance.

This paper makes several contributions. First, it contributes to the entrepreneurial passion literature by examining distinctive mechanisms that link certain types of entrepreneurial passion and firm performance. “All passions are not equivalent and that they may play different roles in the outcomes” (Vallerand, 2017, p. 151). Previous studies found that developing passion indirectly leads to firm performance (Drnovsek et al., 2016; Mueller et al., 2017); however, this research stream of the relationship between entrepreneurial passion and firm performance gave limited attention to diverse types of passion. This skewed focus restricted our understanding of whether other types of passion also improve (or worsen) firm performance and of the mechanism behind these relationships. This restricted understanding might be due to the fact that scholars have barely differentiated between each type of passion. Although the foundational paper on entrepreneurial passion (Cardon et al., 2009) theoretically explained the differences between each type of passion, most recent studies examined entrepreneurial passion as a whole rather than individually. This may have prevented scholars to fully understand specific the mechanisms that explain entrepreneurial passion and firm performance. To address this research gap, I applied developing and inventing passion in the context of post-founding activities of entrepreneurs. Moreover, scholars explained that different types of passion are related to

idiosyncratic outcomes and continuously called for studies on this gap (Cardon et al., 2009; Drnovsek et al., 2016; Strese et al., 2018; Vallerand et al., 2003). This paper answered this call by providing a nuanced examination of explorative and exploratory innovation, which I analyze as unique mediators that are distinctively linked to developing and inventing passion.

Accordingly, I expand our understanding of how entrepreneurs with developing and inventing passion could achieve high firm performance by promoting unique organizational innovation types. Based on my theoretical arguments and the empirical results of this study on the relationship between specific types of entrepreneurial passion and distinctive organizational innovations, I suggest the conversation of the passion literature should pay careful attention to unique outcomes based on each form of passion.

Second, this paper advances identity theory by applying the identity-behavior fit arguments in the entrepreneurship literature. Scholars continuously studied that highly passionate entrepreneurs engage in activities that align with their salient identity (Huyghe et al., 2016; Murnieks & Mosakowski, 2007). I extend this research stream by establishing the logic that specific role identities of entrepreneurs (i.e., developing or inventing) would predict their strategic decisions on organizational innovation (i.e., exploitation or exploration). As a domain-specific concept, passionate entrepreneurs usually have a domain where they invest in (Cardon et al., 2017; Murnieks et al., 2014; Strese et al., 2018). This domain (e.g., developing or inventing) is where entrepreneurs feel positive affect and dominant identity exists (Cardon et al., 2009; Mueller et al., 2017). This domain signals future behaviors of the entrepreneurs who attain strong motivation to match their identity with their behaviors to self-verify (Swann et al., 1989), protect one's self-concept (Stets & Burke, 2000), maintain self-consistency (Burke, 2004), foster psychological and emotional stability (Swann et al., 1989), and prevent cognitive dissonance

(Festinger, 1957). Accordingly, in this paper I explained how a domain where entrepreneurs are passionate about hints the direction of entrepreneurs' future decisions and found that the data supported these arguments.

Third, this paper contributes to the organizational innovation literature by examining unique antecedents that are distinctively linked to exploitative and exploratory innovation. Even though scholars found different antecedents of organizational innovation, most studies focused on a single antecedent to explain both exploitative and exploratory innovation. As I assumed, exploitative and exploratory innovation are two different forms of innovation that have discrete characteristics. In this regard, scholars have called for studies on different antecedents of exploitative and exploratory innovation (Beckman, 2006; Koryak et al., 2018; Lavie et al., 2010). Moreover, entrepreneurs' factors that manifest organizational innovation have been missing from the entrepreneurship literature (e.g., Baron & Tang, 2011). To address these research gaps, I utilized two different types of entrepreneurial passion that individually promote exploitative and exploratory innovation.

As the main practical implication, passionate entrepreneurs need to consider their domain of focus to achieve high firm performance. As my empirical findings indicate, passionate entrepreneurs were not able to directly attain high firm performance without promoting organizational innovation. Accordingly, entrepreneurs must understand the domain where they have a salient identity and sense positive feelings. This will help them to make efficient strategic decisions on innovation investments. Specifically, entrepreneurs who are passionate about developing could invest in exploitative innovation, and entrepreneurs who are passionate about inventing could invest in exploratory innovation.

Another practical implication is that entrepreneurs of venture firms need to understand the values of both exploitative and exploratory innovation. Organizational innovation is the key activity in overcoming the challenges faced by venture firms, which eventually help them to attain better firm performance. Through conducting exploitative innovation, ventures are able to increase the efficiency of processes, improve operation management, and create various values that could eventually help those firms to attain reliability within the industry (Choi & Shepherd, 2005; Kollmann & Stöckmann, 2014). As firms develop, it is hard for firms to hold on to the assets of newness, which is closely related to organizational flexibility (Choi & Shepherd, 2005). To maintain newness, venture firms need to implement exploratory innovation, which fosters firms to proceed on new opportunities, build creative services and products, and enter new markets (Kollmann & Stöckmann, 2014). In other words, exploratory innovation helps venture firms to gain exceptional congruence and flexibility. Therefore, firms can solve several obstructions by implementing both exploitative and exploratory innovation.

As one of the limitations, perceptual measures adopted in this paper lean on the subjective judgment of executives to capture organizational innovation and firm performance. Even though executives are knowledgeable on the firm's strategic decisions (Hambrick & Mason, 1984; Nadkarni & Herrmann, 2010), an objective examination could strengthen current findings. Previous studies applied patent data (Katila & Ahuja, 2002), product introductions (Fernhaber & Patel, 2012), and functional magnetic resonance imaging (Laureiro-Martínez, Brusoni, Canessa, & Zollo, 2015) to measure exploitative and exploratory innovation. As such, future studies could use diverse sources of archival data to capture firm innovation and performance.



While I implemented a two-round data collection design to secure six months gap between independent variables (entrepreneurial passion) and corresponding variables (mediator: organizational innovation; outcome: firm performance), organizational innovation and firm performance were captured during the same period. Instead of a cross-sectional data collection, future studies could design longitudinal or experimental designs to clearly understand causal relationships between entrepreneurial passion, organizational innovation, and firm performance.

Another potential limitation is that I chose to survey firms in one national setting (i.e., Korea). Due to the high levels of innovation prevalent in this context, it would be interesting to replicate the study in a context where innovative activities are not as widespread. Scholars should examine the relationships explored in this study in differing national contexts to increase the generalizability of these findings. Since scholars have suggested an influence of culture on organizational innovation (e.g., Junni, Chang, & Sarala, 2020), future empirical investigations in different contexts might uncover different patterns.

