

Positive affect, the entrepreneurial process, and the entrepreneurial success of sole proprietors

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Abstract. Despite its widely researched role in individual success in many life domains, there is little evidence of *how* positive affect (that is, the extent to which an individual subjectively experiences positive feelings and emotions) plays a role in entrepreneurial success. Our study proposes and tests an extended model of Baron's (2008) conceptual framework to investigate the role of positive affect in entrepreneurial success by using a dataset of more than 800 sole proprietors. Our research model relates positive affect to Baron's key aspects of the entrepreneurial process (opportunity recognition, financial resource acquisition, social network development, response to dynamic environment, and tolerance to stress) and the entrepreneurial success of sole proprietors. Our findings show that positive affect is indirectly and positively associated with the entrepreneurial success of sole proprietors through this entrepreneurial process. Indeed, sole proprietors who express generally positive feelings and emotions are more likely to succeed due to their increased capacity to recognize opportunities, develop broad social networks, respond effectively to rapid change in highly dynamic environments and tolerate intense levels of stress. Our findings have important implications for theory and practice.

Keywords: (positive) affect, PANAS, entrepreneurial process, entrepreneurial success, sole proprietors

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INTRODUCTION

Entrepreneurial success has been largely associated with individual characteristics, firm-specific attributes, and business environment characteristics (Rauch, Frese & Utsch, 2005; Wiklund & Shepherd, 2005). A prime aspect of individual characteristics, positive affect, is defined as the extent to which someone subjectively experiences positive feelings and emotions (Baron, 2008; Watson, Clark & Tellegen, 1988). Lyubomirsky, King and Diener (2005: 804) emphasize the importance of positive affect for individual success and posit that "people who experience a preponderance of positive emotions tend to be successful and accomplished across multiple life domains ... not merely because success leads to happiness, but because positive affect engenders success". Indeed, some papers address this association between positive affect and entrepreneurial success (Baron, 1990; Baron, Tang & Hmieleski, 2011). However, there is little empirical evidence in the entrepreneurship literature of *how* positive affect is associated with entrepreneurial success, while success is conceived as an ultimate goal of entrepreneurship and several scholars have suggested investigating the role of positive affect in entrepreneurial success in their future research directions (Cardon, Foo,

Shepherd & Wiklund, 2012; Delgado García, Quevedo Puente & Blanco Mazagatos, 2015). To overcome this gap, our study investigates whether and, in particular, how positive affect plays a role in the entrepreneurial success of sole proprietors.

From the existing literature, the entrepreneurial process naturally arises as a possible explanation of how positive affect plays a role in entrepreneurial success (Baron, 2008; Baron, Hmieleski & Henry, 2012; Foo, 2011; Foo, Uy & Baron, 2009; Hayton & Cholakova, 2012). Baron (2008) captures the dimensions of the entrepreneurial process that he terms the “key aspects of the entrepreneurial process” as the entrepreneur’s capacity to recognize opportunities, to acquire financial and human resources, to develop broad social networks, to respond quickly and effectively to highly dynamic environments, and to tolerate intense levels of stress. In his conceptual framework, he associates affect with these key aspects. Our paper analyzes the mediating role of these key aspects in the association between positive affect and the entrepreneurial success of sole proprietors.

Hence, our study addresses the question: Does the entrepreneurial process mediate the association between positive affect and the entrepreneurial success of sole proprietors? By investigating this question, we have two aims. First, the paper provides empirical tests of hypotheses implied by Baron’s conceptual framework (Baron, 2008). Note that we do not intend to investigate the exact same hypotheses as Baron, but we derive hypotheses *using* his framework. Second, we test the role of this framework in the entrepreneurial success of sole proprietors and thereby explain *how* positive affect and the entrepreneurial success of sole proprietors are associated.

It is important to note that most empirical studies that address the association between positive affect and entrepreneurial process/entrepreneurial success use samples of small and medium-sized businesses (Baron et al., 2011; Grichnik, Smeja & Welpe, 2010). Surprisingly, to our knowledge, there are no such studies for sole proprietors (also referred to as “self-employed (without personnel)” in American contexts or as “entrepreneurs (without personnel)” in European ones). Nevertheless, a sample of sole proprietors—as opposed to a sample of small and medium-sized businesses—is preferred in studies addressing phenomena such as positive affect (Baron & Tang, 2011) that pertain to persons rather than to businesses because the potential bias from impactful employees is ruled out. This reasoning is in line with Baron (2008). Hence, we use a sample of sole proprietors who are personally and emotionally responsible for their business success (Duchesneau & Gartner, 1990) and who do not necessarily aim to hire employees (and make their company grow). We will use the word “entrepreneur” instead of “sole proprietor” when referring to the literature that uses terms such as “entrepreneurial process” and “entrepreneurial success”. When referring to the present study and our specific sample, we use “sole proprietor”.

Our study contributes to the existing literature in two ways. First, we test the association between positive affect and all key aspects of the entrepreneurial process as defined in Baron’s (2008) framework in *one* single study, while previous studies addressed the association between positive affect and only one or a few of the key aspects (Grichnik et al., 2010). An obvious but minor downside of using sole proprietors is that we have to adjust Baron’s key aspect “acquisition of financial and human resources” to “acquisition of financial resources”, as the definition of sole proprietors practically excludes the use of additional human resources.

Second, we contribute to the explanation of entrepreneurial success, a principle goal of entrepreneurship research, by extending Baron's framework with entrepreneurial success because entrepreneurial success has been predicted to be influenced by both positive affect and the entrepreneurial process (Baron, 1990; Baron et al., 2011; Lyubomirsky et al., 2005). In this way, we use Baron's framework to explain *how* positive affect is associated with the entrepreneurial success of sole proprietors or whether the entrepreneurial process plays a mediating role. By interpreting the entrepreneurial process as a mediator between positive affect and the entrepreneurial success of sole proprietors, we are also able to identify whether positive affect has an additional direct link to the entrepreneurial success of sole proprietors given the entrepreneurial process. Hence, we aim to enrich the current affect-entrepreneurial success knowledge.

Studying the role of affect in entrepreneurship yielded valuable insights, such as the fact that positive affect and entrepreneurial orientation are positively associated (Bernoster, Mukerjee & Thurik, 2018). This gives confidence in the fact that affect could be a valuable explanation for entrepreneurial success.

Our results show a positive association between positive affect and four of Baron's key aspects of the entrepreneurial process: the entrepreneur's capacity to recognize opportunities, to develop broad social networks, to respond quickly and effectively to highly dynamic environments, and to tolerate intense levels of stress. Moreover, positive affect and the entrepreneurial success of sole proprietors are positively and indirectly associated through these four key aspects of the entrepreneurial process. Hence, four of Baron's key aspects of the entrepreneurial process play a key role in explaining how positive affect and the entrepreneurial success of sole proprietors are related.

The next section addresses the theoretical framework on which we base the hypotheses. Then, we describe the dataset of 851 Dutch sole proprietors and explain the method used. We then report and interpret the results before we conclude.

