



The role of affect in entrepreneurial orientation

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Abstract Although the literature on affect (i.e., the extent to which an individual subjectively experiences feelings and emotions) is burgeoning in the field of entrepreneurship, affect has not received sufficient attention with respect to an important antecedent to entrepreneurial success—entrepreneurial orientation. In this paper, we investigate the role of both positive and negative affect in entrepreneurial orientation (i.e., the strategic posture of a firm/individual with respect to innovativeness, proactiveness, and risk taking) and entrepreneurial success. The results of our analysis, based on two samples (337 Dutch sole proprietors and 254 French small business owners), show that positive affect is positively associated with entrepreneurial orientation, whereas negative affect is negatively associated with entrepreneurial orientation for sole proprietors. With respect to entrepreneurial success, results are mixed. The present study contributes to the understanding of the role of affect in entrepreneurial orientation. It also

contributes to the literature on entrepreneurial success, the ultimate objective in the field of entrepreneurship.

Keywords Entrepreneurial orientation · Entrepreneurial success · Positive affect · Negative affect · PANAS

JEL classifications L10 · L26 · D91

1 Introduction

An appropriate strategy leads to high firm performance (Hitt et al. 2001; Mills and Bourne 2002). Not only large firms but also small ones and even sole proprietors (entrepreneurs without employees) can benefit from an appropriate strategic posture. Indeed, research shows that an entrepreneurial strategic posture, or an entrepreneurial orientation, is positively associated with small business success (Khedhaouria et al. 2015; Rauch et al. 2009; Wiklund and Shepherd 2005). For instance, an entrepreneurial strategic posture can lead to an enhanced positive association between knowledge-based resources and small business performance (Wiklund and Shepherd 2003) and effective corporate entrepreneurship (Dess and Lumpkin 2005).

Entrepreneurial orientation is an important antecedent to entrepreneurial success (Rauch et al. 2009; Wiklund and Shepherd 2005) which is the ultimate goal of entrepreneurship. Knowledge about the strategic posture and its drivers could lead to better evaluation of future success; it could also enable individuals to make well-informed choices about being an entrepreneur in

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the first place. Firm-level innovation (Avlonitis and Salavou 2007) and individual-level concepts such as self-evaluation (Simsek et al. 2010), CEO narcissism (Chatterjee and Hambrick 2007), and overconfidence (Engelen et al. 2015) have been identified in the literature as drivers for entrepreneurial orientation.

Although these drivers provide insightful understanding of entrepreneurial orientation, the general state of knowledge on entrepreneurial orientation could benefit from identifying further drivers that explain this important concept. Therefore, our study takes research on entrepreneurial orientation a step further and investigates whether trait affect, a well-known psychological measure for feelings and emotions, plays a role in entrepreneurial orientation.

There are two reasons to conjecture that trait affect is relevant for entrepreneurial orientation. First, several scholars have noted that investigating the role of affect in entrepreneurship is important (Delgado García et al. 2015; Hahn et al. 2012). For example, Hahn et al. (2012) mention that although entrepreneurs experience extreme emotions in their work-life, “affect is a neglected concept in entrepreneurship research, and scholars are urged to focus more on the role of affect in the entrepreneurial process (Baron 2008)” (p. 99). Similarly, Baron (2008) characterizes entrepreneurial environments as highly unpredictable and rapidly changing and states that affect “most likely exert[s] powerful effects on cognition and behavior”, which could lead to specific actions or decisions. Furthermore, the meta-analysis of Delgado García et al. (2015) shows that there is considerable evidence that affect is associated with a wide range of issues in managing an entrepreneurial venture and plays an important role in several aspects of entrepreneurship, such as self-efficacy, task performance, negotiation, conflict (Baron 1990), venture effort (Foo et al. 2008), opportunity evaluation and exploitation (Grichnik et al. 2010). However, although it has been suggested that affect may influence the different stages of the entrepreneurial process, which could in turn impact entrepreneurial success, no empirical studies exist associating affect with entrepreneurial orientation, an important stage in the entrepreneurial process (Delgado García et al. 2015).