Although not hypothesized in the paper, empirical results of the direct relationships between entrepreneurial passion and firm performance provide diverse implications. First, the direct influence of developing passion on firm performance was not significant in my sample. This indicates the importance of mediation impact (i.e., exploitative innovation) on the developing passion and firm performance relationship. Similar to previous studies, developing passion is indirectly associated with firm performance (Drnovsek et al., 2016; Mueller et al., 2017). However, a recent study showed that average team passion for developing is not related to both short-term (i.e., quality of the business idea) and long-term performance (i.e., amount of funding) (de Mol, Cardon, de Jong, Khapova, & Elfring, 2020). These opposing findings suggest that scholars need to study various contingencies behind this relationship.

Second, empirical results of the direct relationship between inventing passion and firm performance was negative. This also implies the importance of an appropriate mechanism (i.e., exploratory innovation) for entrepreneurs with high inventing passion for achieving high firm performance. Scholars suggest that there are ‘selfish’ types of passion that only seek personal contentment, but harm the benefits of their affiliations (Joussain, 1928; Vallerand, 2017). However, it is important to note that inventing passion does not necessarily precipitate negative outcomes. The results of the current study are inconsistent with the ones of some previous studies. Boone, Andries, and Clarysee (2020) showed that TEP for inventing does not lead to team performance (i.e., competition scores), and de Mol et al. (2020) found that average team passion for inventing is not related to both short-term and long-term performance. Future studies could focus on the boundary conditions between inventing passion and firm performance to clarify the contradictory findings.

Empirical findings of post hoc analyses also provide fruitful implications for future studies. Huyghe et al. (2016) introduced the concept of passion orchestra according to which different types of passion could exist at the same time. I adopted this concept to empirically test the simultaneous impact of developing and inventing passion for the formation of organizational ambidexterity. Building on my findings that developing passion promotes exploitative innovation and inventing passion develops exploratory innovation, I assumed that entrepreneurs with both high on developing and inventing passion would positively achieve organizational ambidexterity. The results indicate that the summation and multiplication measures of ambidexterity mediate the relationship between interaction effect (i.e., developing passion  $\times$  inventing passion) and firm performance. Passion orchestration assumes that entrepreneurs could attain different types of passion simultaneously. The purpose of the current paper was to

investigate the distinctive mechanisms of how developing and inventing passion could impact firm performance through exploitative and exploratory innovation; therefore, the scope of the paper does not embrace passion orchestration. Future studies could adopt diverse types of passion (e.g., dualistic model of passion: Vallerand et al., 2003) simultaneously to expand our understanding of passion orchestration further.

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## CHAPTER 6. GENERAL CONCLUSION

In this dissertation, I presented four essays to answer relevant questions on how entrepreneurial passion influences firm performance. In the first essay (Chapter 2), I conducted a systematic review on the topic of entrepreneurial passion and identified critical research opportunities in the literature. I concluded that scholars found contradictory results, focused on a few types of passion, did not always match theoretical arguments and empirical measures, and collected empirical data from a few cultural contexts. As the main motivation of the dissertation, I attempted to address these unresolved issues by conducting three empirical papers on the relationship between entrepreneurial passion and firm performance. First, I investigated different boundary conditions (overwork and entrepreneurial autonomy) behind the dualistic model of passion and its relationship with firm performance to clarify the contradictory findings found in the literature. Second, I examined diverse mechanisms (identity fusion, bricolage, exploitation, and exploration) for each type of passion (obsessive, harmonious, developing, and inventing passion) to investigate a nuanced impact of entrepreneurial passion on firm performance. Third, I carefully matched the theoretical arguments and empirical measures in each empirical paper. Lastly, I collected survey data from multiple respondents (CEOs, entrepreneurs, and top executives) of various forms of firms (small- and medium-sized enterprises and ventures) in an understudied context (Korea). Details of contributions based on each motivation are elaborated below. Table 1 displays the comparison between three empirical papers based on variables, theories, and empirical contexts used in each chapter.

**Table 6.1. Comparison between Empirical Chapters**

<b>Chapter</b>	<b>Independent Variable</b>	<b>Dependent Variable</b>	<b>Moderator</b>	<b>Mediator</b>	<b>Theory</b>	<b>Empirical Context</b>
<b>Chapter 3</b>	Obsessive Passion	Firm Performance	Overwork	Identity Fusion	Theory of Fusion and Affect Infusion Model	196 Entrepreneurs and Top Executives of Korean Firms
<b>Chapter 4</b>	Harmonious Passion	Firm Performance	Entrepreneurial Autonomy	Bricolage	Resource-based View	237 CEOs and Top Executives of Korean SMEs
<b>Chapter 5</b>	Developing and Inventing Passion	Firm Performance	-	Exploitative and Exploratory Innovation	Identity Theory	150 Entrepreneurs and Top Executives of Korean Ventures

In the second essay (Chapter 3), I theorized that entrepreneurs with high obsessive passion would increase firm performance through identity fusion with their organizations. I drew from the theory of fusion (Swann, Gómez, Seyle, Morales, & Huici, 2009), the affect infusion model (Forgas & George, 2001), and the literature on the dualistic model of passion (Vallerand, Blanchard, Mageau, Koestner, Ratelle, Léonard, Gagné & Marsolais, 2003). I argue that obsessive passion influences the entrepreneurs' identity to strongly fuse with their organizations because of the characteristic of obsessive passion - positive affect and ego-protective behaviors. In turn, identity fusion would positively increase firm performance through strong loyalty and responsibility toward their organizations. I also examined overwork as a moderator between identity fusion and firm performance, where overworking behavior would positively intensify the influence of identity fusion on firm performance through increased exposure to the organization and fulfilled self-actualization. I conducted a two-stage data collection from multiple sources and obtained survey data from 196 Korean firms with a six-month lagged performance data. I found that overworking behavior of entrepreneurs was a significant boundary condition between the obsessive passion, identity fusion, and firm performance relationship. Specifically, obsessively

passionate entrepreneurs were able to attain high firm performance through identity fusion only when they overworked.

As the main contribution of Chapter 3, I advance the entrepreneurial passion literature by clarifying the contradictory empirical findings on the relationship between obsessive passion and firm performance (Ho & Pollack, 2014; Patel, Thorgren, & Wincent, 2015; Sirén, Patel, & Wincent, 2016). In this chapter, I investigated a boundary condition (i.e., overwork) through which obsessively passionate entrepreneurs may increase (or decrease) firm performance. Second, this chapter also contributes to the understanding of obsessive passion by examining identity fusion to the firm, which is a potentially positive outcome of obsessive passion. I explained that compulsive affection and ego protective behavior of obsessively passionate entrepreneurs develop identity fusion with their organizations. Third, this chapter advances the theory of identity fusion by studying entrepreneurs' identity fusion with organizations and by investigating the antecedent of identity fusion. Scholars examined identity fusion with various levels of 'groups' (Joo & Park, 2017); however, organizational-level studies have been missing in the literature. In this regard, scholars called for studies on this understudied context: individuals' identity fusion with their organizations (Buhrmester & Swann, 2015). Moreover, scholars emphasized the lack of studies on the antecedents of identity fusion (e.g., Swann, Jetten, Gómez, Whitehouse, & Bastian, 2012; Whitehouse et al., 2017) and called for studies on this stream (Misch, Fergusson, & Dunham, 2018). Corresponding to this need, I identified an antecedent (i.e., obsessive passion) of entrepreneurs' identity fusion with their organizations. Lastly, this chapter contributes to the entrepreneurship literature by examining the overworking behavior of entrepreneurs. It is common to find entrepreneurs who invest excessive amount of time in their work, but this topic has been disregarded in the literature. I utilized the concept of

overwork as the boundary condition between identity fusion and firm performance and found that the relationship was positively moderated when entrepreneurs work long hours.