SUPPORTING LITERATURE

The aim of our study is to investigate entrepreneurial success by associating it with positive affect and allowing for a mediation role of key aspects of the entrepreneurial process. This is done using Baron's (2008) framework and by examining the role of entrepreneurial success in a new and extended version of this framework. The context of our investigation is sole proprietors and trait affect—our study focuses on trait instead of state affect. We are not aware of any literature that addresses this specific context. Therefore, we named this section "*Supporting literature*": we extend our search dimensions from "trait" affect to both "state" and "trait" affect and from "sole proprietors" to "entrepreneurs", and we derive the hypotheses using the resulting literature. We first describe the hypotheses implied by Baron's framework. Second, we describe a novel and extended version of Baron's framework by including entrepreneurial success. Third, the direct and indirect associations between positive affect and entrepreneurial success are discussed. This set-up is summarized in Figure 1 and is similar to that of Bernoster et al. (2018), where the role of affect in entrepreneurial orientation is investigated.

It is tempting to follow Baron (2008) and its follow-up studies (Baron et al., 2011; Hmieleski & Baron, 2009) and present correlations as "effects" of positive affect. However, we prefer to refer to "associations" because it is impossible to fully test for causality given our dataset. We will return to this

issue in the section on “Limitations and suggestions for future research”, where we argue that a causality from positive affect towards process and success is the most likely interpretation.

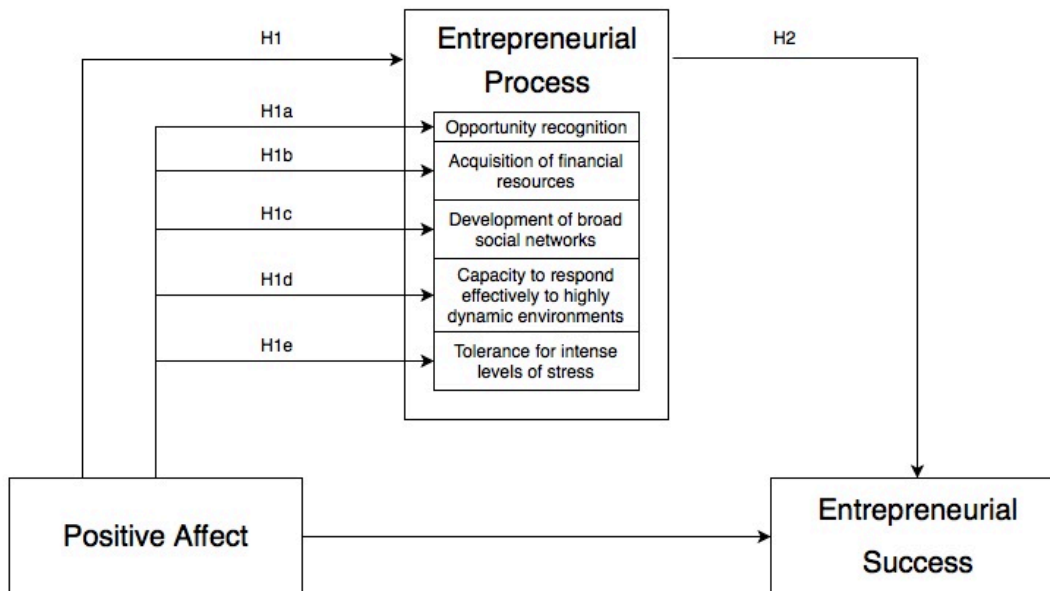


Figure 1. A mediation model of the influence of positive affect on entrepreneurial success (adapted from Baron, 2008: 335). Although we refer to “associations” throughout our study, we keep the arrows from Baron’s original framework. Note that the key aspect “acquisition of financial and human resources” is changed to “acquisition of financial resources” due to the type of subjects we investigate (sole proprietors).

POSITIVE AFFECT AND THE ENTREPRENEURIAL PROCESS

The concept of affect contains two independent dimensions: positive affect and negative affect. Our paper focuses on positive affect, without neglecting the negative dimension. Positive affect refers to stable tendencies to experience positive feelings and emotions often and across many situations (i.e. trait or dispositional positive affect) as well as to positive feelings and emotions in response to specific events (i.e. state or event-generated positive affect) (Baron, 2008: 328; Baron et al., 2012: 311). Similarly, negative affect refers to negative feelings and emotions. Like Baron and Tang (2011), who suggest that innovation is a continuing process reflected better by trait positive affect than state positive affect, we assume that entrepreneurial outcomes (e.g. the entrepreneurial process and entrepreneurial success) are continuing processes. Therefore, it is likely that these outcomes are reflected by trait rather than state affect¹. Hence, throughout our paper, we use the term positive affect to refer to trait positive affect and negative affect to refer to trait negative affect.

Although one may expect positive affect to lead only to good things, the possibility that high levels of positive affect could be associated with detrimental effects has also been reported in the literature (Baron et al., 2012). For instance, high levels of positive affect can increase cognitive

1. While trait positive affect and state positive affect derive from distinct sources (such as biological processes and genetic influences on the one hand versus discrete external events on the other), research indicates that both produce parallel effects in many situations (Baron, 2008; Lyubomirsky et al., 2005).

errors in decision making, reduce performance in critical thinking, hamper idea generation and evaluation, and encourage impulsiveness, in particular the tendency to act without adequate thinking (DeYoung, 2010; Forgas & George, 2001; Melton, 1995; Zhou & George, 2007). Nevertheless, across a considerable body of research in the field of entrepreneurship, positive affect is associated with a wide range of positive outcomes such as enhanced focus and effort on future-oriented tasks, increased creativity, increased resilience in terms of bouncing back from failure, the adoption of more challenging goals, stronger goal commitment, and enhanced creative problem solving (Baron & Tang, 2011; Cardon, Wincent, Singh & Drnovsek, 2009; Foo et al., 2009; Hayward, Forster, Sarasvathy & Fredrickson, 2010). We turn now to the issue of nonlinearity in the limitations.

Baron (2008: 335) attempts to bring this all together and proposes a theoretical framework on the role of positive affect in the entrepreneurial process. Studying processes means leaving out all “fixed” parameters and studying only flow, movement or change (Hjorth, Holt & Steyaert, 2015). Hjorth et al. (2015) even referred to “entrepreneurship”, by which they mean the actual experiences of organizational creation. Therefore, their view of processes is similar to Gartner’s (1988), who defined entrepreneurship as the creation of organizations. Haber and Reichel (2007) define the entrepreneurial process as a process that encompasses four main stages, namely, the discovery of an idea, the development of the business idea, the acquisition of financial, human, and capital resources, and the operationalization of the business idea. The performance of the entrepreneurial process is conditioned on certain capabilities that the entrepreneur should possess and that Baron (2008) in his conceptual framework names the “key aspects of the entrepreneurial process”, including the entrepreneur’s capacity to recognize opportunities, to acquire financial and human resources, to develop broad social networks, to respond quickly and effectively to highly dynamic environments, and to tolerate intense levels of stress. Indeed, Baron (2008) posits that positive affect may impact these key aspects through basic cognitive processes such as decisions, memory, creativity and cognitive strategies for coping with stress. Our study investigates Baron’s (2008) key aspects of the entrepreneurial process as the conceptualization of the “entrepreneurial process” so that important elements of the entrepreneurial process are assessed (i.e. key aspects) and to stay close to Baron (2008), as one of our aims is to test (part of) Baron’s theoretical framework.

