WORKING PASSIONATELY DOES NOT ALWAYS PAY OFF: THE NEGATIVE MODERATING ROLE OF PASSION ON THE RELATIONSHIP BETWEEN DELIBERATE PRACTICE AND VENTURE PERFORMANCE

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Abstract

Deliberate practice, an iterative process that leads to expertise, is found to be positively associated with superior performance in domains such as sports, education and entrepreneurship. At the same time, deliberate practice is also seen as being less than enjoyable and difficult to pursue consistently. As such, passion is considered to be a vital motivator of engagement in and maintenance of deliberate practice. Despite the evident importance of passion, the relationship between passion and deliberate practice in entrepreneurship has not been subject to sufficient empirical evaluation. Therefore, in this study, we consider the way in which passion moderates the relationship between deliberate practice and venture performance. We hypothesize that deliberate practice is positively related to venture performance and that passion positively moderates this relationship. We find support for our first hypothesis, in line with previous studies. However, contrary to our second hypothesis, we find that entrepreneurial passion *negatively* moderates the deliberate practice-venture performance relationship. In response to this finding, we provide possible explanations as to why this negative moderation effect was observed by drawing on Kolb's experiential learning cycle.

Introduction

Studies of entrepreneurial expertise have increased in number over the last decade (Baron and Henry, 2010; Dew et al., 2015; Mitchell et al., 2017) and have proven to be especially well-placed to show how entrepreneurial decision-making and behavior influence performance (Baron, 2004). Findings in this area suggest that deliberate practice – seen as a process through which expertise is gained (Ericsson et al., 1993; Krampe and Ericsson, 1996) – can account for improved performance. Deliberate practice is defined as "a highly structured activity, the explicit goal of which is to improve performance", where "specific tasks are invented to overcome weaknesses, and performance is carefully monitored to provide cues for ways to improve it further" (Ericsson et al., 1993, 368). Deliberate practice has been found to positively influence performance in education (Plant et al., 2005), business (Sonnentag and Kleine, 2000), the performing arts (Krampe and Ericsson, 1996), sports (Helsen et al., 1998), as well as entrepreneurship (Unger et al., 2009). The latter study revealed that entrepreneurs engaging in repetitive deliberate practice activities (e.g. consulting colleagues or experts, asking customers for feedback and professional reading) acquire more entrepreneurial knowledge and show improved ven-

ture performance. Recently, Dew et al. (2018) have suggested that the main deliberate practice activity performed by entrepreneurs is the effectual process of acquiring stakeholder commitments – the 'effectual ask'. Due to the granularity of the 'effectual ask', this activity can be executed repetitively and outcomes provide clear cues as to how to elicit stakeholder commitments.

The development and acquisition of expertise as a result of deliberate practice is an effortful activity (Ericsson et al., 1993) that is fundamentally difficult to enjoy (Ericsson and Charness, 1994). In light of this, studies find that motivational factors such as passion, defined as "an entrepreneur's intense affective state accompanied by cognitive and behavioral manifestations of high personal value" (Chen et al., 2009, 199), are essential in helping individuals commit to engaging in deliberate practice activities (Bonneville-Roussy et al., 2011; Duckworth et al., 2011). For example, passion motivates athletes in various sports to engage in and commit to deliberate practice (Vallerand et al., 2008). Moreover, it is suggested that passion aids entrepreneurs in overcoming difficulties and remaining committed (Cardon et al., 2009a). For instance, Murnieks et al. (2014) suggest that passion may act as a stimulant that motivates entrepreneurs to continuously pursue deliberate practice activities. Despite the apparently vital role of passion in consistently carrying out deliberate practice, there has yet to be any empirical study carried out of the effect of passion on deliberate practice in entrepreneurial settings.

Thus, to address this void, our study empirically investigates the question of how entrepreneurial passion affects venture performance when coupled with deliberate practice in the entrepreneurship context. In short, we ask: how does entrepreneurial passion moderate the deliberate practice-venture performance relationship? In addressing this question, we hypothesize that deliberate practice is positively related to performance and that entrepreneurial passion positively moderates this relationship. To test our hypotheses, we empirically examine the relationship between deliberate practice and venture performance and the moderating role of passion on the basis of data gathered from 119 start-up founders in the Netherlands. Our findings provide support for the claim that deliberate practice is positively related to performance. However, to our surprise, we found that passion *negatively* moderates the relationship between deliberate practice and venture performance.

We seek to contribute to entrepreneurship literature on deliberate practice. In reaction to our finding that passion negatively moderates the deliberate practice-venture performance relationship, we provide the following explanation: when passion on the part of the entrepreneurs become obsessive or excessive, the positive effects of deliberate practice activities

are eroded. In such cases, despite engaging in deliberate practice, entrepreneurial passion will not positively contribute to venture performance.

In what follows, we begin by reviewing the literature related to the key constructs included in our study: deliberate practice, venture performance and entrepreneurial passion. We then derive our hypotheses on the basis of research gaps identified in the literature review. Next, we describe the methodology used in our study. Finally, we breakdown the results of our analyses and discuss the implications that flow from them.