Second, affect is associated with the three dimensions of entrepreneurial orientation: innovativeness, proactiveness, and risk taking. For instance, affect has been associated with innovation in business (Baron and Tang 2011; Rutherford and Holt

2007) because it enhances creativity, which in turn has a positive effect on firm-level innovation. Additionally, happy individuals work actively toward new goals (Lyubomirsky et al. 2005); thus, individuals with higher positive affect have a proactive work attitude. Induced positive affect has also been shown to lead to higher risk taking when stakes are high (Isen and Geva 1987). Moreover, Baron’s (2008) theoretical work indicates that affect has a strong effect on decision-making and judgment, which play a key role in the formation of strategy. Thus, it appears that affect could be relevant for entrepreneurial orientation.

With the aim of addressing this *affect-entrepreneurial orientation gap* in the literature, the present study considers both (orthogonal) dimensions of trait affect, i.e., positive and negative, and, the two variants of entrepreneurial orientation (i.e., the original firm-level variant and the individual-level variant). It additionally aims to distinguish between the dimensions of entrepreneurial orientation: innovativeness, proactiveness, and risk taking. Because entrepreneurial success is vital to entrepreneurship, we also aim to analyze the role of affect and entrepreneurial orientation in entrepreneurial success. To summarize, the importance of the two main concepts that we investigate—*affect and entrepreneurial orientation*—, the suspicion in the literature that they could be associated (Baron 2008; Delgado García et al. 2015; Hahn et al. 2012), and the absence of any empirical investigation in this respect highlight the importance of the present study. The awareness and knowledge of a possible association between affect and entrepreneurial orientation is important because strategy ultimately determines entrepreneurial success.

For our empirical study, we use two samples, one consisting of 337 Dutch sole proprietors and the other consisting of 254 French small business owners. We analyze the affect-entrepreneurial orientation gap further with a sample of 177 Dutch students. However, because students have little or no experience with entrepreneurship, we present the results of this particular sample in Appendix 1. Our results show that positive affect is positively associated with entrepreneurial orientation. Conversely, negative affect is negatively associated with entrepreneurial orientation, but for sole proprietors only. However, the positive associations are stronger than

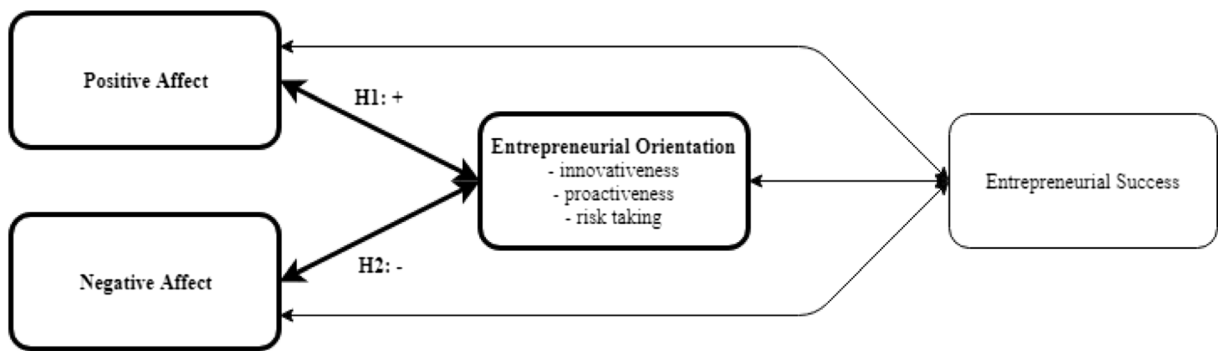


Fig. 1 Our main model and hypotheses (in bold) and our additional aims (in non-bold)

the negative associations. Our results further indicate that the associations are primarily visible for the innovativeness dimension. Our results also show that positive affect is positively associated with entrepreneurial success, whereas negative affect is negatively associated with success. This latter finding is more evident for the sole proprietors than for the business owners.