In the third essay (Chapter 4), I investigated the indirect influence of CEOs' harmonious passion on firm performance through bricolage. I drew from the theory of entrepreneurial bricolage (Baker & Nelson, 2005) and the resource-based view (Barney, 1991; Sirmon, Hitt, & Ireland, 2007; Sirmon, Hitt, Ireland, & Gilbert, 2011), to propose that harmonious passion increases the firm-level capability of effective resource management (i.e., bricolage) through deliberate practice, creative solutions, and awareness of organizational capacity. In turn, a firm's bricolage capability would positively develop high firm performance through creative recombination of available resources, action without biases, and utilization of all the possible methods. Moreover, I asserted that entrepreneurial autonomy would positively intensify the relationship between bricolage and firm performance by supporting independent decision-making and encouraging organizational creativity. Utilizing a six-month lagged survey data collected from 237 CEOs of Korean small and medium-sized enterprises (SMEs), I empirically found support for the hypothesized model.

In Chapter 4, I extend the entrepreneurial passion literature by establishing more nuanced theoretical arguments and by empirically testing the indirect impact of CEOs' entrepreneurial passion on firm performance through bricolage in the context of SMEs. Specifically, I attempted to clarify the mixed findings on the relationship between harmonious passion and firm performance (Ho & Pollack, 2014; Patel et al., 2015; Sirén et al., 2016) by investigating entrepreneurial autonomy as a boundary condition that modifies the strength of the indirect effect of harmonious passion on firm performance through bricolage. Second, this chapter advances the bricolage literature by focusing on the financial outcomes of bricolage. Considering the lack of



empirical studies on bricolage (Senyard, Baker, Steffens, & Davidsson, 2014; Welter, Mauer, & Wuebker, 2016) and on its outcomes (Desa & Basu, 2013), this chapter has made an important contribution by explaining and providing an empirical support on the relationship between bricolage and firm performance. Lastly, this chapter advances the literature on entrepreneurial autonomy by theoretically arguing the importance of firm-level autonomy for SMEs.

Entrepreneurial autonomy is an important organizational factor that encourages organizational members' independent decisions and creative activities. Specifically, SMEs with high autonomy could increase the efficiency of decision making on resource applications and facilitate creative resource combinations with flattened processes and flexible structures. Despite the importance of autonomy in the entrepreneurial phenomenon (Lumpkin, Cogliser, & Schneider, 2009), the concept has been neglected in the literature (Short, Payne, Brigham, Lumpkin, & Broberg, 2009; Van Gelderen, 2016; Van Gelderen, Shirokova, Shchegolev, & Beliaeva, 2020; Yu, Lumpkin, Parboteeah, & Stambaugh, 2019). As such, I applied it as a core moderator that influences the harmonious passion-bricolage-firm performance relationship.

In the fourth essay (Chapter 5), I studied the indirect influence of developing and inventing passion on firm performance through organizational innovation. Based on identity theory (Stryker, 1968; Stryker & Burke, 2000), I theorized that passionate entrepreneurs would behave according to their identities. Entrepreneurs with high developing passion would promote exploitative innovation and entrepreneurs with high inventing passion would increase exploratory innovation. In turn, both types of organizational innovation enhance firm performance. The hypotheses were empirically supported with data from a two-round survey collected from 150 entrepreneurs of Korean venture firms.

As a primary contribution of Chapter 5, I examine unique mechanisms that link different types of passion and firm performance. Most previous studies concentrated on an outcome of entrepreneurial passion as a whole and did not consider unique characteristics of each type of entrepreneurial passion (e.g., developing and invention passion). Accordingly, researchers called for the examination of distinctive outcomes of each type of entrepreneurial passion (Cardon, Wincent, Singh, & Drnovsek, 2009; Drnovsek, Cardon, & Patel, 2016; Strese, Keller, Flatten, & Brettel, 2018). In this chapter, I attempted to explain how entrepreneurs' developing and inventing passion attain high firm performance through exploitative and exploratory innovation distinctively. Second, in this chapter, I advance identity theory by connecting the specific role identities of entrepreneurs to particular behaviors. Specifically, I examined how entrepreneurs' domains of salient identity leads to development of specific organizational innovation, thereby offering important theoretical and empirical support for the identity-behavior fit arguments (Huyghe, Knockaert, & Obschonka, 2016; Murnieks & Mosakowski, 2007; Stets & Burke, 2000). Third, I identified antecedents of organizational innovation which was entrepreneurial passion. Specifically, I examined effects of developing and inventing passion on exploitative and exploratory innovation, respectively. Previous studies in this literature focused on a single antecedent to explain the development of both exploitative and exploratory innovation and the effects of individual-level factors of entrepreneurs on both innovations have been neglected from the literature. Accordingly, I addressed these research gaps by examining two distinctive forms of entrepreneurial passion as antecedents of exploitative and exploratory innovation.

Next, I elaborate on an overall conclusion of this dissertation and on how the conversation of the entrepreneurial passion literature should continue, based on the arguments and findings of this investigation.

### **Passion is Not Enough**

One of the primary motivations of the dissertation was to understand how distinct mechanisms explain how different types of entrepreneurial passion could increase (or decrease) firm performance. Based on the theoretical arguments and empirical results of three papers, I contend that passion alone is not enough to explain firm performance. Specifically, empirical results indicated that direct influences of obsessive (Chapter 3), harmonious (Chapter 4), and developing (Chapter 5) passion on firm performance were insignificant. These results stress the importance of identifying mechanisms between passion and firm performance relationships. In meta-analyses, scholars have found that different outcomes corresponded with different types of passion (Curran, Hill, Appleton, Vallerand, & Standage, 2015; Pollack, Ho, O’Boyle, & Kirkman, 2020). These different outcomes could be utilized as mediators to understand unique antecedent roles of passion on performance. Accordingly, investigating the distinct linkages that connect each type of passion and performance could help increase our knowledge in the entrepreneurial passion literature. For instance, one possible future research opportunity could be examining founding passion of entrepreneurs in the pre-launch or early stage of firms. Founding passion indicates one’s central identity and positive emotion toward “establishing a venture for commercializing and exploiting opportunities” (Cardon et al., 2009, p. 516), and has been related to creativity, persistence (Cardon, Grégoire, Stevens, & Patel, 2013) and entrepreneurial intention (Biraglia & Kadile, 2017). Based on my systematic review on the entrepreneurial passion literature (Chapter 1), founding passion did not receive much attention from scholars compared to other forms of passion. As with other types of passion, other important factors may play a role in the relationship between founding passion and firm performance. Hence, it would be of great importance to investigate specific mediators that explain the relationship between founding passion and firm performance.