Literature and Hypotheses

Deliberate Practice and Venture Performance

Studies suggest that, in many cases, experience and performance are loosely related, only modestly correlated at best (e.g., Ericsson et al., 1993; Ericsson and Lehmann, 1996). In contrast with straightforward experience, which is no guarantee of superior performance in and of itself, deliberate practice has the capacity to elicit superior performance (Ericsson et al., 1993).

Deliberate practice is defined as "a highly structured activity, the explicit goal of which is to improve performance", where "specific tasks are invented to overcome weaknesses, and performance is carefully monitored to provide cues for ways to improve it further" (Ericsson et al., 1993, 368). Similarly, Keith and Ericsson (2007, 142) highlight that deliberate practice activities are "undertaken with the explicit goal of performance improvement. Only effortful and challenging practice activities during which individuals push themselves are considered to constitute deliberate practice, in contrast to more playful activities". Shreve (2006, 29) defines deliberate practice as "regular engagement in specific activities directed at performance enhancement in a particular domain, where domain is some sort of skilled activity". These various definitions all share the perspective that deliberate practice is purposefully carried out to improve performance.

The literature supports the idea that deliberate practice activities should be closely linked to performance enhancement. This is because the fundamental constructs of deliberate practice, such as the immediacy of feedback and a repetitive nature (Ericsson et al., 1993) serve to increase precision and speed in relation to cognitive, motor and perceptual duties (Fitts and Posner, 1967; Gibson, 1969; Welford, 1968). To elaborate, the repetition aspect of deliberate practice fortifies the link between acquired knowledge blocks (Rock, 1957). Moreover, the self-reflection process that follows the provision of immediate feedback inherent in deliberate practice is highly beneficial, since the process allows individuals to increase their

awareness of their own experiences, thereby creating a self-teachable moment (Hullfish and Smith, 1961). In addition, the demanding nature of deliberate practice activity may contribute to improved performance since more difficult/demanding tasks require more attention, which, in turn, can augment neuronal behavior and performance (Boudreau et al., 2006; Spitzer et al., 1988; Spitzer and Richmond, 1991).

Nonetheless, debate exists regarding the effectiveness of deliberate practice in producing improved performance. Hambrick et al. (2014) point out that the effectiveness (in terms of performance) of deliberate practice is contingent upon the domain in which it is practiced. For instance, in one study, 34% of the variance in performance in the game of chess was explained by deliberate practice (Hambrick et al., 2014), while in another study, only 21% of this variance was explained in the domain of music (Macnamara et al. 2014). Still, despite differences in the degree of effectiveness found, the fact that deliberate practice entails unique activities that are expected to facilitate improved performance to some extent is quite well established. Deliberate practice enables the learner to construct an environment that is well-suited to learning and acquiring skills that arise through relevant knowledge absorption alongside prompt feedback (Ericsson et al., 1993). In addition, when engaging in deliberate practice, one is forced to accept challenges by venturing outside of one's comfortable learning zone (Ericsson, 2002; Ericsson, 2006). Improvement as a result of overcoming challenges outside of one's comfort zone is what distinguishes deliberate practice from the acquisition of ordinary experience.

Superior performance as a result of long hours of deliberate practice can be observed in several domains, for instance, basketball (Vallerand et al., 2008), music (Ericsson et al., 1993; Krampe and Ericsson, 1996) and entrepreneurship (Keith et al., 2016). Unger et al. (2009) find that deliberate practice is positively related to entrepreneurial knowledge and, as a consequence, related to venture growth as a measure of performance. The authors suggest that deliberate practice promotes the development of procedural knowledge, a type of knowledge that increases an individual's fluency in the execution of learning-based tasks (Anderson, 1982; Sonnentag and Kleine, 2000). Such augmentation of knowledge, in turn, fosters performance improvement (Sonnentag and Kleine, 2000). Similarly, deliberate practice is conceptualized as a strategic activity that is technically geared towards selectively reiterating the best learning practices and methods, which, in turn, is associated with superior performance (Ericsson et al., 1993). Furthermore, Unger et al. (2009) suggest that deliberate practice positively influences entrepreneurial success. Therefore, we hypothesize the following:

Hypothesis 1: Deliberate practice is positively related to venture performance.

Deliberate practice is an effortful endeavor that can only be sustained for a limited time (Ericsson et al., 1993) because it requires high levels of concentration (Schneider, 1993). It is not enjoyable and the rewards for engaging in it are limited to those that arise from resulting performance improvement (Ericsson et al., 1993). Unlike professional work, deliberate practice does not yield external or monetary benefits (Vallerand et al., 2007). Therefore, a driver, such as passion, is vital in terms of motivation.

Entrepreneurial Passion

Regarding the definition of entrepreneurial passion, Cardon et al. (2009a)'s meta-study shows that the concept can be defined in several different ways. To start with, entrepreneurial passion can be interpreted in light of the venture or work. For instance, Baum and Locke (2004, 588) illustrate the notion of entrepreneurial passion as "a genuine love for work" and Shane et al. (2003, 268) define it as a "selfish love of work". In a similar fashion, Baron and Hannan (2002, 10) explain it as "a sense of personal belonging and identification with the company". Other studies put more emphasis on the affective/emotional aspect of entrepreneurial passion in their definitions. For instance, Chen et al. (2009, 200) define it as "an entrepreneur's intense affective state accompanied by cognitive and behavioral manifestations of high personal value". Smilor (1997, 342) defines it as an "enthusiasm, joy, and even zeal that come from the energetic and unflagging pursuit of a worthy, challenging, and uplifting purpose". As this study focuses on understanding the emotional/affective push that passion provides, we rely on Chen et al. (2009)'s definition in this study.