The present paper contributes to the literature in several ways. *First*, it contributes to our knowledge of the entrepreneurial profile (Gartner 1990) by exploring the role of affect in entrepreneurial orientation and thereby fills the (empirical) affect-entrepreneurial orientation gap. We address this gap in several ways. First, we explore multiple measures and dimensions of entrepreneurial orientation. That is, we investigate the role of affect in both firm entrepreneurial orientation and individual entrepreneurial orientation. Second, we analyze all three dimensions of entrepreneurial orientation, i.e., innovativeness, proactiveness, and risk taking. Third, we analyze the affect-entrepreneurial orientation association in three different samples (two presented in the main text of the paper and one in Appendix 1).

Second, the present paper contributes to our knowledge of entrepreneurial success by analyzing the role of affect and entrepreneurial orientation in entrepreneurial success in two samples. Although the investigation of entrepreneurial success is an additional goal, our results also contribute to the existing knowledge of the affect-entrepreneurial success association (Baron 1990; Baron et al. 2011; Lyubomirsky et al. 2005) and the entrepreneurial orientation-success association (Rauch et al. 2009; Wiklund and Shepherd 2005).

Third, the present paper contributes to the field of psychology by considering that positive and negative affect are unipolar; hence, they both must be investigated. Studies analyzing affect and entrepreneurial outcomes tend to neglect this unipolarity because they investigate either positive affect (Baron and Tang 2011; Baron et al. 2011; Delgado García et al. 2015, p. 203; Foo et al. 2008) or negative affect (Doern and Goss 2014; Shepherd et al. 2011). However, positive and negative affect are orthogonal dimensions and should be treated as separate concepts (Watson et al. 1988). By showing that the roles of positive affect and negative affect differ—not only in sign, but also in magnitude—we demonstrate that ignoring this orthogonality does not provide the full picture.

Fourth, from a practical point of view, the present paper is important because it provides entrepreneurs insight into their strategic posture, which could partly determine their entrepreneurial success. Knowledge and awareness of a possible association between one's feeling and emotions (i.e., affect) and one's strategic posture (i.e., entrepreneurial orientation) could provide insights on ultimate entrepreneurial success because orientation leads to success (Rauch et al. 2009). Moreover, entrepreneurial orientation also leads to a more deliberate choice of entering entrepreneurship in the first place and could be instrumental in selecting successful entrepreneurs, thus reducing the rate of entrepreneurial failures.

The rest of the paper is organized as follows. First, we provide an overview of the principle variables under examination—affect and entrepreneurial orientation—and delineate the relationship between the two to justify our hypotheses. Then, we present our research method and our empirical results. We conclude by discussing

our results and their limitations and by suggesting future research directions.

2 Literature review

The present section explains the concept of affect, entrepreneurial orientation, and entrepreneurial success and provides an overview of the current literature with respect to the association between these concepts. It also motivates our two hypotheses and the general aims of the present paper. Figure 1 summarizes our research set-up. Unlike many other papers, we have used bidirectional arrows (i.e., from affect to entrepreneurial orientation and from entrepreneurial orientation to affect) to clarify that we do not claim causality. As Lyubomirsky et al. (2005) mentioned, “Success leads to happy people, but happiness, often characterized by high positive affect, leads to success” (p. 803). We hold a similar view for affect and entrepreneurial orientation, i.e., feelings and emotions could lead to a certain strategic posture, but similarly, a particular strategic posture could lead to success and thus (eventually) lead to certain feelings and emotions. Hence, we use the word “association” throughout the paper to highlight these bidirectional arrows.

In Fig. 1, the bold font indicates our main aim of filling the (empirical) affect-entrepreneurial orientation gap, whereas the non-bold font indicates our additional aims, i.e., investigating the role of affect in the different dimensions of entrepreneurial orientation and the role of affect and entrepreneurial orientation in entrepreneurial success.