### **Passion is Not Always Great**

This dissertation attempted to solve the contradictory findings in the literature by examining when entrepreneurial passion could advance (or decline) firm performance through diverse boundary conditions. Entrepreneurial passion would not always lead to positive results unless it is directed to appropriate routes and enabled in apt contexts. Obsessive passion is treated as a negative connotation in the literature (Pollack et al., 2020) and scholars found contradicting results of the dualistic model of passion and performance relationships (Ho & Pollack, 2014; Patel et al., 2015; Sirén et al., 2016). To resolve these issues, I applied diverse moderators in this dissertation. In Chapter 3, I found that obsessively passionate entrepreneurs achieve high firm performance through identity fusion when they overwork. In Chapter 4, it was found that the positive influence of harmonious passion on firm performance through bricolage capability was especially strong when firms had high entrepreneurial autonomy. These two chapters indicate the critical role of boundary conditions in the relationship between passion and firm performance. As shown in Chapter 5, developing passion does not have a direct influence on firm performance. This result aligns with those of a previous study, which found that average team passion for developing is not associated with short-term and long-term performance (de Mol, Cardon, de Jong, Khapova, & Elfring, 2020), but contradicts previous studies, which found a significant indirect association between developing passion and firm performance (Drnovsek et al., 2016; Mueller, Wolfe, & Syed, 2017). Moreover, earlier studies on inventing passion found an insignificant relationship between inventing passion and various types of performance (Boone, Andries, & Clarysee, 2020; de Mol et al., 2020), but the empirical results of Chapter 5 in this dissertation showed that inventing passion was negatively related to firm performance. These contradicting results strengthen my suggestion that contingencies and boundary conditions are critical in understanding the influence of passion on firm performance. Accordingly, scholars

need to posit that passion alone is not enough to predict firm performance and requires an appropriate examination of boundary conditions and mechanisms. Even for passionate entrepreneurs, managing a firm can create pressures on time and resources, increase uncertainty, and even be detrimental to personal well-being (Cardon, Foo, Shepherd, & Wiklund, 2012). Accordingly, potential research opportunities in this area would be examining boundary conditions that could alleviate those barriers of entrepreneurs and ignite the passion-performance relationship. For instance, entrepreneurs in collectivistic culture may receive strong psychological support from family and attain a safety net from their network (Lee, Howe, & Kreiser, 2019), which might magnify the effects of passion on firm performance.

### **Theories and Research Questions Matter**

There are four major frameworks of passion (i.e., entrepreneurial passion, dualistic model of passion, work passion, and perceived passion). Scholars should choose the type of passion based on theoretical justifications and contextual appropriateness. Because passion is a domain-specific concept (Cardon et al., 2009; Vallerand et al., 2003); understanding ‘passion for what’ is a fundamental conclusion in the literature (Cardon, Glauser, & Murnieks, 2017; Murnieks, Mosakowski, & Cardon, 2014; Strese et al., 2018). Accordingly, focusing on the domain and research questions would help in having an appropriate application of the suitable frameworks for passion.

It is critical to mention that frameworks should be integrated in research studies with suitable theoretical justifications. Although the dualistic model of passion (Vallerand et al., 2003) and entrepreneurial passion (Cardon et al., 2009) share similarities like affection and identification as the core components of passion, they are different in their approach toward entrepreneurship and internalization (Collewaert, Anseel, Crommelinck, De Beuckelaer, &

Vermeire, 2016; Ho & Pollack, 2014). First, the dualistic model of passion takes a broad approach toward entrepreneurship. Most scholars study entrepreneurs' overall passion for entrepreneurial activities (e.g., Ho & Pollack, 2014), and entrepreneurial passion focuses on specific roles of entrepreneurs such as inventing, developing, and founding (Cardon et al., 2009). Second, the dualistic model of passion considers how entrepreneurial activities are internalized in one's identity (Vallerand et al., 2003), and entrepreneurial passion is related to salient identity toward the roles of entrepreneurs (Cardon et al., 2009). Researchers should consider these differences and integrate frameworks of passion and empirical models with the appropriate theoretical rationale.

I also emphasize that even different types of passion from the same frameworks should be carefully distinguished based on theory and the research question being studied before their inclusion in theoretical models. While Vallerand et al. (2003) introduced the dualistic model of passion and suggested two types of passion (i.e., harmonious and obsessive passion), these two are different types of passion that do not necessarily have to be examined in the same model. Harmonious and obsessive passion are theoretically different in terms of internalization and behavioral persistence toward a particular domain (Vallerand et al., 2003). Although they are rooted in the same framework, these two types are two independent variables, and scholars should probe whether they are continuum or orthogonal constructs. They share theoretical similarities; both types attain strong inclinations toward a domain that people love. Most of the empirical correlations in previous studies were moderately high ( $r = .48$ : Murnieks, Cardon, & Haynie, 2020;  $r = .44$ : Stroe, Sirén, Shepherd, & Wincent, 2020). Scholars propose that the dualistic model of passion is not a unidimensional continuum construct but one that includes two disparate types of passion (Philippe, Vallerand, Beaulieu-Pelletier, Maliha, Laventure, & Ricard-

St-Aubin, 2019). Second, because the dualistic model of passion is a domain-specific concept, harmonious and obsessive passion are not orthogonal constructs where both could score high on the same domain. In other words, when studying passion for one specific domain, an individual cannot have high levels of both harmonious and obsessive passion. Therefore, I emphasize that the decision between types of passion should be based on theoretical arguments and research questions.

For instance, in Chapter 3, based on the theoretical appropriateness of harmonious passion as the voluntary engagement and persistence in entrepreneurial activities, I focused on harmonious passion to examine how CEOs effectively manage limited resources and attain high firm performance. In Chapter 4, I concentrated on obsessive passion because the characteristics of obsessive passion like uncontrollable affection and ego protective behavior play important roles in linking entrepreneurial passion and identity fusion. Specifically, it is more appropriate to concentrate on obsessive passion when examining core identity, ego-related behavior, and strong affection of entrepreneurial passion. In Chapter 5, I applied identity theory (Stryker, 1968; Stryker & Burke, 2000) to answer the research question of how entrepreneurial passion for developing and inventing are linked to exploitative and exploratory innovation distinctively. Moreover, I justified the appropriateness of investigating these two types of passion based on the context of the study which was entrepreneurs who have already established the firm.