Definitions of the nature of entrepreneurial passion rest on the theoretical foundation established by Cardon et al. (2009a), that entrepreneurial passion is an intense positive feeling that arises in response to the unique identity salience entrepreneurs possess. In emphasizing that entrepreneurial passion is about an individual's emotion and experience, Cardon et al. (2009a)'s theory focuses on the entrepreneurial being rather than simply a passion for venture processes or work. This theorization borrows from identity theory (Stryker and Burke, 2000), which explains how the self-acknowledgement of one's identity (in our case, the identity of being an entrepreneur) triggers reflexive cerebration and action relevant to that identity. In accordance with this theory, entrepreneurs exhibit passion in their endeavors in inventing novel services or products and developing new ventures (Cardon and Stevens, 2009; Cardon et al., 2013). Passion arises in situations in which entrepreneurs are engaged in meaningful, ven-

ture-related activities (Cardon et al., 2005; Cardon et al., 2009a; Smilor, 1997).

Entrepreneurial passion carries with it a wide range of positive effects. For instance, passion aids entrepreneurs in adapting to and withstanding difficulties that arise in their surroundings (Cardon et al., 2009a). In addition, it is suggested that passion is a strong motivator of drive and persistence (Brannback et al., 2018; Cardon et al., 2005), as well as a source of affective enjoyment (Cardon and Kirk, 2015). Cardon et al. (2005) suggest that passion for a venture may blind entrepreneurs to hardship or, at least, prevent them from acknowledging it. Consequently, it helps to maintain enthusiasm when working toward a goal. This positive drive and enthusiasm are associated with an individual achieving a joyful state, stemming from passion (Chang, 2002).

Considering the uplifting properties of entrepreneurial passion, it is possible that these factors might contribute to an entrepreneur being able to power through hard-to-sustain-and-enjoy deliberate practice activities. Deliberate practice can be difficult to sustain over time (Ericsson et al., 1993), yet the persistence that passion brings with it (Brannback et al., 2018; Cardon et al., 2005) can help overcome this. Moreover, the tedious nature of deliberate practice activities (Ericsson et al., 1993) may be tempered by passion's ability to make the seemingly unenjoyable enjoyable (Cardon and Kirk, 2015; Chang, 2002).

The motivational push toward deliberate practice that passion tends to provide has been observed in several domains. For instance, passion and perseverance in students have been found to help students engage in and sustain deliberate practice activities (Duckworth et al., 2011). Duckworth et al. (2011) posit that differences in student performance can be traced back to the degree to which a student is willing to sustain 'hard-to-enjoy' deliberate practice activities, which, in turn, is contingent on the student's level of grit (a combination of passion and perseverance). In short, passion and perseverance are what enable individuals to reap the performance-related benefits that flow from deliberate practice. Similarly, passion has been found to help basketball players and swimmers engage in and commit to deliberate practice leading to improved performance in their respective sports (Vallerand et al., 2008). This is because passion enables individuals to concentrate on relevant achievement processes, which, in this case, are deliberate practice activities. Passion is also seen as being at play in the realm of entrepreneurship, as it is theorized that passion is intimately related to venture-related activities (Cardon et al., 2009a; Smilor, 1997).

In summary, previous studies suggest that passion is highly beneficial in terms of improved performance when coupled with deliberate

practice. It is also suggested that passion has a positive influence on the effectiveness of deliberate practice. Therefore, we suggest that entrepreneurial passion moderates the relationship between deliberate practice and venture performance. Passion helps entrepreneurs to persistently engage in deliberate practice, which, in turn, can contribute to venture success (Keith et al., 2016). Hence, we hypothesize the following:

Hypothesis 2: Entrepreneurial passion positively moderates the relationship between deliberate practice and venture performance.

In the following section, we will discuss the methodology used to test our hypotheses. We describe our sample and the procedures used to collect data, the techniques we used to construct our survey and the measures used for each variable of interest.

Methodology

Sample

We conducted a quantitative study of data collected from surveys of 119 start-up founders in the Netherlands. The sample was drawn from Startup Delta in the Netherlands, an initiative of entities including the Dutch Ministry of Economic Affairs, that provides a gateway to an extensive network of stakeholders in the Dutch start-up ecosystem. Startup Delta makes use of Dealroom.co's database that allows anyone to add their company's information. Each company is verified in an internal, manual curation process. We targeted 2,042 start-up founders that were officially listed as of April 2016 and sent them an online survey. In the event of non-responses after sending a follow-up email, we personally approached several entrepreneurs at start-up meetings. Each founder included started at least one company. In the event that an entrepreneur had founded more than one firm, we included the founder just once in our study, regardless of how many firms that individual had founded. Using this information, we conducted an analysis at the deliberate practice-level. This means that we treated one observation as one deliberate practice activity. As such, in the event that an individual engaged in more than one deliberate practice activity, we treated each activity as a separate observation. As a result, our analysis is based on a sample size of 156 deliberate practice activities. The reason for this approach is that we were interested in understanding how each deliberate practice activity relates to venture performance rather than how a combination of deliberate practice activities affects venture performance.