2.1 Affect

Affect is the extent to which someone subjectively experiences positive or negative feelings and emotions, resulting in positive or negative affect (Watson et al. 1988). High positive affect is associated with “high energy, full concentration, and pleasurable engagement,” whereas low positive affect is associated with “sadness and lethargy” (Watson et al. 1988, p. 1063). Conversely, high negative affect is associated with “anger, contempt, disgust, guilt, fear, and nervousness,” whereas low negative affect is associated with “calmness and serenity” (Watson et al. 1988, p. 1063). Affect can be defined over various time frames. Feelings and emotions experienced *in general* are referred to as trait affect, whereas feelings and emotions experienced *at this moment* are referred to

as state affect. Watson et al. (1988) developed a reliable, valid, and efficient scale for measuring positive and negative affect when considering the various time frames—the positive and negative affect scale (PANAS). The reliability of the PANAS was tested over a period of 2 months and proved high, independent of the chosen time frame. In the present study, we will focus on trait affect.

Many studies associating affect with entrepreneurship focus on either positive or negative affect (Delgado García et al. 2015). However, positive affect and negative affect are independent concepts (Watson et al. 1988). Hence, investigating one of them does not imply the result for the other. In other words, a positive association between positive affect and an outcome measure does not imply a similar but negative association between negative affect and the same outcome measure. Therefore, in the present study, we focus on both positive affect and negative affect and treat them as separate concepts.

2.2 Entrepreneurial orientation

Different types of strategic postures or orientations exist, such as entrepreneurial orientation and market orientation (Boso et al. 2013). Covin and Slevin (1989) define strategic posture as “a firm’s overall competitive orientation” (p. 77). In the present paper, we focus on entrepreneurial orientation, which can be defined as “the strategy making processes that provide organizations with a basis for entrepreneurial decisions and actions” (Rauch et al. 2009, p. 763). In other words, entrepreneurial orientation indicates the degree of entrepreneurship in a firm’s strategic posture (Lumpkin and Dess 1996). Entrepreneurial orientation can be captured by three dimensions: innovativeness, proactiveness, and risk taking (Miller 1983). However, the scale for measuring entrepreneurial orientation (Covin and Slevin 1989) is unidimensional with a high factorial validity such that it is also appropriate to combine all three dimensions in a single scale.

Entrepreneurial orientation is usually measured at the firm level. In addition to firm entrepreneurial orientation, another type of entrepreneurial orientation exists—individual entrepreneurial orientation (Langkamp Bolton and Lane 2012). According to the upper echelon theory, organizational outcomes are predicted by managerial characteristics (Hambrick and Mason 1984). Thus, not only firm-specific traits but also individual-

specific traits lead to firm decisions. Hence, for sole proprietors, individual entrepreneurial orientation is now deemed an appropriate concept.

Entrepreneurial orientation has an effect on entrepreneurial success (Rauch et al. 2009; Wiklund et al. 2009; Wiklund and Shepherd 2003, 2005). For this reason, one of the aims of entrepreneurship studies is to investigate its drivers, of which several have been identified. For instance, Khedhaouria et al. (2015) mention creativity and Avlonitis and Salavou's (2007) study of SME owners shows a clear association between innovation and entrepreneurial orientation. Simsek et al.'s (2010) work shows that CEO personalities reflecting higher core self-evaluations have a stronger positive influence on firms' entrepreneurial orientation, particularly for firms facing dynamic (rather than stable) environments. Similarly, Chatterjee and Hambrick (2007) found CEO narcissism to play a role in both strategic posture and firm performance. Overconfidence of CEOs has also been shown to play a role in firm entrepreneurial orientation (Engelen et al. 2015) because such CEOs feel more in control, consider themselves to be better than others in successfully completing challenging tasks, and are more likely to depart from established practices to pursue new opportunities (Hayward et al. 2006). Because entrepreneurial orientation is an important concept in the entrepreneurship literature and different scholarly studies have hinted that affect could play a role in it (Baron 2008; Delgado García et al. 2015; Hahn et al. 2012), we investigate the role affect plays in entrepreneurial orientation in the present paper.