Baron’s theoretical framework implies hypotheses on the association between affect and key aspects of the entrepreneurial process. These associations have received little empirical investigation and only recently became a subject of interest (Baron & Tang, 2011) and, as far as we know, existing empirical evidence never refers to the complete framework with all five key aspects in one study or dataset. Therefore, the first purpose of our study is to empirically test the propositions resulting from Baron’s framework using one dataset. These propositions are developed by leaving out the specific mediators of Baron’s framework (Baron, 2008: 335) so that only the associations between positive affect and the five key aspects of the entrepreneurial process remain. One of these key aspects, “acquisition of financial and human resources”, is replaced by “acquisition of financial resources” because our research subjects are sole proprietors. Although this replacement does not allow for the perfect testing of Baron’s framework, the use of sole proprietors is a big advantage because it bridges the gap between individual-specific concepts (i.e. positive affect) and firm-specific concepts (i.e. entrepreneurial success), as the latter become individual- rather than firm-specific. Our paper develops five

hypotheses from Baron's framework, corrected for his specific mediators and the sample used in the present study. These hypotheses are similar to the five propositions of Baron's study, but their justification is updated with some recent investigations.

According to Baron's (2008) framework, positive affect may influence five key aspects of the entrepreneurial process. First, positive affect triggers the entrepreneurial process as it represents a significant source of identifying and creating a new entrepreneurial opportunity (Foo, 2011; Grichnik et al., 2010; Hayton & Cholakova, 2012). An entrepreneurial opportunity starts with the discovery of new ideas (Dimov, 2007) for which creativity is essential. It has been found that positive feelings encourage the required amount of creativity (Baron & Tang, 2011; Hills, Shrader & Lumpkin, 1999; Isen, Daubman & Nowicki, 1987). Positive feelings are also found to generate increased levels of dopamine in the anterior cingulate cortex, which facilitates the cognitive flexibility to switch among alternative cognitive sets (Baas, De Dreu & Nijstad, 2008), as positive feelings may increase this number of cognitive sets (Isen & Daubman, 1984) and facilitate unusual associations that are useful for exploring new opportunities (Isen, Johnson, Mertz & Robinson, 1985). Hence, positive affect fosters the generation of new ideas. These considerations lead to the following hypothesis:

Hypothesis 1a. *Entrepreneurs' positive affect is positively associated with opportunity recognition.*

Second, positive affect may influence the development of the business idea through the acquisition of the necessary financial, human and capital resources (Haber & Reichel, 2007). It has been argued that the acquisition of financial and human resources is necessary for business idea development (Baron, 2008). The ability of an entrepreneur to obtain such resources is often a crucial step in forging the business idea and achieving success in the new venture (Haber & Reichel, 2007). Indeed, positive affect has been found to be closely related to motivation, and a large body of findings indicate that motivation, in turn, helps entrepreneurs obtain the desired resources necessary for the development and success of the business idea (Bitler, Moskowitz & Vissing-Jorgensen, 2005; Foo et al., 2009). Positive affect has also been found to be closely related to demonstrating enthusiasm, which, in turn, is closely related to persuasiveness (Cardon, 2008). Indeed, entrepreneurs who are passionate and enthusiastic are able to convince others of the value of their potential ideas and to obtain the necessary resources to develop the business idea (Cardon, Zietsma, Saporito, Matherne & Davis, 2005). Thus, entrepreneurs who have high levels of positive affect may be more effective in generating positive reactions to obtain essential financial and human resources. While this may be true for entrepreneurs who own a business with considerable resources, it may not be true for sole proprietors because they generally do not need or want ample resources. In particular, *sole* proprietors by definition do not employ others. In other words, the acquisition of human resources is not embedded in the definition of *sole* proprietors. Therefore, we will focus on the association between positive affect and acquisition of financial resources by investigating the following hypothesis:

Hypothesis 1b. *Entrepreneurs' positive affect is positively associated with the acquisition of financial resources.*

Third, positive affect may contribute to the operationalization and success of the business idea by extending and reinforcing the quality of entrepreneurs' social networks (Baron, 2008: 333). Indeed, entrepreneurs who show positive emotions may have large social networks because they are attentive to others' ideas and socially more engaging in their networks (Baron & Markman, 2003). Their persuasive ability to change and their access to others' ideas and views may help them to broaden their networks and succeed their new ventures (Baron & Markman, 2000). These considerations lead to the following hypothesis:

Hypothesis 1c. *Entrepreneurs' positive affect is positively associated with the development of broad social networks.*

Fourth, positive affect may contribute to the operationalization and success of a business idea by increasing the capacity of entrepreneurs to respond effectively to dynamic environments (Baron, 2008). Dynamic environments are environments that are subject to unpredictable and rapid change and thus to high levels of uncertainty (Baron & Tang, 2011; Miller, 2007). These environments require entrepreneurs who can quickly generate alternatives and make effective decisions. Indeed, it has been argued that positive emotions may encourage the use of a "satisficing" strategy that allows entrepreneurs to make decisions both quickly and efficiently (Baron, 2008). Positive emotions may promote flexibility in thinking and problem solving, which may help entrepreneurs to quickly generate useful alternatives that can be effectively applied to reduce uncertainties (Baron & Tang, 2011; Lyubomirsky et al., 2005). Furthermore, positive emotions may encourage entrepreneurs to be passionate and enthusiastic, which may help them cope with uncertainties and increase their capacity to respond effectively in dynamic environments (Hayton & Cholakova, 2012). These considerations lead to the following hypothesis:

Hypothesis 1d. *Entrepreneurs' positive affect is positively associated with the capacity to respond effectively to highly dynamic environments.*

Fifth, positive affect may play a role in the operationalization and success of the business idea by increasing the capacity of entrepreneurs to tolerate intense levels of stress (Baron, 2008). While the capacity to tolerate and resist high levels of stress is important in many contexts, it may be crucial for entrepreneurs, who often work under high levels of stress (Cardon & Patel, 2013). Empirical studies indicate that positive emotions may facilitate successful adaptation to stress and are a starting point for enhanced well-being (Baron, Franklin & Hmieleski, 2016; Fredrickson & Joiner, 2002; Ong, Bergeman, Bisconti & Wallace, 2006). Ong et al. (2006) argue that adaptation to stress may be reflected in the capacity to maintain and preserve positive affective states. Moreover, Fredrickson and Joiner (2002) posit that positive emotions are important facilitators of adaptive recovery, quietening or undoing the autonomic arousal generated by negative emotions. These considerations lead to the following hypothesis:

Hypothesis 1e. *Entrepreneurs' positive affect is positively associated with tolerance for intense levels of stress.*

All the above considerations are indicative of a broad range of cognitive and other behaviors of entrepreneurs that are hypothesized to be

associated with positive affect. This enables us to investigate whether there is an association between positive affect and an “aggregated” cognition and behavior component: the key aspects of the entrepreneurial process. The advantage of this approach is that the reliability of the composite measures can be calculated, while this is not possible for the single key aspects of the entrepreneurial process in the hypotheses mentioned above. We do this formulating hypothesis 1.

Hypothesis 1. *Entrepreneurs’ positive affect is positively associated with their performance in the key aspects of the entrepreneurial process.*

ENTREPRENEURIAL PROCESS AND ENTREPRENEURIAL SUCCESS

The relationship between the entrepreneurial process and entrepreneurial success has been widely addressed in the field of entrepreneurship and small business research (Bosma, Van Praag, Thurik & De Wit, 2004; Cassar, 2006; Haber & Reichel, 2007; Rauch et al., 2005; Wiklund & Shepherd, 2005; Wright, Liu, Buck & Filatotchev, 2008). Entrepreneurial success is multidimensional in nature (Wiklund & Shepherd, 2005). Among others, growth in finances or firm size, survival, or happiness can be seen as indicators of entrepreneurial success. Although growth in firm size was suggested to be an indicator of entrepreneurial success (Wiklund & Shepherd, 2005), *sole* proprietors do not necessarily hire employees. As such, investigating the success of sole proprietors naturally shifts towards evaluating the growth of finances, survival or happiness. Our study follows the example of many others by adopting financial performance as a measure of success (Duchesneau & Gartner, 1990; McClelland, 1987). Below, we will discuss the association between each of Baron’s key aspects of the entrepreneurial process and entrepreneurial success.