Researching a sample like this is important from an academic standpoint because the sample consists of actual entrepreneurs. As the entrepreneur population is difficult to identify and relatively small (Neergaard and Ulhøi, 2007), studies have, at times, had to make use of proxies of entrepreneurs, like students with entrepreneurial intentions, in spite of the drawbacks associated with doing so (Robinson et al., 1991). However, our study manages to avoid this potential pitfall and directly addresses the entrepreneurial topic of interest by observing entrepreneurs that were active in running their own businesses at the time of data collection.

Procedure

Data was collected online by approaching entrepreneurs via email, as well as through face-to-face communication. We began by sending out email surveys to every individual listed the Startup Delta database. We managed to track down a number of non-respondents by attending start-up events around the Netherlands (e.g. Let's Get Started 2017 in Amsterdam) attended by entrepreneurs seeking to promote their new ventures. At these events, we provided respondents with tablet computers on which they were asked to complete the exact same version of the survey that was sent by the email. To mimic the conditions of the email survey, we did not interact with the respondents in the time in which they completed the survey other than to hand them the computers that were pre-loaded with the survey. De Leeuw (1992) states that differences in reliability and consistency of answers between different survey modes are minor, especially when the open questions are simple to answer, as was the case in our study (the open-ended questions included in our study only required one or two-word answers). While the survey was carried out using two different modes, there is no major reason to suspect that a prominent mode effect has come into play here. In both cases (email and face-to-face), we made use of a media channel that minimizes human interaction and lets the computer facilitate the entire survey, provided the same user-interface and let the respondent be in control of the survey without interference (De Leeuw, 1992). The overall response rate was 5.8 percent.

Survey Design

We employed several strategies in designing the questionnaire to address potential biases. First, a commonly observed bias in survey design is the question-order bias (Bradburn and Mason, 1964; Van de Walle and Van Ryzin, 2011). This arises from the order in which questions are presented (e.g. easiest to hardest) in a survey, which may influence the respondent's choice of answers (Weinstein and Roediger, 2010). To prevent such bias, McFarland (1981) advises ordering the questions in such a way

that relatively more general questions precede specific ones and unaided questions are placed before aided ones. Our constructed survey followed suit by placing the more general and open-ended questions at the beginning and the more lengthy and detailed multiple-choice questions at the end.

Secondly, we took into account the possibility of social desirability bias. According to Podsakoff et al. (2003), a self-reporting survey is always prone to such a bias. Nevertheless, we argue that one can limit social desirability bias by incorporating validated scales from prior studies. As such, in this survey, we use established scales and metrics for all variables.

Thirdly, this survey was constructed and administered using a computer-based format, as it is known that computer-administered questionnaires diminish desirability bias better than other formats (Richman et al., 1999).

Finally, Huber and Power (1985) advise removing disincentives to answering the questionnaire by assuring anonymity. In this study, we informed the respondents of the potential benefits they could reap by participating, both in the introductory email and on the first page of the survey and stated that both confidentiality and anonymity were guaranteed.

Measures

Deliberate Practice. To measure deliberate practice, we asked respondents to report the weekly activities in which they engaged in order to improve their performance and the frequency with which these activities were executed. We asked each individual to provide the average total hours of deliberate practice activities done per week for each unique deliberate practice activity he or she reported. For instance, one entrepreneur may state that he or she had done activity A for an average of 4 hours per week and activity B for an average of 7 hours per week. We then added up all weekly hours reported.

On the basis of the answers provided, we refined the list of reported activities to include activities that fit the deliberate practice criteria. These criteria were as follows: the activities were repetitive; instant and productive feedback was available; the activities were systematically designed to improve performance levels and the activities can be considered to be mentally demanding and not particularly enjoyable (Ericsson et al., 1993; Ericsson and Charness, 1994; Krampe and Ericsson, 1996; Vallerand et al., 2008). Additional validation was conducted by comparing the refined list with the deliberate practice activities previously identified by Unger et al. (2009). This measurement of deliberate practice is common in

the study of entrepreneurship (cf. Unger et al., 2009; Keith et al., 2016) and business (cf. Sonnentag and Kleine, 2000). This filtering led to the emergence of five distinct deliberate practice activities, namely reading, online education/training, mentoring/coaching, offline education/training and networking.

Entrepreneurial Passion. Entrepreneurial passion was measured in accordance with Cardon et al. (2013). We used a measure that encompasses three dimensions of passion: passion for inventing; passion for founding and passion for developing a venture. We measured passion for inventing by asking about "activities associated with scanning the environment for new market opportunities, developing new products or services, and working with new prototypes" (Cardon et al., 2013, 4). We measured passion for founding by asking questions related to the required monetary, human and social resources relevant to establishing a new venture (Cardon et al., 2009b). Finally, we measured passion for developing by asking questions about the processes that a venture experiences after being established, such as growth and development (Cardon et al., 2009a). In total, 10 questions that verify intense positive feelings in response to inventing, founding and developing new ventures were asked in the questionnaire and each participant responded using a 7-point Likert-type scale.