Although most passion studies employ one framework of passion for answering their research questions, Huyghe et al. (2016) applied two different frameworks (e.g., obsessive passion and inventing passion) to introduce the concept of passion orchestra. In Chapter 5, I showed the concept of passion orchestra by examining the interaction effect of developing and inventing passion on organizational innovation. While it is interesting and important, this

approach should be taken carefully, because it can be a baffling concept for readers to grasp the simultaneous existence of multiple forms of passion. For instance, Huyghe et al. (2016) justified matching two different types of passion by providing a context of academia where researchers could have both obsessive passion for scientific research and entrepreneurial passion for inventing roles. Likewise, a contextual rationalization is critical for considering which types of passion would be appropriate to apply when studying passion orchestra. Also, scholars who plan to examine this stream of research could utilize polynomial regression and response surface methodology to advance our understanding of the fit between multiple types of passion.

### **Beyond Entrepreneurs**

I examined the entrepreneurial passion of CEOs and entrepreneurs (who are founders, owners, and top executives) working in diverse forms of firms (e.g., large, venture, start-ups, or SMEs). We should not assume that entrepreneurial passion is a concept only applicable to entrepreneurs of small firms. We need to look beyond this prejudice on entrepreneurial passion, and utilize the concept to various contexts, which would bring fruitful directions for the literature. Similar to the five factor model of personality (McCrae & Costa, 1987) which was applied to diverse agents with different characteristics such as CEOs (e.g., Herrmann & Nadkarni, 2014) and entrepreneurs (e.g., Zhao & Seibert, 2006), entrepreneurial passion is not a characteristic unique to only entrepreneurs of small firms, but one that is likely to exist among non-entrepreneurs (e.g., CEOs, employees, professors, students, or politicians) of diverse types of organizations (e.g., large, non-profit, government agencies, universities, or political parties). For instance, professors who expand their research and teaching roles in their affiliated universities could have high developing passion; employees who always enjoy finding completely new tasks would be high on inventing passion; and politicians who establish or join



new political parties could be linked to founding passion. I hope the conclusions and insights from this dissertation could shed light on the entrepreneurial passion literature and provide valuable ideas and inspirations to scholars.

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## APPENDIX A. LIST OF SURVEY ITEMS

### Chapter 3. Context: Korean Firms

**Phase 1 (Target: Entrepreneurs – who are owners, founders, and CEOs of the firm)**

#### Independent variable

**Obsessive passion** (6 items) – Vallerand et al., 2003 (JPSP)

#### Mediating and Moderating Variables

**Identity fusion** (7 items) – Gómez et al., 2011 (JPSP)

**Overwork** (1 item) – Average working hours in a week

#### Control variables

##### Environmental-level

**Industry** (1 item) – Korean Standard Industrial Classification (KSIC)

**Environmental hostility** (6 items) – Slevin & Covin, 1997 (JOM)

**Environmental dynamism** (5 items) – Miller & Friesen, 1982 (SMJ)

##### Firm-level

**Firm age** (1 item) – Establishment year of the company

**Firm size** (1 item) – Total number of full-time equivalent employees at the company

**Prior firm performance** (18 items) – Gupta & Govindarajan, 1986 (AMJ)

**Human capital** (9 items) – Jin et al., 2010 (Human Resource Management)

##### Individual-level

**Respondent gender** (1 item) – 1) Male 2) Female

**Respondent age** (1 item) – Which year were you born?

**Education** (1 item) – Datta & Rajagopalan, 1998 (SMJ); Herrmann & Datta, 2002 (JIBS)

**Respondent entrepreneurial self-efficacy** (4 items) – Zhao et al., 2005 (JAP)

**Entrepreneurship experience** (1 item) – 1) Yes 2) No

**Firm family ownership** (1 item) – 1) Yes 2) No

**Phase 2 (Target: Other executives like vice presidents, co-founders, or TMT members)**

**Dependent variable**

**Firm performance** (6 items) – Schilke, 2014 (SMJ)

#### **Chapter 4. Context: Korean SMEs**

**Phase 1 (Target: CEOs of the firm)**

**Independent variable**

**Harmonious passion** (6 items) – Vallerand et al., 2003 (JPSP)

**Mediating and Moderating Variables**

**Bricolage** (8 items) – Senyard et al., 2014 (JPIM)

**Entrepreneurial autonomy** (4 items) – Lumpkin et al., 2009 (ETP)

**Control variables**

**Environmental-level**

**Industry** (1 item) – Korean Standard Industrial Classification (KSIC)

**Environmental hostility** (6 items) – Slevin & Covin, 1997 (JOM)

**Environmental dynamism** (5 items) – Miller & Friesen, 1982 (SMJ)

**Firm-level**

**Firm age** (1 item) – Establishment year of the company

**Firm size** (1 item) – Total number of full-time equivalent employees at the company

**Firm organizational slack** (4 items) – De Luca & Atuahene-Gima, 2007 (Journal of Marketing)

**Individual-level**

**Respondent age** (1 item) – Which year were you born?

**Respondent tenure** (1 item) – How many years have you been with the company?

**Obsessive passion** (6 items) – Vallerand et al., 2003 (JPSP)

**Phase 2 (Target: Other executives like vice presidents, co-founders, or TMT members)**

**Dependent variable**

**Firm performance** (6 items) – Schilke, 2014 (SMJ)

## **Chapter 5. Context: Korean Ventures**

**Phase 1 (Target: Entrepreneurs – who are owners, founders, and CEOs of the firm)**

**Independent variables**

**Entrepreneurial passion** (9 items) – Cardon et al., 2013 (ETP)

**Mediating Variables**

**Exploitation and exploration** (12 items) – He & Wong, 2004 (OS); Lubatkin et al., 2006 (JOM)

**Control variables**

**Environmental-level**

**Industry** (1 item) – Korean Standard Industrial Classification (KSIC)

**Environmental hostility** (6 items) – Slevin & Covin, 1997 (JOM)

**Environmental dynamism** (5 items) – Miller & Friesen, 1982 (SMJ)

**Firm-level**

**Firm age** (1 item) – Establishment year of the company

**Firm size** (1 item) – Total number of full-time equivalent employees at the company

**Past firm performance** (18 items) – Gupta & Govindarajan, 1986 (AMJ)

**Individual-level**

**Respondent gender** (1 item) – 1) Male 2) Female

**Respondent age** (1 item) – Which year were you born?

**Respondent tenure** (1 item) – How many years have you been with the company?

**Education** (1 item) – Datta & Rajagopalan, 1998 (SMJ); Herrmann & Datta, 2002 (JIBS)

**Firm family ownership** (1 item) – 1) Yes 2) No

**Phase 2 (Target: Other executives like vice presidents, co-founders, or TMT members)**

**Dependent variable**

**Firm performance** (18 items) – Gupta & Govindarajan, 1986 (AMJ)

## **SURVEY ITEMS**

### **Chapter 3. Context: Korean Firms**

**Phase 1 (Target: Entrepreneurs – who are owners, founders, and CEOs of the firm)**

**Independent variable**

**Obsessive passion** (6 items) – Vallerand et al., 2003 (JPSP)

Indicate the level of agreement with the following items (1 = Strongly Disagree; 7 = Strongly Agree):

1. I have difficulties controlling my urge to do entrepreneurial activities.
2. I have almost an obsessive feeling for entrepreneurial activities.
3. Entrepreneurial activities are the only thing that really turns me on.
4. If I could, I would only do entrepreneurial activities.
5. Entrepreneurial activities are so exciting that I sometimes lose control over it.
6. I have the impression that entrepreneurial activities control me.