First, opportunity recognition is proposed as a determinant for entrepreneurial success (Gielnik, Frese, Graf & Kampschulte, 2012; Shane & Venkataraman, 2000). Indeed, according to Baron (2006), entrepreneurs “connect the dots” between changes in different markets more easily than others do. Properly and inventively connecting these dots may result in identifying business opportunities and new ideas. Business idea generation is crucial for innovation (Baron & Tang, 2011) and (thus) related to venture growth (Gielnik et al., 2012).

Second, entrepreneurs must convince venture capitalists of the credibility of their business idea to guarantee its success (Busenitz & Barney, 1997). If entrepreneurs are able to acquire the required financial resources, thoughtful and proper investments can be made to increase the success of the business idea (Lussier & Pfeifer, 2001). Investments may eventually pay off through higher survival rates, profits and employment growth (Bosma et al., 2004). Hence, the ability to acquire financial resources with ease and consideration may improve entrepreneurial success (Brüderl & Preisendörfer, 1998).

Third, the ability of entrepreneurs to broaden their social network may help them to acquire knowledge by using the diversity of joint expertise and ensure the success of their new business ideas (Brüderl & Preisendörfer, 1998). Broad social networks may favor the access to information and capital resources necessary to successfully implement the new venture (Seibert, Kraimer & Liden, 2001). Hence, network support may be beneficial to business growth and success (Brüderl & Preisendörfer, 1998).

Fourth, because entrepreneurs usually operate in dynamic environments, they should be quick and accurate in their actions to anticipate the business environment and succeed in their new ventures. In such environments, entrepreneurs face the need to creatively adapt and anticipate market requirements (Baron & Tang, 2011). Indeed, the capacity of entrepreneurs to effectively respond to market needs is related to their ability to seek required advice (Dyer & Ross, 2008). Advice seeking, in turn, is found to be positively associated with business performance (Dyer & Ross, 2008).

Finally, due to highly dynamic environments and often a lack of the required resources, entrepreneurs may experience high levels of stress (Baron, 2008). Some research suggests that entrepreneurs do not experience this stress as a burden on their health but as a benefit to their personal success (Cardon & Patel, 2013). Indeed, the ability of entrepreneurs to effectively tolerate intense levels of stress may help them overcome difficulties related to highly dynamic environments and find sufficient resources to implement their new business ideas and ensure the success of their new ventures (Baron et al., 2011).

According to these five rationales, the next logical step is to extend Baron's framework with entrepreneurial success (Figure 1). We formulate the following hypothesis:

Hypothesis 2. *Entrepreneurs' performance in the key aspects of the entrepreneurial process is positively associated with entrepreneurial success.*

POSITIVE AFFECT AND ENTREPRENEURIAL SUCCESS: A MEDIATION MODEL

A research set-up including a combination of Hypothesis 1a through 1e, or Hypothesis 1, on the one hand and Hypothesis 2 on the other does not clarify precisely what role positive affect plays in entrepreneurial success. The association between positive affect and entrepreneurial success can be direct or indirect through a certain mediator for which we propose Baron's (2008) key aspects of the entrepreneurial process. Hence, an indirect association would mean that positive affect is associated with the entrepreneurial process, which in turn would be associated with entrepreneurial success, or in other words, that the association between positive affect and entrepreneurial success is mediated by the key aspects of the entrepreneurial process. As Hypotheses 1 and 2 presume positive associations, the indirect effect is also expected to be positive. Hence, the third hypothesis is as follows:

Hypothesis 3. *The association between positive affect and entrepreneurial success is positively and indirectly associated with the entrepreneurial process.*

We will investigate whether the association between positive affect and entrepreneurial success is fully, partially or not at all mediated by the key aspects of the entrepreneurial process and thereby address the suggestion of Cardon et al. (2012) and Delgado García et al. (2015) to investigate how positive affect is associated with entrepreneurial success. For a literature review on the role of affect on entrepreneurial success and the possible mediation of entrepreneurial orientation in this relationship, see Bernoster et al. (2018).

DATA AND METHOD

SAMPLE

Data were collected by Panteia², one of the largest market and policy research institutes in the Netherlands. One of its activities is maintaining a nationally representative panel of Dutch sole proprietors using surveys carried out twice a year on firm-specific aspects such as revenue and number of customers and individual-specific aspects such as physical and psychological health. We were invited to contribute to the questionnaire used for the data collected between December 2014 and January 2015. As the space for our questions was limited, only some crucial questions, such as a measure of positive affect and measures of the key aspects of the entrepreneurial process, were inserted. Therefore, we must rely on the measures of Panteia with regard to entrepreneurial success. Part of the present sample (N=337) is used for a dataset investigating the role of affect in entrepreneurial orientation (Bernoster et al., 2018): it is used for a different purpose, and part of the data was collected in another time frame (the year 2013).

An e-mail with a link to this questionnaire³ was sent to 2,498 registered e-mail addresses of those on the panel. Three reminders were sent, ultimately resulting in responses from 851 sole proprietors, giving a response rate of 34.1%. Of the respondents, 572 (67.2%) were men, and the average age was 51 with a standard deviation of 9. To assess sample representativeness, these statistics are compared to those of the general population of Dutch sole proprietors as described by the Central Agency for Statistics (CBS)⁴. The CBS reports that 64.1% of sole proprietors are men with an average age of 49 and a standard deviation of 13, so our sample and the population measured in the fourth quarter of 2014 are similar in at least these two dimensions.

VARIABLES AND MEASURES

Entrepreneurial success. For the measurement of entrepreneurial success, we are constrained by the questions of Panteia, which primarily address revenue growth measures. Hence, only two dimensions of revenue growth are included (Hmieleski & Baron, 2009; Wiklund, Patzelt & Shepherd, 2009): *expected revenue growth* and *observed revenue growth*. The question used to measure *expected revenue growth* follows a question about the actual expected revenue over 2014: "Is this revenue (i.e. the expected revenue over 2014) in agreement with the expected revenue at the beginning of 2014?". The answers to this question indicate whether the revenue was much higher (more than 20%), higher, similar, lower, or much lower (less than 20%) than expected. To measure *observed revenue growth*, the question "Can you indicate whether the expected revenue in 2014 is more or less than in 2013?" was used. The answer options for this question are "higher than 2013", "equal", or "less than 2013". For both questions, we reversed the scale such that the highest value represents an increase in revenue. Then, *entrepreneurial success* is calculated as the average of these (standardized) scales, and its value of Cronbach's alpha is .73.