Venture Performance. To measure venture performance, we measured growth. In particular, we used employment growth, as it is considered to be a safer and more conservative measure of business growth that financial growth, which can be subject to sporadic and volatile changes (Delmar, 1997). Moreover, growth measures help avoid the potential problems inherent to static financial performance measures such as ROI or ROA, such as providing a distorted view of the health of new ventures that stems from relatively smaller investment sizes compared to returns (Chandler and Hanks, 1993). Additionally, the growth measure is seen as highly relevant to gauging venture performance levels (Chandler and Hanks, 1993). Previous studies have shown that growth is the most common indicator of venture performance used (Brush and Vanderwerf, 1992; Murphy et al., 1996; Baron and Tang, 2009; Read et al., 2009; Arend et al., 2014). We use employee growth, in particular, to measure venture performance. Williamson (1996)'s transaction cost perspective shows that an increase in number of employees comes at a cost and would therefore not be implemented if the firm was not financially better off than before. In other words, employee growth can be seen as a strong indicator and signal that a firm has achieved certain financial objectives. In addition, from the survey participant's perspective, reporting may be more accurate, as specific numbers do

not need to be estimated or meticulously calculated (Cooper et al., 1994). Finally, employee growth may be a better, less deceptive measure than financial growth in the context of new ventures. For instance, the growth of small innovative firms in terms of employee headcount can serve as a proxy for growth of legitimacy and value of technology or knowledge, even while showing zero sales revenue (Clarysse et al., 2011; Davila et al., 2003). Thus, using data on past growth – measured as number of employees – is considered to be a highly dependable measure of impending venture performance (Brush and Vanderwerf, 1992).

Employee growth was measured using the exact worker headcount per year over the past three years. The employee growth formula ($\frac{\text{Year x+1 headcount} - \text{Year x headcount}}{\text{Year x+1 headcount}}$ with x being 2014, 2015 and 2016) was adapted from Hanks et al. (1993). We calculated the average annual growth rates for the past three years. Although the applied growth formula is considered atypical, as the denominator is year x+1 instead of year x, the difference is advantageous in the context of measuring the growth of very young firms, as new ventures are, that may have only been established recently (Hanks et al., 1993).

Control Variables. We controlled for (co)-founders' previous successful/unsuccessful entrepreneurial exits, group-level deliberate practice and firm size. First, the number of unsuccessful exits were incorporated into the study because venture failure experience has been seen to affect performance in several studies (Cope, 2011; Ellis et al., 2006). Simultaneously, the number of successful exits were also included since such exit experiences may have negative performance implications for new ventures (Rerup, 2005). Secondly, group-level deliberate practice was included as a control variable since team learning activities can foster adaptive behavior that leads to better team performance in businesses (Bunderson and Sutcliffe, 2003). Finally, firm size was included since small firms are generally found to be more prone to failure (Bruderl and Schussler, 1990; Dobrev, 2001). Moreover, as larger firms are more likely to realize growth than smaller firms (Orser et al., 2000), we also included a firm size measure in our study.

Results

Descriptive Information

The average entrepreneur experienced 0.87 (less than 1) successful exit and 0.47 (less than 1) unsuccessful exit. The new venture headed by the entrepreneur had, on average, a headcount of 9.9 employees. Moreover,

entrepreneurs devoted 3.26 hours to deliberate practice at the individual-level per week. We observed high levels of entrepreneurial passion (i.e. 70% replied 'strongly agree' or 'agree' to questions that asked how passionate one is on a 7-item Likert-like scale). We conducted hierarchical linear regression analyses using this data to measure the main effect of deliberate practice and the interaction effect of entrepreneurial passion and deliberate practice on venture performance.

Insert Table 1 about here

Hypothesis Testing

Prior to testing our hypotheses, we ran several tests to determine whether or not the basic assumptions of linear regression analysis were met. First, a test for multicollinearity showed that all predictor variables had a VIF value of under 10 with an average of 1.17. We were therefore able to conclude that there are no major issues with multicollinearity between the variables (Bowerman and O'Connell, 1990; Myers, 1990). Second, there were no influential cases (Cook's Distance > 1) in our sample (n = 156) that Field et al. (2012) and Cook and Weisberg (1982) claim can distort an analysis. Finally, we conducted a Cronbach's alpha test for the 7-item Likert-like passion scale (Crook et al., 2010; Nunnally, 1978). The result shows a good level of reliability ($\alpha = .80$). Table 1 provides information on the standard deviations, means and bivariate correlations of all measured variables.

We then tested the main effect of deliberate practice on venture performance. The results show a significant positive relationship between deliberate practice and venture performance ($\beta = .011$, $p < .05$). The more hours people reported engaging in deliberate practice activities, the higher the employee growth rate was. As such, we found support for Hypothesis 1. At the same time, entrepreneurial passion was not a factor that explained venture performance in our study ($\beta = .001$, $p > .10$).

Next, we tested for interaction effects of entrepreneurial passion and deliberate practice. The results show that the interaction effect of entrepreneurial passion and deliberate practice on venture performance is significant, but *negative* ($\beta = -.001$, $p < .01$; see Fig. 1). Contrary to our Hypothesis 2, in which we posit that entrepreneurial passion *positively* moderates the relationship between deliberate practice and venture performance, our results shows that entrepreneurial passion *negatively* moderates this relationship.