2.3 Affect and entrepreneurship

The recent and rapid development of the affect-entrepreneurship literature has yielded several results. For instance, Baron's (2008) theoretical framework indicates the important role played by positive and negative affect in entrepreneurship via 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. Baron's work serves as an excellent starting point for further research. For instance, affect has been associated with innovation in business (Baron and Tang 2011; Baron et al. 2011; Rutherford and Holt 2007). Affect has also been associated with level of effort, personal initiative and persistence, propensity to continue investments in an

underperforming project, types of goals set (Delgado García et al. 2012), performance and attitude (Baron 1990), and creativity (Isen et al. 1987). However, we appear to be lacking in work that focuses on affect and entrepreneurial orientation.

Furthermore, most studies investigating the role of affect in entrepreneurship focus on either positive or negative affect. For instance, positive affect has been found to be positively associated with firm performance (Baron et al. 2011), attitude (Baron 1990), and individual innovativeness in mid-sized organizations (Baron and Tang 2011; Rutherford and Holt 2007). However, what appears surprising is that none of the above-mentioned studies considers negative affect. Studies that investigate negative emotions have shown that they play a role in moving forward after project failure (Shepherd et al. 2011) or in social processes of entrepreneurship (Doern and Goss 2014). However, these latter studies do not consider positive affect.

Studies that have investigated both the bright and dark side of feelings and emotions have used concepts such as passion (Cardon and Kirk 2015), affective well-being (Hahn et al. 2012), and emotion (Brundin and Gustafsson 2013; Grichnik et al. 2010) instead of affect. Studies investigating the role of both positive and negative affect in entrepreneurship are scarce. As mentioned earlier, Baron's (2008) conceptual paper indicated that both positive and negative affect influence the entrepreneurial process. Foo et al.'s (2008) empirical work showed that both positive and negative affect positively influences venture effort, whereas negative affect is only related to the immediately required effort for the venture. Positive and negative affect have also been empirically shown to be associated with positive orientation toward personal goal realization (consisting of the subscales self-esteem, life satisfaction, and optimism) in entrepreneurs (Laguna et al. 2016). Thus, although affect, a prominent psychological construct (Watson et al. 1988), appears to be playing an important role in entrepreneurship (Baron 2008; Delgado García et al. 2015; Hahn et al. 2012), we are not aware of any empirical study that has investigated the role of affect in *entrepreneurial orientation*.

Summarizing the literature reviewed above, we can conclude that positive affect positively influences (firm-specific) characteristics such as the entrepreneurial process (Baron 2008) and innovation (Baron and Tang 2011; Rutherford and Holt 2007), which are positively associated with entrepreneurial orientation (Avlonitis

and Salavou 2007), and personal goal orientation (Laguna et al. 2016). Conversely, negative affect negatively influences the entrepreneurial process (Baron 2008) and personal goal orientation (Laguna et al. 2016). However, it is not clear whether or how affect is associated with entrepreneurial orientation (Rauch et al. 2009; Wiklund et al. 2009; Wiklund and Shepherd 2005). Therefore, the present paper investigates the direct link between affect and entrepreneurial orientation to supplement the indirect and scattered evidence that this link may exist.

Before we formulate our hypotheses, we want to make one more remark about the affect-as-information mechanism (Clore et al. 2001), which suggests that judgments and decisions are based on affect. For instance, when one experiences positive affect, his or her judgments are more positive. This observation holds even when the affect one experiences is not related to the judged object or decision. Hence, according to the affect-as-information mechanism, positive affect could lead to positive decision-making or strategy.