### **Mediating and Moderating Variables**

**Identity fusion** (7 items) – Gómez et al., 2011 (JPSP)

Indicate the level of agreement with the following items (1 = Strongly Disagree; 7 = Strongly Agree):

1. My firm is me.
2. I am one with my firm.
3. I feel immersed in my firm.
4. I have a deep emotional bond with my firm.
5. I am strong because of my firm.
6. I'll do for my firm more than any of other group members would do
7. I make my firm strong.



**Overwork** (1 item) – Average working hours in a week

What is the number of hours in an average week you spend on activities related to work?

### **Control variables**

#### **Environmental-level**

**Industry** (1 item) – Korean Standard Industrial Classification (KSIC)

**Environmental hostility** (6 items) – Slevin & Covin, 1997 (JOM)

Indicate the level of agreement with the following items (1 = Strongly Disagree; 7 = Strongly Agree):

1. The failure rate of firms in my industry is high.
2. My industry is very risky, such that one bad decision could easily threaten the viability of my business unit.
3. Competitive intensity is high in my industry.
4. Customer loyalty is low in my industry.
5. Severe price wars are characteristic of my industry.
6. Low profit margins are characteristic of my industry.

**Environmental dynamism** (5 items) – Miller & Friesen, 1982 (SMJ)

Indicate the level of agreement with the following items (1 = Strongly Disagree; 7 = Strongly Agree):

1. Actions of competitors are generally quite easy to predict.
2. The set of competitors in my industry has remained relatively constant over the last 3 years.
3. Product demand is easy to forecast.
4. Customer requirements / preferences are easy to forecast.
5. My industry is very stable with very little change resulting from major economic, technological, social, or political forces.

#### **Firm-level**

**Firm age** (1 item) – Establishment year of the company

**Firm size** (1 item) – Total number of full-time equivalent employees at the company

**Prior firm performance** (18 items) – Gupta & Govindarajan, 1986 (AMJ)

Indicate the degree of importance to each of the following performance criteria (1 = Little Importance; 7 = Extremely Important):

1. Total sales
2. Sales growth
3. Return on equity
4. Return on investment
5. Return on total assets
6. Operating profits
7. Market share
8. Cash flow
9. Ability to fund growth from profits

Indicate the degree of importance to each of the following performance criteria (1 = Little Importance; 7 = Extremely Important):

1. Total sales
2. Sales growth
3. Return on equity
4. Return on investment
5. Return on total assets
6. Operating profits
7. Market share
8. Cash flow
9. Ability to fund growth from profits

**Human capital** (9 items) – Jin et al., 2010 (Human Resource Management)

Indicate the level of agreement with the following items (1 = Strongly Disagree; 7 = Strongly Agree):

1. Our managers have technical knowledge that is relevant to their responsibilities
2. Our managers have general people management skills (planning, organizing, directing, evaluating, and motivating)

3. Our managers have knowledge of the strengths and weaknesses of our firm
4. Our managers have the necessary coordination skills to work well with other departments in our firm
5. Our managers have the necessary coordination skills to work well with our suppliers
6. Our workers have multiple technological skills
7. Our workers have problem-solving skills
8. Our workers have the necessary interpersonal skills to work well with their coworkers
9. Our workers have experience that is relevant to their jobs

### **Individual-level**

**Respondent gender** (1 item) – 1) Male 2) Female

**Respondent age** (1 item) – Which year were you born?

**Education** (1 item) – Datta & Rajagopalan, 1998 (SMJ); Herrmann & Datta, 2002 (JIBS)

Please indicate your level of education.

1) High school 2) Attended College 3) Undergraduate Degree 4) Attended Graduate School 5) MBA/Master's Degree 6) Attended Doctoral Program 7) Doctorate

**Respondent entrepreneurial self-efficacy** (4 items) – Zhao et al., 2005 (JAP)

Indicate the level of confidence with the following items (1 = Not Very Confident; 7 = Very Confident):

1. Identifying new business opportunities.
2. Creating new products or services.
3. Thinking creatively.
4. Commercializing an idea or new development.

**Entrepreneurship experience** (1 item) – 1) Yes 2) No

**Firm family ownership** (1 item) – 1) Yes 2) No

**Phase 2 (Target: Other executives like vice presidents, co-founders, or TMT members)****Dependent variable****Firm performance** (6 items) – Schilke, 2014 (SMJ)

Indicate the level of agreement with the following items (1 = Strongly Disagree; 7 = Strongly Agree):

1. We have gained strategic advantages over our competitors.
2. We have a large market share
3. Overall, we are more successful than our major competitors.
4. Our EBIT (earnings before interest and taxes) is continuously above industry average.
5. Our ROI (return on investment) is continuously above industry average.
6. Our ROS (return on sales) is continuously above industry average.

**Chapter 4. Context: Korean SMEs****Phase 1 (Target: CEOs of the firm)****Independent variable****Harmonious passion** (6 items) – Vallerand et al., 2003 (JPSP)

Indicate the level of agreement with the following items (1 = Strongly Disagree; 7 = Strongly Agree):

1. Entrepreneurial activities are in harmony with the other activities in my life.
2. The new things that I discover with entrepreneurial activities allow me to appreciate them even more.
3. Entrepreneurial activities reflect the qualities I like about myself.
4. Entrepreneurial activities allow me to live a variety of experiences.
5. Entrepreneurial activities are well integrated in my life.
6. Entrepreneurial activities are in harmony with other things that are part of me.