2. www.panteia.nl/

3. Note that the questionnaire was in Dutch.

4. www.ikwordzzper.nl/landelijk/zzp-kennisbank/cijfers-en-kengetallen/wat-zijn-de-zzp-kengetallen-volgens-het-cbs

Positive affect. To measure (positive) affect, a Dutch version of the Positive Affect and Negative Affect Schedule (PANAS) (Watson et al., 1988) is used. The PANAS describes various feelings and emotions, ten of which deal with positive affect and ten with negative affect. Positive affect and negative affect are clearly separately defined and independent (Watson et al., 1988). The PANAS invites participants to rate the 20 items in the area of feelings and emotions. The items for positive affect are “interested”, “excited”, “strong”, “enthusiastic”, “proud”, “alert”, “inspired”, “determined”, “attentive” and “active”. The items for negative affect are “distressed”, “upset”, “guilty”, “scared”, “hostile”, “irritable”, “ashamed”, “nervous”, “jittery” and “afraid”. The PANAS can be framed with various temporal perspectives, such as “at this moment”, “over the past few days” and “in general”.

As explained earlier, in our study positive affect refers to dispositional positive affect because we aim to investigate entrepreneurial success, which is a long-term process. Therefore, we are interested in one’s feelings and emotions “in general”. Hence, we frame the instructions as “Indicate to what extent you generally feel this way, that is, how you feel on average”. We focus on positive affect, which shows a high Cronbach’s alpha of .85, similar to the value of .88 reported in Watson et al. (1988). Cronbach’s alpha for negative affect is .88, which is also similar to the value of .87 reported in Watson et al. (1988).

Key aspects of the entrepreneurial process. As Baron (2008) proposed, the entrepreneurial process can be described by five key aspects: opportunity recognition, acquisition of financial and human resources, development of broad social networks, capacity to respond effectively to highly dynamic environments and tolerance for intense levels of stress.

The use of multiple-item scales to measure psychological concepts is often preferred over single items because reliability indices can be reported for multiple-item scales. Nevertheless, all five key aspects of the entrepreneurial process were measured using a single item due to limited questionnaire space. However, as shown by Wanous, Reichers and Hudy (1997), single-item measures can be acceptable when the construct being measured is sufficiently narrow. As the wording of our items is close to Baron’s wording of the key aspects, we therefore think that the items measure what the key aspects represent, and we have confidence in the accuracy of our single-item measures.

Items were rated on a 5-point Likert scale. The item for measuring *opportunity recognition* was “I’m good at recognizing new, profitable opportunities (new products, new services, new ways of marketing, etc.) for my firm”. As explained earlier, sole proprietors by definition do not acquire human resources. Therefore, we operationalize Baron’s key aspect acquisition of financial and human resources as “I have no trouble in acquiring the financial means I need (loans at a bank or other lenders)”, which we name *acquisition of financial resources*. In this way, the item only measures the acquisition of financial resources (and not the acquisition of human resources). The item corresponding to the *development of broad social networks* was “I developed a broad social network”. The item corresponding to *capacity to respond effectively to highly dynamic environments* was “I have the capacity to respond effectively to highly dynamic environments”, and the item corresponding to *tolerance for intense levels of stress* was “I can tolerate intense levels of stress”.

To test hypotheses 1a through 1e, the key aspects of the entrepreneurial process are dealt with separately, but, for testing Hypotheses 1 and 2, a composite measure of these five aspects is used.

Because correlations between these five items are significant without any multicollinearity issues (Table 1), we view the entrepreneurial process measured by these items as a reflective construct. Additionally, Baron (2008) treats the key aspects of the entrepreneurial process as equally important. Hence, we take a simple average over the five single items to obtain the *entrepreneurial process*. The value of Cronbach's alpha for this composite measure is .69.

Control variables. Four variables are used as controls: the sole proprietor's age (years), gender (0=woman, 1=man), education, and experience (Baron & Tang, 2011). Education is measured as the highest finished level of education, for which there are six categories ranging from primary education to university. In education, two clear peaks are observed. More than half of the people have university diplomas, and a large portion (approximately 24%) finished secondary vocational education. Finally, experience is measured as the number of years the respondent has been a sole proprietor, including years with earlier ventures. We compensate for the low number of control variables with the considerable number of robustness checks.

ANALYSIS

A corresponding model is analyzed for each hypothesis in Figure 1. To estimate the coefficients of these models, an ordinary least squares (OLS) estimator is used. Further, we investigate whether there is an indirect association between positive affect and entrepreneurial success. The significance of this indirect association is calculated by applying a Sobel test (Sobel & Leinhardt, 1982). All non-dummy variables are standardized for ease of comparison.

Robustness checks

We performed several robustness checks but discuss only a selection, including those that show results that deviate from the main results. The first robustness check (RC1) addresses the items constituting *entrepreneurial success*, which, as mentioned before, are confined by Panteia's questions. To test robustness in the dependent variable, we repeat the original analysis with the two entrepreneurial success items separately and with several other measures dealing with entrepreneurial success. The first other item, *observed revenue growth (calculated)*, is similar to *observed revenue growth*, but growth is categorized based on the reported revenue categories of 2014 and 2013 instead of directly asking about growth. Panteia also measures net monthly income in categories. We translate the categories to "real" incomes to define *net income per hour worked*: the "real" income divided by the number of hours worked per month, where we assume a month to consist of four weeks. Furthermore, *weekly revenue* (multiplication of the number of hours charged and the price per hour) and the number of months during which a livelihood can be provided after a possible failure, which we call *number of months during which a livelihood can be provided after failure*, are investigated.

Although the *observed revenue growth* and *observed revenue growth (calculated)* seem similar, there are some sole proprietors with incongruent answers (for instance, stating that the expected revenue for 2014 is higher than the revenue in 2013 in *observed revenue growth*, while the difference in their self-reported revenues, i.e. *observed revenue growth (calculated)*, shows a decrease). This could indicate sloppy answering in

the questionnaire. Therefore, the second robustness check (RC2) entails leaving out the sole proprietors with incongruent answers.

The third robustness check (RC3) is also based on sample selection. In our definition of *entrepreneurial success*, we implicitly assume that entrepreneurial success can be measured by financial growth. However, some sole proprietors may simply classify themselves as “successful” if they are able to retain their desirable living standard and/or if they are happy. Hence, they do not necessarily want to grow financially. For these sole proprietors, the expected patterns between entrepreneurial process and success are unlikely to apply. To check for this phenomenon, we exclude 179 sole proprietors who explicitly state that they do not want to grow.

The final variable-related robustness check (RC4) aims to provide additional information on the role of affect. In the present analysis, the focus is on positive affect (and we hypothesize positive associations), while we also measure negative affect. In this final “robustness check”, we repeat the original analysis where we replace positive affect with negative affect and test for negative associations.

RESULTS

In this section, we first describe the main results, such as those corresponding to the hypotheses and the mediation model. The results of the robustness checks are then discussed.

MAIN RESULTS

Table 1 shows the means, standard deviations (SDs), percentage of missing observations, variance inflation factors (VIFs), correlations and Cronbach’s alpha of the variables. With regard to the correlations, Table 1 shows significant and high correlations among the key aspects of the entrepreneurial process, which justifies its satisfactory reliability. Among all other independent variables, correlations range from $-.18$ to $.38$. Furthermore, all variables show a missing data level of less than 10%, which is acceptable (Hair, Anderson, Babin & Black, 2010), except for the variable *acquisition of financial resources* (30%). The reason for this higher percentage of missing observations is probably that sole proprietors do not need ample financial resources and thus do not (aim to) acquire it, so that they were unable to rate the statement “I have no trouble in acquiring the financial means I need (loans at a bank or other lenders)”.