Insert Table 2 about here

The results of both the main effect and interaction effect are presented in Table 2. Illustrating the interaction effect, Fig. 1 shows how, in the case of lower levels of entrepreneurial passion, deliberate practice and venture performance have a directly proportional slope; however, in the case of higher levels of entrepreneurial passion, deliberate practice and venture performance have an inversely proportional slope. The slopes show the effect of deliberate practice on performance at -1 standard deviation and +1 standard deviation, based on Hayes (2017)'s recommendation.

To ensure that the results presented indeed point to a moderation effect, we conducted a simple slopes analysis. The simple slopes analysis was conducted in line with Bauer and Curran (2005) and Cohen et al. (2013). For the slopes associated with deliberate practice interacting with entrepreneurial passion at +1 standard deviation, mean and -1 standard deviation, all were shown to be significantly different from zero. Our choice of points of measurement follows those of multiple studies including Bauer and Curran (2005), Cohen et al. (2013), and Spiller et al. (2013).

Insert Figure 1 about here

Discussion

Implications

Relationship between Deliberate Practice and Venture Performance. Our findings show a positive effect of deliberate practice on venture performance. This result is consistent with the existing literature. For example, Unger et al. (2009) find that deliberate practice is positively related to venture growth. Several activities are seen as constituting deliberate practice in entrepreneurship. For example, consulting colleagues or experts, asking customers for feedback, professional reading (Unger et al., 2009) and effectually acquiring stakeholder commitments through asking (Dew et al., 2018). Engaging in these activities allows entrepreneurs to enter a learning cycle (Kolb, 1981) and acquire the knowledge that is necessary to make informed decisions with the aim of improving venture performance.

Moderating Effect of Passion. We hypothesized that passion positively moderates the relationship between deliberate practice and venture growth. To our surprise, our results showed a negative moderation effect of entrepreneurial passion on the deliberate practice-venture performance relationship. For a theoretical explanation for this observed relationship, we rely on Kolb's (1981) theory on the learning cycle and discuss the various types of deliberate practice activities.

Deliberate practice is viewed as a strategic activity that includes reiterating learning practices (Ericsson et al. 1993). Delving deeper into the learning aspect, learning can be viewed as a cycle (Kolb, 1981) that involves four essential phases in service of promoting knowledge acquisition (Holcomb et al., 2009; Minniti and Bygrave, 2001). These phases are Concrete Experience (CE); Reflective Observation (RO); Abstract Conceptualization (AC) and Active Experimentation (AE). According to Kolb (1981), CE refers to exposing oneself openly and freely to new experiences. RO represents the act of taking on various perspectives through observation and reflective thinking. AC is the process of translating one's observations into rational and plausible theories. Finally, AE involves the use of established theories to find solutions to problems or in decision making. Kolb (1981) suggests that effective learning is a combination of experience and experimentation (CE and AE), as well as reflection and making sense of experiences (RO and AC). In the same study, effective learning is defined as possessing the ability to carry out all four phases. This means that individuals have to proceed through all of the four phases in the learning process in order to learn effectively. However, *not* proceeding through all the four phases may also lead to knowledge acquisition. In other words, engaging only in activities related to a single phase, e.g. reflection, can lead to learning, but not in an effective manner.

Deliberate practice activities can also be categorized based on their level of passivity/activity, i.e. reflection versus experimentation (see Fig. 2). For example, online learning is considered, in many cases, to be devoid of the interaction aspect of learning that is commonly present in learning-by-doing (Koedinger et al., 2015). Moreover, receiving/giving mentoring or coaching is considered to be an indirect learning method that is different from direct accumulation of experience (Hallen et al., 2017). Similarly, the act of reading a textbook does not automatically entail learning-by-doing and is thus considered by some to be a passive activity for most individuals (Haussamen, 1995). On the other hand, deliberate practice activities such as networking and offline education and training can be considered experimentation and active learning-by-doing (Birley, 1985; Maxwell and Stephen, 2018).

In sum, effective learning requires that individuals combine both active and passive learning activities. The same goes for deliberate practice, which is also comprised of both active and passive learning activities. In order for deliberate practice to be effective, individuals must combine both active and passive learning activities associated with deliberate practice. For example, entrepreneurs might combine reading textbooks with networking. However, deliberate practice activities may not lead to learning and acquisition of knowledge when entrepreneurs, due to their passion, are overly persistent in engaging in these activities. The reason is that passion may lead to inaction (Delisle and Prosnick, 2003). Passion aids entrepreneurs in overcoming obstacles (Baum and Locke, 2004) that arise in their surroundings (Cardon et al., 2009a). It is required to engage in and sustain effortful and unpleasant deliberate practice activities. However, passion does not only lead to positive outcomes; it can also erode the positive effects of deliberate practice. When passion becomes obsessive (Branzei and Zietsma, 2003), it leads to rigid behavior (Vallerand et al., 2003). In this case, obsessive passion can drive entrepreneurs to commit to and prioritize the venture to a degree that can 'blind' the entrepreneur from perceiving obstacles and hardship (Cardon et al., 2005) and even negative venture performance (Ho and Pollack, 2014).