**Mediating and Moderating Variables****Bricolage** (8 items) – Senyard et al., 2014 (JPIM)

Does the following represent how you never, rarely, sometimes, often, or always go about doing things for your start-up? (1 = Never; 4 = Sometimes; 7 = Always)

1. We are confident of our ability to find workable solutions to new challenges by using our existing resources.
2. We gladly take on a broader range of challenges than others with our resources would be able to.
3. We use any existing resource that seems useful to responding to a new problem or opportunity.
4. We deal with new challenges by applying a combination of our existing resources and other resources inexpensively available to us.
5. When dealing with new problems or opportunities we take action by assuming that we will find a workable solution.
6. By combining our existing resources, we take on a surprising variety of new challenges.
7. When we face new challenges we put together workable solutions from our existing resources.
8. We combine resources to accomplish new challenges that the resources weren't originally intended to accomplish.

#### **Entrepreneurial autonomy (4 items) – Lumpkin et al., 2009 (ETP)**

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Autonomy		
<i>My firm:</i>		
Supports the efforts of individuals and/or teams that work autonomously	1 2 3 4 5 6 7	Requires individuals or teams to rely on senior managers to guide their work.
<i>In general, the top managers of my firm believe that ...</i>		
The best results occur when individuals and/or teams decide for themselves what business opportunities to pursue.	1 2 3 4 5 6 7	The best results occur when the CEO and top managers provide the primary impetus for pursuing business opportunities.
<i>In My Firm:</i>		
Individuals and/or teams pursuing business opportunities make decisions on their own without constantly referring to their supervisor(s).	1 2 3 4 5 6 7	Individuals and/or teams pursuing business opportunities are expected to obtain approval from their supervisor(s) before making decisions.
The CEO and top management team play a major role in identifying and selecting the entrepreneurial opportunities my firm pursues.	1 2 3 4 5 6 7	Employee initiatives and input play a major role in identifying and selecting the entrepreneurial opportunities my firm pursues.

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#### **Control variables**

##### **Environmental-level**

**Industry** (1 item) – Korean Standard Industrial Classification (KSIC)

**Environmental hostility** (6 items) – Slevin & Covin, 1997 (JOM)

Indicate the level of agreement with the following items (1 = Strongly Disagree; 7 = Strongly Agree):

1. The failure rate of firms in my industry is high.
2. My industry is very risky, such that one bad decision could easily threaten the viability of my business unit.
3. Competitive intensity is high in my industry.
4. Customer loyalty is low in my industry.
5. Severe price wars are characteristic of my industry.
6. Low profit margins are characteristic of my industry.

**Environmental dynamism** (5 items) – Miller & Friesen, 1982 (SMJ)

Indicate the level of agreement with the following items (1 = Strongly Disagree; 7 = Strongly Agree):

1. Actions of competitors are generally quite easy to predict.
2. The set of competitors in my industry has remained relatively constant over the last 3 years.
3. Product demand is easy to forecast.
4. Customer requirements / preferences are easy to forecast.
5. My industry is very stable with very little change resulting from major economic, technological, social, or political forces.

**Firm-level**

**Firm age** (1 item) – Establishment year of the company

**Firm size** (1 item) – Total number of full-time equivalent employees at the company

**Firm organizational slack** (4 items) – De Luca & Atuahene-Gima, 2007 (Journal of Marketing)

Indicate the level of agreement with the following items (1 = Strongly Disagree; 7 = Strongly Agree):

1. Our firm has uncommitted resources that can be used to fund strategic initiatives at short notice.
2. Our firm has a large amount of resources available in the short run to fund our initiatives.
3. Our firm will have no problems obtaining resources at short notice to support new strategic initiatives.
4. Our firm has a large amount of resources at the discretion of management to fund new strategic initiatives.

### **Individual-level**

**Respondent age** (1 item) – Which year were you born?

**Respondent tenure** (1 item) – How many years have you been with the company?

**Obsessive passion** (6 items) – Vallerand et al., 2003 (JPSP)

Indicate the level of agreement with the following items (1 = Strongly Disagree; 7 = Strongly Agree):

1. I have difficulties controlling my urge to do entrepreneurial activities.
2. I have almost an obsessive feeling for entrepreneurial activities.
3. Entrepreneurial activities are the only thing that really turns me on.
4. If I could, I would only do entrepreneurial activities.
5. Entrepreneurial activities are so exciting that I sometimes lose control over it.
6. I have the impression that entrepreneurial activities control me.

### **Phase 2 (Target: Other executives like vice presidents, co-founders, or TMT members)**

#### **Dependent variable**

**Firm performance** (6 items) – Schilke, 2014 (SMJ)

Indicate the level of agreement with the following items (1 = Strongly Disagree; 7 = Strongly Agree):

1. We have gained strategic advantages over our competitors.
2. We have a large market share
3. Overall, we are more successful than our major competitors.
4. Our EBIT (earnings before interest and taxes) is continuously above industry average.
5. Our ROI (return on investment) is continuously above industry average.
6. Our ROS (return on sales) is continuously above industry average.

## Chapter 5. Context: Korean Ventures

### Phase 1 (Target: Entrepreneurs – who are owners, founders, and CEOs of the firm)

#### Independent variables

##### **Entrepreneurial passion** (9 items) – Cardon et al., 2013 (ETP)

Indicate the level of agreement with the following items (1 = Strongly Disagree; 7 = Strongly Agree):

Developer

1. I really like finding the right people to market my product/service to.
2. Assembling the right people to work for my business is exciting.
3. Pushing my employees and myself to make our company better motivates me.
4. Nurturing and growing companies is an important part of who I am.

Inventor

1. It is exciting to figure out new ways to solve unmet market needs that can be commercialized.
2. Searching for new ideas for products/services to offer is enjoyable to me.
3. I am motivated to figure out how to make existing products/services better.
4. Scanning the environment for new opportunities really excites me.
5. Inventing new solutions to problems is an important part of who I am.

#### Mediating Variables

##### **Exploitation and exploration** (12 items) – He & Wong, 2004 (OS); Lubatkin et al., 2006 (JOM)

Indicate the level of agreement with the following items (1 = Strongly Disagree; 7 = Strongly Agree):

Exploration

*My Firm:*

1. looks for novel technological ideas by thinking “outside the box,”
2. bases its success on its ability to explore new technologies.
3. creates products or services that are innovative to the firm.
4. looks for creative ways to satisfy its customers’ needs.



5. aggressively ventures into new market segments.
6. actively targets new customer groups.

#### Exploitation

##### *My Firm:*

1. commits to improve quality and lower cost,
2. continuously improves the reliability of its products and services.
3. increases the levels of automation in its operations.
4. constantly surveys existing customers' satisfaction.
5. fine-tunes what it offers to keep its current customers satisfied.
6. penetrates more deeply into its existing customer base.

#### Control variables

##### Environmental-level

**Industry** (1 item) – Korean Standard Industrial Classification (KSIC)

**Environmental hostility** (6 items) – Slevin & Covin, 1997 (JOM)

Indicate the level of agreement with the following items (1 = Strongly Disagree; 7 = Strongly Agree):

1. The failure rate of firms in my industry is high.
2. My industry is very risky, such that one bad decision could easily threaten the viability of my business unit.
3. Competitive intensity is high in my industry.
4. Customer loyalty is low in my industry.
5. Severe price wars are characteristic of my industry.
6. Low profit margins are characteristic of my industry.