	Missing				1	2	3	4	5	6	7	8	9	10	11
	Mean	SD	Obs. (%)	VIF											
1. Entrepreneurial success	2,93	0,89	3		0,73										
2. Opportunity recognition	3,31	0,85	5	1,56	0,07*	-									
3. Acquisition of financial resources	2,82	1,25	30	1,14	0,04	0,25***	-								
4. Development of broad social networks	3,63	0,94	2	1,35	0,06*	0,39***	0,25***	-							
5. Capacity to respond effectively to highly dynamic environments	3,71	0,86	3	1,68	0,11**	0,51***	0,25***	0,40***	-						
6. Tolerance for intense levels of stress	3,57	0,96	2	1,37	0,09*	0,34***	0,23***	0,26***	0,48***	-					
7. Entrepreneurial process	3,69	0,72	2	1,18	0,12***	0,71***	0,58***	0,68***	0,76***	0,66***	0,69				
8. Positive affect	3,56	0,52	0	1,24	0,08*	0,32***	0,07	0,28***	0,28***	0,27***	0,36***	0,85			
9. Sole proprietor's age	51,25	9,06	0	1,19	-0,11**	0,04	0,13**	0,01	0,03	0,03	0,06	-0,08*	-		
10. Gender	0,67	0,47	0	1,13	0,04	0,14***	0,04	-0,03	0,11**	0,15***	0,07*	-0,07*	0,00	-	
11. Education	4,91	1,36	0	1,15	0,01	0,04	0,06	0,09**	0,11**	-0,01	0,09**	0,19***	-0,01	-0,16***	-
12. Experience	13,32	9,34	2	1,26	-0,11**	-0,02	0,05	-0,10**	-0,06	0,01	-0,06	-0,13***	0,38***	0,14***	-0,18***

Table 1 - The means, standard deviations (SDs), percentage of missing observations, variance inflation factors (VIFs), correlations and values of Cronbach’s alpha (on the diagonal). VIFs are based on the maximum VIF of the single-item group and the composite measure group.

Note: *, $p < .05$, **, $p < .01$, ***, $p < .001$.

We tested for multicollinearity by examining the variance inflation factors (VIFs). As we have single items and a composite measure for the entrepreneurial process, we considered two groups of VIFs: one group consisted of the single items and the other of the composite measure. The maximum value of the VIF for the single-items group is 1.68 and that for the composite-measure group is 1.23. Both are below 3.30, indicating no danger of multicollinearity (Diamantopoulos, Riefler & Roth, 2008; Hair et al., 2010). We also checked for common method bias by applying Harman’s single factor test (Podsakoff, MacKenzie, Lee & Podsakoff, 2003). The rule of thumb is that a single unrotated principal component should not explain more than the threshold level of 50% of the variance for all the indicators measured using the same method. Our first principal component has an explained variance of 25.2%, indicating no danger of common method bias.

Table 2 shows the results of hypotheses 1a, 1b, 1c, 1d, 1e, and 2. Hypotheses 1a (coefficient = .35, $p < .001$), 1c (coefficient = .29, $p < .001$), 1d (coefficient = .29, $p < .001$), 1e (coefficient = .30, $p < .001$), and 2 (coefficient = .39, $p < .001$) are confirmed because the p-values suggest strong evidence against a null hypothesis of no association. However, we found no evidence for the confirmation of Hypothesis 1b according to an attained significance level of .124. This may be due to the same reasons that hold for the low response rate on *acquisition of financial resources*⁵. We confirm Hypothesis 2 (coefficient = .11, p -value = .004) as the p -value suggests strong evidence against the null hypothesis of no association.

5. Results on the other hypotheses do not noticeably change when we repeat the original analysis where acquisition of financial resources was disregarded.

Independent variables	Dependent variables						
	Opportunity recognition (H1a)	Acquisition of financial resources (H1b)	Development of broad social networks (H1c)	Capacity to respond effectively to highly dynamic environments (H1d)	Tolerance for intense levels of stress (H1e)	Entrepreneurial process (H1)	Entrepreneurial success (H2)
Intercept	-0.232*** (0,059)	-0,063 (0,080)	-0,002 (0,059)	-0.205*** (0,059)	-0.245*** (0,059)	-0.207*** (0,057)	-0,037 (0,063)
Positive affect	0.352*** (0,036)	0,066 (0,043)	0.291*** (0,036)	0.291*** (0,036)	0.303*** (0,036)	0.392*** (0,035)	0,037 (0,040)
Entrepreneurial process							0.111** (0,038)
Sole proprietor's age	0.076* (0,036)	0.124** (0,044)	0,058 (0,037)	0,069 (0,036)	0,054 (0,036)	0.109** (0,035)	-0.098* (0,038)
Gender (men = 1)	0.329*** (0,072)	0,089 (0,095)	0,003 (0,073)	0.290*** (0,073)	0.354*** (0,072)	0.302*** (0,069)	0,075 (0,077)
Education	-0,001 (0,035)	0,057 (0,043)	0,024 (0,035)	0.076* (0,035)	-0,038 (0,035)	0,023 (0,033)	-0,015 (0,037)
Experience	-0,032 (0,038)	0,012 (0,045)	-0.083* (0,037)	-0,061 (0,038)	-0,010 (0,037)	-0,056 (0,036)	-0,063 (0,039)
F-statistic	23.290*** (0,000)	2.970* (0,012)	15.900*** (0,000)	18.610*** (0,000)	18.520*** (0,000)	31.380*** (0,000)	4.870*** (0,000)
Adjusted R squared	0,123	0,017	0,083	0,098	0,097	0,156	0,028
Number of observations	798	581	820	811	817	822	803

Table 2 - Estimated coefficients for all models corresponding to the hypotheses (abbreviated with “H”). Note that coefficients are presented with their corresponding SEs in brackets.

Note: *: $p < .05$, **: $p < .01$, ***: $p < .001$.

Additionally, we tested to what extent the association between positive affect and entrepreneurial success is direct (corrected for the key aspects of the entrepreneurial process) and to what extent it is indirect (through the key aspects of the entrepreneurial process). We cannot confirm a direct association because the corresponding p-value is .355. The indirect association is positive (coefficient = .043) with a p-value of .005 according to Sobel's test (Sobel & Leinhardt, 1982); hence, Hypothesis 3 is confirmed. To check the accuracy of these outcomes, we analyzed the mediation model using PROCESS⁶ in SPSS, with the number of bootstrap samples for the bias corrected bootstrap confidence intervals equal to 5000. We found similar results.

ROBUSTNESS CHECKS

Many of the robustness checks performed show results similar to the main results. In this section, we focus on those in which the results deviate from the main results. In RC1, *entrepreneurial success* is replaced by six different measures: the two items that currently constitute *entrepreneurial success* and four other previously mentioned items. In Table 3, we present the results concerning Hypothesis 2 and the total, direct and indirect (i.e. Hypothesis 3) associations (the coefficients corresponding to Hypotheses 1a through 1e and 1 do not change because entrepreneurial success is not included in the models to test these hypotheses).

Measure for entrepreneurial success	Hypothesis 2		Total association		Direct association		Hypothesis 3 (indirect association)		N
	coef.	p-value	coef.	p-value	coef.	p-value	coef.	p-value	
Expected revenue growth	0,129	0,001	0,048	0,219	-0,003	0,942	0,051	0,001	790
Observed revenue growth	0,067	0,083	0,095	0,013	0,069	0,093	0,026	0,082	782
Observed revenue growth (calculated)	-0,036	0,390	0,082	0,041	0,096	0,026	-0,014	0,381	731
Net income per worked hour	0,131	0,001	-0,015	0,701	-0,066	0,117	0,051	0,002	742
Weekly revenue	0,176	0,000	0,126	0,006	0,063	0,190	0,064	0,000	515
Number of months to provide in livelihood after failure	0,119	0,001	0,014	0,697	-0,033	0,398	0,047	0,002	812

Table 3 - Estimated coefficients with their corresponding p-values for Hypothesis 2 and the mediation model (including Hypothesis 3) for different measures for entrepreneurial success.