Based on the indications of prior studies and the affect-as-information mechanism, we expect a positive association between positive affect and entrepreneurial orientation and a negative association between negative affect and entrepreneurial orientation. Hence, we hypothesize that

Hypothesis 1: Positive affect is positively associated with entrepreneurial orientation.

Hypothesis 2: Negative affect is negatively associated with entrepreneurial orientation.

2.4 Additional tests

To obtain a deeper understanding of the role of affect in entrepreneurial orientation, we distinguish its role on the three dimensions of entrepreneurial orientation, i.e., innovativeness, proactiveness, and risk taking. It is possible that the association between affect and entrepreneurial orientation is driven by one of these dimensions. For instance, there is stronger evidence in the literature of the association between affect and innovativeness or risk taking than between affect and proactiveness (Mittal and Ross Jr 1998; Rutherford and Holt 2007). Positive affect was found to be associated with individual innovativeness in the field of corporate entrepreneurship using a sample of mid-sized organizations

(Rutherford and Holt 2007), and with firm-level innovation (Baron and Tang 2011). Furthermore, Isen and Geva (1987) showed that induced positive affect leads to higher risk taking when stakes are high, but to being more risk prone when stakes are low. Mittal and Ross Jr (1998) showed that MBA students with a positive mood (compared with those with a negative mood) displayed lower levels of risk taking. Positive affect has been shown to induce active work attitude toward new goals, the latter being similar to a proactive attitude (Lyubomirsky et al. 2005). Due to the possibility of different associations between affect and the three dimensions of entrepreneurial orientation, we also tested our hypotheses 1 and 2 for each of these three dimensions.

We have further enriched our main model by including entrepreneurial success (see Fig. 1) leading to two additional goals. It helps us to analyze the role of affect in entrepreneurial success and it allows us to analyze the role of entrepreneurial orientation in entrepreneurial success. Several studies serve as a rationale for investigating these associations. For instance, with respect to the affect-entrepreneurial success association, studies show that (environmentally induced) dispositional positive affect is positively associated with firm performance (Baron 1990), but after a certain point, higher dispositional positive affect could lead to a decline in firm performance (Baron et al. 2011). Furthermore, positive affect has been associated with several dimensions of the Big Five, which in turn impact entrepreneurial success. Specifically, studies show that positive affect is associated with extraversion (Shiota et al. 2006), whereas negative affect is associated with neuroticism (Costa and McCrae 1980; Gutiérrez et al. 2005). Positive affect has also been associated with openness to experience and conscientiousness (Roccas et al. 2002). Additionally, studies show that conscientiousness, openness to experience, and extraversion are positively associated with entrepreneurial performance, whereas neuroticism is negatively associated with entrepreneurial performance (Brandstätter 2011). Because positive affect is associated with conscientiousness, openness to experience, and extraversion, and given that these dimensions are associated with entrepreneurial performance, positive affect can also impact entrepreneurial performance. Similar reasoning holds for negative affect and entrepreneurial success; negative affect has been found to be associated with neuroticism, which has a negative effect on entrepreneurial performance.

Taken together, negative affect may negatively impact entrepreneurial performance.

With respect to the entrepreneurial orientation-entrepreneurial success association, several studies point toward this association (Wiklund et al. 2009; Chatterjee and Hambrick 2007; Khedhaouria et al. 2015; Rauch et al. 2009; Wiklund and Shepherd 2005). Furthermore, different dimensions of entrepreneurial orientation have been shown to have different effects on SME performance (Kreiser et al. 2013). For instance, whereas innovativeness and proactiveness show a positive U-shape relationship with SME performance, risk taking shows a negative U-shape relationship.