**Environmental dynamism** (5 items) – Miller & Friesen, 1982 (SMJ)

Indicate the level of agreement with the following items (1 = Strongly Disagree; 7 = Strongly Agree):

1. Actions of competitors are generally quite easy to predict.
2. The set of competitors in my industry has remained relatively constant over the last 3 years.

3. Product demand is easy to forecast.
4. Customer requirements / preferences are easy to forecast.
5. My industry is very stable with very little change resulting from major economic, technological, social, or political forces.

#### **Firm-level**

**Firm age** (1 item) – Establishment year of the company

**Firm size** (1 item) – Total number of full-time equivalent employees at the company

**Past firm performance** (18 items) – Gupta & Govindarajan, 1986 (AMJ)

Indicate the degree of importance to each of the following performance criteria (1 = Little Importance; 7 = Extremely Important):

1. Total sales
2. Sales growth
3. Return on equity
4. Return on investment
5. Return on total assets
6. Operating profits
7. Market share
8. Cash flow
9. Ability to fund growth from profits

Indicate the degree of importance to each of the following performance criteria (1 = Little Importance; 7 = Extremely Important):

1. Total sales
2. Sales growth
3. Return on equity
4. Return on investment
5. Return on total assets
6. Operating profits
7. Market share
8. Cash flow

9. Ability to fund growth from profits

**Individual-level**

**Respondent gender** (1 item) – 1) Male 2) Female

**Respondent age** (1 item) – Which year were you born?

**Respondent tenure** (1 item) – How many years have you been with the company?

**Education** (1 item) – Datta & Rajagopalan, 1998 (SMJ); Herrmann & Datta, 2002 (JIBS)

Please indicate your level of education.

1) High school 2) Attended College 3) Undergraduate Degree 4) Attended Graduate School 5) MBA/Master's Degree 6) Attended Doctoral Program 7) Doctorate

**Firm family ownership** (1 item) – 1) Yes 2) No

**Phase 2 (Target: Other executives like vice presidents, co-founders, or TMT members)**

**Dependent variable**

**Firm performance** (18 items) – Gupta & Govindarajan, 1986 (AMJ)

Indicate the degree of importance to each of the following performance criteria (1 = Little Importance; 7 = Extremely Important):

1. Total sales
2. Sales growth
3. Return on equity
4. Return on investment
5. Return on total assets
6. Operating profits
7. Market share
8. Cash flow
9. Ability to fund growth from profits

Indicate the degree of importance to each of the following performance criteria (1 = Little Importance; 7 = Extremely Important):

1. Total sales
2. Sales growth

3. Return on equity
4. Return on investment
5. Return on total assets
6. Operating profits
7. Market share
8. Cash flow
9. Ability to fund growth from profits

## APPENDIX B. INSTITUTIONAL REVIEW BOARD APPROVAL



Institutional Review Board  
Office for Responsible Research  
Vice President for Research  
2420 Lincoln Way, Suite 202  
Ames, Iowa 50014 515 294-  
4566

**Date:** 07/03/2019

**To:** Younggeun Lee Pol Herrmann

**From:** Office for Responsible Research

**Title:** Entrepreneurial passion and related constructs

**IRB ID:** 19-329

**Submission Type:** Initial Submission **Exemption Date:** 07/03/2019

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The project referenced above has been declared exempt from most requirements of the human subject protections regulations as described in 45 CFR 46.104 or 21 CFR 56.104 because it meets the following federal requirements for exemption:

2018 - 2 (ii): Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording) when any disclosure of the human subjects' responses outside the research would not reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, educational advancement, or reputation.

The determination of exemption means that:

- **You do not need to submit an application for continuing review. Instead, you will receive a request for a brief status update every three years. The status update is intended to verify that the study is still ongoing.**
- **You must carry out the research as described in the IRB application.** Review by IRB staff is required prior to implementing modifications that may change the exempt status of the research. In general, review is required for any *modifications to the research procedures* (e.g., method of data collection, nature or scope of information to be collected, nature or duration of behavioral interventions, use of deception, etc.), any change in *privacy or confidentiality protections*, modifications that result in the *inclusion of participants from vulnerable populations*, removing plans for informing participants about the study, any *change that may increase the risk or discomfort to participants*, and/or any change such that the revised procedures do not fall into one or more of the regulatory exemption categories. The purpose of review is to determine if the project still meets the federal criteria for exemption.
- All **changes to key personnel** must receive prior approval.
- **Promptly inform the IRB of any addition of or change in federal funding for this study.** Approval of the protocol referenced above applies only to funding sources that are specifically identified in the corresponding IRB application.

**Detailed information about requirements for submitting modifications for exempt research can be found on our [website](#).** For modifications that require prior approval, an amendment to the most recent IRB application must be submitted in IRBManager. A determination of exemption or approval from the IRB must be granted before implementing the proposed changes.

Non-exempt research is subject to many regulatory requirements that must be addressed prior to implementation of the study. Conducting non-exempt research without IRB review and approval may constitute non-compliance with federal regulations and/or academic misconduct according to ISU policy.

Additionally:

- All research involving human participants must be submitted for IRB review. **Only the IRB or its designees may make the determination of exemption**, even if you conduct a study in the future that is exactly like this study.
- **Please inform the IRB if the Principal Investigator and/or Supervising Investigator end their role or involvement with the project** with sufficient time to allow an alternate PI/Supervising Investigator to assume oversight responsibility. Projects must have an eligible PI to remain open.
- **Immediately inform the IRB of (1) all serious and/or unexpected adverse experiences involving risks to subjects or others; and (2) any other unanticipated problems involving risks to subjects or others.**
- **Approval from other entities may also be needed.** For example, access to data from private records (e.g., student, medical, or employment records, etc.) that are protected by FERPA, HIPAA or other confidentiality policies requires permission from the holders of those records. Similarly, for research conducted in institutions other than ISU (e.g., schools, other colleges or universities, medical facilities, companies, etc.), investigators must obtain permission from the institution(s) as required by their policies. **An IRB determination of exemption in no way implies or guarantees that permission from these other entities will be granted.**
- Your research study may be subject to **post-approval monitoring by Iowa State University's Office for Responsible Research**. In some cases, it may also be subject to formal audit or inspection by federal agencies and study sponsors.
- Upon completion of the project, transfer of IRB oversight to another IRB, or departure of the PI and/or Supervising Investigator, please initiate a Project Closure in IRBManager to officially close the project. For information on instances when a study may be closed, please refer to the IRB Study Closure Policy.

Please don't hesitate to contact us if you have questions or concerns at 515-294-4566 or [IRB@iastate.edu](mailto:IRB@iastate.edu).