In the case of passionately engaging in deliberate practice activities, prioritizing reflection over experimentation can have detrimental effects on learning by making the learning cycle less effective. For example, Gemmell (2017, 17) finds that "high levels of RO can lead to rumination and retroflection [a Gestalt term referring to reflection turned back on itself instead of leading to action (Kolb, 2015)]." In other words, obsessive passion may lead to inaction (Delisle and Prosnick, 2003). The resulting inaction is in direct opposition to what experimentation entails, which is the action required to make decisions and solve problems (Kolb, 1981). For this reason, high levels of reflection could be negatively related to venture performance which is consistent with Gemmell (2017)'s study that shows how entrepreneurs having a preference for the AE mode of learning over the RO mode predicted performance improvement and how RO is negatively correlated with growth.

Applying these ideas to our study, we see that our data shows that deliberate practice that relies on the RO type of learning is more popular than the AE type (see Fig. 2). This implies that our study, which focuses on the deliberate practice-level, may actually show how obsessive passion reinforces the RO type learning at the expense of the AE type of learning, on the whole. In turn, the biased reinforcement of RO type learning encourages rumination and retroflection and prevents the learning cycle from completing its full rotation. As a result, effective learning from committed

deliberate practice may not take place and venture performance may suffer as a result.

Insert Figure 2 about here

Future Research

In the course of carrying out our study, we identified several promising avenues for future research. First, research on matching the type of deliberate practice activity (networking, coaching/mentoring, offline education/training, online education/training, reading) with the type of processing used in experiential learning (AE or RO) should be considered. Effective learning occurs when entrepreneurs achieve a balance between reflective and experiential activities. However, effective learning may be difficult, as people have a tendency to choose one particular learning style (i.e. prioritizing experimentation over reflection, or vice versa) at the expense of another (Kolb, 1981). While one can extract the generic properties of a deliberate practice activity and link it to either an AE-based or RO-based process, it could be beneficial for future studies to conduct empirical tests to verify whether or not this relationship holds true. Research along these lines may not only contribute to existing literature on deliberate practice and the entrepreneur's learning style, but it may also carry with it important practical implications. For instance, since Gemmell (2017)'s study shows how entrepreneurs who prefer the AE mode of learning over the RO mode saw improved performance, identifying deliberate practice activities that are conducted in large part using AE type processing may help entrepreneurs improve their venture performance.

In addition, future studies could contribute to literature on entrepreneurial passion by further exploring the link between passion, deliberate practice and performance at a more granular level by uncovering constructs that are likely to come into play, beyond those in our model. For instance, one variable that needs to be examined more closely is level of concentration. Ratelle et al. (2004) find that obsessive passion in gamblers deters them from concentrating on daily tasks or jobs. Moreover, Cardon et al. (2005) and Sonnentag (2003) argue that concentration is important since it is correlated with one's ability to overcome obstacles and achieve superior performance in the context of a particular task. Thus, it may be the case that entrepreneurs with lower levels of passion are able to concentrate better, allowing them to reap the benefits of deliberate practice that the more passionate group of people cannot.

Limitations

We were not able to assess the qualitative differences between deliberate practice activities conducted by different individuals. For instance, reading as a deliberate practice could be leisurely reading of an anecdotal business text that the reader does not take seriously. On the other hand, reading could also be serious hours invested in learning how to adopt a machine learning algorithm that can immediately be applied in one's business. Distinguishing between high quality and low quality engagement with the same activity may be important, as the effectiveness of that activity depend on it (Ericsson, 2002). However, since it is technically difficult to objectively measure quality, future research should work toward a study design that allows for scrutiny of this issue.

Conclusion

The main purpose of this study was to empirically examine the relationship between deliberate practice and venture performance with entrepreneurial passion as a moderating variable. Research has shown that deliberate practice is helps achieve superior performance (Ericsson et al., 1993; Krampe and Ericsson, 1996; Unger et al., 2009). However, it is effortful, difficult to sustain and unenjoyable. As such, passion is a vital component of committing to deliberate practice. Studies have found that passion is a predictor of deliberate practice and helps to sustain this practice in domains such as education (Duckworth et al., 2011; Vallerand et al., 2008). However, at the time of writing, there are no studies published that examine the effects of passion on deliberate practice in entrepreneurship.

We find that deliberate practice positively influences venture performance. This result is in line with other studies in entrepreneurship that have repeatedly demonstrated the close positive ties between deliberate practice and performance (Keith et al., 2016; Unger et al., 2009). However, our exploration of the moderating effect of passion on the deliberate practice-performance relationship produced unexpected results. While we hypothesized that passion would strengthen the positive relationship between deliberate practice and venture performance, our results show the opposite. To explain this result, we have drawn on Kolb (1981)'s experiential learning cycle and the idea of obsessive passion put forward by Cardon et al. (2009a). We argue that a balance is necessary between experiential and reflective activities (Kolb, 1981) in order for learning to be effective and ultimately lead to improved venture outcomes. Secondly, when the passion experienced by an entrepreneur become obsessive, the positive effects of deliberate practice activities are eroded. In these cases, despite engaging in deliberate practice, there will be no benefit to the venture.