Table 3 shows that there is strong evidence for Hypotheses 2 and 3 when the focus is on *expected revenue growth*, *net income per hour worked*, *weekly revenue* and *number of months during which a livelihood can be provided* after failure. With regard to these variables, a direct association is unlikely because coefficients have p-values higher than .10. We interpret the coefficients for *observed revenue growth* as clear signals for the expected association while we cannot do so for *observed revenue growth (calculated)* due to its high p-value. Note that the insignificant total associations between *positive affect* and the success measures *expected revenue growth*, *net income per hour worked*, and *number of months during which a livelihood can be provided* after failure suggest inconsistent mediation, where the direct and indirect associations cancel each other out.

Leaving out sole proprietors (RC2) with incongruent responses in the variables *observed revenue growth* and *observed revenue growth*

6. <http://afhayes.com/index.html>

(*calculated*) results in a stronger indirect association for the congruent sole proprietors (coefficient = .054, p-value = .003, N = 656). We cannot confirm an indirect association for the incongruent sole proprietors because the p-value is high (coefficient = -.062, p-value = .321, N = 56).

We see distinct results when separating the sole proprietors who want to grow from those who do not want to grow (RC3). The analysis of the group of sole proprietors who want to grow (N = 637) results in an association between entrepreneurial process and entrepreneurial success (Hypothesis 2) of .122 (p-value = .004), a direct association of .043 (p-value = .337) and an indirect association (Hypothesis 3) of .049 (p-value = .005). These results differ from the coefficients of the group that does not want to grow (N = 162), where the association between entrepreneurial process and entrepreneurial success (Hypothesis 2) is .043 (p-value = .645), the direct association is .013 (p-value = .893) and the indirect association (Hypothesis 3) is .015 (p-value = .642). The results of the group that does not want to grow financially do not provide strong evidence for Hypothesis 2 or 3. There is a difference between sole proprietors who aim for financial growth and those who do not, but the results of the group that does not want to grow hardly influence the main results.

The fourth robustness check (RC4), which is not a robustness check *sensu stricto*, addresses the associations between negative affect and entrepreneurial process and between negative affect and entrepreneurial success. For all the results that involve positive affect, similar but negative coefficients arise. We see a negative association between negative affect and the entrepreneurial process (as well for separate key aspects as the composite measure), but the coefficients are somewhat smaller than those of positive affect. For instance, the association between negative affect and the entrepreneurial process is -.320 (p-value < 0.001). Additionally, the direct association (coefficient = -.047, p-value = .223) cannot be confirmed due to a high p-value, but there is a negative indirect association (coefficient = -.035, p-value = .005, N = 803).

DISCUSSION

Baron (2008: 337) concludes that “careful attention to the potential influence of affect may assist scholars in the field of entrepreneurship in addressing several important questions (e.g. the nature of entrepreneurial cognition, how microlevel variables can influence macrolevel measures of new venture success)”. Our study builds upon this recommendation by testing an extended version of Baron’s (2008) conceptual framework using data about some 800 sole proprietors to investigate the role of positive affect in the entrepreneurial process and for success. By and large, our results are consistent with the findings of previous studies (Baron & Tang, 2011; Delgado García et al., 2015; Foo, 2011; Foo et al., 2009), and they provide additional confidence in Baron’s approach connecting positive affect to the entrepreneurial process.

Our results provide support for the positive association between positive affect and the key aspects of the entrepreneurial process as defined by Baron (2008), except for the key aspect “acquisition of financial resources”. Hence, the results provide an empirical test of the propositions implied by Baron’s framework. Indeed, four out of five hypotheses implied by Baron’s framework are supported by results from more than 800 Dutch sole proprietors.

Furthermore, the results *explain* the positive association between positive affect and the entrepreneurial success of sole proprietors, as they show that this association is mediated by the entrepreneurial process

through four key aspects out of the five suggested by Baron (2008). Indeed, sole proprietors who express generally positive feelings and emotions are more likely to succeed due to their increased capacity to recognize opportunities, to develop broad social networks, to respond effectively to rapid change in highly dynamic environments and to tolerate intense levels of stress. Hence, four of Baron's key aspects of the entrepreneurial process play an important role in explaining *how* positive affect and entrepreneurial success of sole proprietors are related.

Moreover, it is important to note that, while there is an indirect association between positive affect and the entrepreneurial success of sole proprietors through the entrepreneurial process, there is no direct association between positive affect and the entrepreneurial success of sole proprietors. The relationship between positive affect and the entrepreneurial success of sole proprietors seems to be entirely based on the mediation by the entrepreneurial process, which hints at the important role of the entrepreneurial process and the way it is defined.

Our results are in line with those of Bernoster et al. (2018) in the sense that positive affect is positively associated with entrepreneurial outcomes. Our paper defines entrepreneurial outcomes as the entrepreneurial process and entrepreneurial success, while the study of Bernoster et al. (2018) shows the role of positive affect in entrepreneurial orientation.

With respect to the entrepreneurial process, we must note that our focus is on the *key aspects* of the entrepreneurial process as defined by Baron (2008). With these key aspects, we capture several features of the entrepreneurial process, but the entrepreneurial process is a divergent concept in the literature. As mentioned earlier, the entrepreneurial process, or "entrepreneurship", may be more broadly defined as studying flow, movement or change (Hjorth et al., 2015), and Haber and Reichel (2007) define it as the process from discovering an idea to operationalizing it. Our paper focuses on a specific definition of the entrepreneurial process as developed by Baron (2008) but does not necessarily capture the other divergent definitions of entrepreneurial process. We suggest that future studies should investigate the association between affect (positive and negative) and other definitions of the entrepreneurial process.

Furthermore, replacing revenue growth with several other indicators of the entrepreneurial success of sole proprietors yields the same results and provides clear evidence of an indirect and positive association between positive affect and the entrepreneurial success of sole proprietors through the entrepreneurial process.

In short, sole proprietors who experience more positive feelings and emotions recognize opportunities more easily, develop broader networks of possible clients or useful others, respond more effectively in high incentive situations and handle stress better. These key aspects of the entrepreneurial process, in turn, result in success for sole proprietors in terms of higher expected growth in revenue, higher net monthly income per hour worked, higher weekly revenues and a longer number of months during which they can provide a livelihood after failure.

IMPLICATIONS FOR THEORY AND PRACTICE

Our study has several theoretical implications. First, it provides an empirical analysis of Baron's (2008) original model. The paper analyzes the role of (positive) affect in each of the five key aspects of the entrepreneurial process. Although some of these factors have been previously associated with positive affect (Baron & Tang, 2011; Foo, 2011;

Foo et al., 2009), to our knowledge, we are the first to analyze all key aspects using a single sample.