Our study contributes to entrepreneurship literature by providing empirical insight on how the performance of a venture is affected when deliberate practice is affected by entrepreneurial passion. We do this in a way that adds a new perspective to existing theory on deliberate practice and passion. In other words, we not only provide an additional context of application of this theory, but also provide a context in which the theory's posited role of passion on deliberate practice is not fully applicable. As a result, this study serves as the starting point for better understanding why entrepreneurial passion is not always helpful to entrepreneurs and their endeavours when engaging in deliberate practice.

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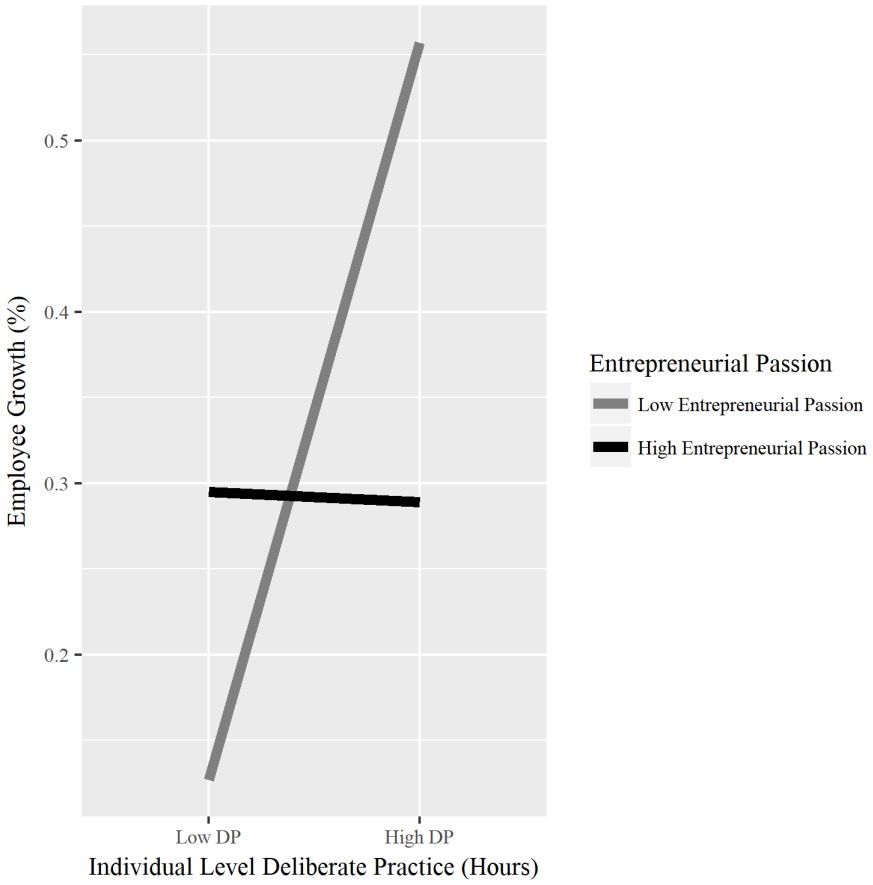

Fig. 1 Interaction Graph of Entrepreneurial Passion with Deliberate Practice on Venture Performance

+1 standard deviation shown as high entrepreneurial passion
-1 standard deviation shown as low entrepreneurial passion

Fig. 2 Popularity of the different deliberate practice activities by frequency (RO: Reflective Observation-based activity, AE: Active Experimentation-based activity, adapted based on Kolb (1981)'s experiential learning cycle)

Table 1. Descriptive Statistics and Correlation Table

	Mean	SD	1	2	3	4	5	6	7
Firm Size	9.924	33.856	—						
Successful Exit	.820	1.757	.136	—					
Unsuccessful Exit	.470	.999	-.051	.330**	—				
Group Level Deliberate Practice	1.591	3.026	-.055	-.050	-.035	—			
Entrepreneurial Passion	46.950	27.134	.158*	.203**	-.069	.242**	—		
Individual Level Deliberate Practice	3.259	4.709	-.061	-.072	-.080	.194*	.308**	—	
Entrepreneurial Passion x Individual Level Deliberate Practice	192.09	301.48	-.041	-.047	-.104	.208**	.384**	.968**	—
Employee Growth	.284	.268	.052	.151	.078	.066	.175*	.217**	.172*

*p<0.1; **p<0.05; ***p<0.01

Table 2. Main Effects and Interaction Effect

	Venture Performance	
	Main Effects	Interaction
Constant	0.178***	0.135***
	(0.045)	(0.046)
Firm Size	0.000	0.000
	(0.001)	(0.001)
Successful Exit	0.020	0.023*
	(0.013)	(0.013)
Unsuccessful Exit	0.006	-0.007
	(0.025)	(0.025)
Group Level Deliberate Practice	0.001	0.001
	(0.007)	(0.007)
Entrepreneurial Passion	0.001	0.002**
	(0.001)	(0.001)
Individual Level Deliberate Practice	0.011**	0.063***
	(0.005)	(0.018)
Entrepreneurial Passion x Individual Level Deliberate Practice		-0.001***
		(0.0003)
Observations	156	156
R^2	0.085	0.135
Adjusted R^2	0.048	0.094
Residual Std. Error	0.259 (df = 149)	0.253 (df = 148)
F Statistic	2.302** (df = 6; 149)	3.292*** (df = 7; 148)

Level of significance shown
Standard error in parentheses
*p<0.1; **p<0.05; ***p<0.01