Second, our findings contribute to our knowledge about the association between positive affect and entrepreneurial success. Although many studies relate positive affect and successful outcomes in various life domains (Lyubomirsky et al., 2005), little attention has been devoted to empirical studies addressing the link between positive affect and *entrepreneurial* success (Baron & Tang, 2011; Hayton & Cholakova, 2012). Our study extends Baron's (2008) model with entrepreneurial success, a focal concept in the field of entrepreneurship research. Analysis of this extended model shows that there is an association between positive affect and the entrepreneurial success of sole proprietors for a variety of success indicators. In addition, we address *how* positive affect is associated with the entrepreneurial success of sole proprietors (Delgado García et al., 2015). In fact, mediation plays a role such that positive affect is not directly but indirectly associated with the entrepreneurial success of sole proprietors through four of the five key aspects of the entrepreneurial process (Baron, 2008). Furthermore, we report empirical results for negative affect as well as for positive affect.

Third, the complexities arising from the discrepancy between micro-level (individual) and macro-level (firm) variables (Baron, 2008) are partly solved due to the use of sole proprietors instead of, for instance, (small) business owners. Positive affect and key aspects of the entrepreneurial process are micro-level variables. To draw proper conclusions, micro-level variables should be compared to other micro-level variables. Entrepreneurial success is usually classified as a macro-level variable, but with sole proprietors being the subject of study, we can argue that entrepreneurial success is "individual"—as sole proprietors are personally and emotionally responsible for their business success (Duchesneau & Gartner, 1990)—and can thus be classified as a micro-level variable.

Fourth, our model supplements the literature on affect (often connected to terms such as "effective events theory", "psychological capital", "positive emotions" and "positive organizations") and employee performance (Ashkanasy & Daus, 2002; Avey, Reichard, Luthans & Mhatre, 2011; Avey, Wernsing & Luthans, 2008; Luthans & Youssef, 2007) by contributing to emerging theoretical frameworks for understanding how entrepreneurs—and more specifically, how characteristics pertaining to their skills, motives and emotions—ultimately relate to entrepreneurial success (e.g. firm growth in sales and profits). Several researchers have suggested that understanding such links is useful for the field of entrepreneurship (Baron, 2008), and a small but growing body of evidence pertaining to these suggestions has recently begun to emerge (Baron & Tang, 2011; Baron et al., 2012). Such research suggests that to fully understand key aspects of entrepreneurship, it is necessary to address the effects of variables operating at many levels of analysis—individual-level factors relating to characteristics of entrepreneurs as well as firm-level factors relating to entrepreneurial success (Baron et al., 2012). Our model helps to resolve this complex issue by suggesting that positive affect should be included as a relevant factor and that its association with entrepreneurial success is mediated through several key aspects of the entrepreneurial process. A lack of attention to these complexities may, in fact, partly explain prior failures to identify associations between the individual characteristics of entrepreneurs and the success of their firms (Gartner, 1989).

Furthermore, from a practical perspective, we help sole proprietors by providing insights into their possibilities for financial growth. Of the five key aspects proposed by Baron (2008), four are relevant to the (financial) success of sole proprietors: being able to recognize opportunities, having a broad social network, being able to respond effectively in highly dynamic situations and being able to handle stress. To achieve better performance in those key aspects, positive feelings and emotions seem helpful, although positive feelings and emotions do not directly influence success. We also found that, contrary to positive affect, negative affect has a negative impact on the performance on these key aspects and thus, via the key aspects, on success. Aspiring sole proprietors may use this information to classify themselves as being eligible for starting a new venture or not, while established sole proprietors can reflect on their success and obtain new insights in their evaluation. Financiers of entrepreneurs, who often bear a considerable part of the risk, may want to know more about the role of affect in entrepreneurial success to estimate their chances for success.

LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

The results of our study are subject to some limitations that should be addressed in future research. We briefly mention some limitations but please contact the authors for further details and possible ways to use the limitations as a starting point for further research. First, the key aspects of the entrepreneurial process were measured using single items due to the limited questionnaire space for asking additional questions. Although the lower bounds of internal reliability of entrepreneurial process and entrepreneurial success of sole proprietors are .69 and .66, respectively, and although we have confidence in our results (as explained earlier), a replication of our study with other (validated) measures would be desirable to increase the validity of our results.

Second, although the PANAS has been validated by many studies (Watson et al., 1988), there is some criticism of its scale: it measures affect using two separate dimensions—positive and negative. Feldman Barrett and Russell (1998) propose that affect should be measured by four dimensions. Future research could widen our knowledge about the role of feelings and emotions in entrepreneurship by investigating these four different dimensions of affect.

Third, while this paper has many strengths, there is at least one drawback to investigating sole proprietors. Sole proprietors do not, by definition, need human resources and often they do not need much financial help. Therefore, Baron's item about the acquisition of financial and human resources is not appropriate for sole proprietors, while the relation between positive affect and acquisition of financial and human resources in other types of entrepreneurs, such as small and medium-sized business owners, is desirable.

Fourth, reversed causality may occur if entrepreneurial success leads to positive affect. However, since the indirect association between positive affect and the entrepreneurial success of sole proprietors through key aspects of the entrepreneurial process is evident, the "effect" of positive affect on the entrepreneurial success of sole proprietors is more likely than the reversed case. It is unlikely that people's success influences their performance in the key aspects of the entrepreneurial process. For instance, opportunity recognition comes before the business idea, which comes before starting a firm, which is eventually necessary to succeed.

Fifth, we assume that positive affect is linearly associated with entrepreneurial process and success (Baron, 2008). Nevertheless, high

levels of positive affect have also been found to be associated with detrimental outcomes such as reduced task performance (Baron et al., 2012). Hence, future research should address this issue by separating low and high positive affect levels to examine their association with entrepreneurial process and success or by testing for nonlinear models.

Sixth, the reason for a positive association between positive affect and the key aspects of the entrepreneurial process could be the nature of positive affect itself. It may be that scoring highly on positive affect implies a higher score on the key aspects of the entrepreneurial process. Future research should address this issue by replicating our study while controlling for third variables such as optimism.

Finally, as in most entrepreneurship studies, differentiating between necessity- and opportunity-driven sole proprietors would have been worthwhile. It would be interesting to perform robustness checks on necessity- or opportunity-driven sole proprietors. Unfortunately, we did not have the means to do so.

CONCLUSION

The interplay between feelings and emotions on the one hand and entrepreneurship on the other (Hessels, Rietveld, Thurik & Van der Zwan, 2018; Shepherd, 2015; Torrès & Thurik, 2018; Uy, Foo & Song, 2013) does not receive the scholarly attention it deserves. After all, people who feel better are likely to produce better results, and those who produce better results will probably feel better (Rietveld, Van Kippersluis & Thurik, 2015). One reason for this lack of attention may be the dual causality itself. Another reason could be the multidimensional concept of both feelings and emotions (with cognitive, affective, physiological and psychological dimensions) and entrepreneurship (with its many manifestations such as preference, intention, orientation, process, choice and success). Our study tests this interplay between affect and entrepreneurship by proposing an extended version of Baron's (2008) conceptual framework to investigate whether and how positive affect is associated with the entrepreneurial success of sole proprietors. Our findings provide empirical evidence for a positive indirect association between positive affect and the entrepreneurial success of sole proprietors. Interestingly, we find that this positive association is fully mediated by the entrepreneurial process. The association between positive affect and success in many different life domains has been predicted (Lyubomirsky et al., 2005), but to date, little attention has been devoted to entrepreneurial success. Moreover, our study is the first to fully cover the assumed benefits of positive affect for entrepreneurial success using Baron's (2008) framework, and it shows that sole proprietors who, in general, express positive feelings and emotions are more likely to succeed.

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