Together with our two main hypotheses, the associations between affect-entrepreneurial orientation and entrepreneurial success suggest the possibility that entrepreneurial orientation could play an indirect or mediating role in the association between affect and entrepreneurial success. Therefore, we also intend to investigate this mediation, which would contribute to the existing knowledge of entrepreneurial success. However, investigation of the association between affect and entrepreneurial success remains our secondary goal, because the main focus of our paper is to fill the affect-entrepreneurial orientation gap in the literature. We believe that such a focus is justified because it has not thus far been employed (in contrast to evidence that already exists concerning the role of affect in entrepreneurial success (Baron 1990; Baron et al. 2011)). Additionally, because entrepreneurial success is an immensely broad construct and latent in nature, it is difficult to validate measures for entrepreneurial success. This difficulty explains why our measure of entrepreneurial success is not validated.

3 Method

To investigate the association between affect and entrepreneurial orientation, we used two samples: Panteia and AMAROK. The present section discusses each sample and their measures and presents the analysis that we performed on these samples.

3.1 Panteia

The Panteia sample consisted of 851 Dutch sole proprietors. However, for this study, our sample consists of

337 sole proprietors. Panteia¹ used to be one of the largest market and policy research institutes in the Netherlands, maintaining a nationally representative panel of Dutch sole proprietors. The data were collected between December 2014 and January 2015²; however, the data on entrepreneurial orientation were collected in 2013. The fact that our data on entrepreneurial orientation were collected a year before collection of the data on affect does not affect the credibility of our results, because we examined *trait* affect, which is considered stable over time (Watson et al. 1988). The average age of the final 337 sole proprietors was 53 years, and 69% of them were male. A majority of them had obtained a university or higher education degree (58%), followed by those with secondary vocational education (21%).

3.1.1 Variables and measures

Entrepreneurial orientation Sole proprietors fully represent their own business. To measure entrepreneurial orientation among sole proprietors, it is appropriate to use an individual-level scale because it is difficult to discriminate between individual and firm entrepreneurial orientation (because the sole proprietors' individual strategy matches that of the firm, given they solely decide). Hence, we used the individual entrepreneurial orientation scale of Langkamp Bolton and Lane (2012) that was specifically developed for measuring entrepreneurial orientation in individuals solely responsible for the firm's strategic posture. Similar to the regular firm entrepreneurial orientation scale of Covin and Slevin (1989), this individual entrepreneurial orientation scale consists of three dimensions: innovativeness, proactiveness, and risk taking. In total, ten items—four for innovativeness, three for proactiveness, and three for risk taking—were rated on a five-point Likert scale. Sample items for each category were, “I often like to try new and unusual activities that are not typical but not

¹ <http://www.panteia.nl/>

² An e-mail with a link to a questionnaire was sent to 2498 registered e-mail addresses of the panel. In total, three reminders were sent, ultimately resulting in responses of 851 sole proprietors, yielding a response rate of 34.1%. Among the respondents, 572 (67.2%) are male and the average age is 51, with a standard deviation of 9. To assess sample representativeness, these statistics are compared with those of the general population of Dutch entrepreneurs as described by the Central Agency for Statistics (CBS). The CBS reports 64.1% men and an average age of 49 with a standard deviation of 13, so our sample and the population measured in the fourth quarter of 2014 are similar on at least these two dimensions.

necessarily risky,” “I usually act in anticipation of future problems, needs or changes,” and “I like to take bold action by venturing into the unknown,” respectively. Cronbach’s alpha is equal to 0.81, indicating a good reliability for this scale.

Affect To measure positive and negative affect, a Dutch version of the PANAS (Watson et al. 1988) was used. The PANAS consists of 20 items: ten for positive affect and ten for negative affect. An item is essentially a single word indicating a certain feeling or emotion, such as “inspired” for positive affect and “afraid” for negative affect. Prior to this word, the PANAS instructs participants to indicate how often they feel this particular way. The PANAS can be framed with various temporal perspectives, such as “at this moment,” “over the past few days,” and “in general.” Because we investigated a stable concept, i.e., entrepreneurial orientation, we focused on trait affect and thus framed the instructions of the PANAS as “Indicate to what extent you *generally* feel this way, that is, how you feel on average.” Cronbach’s alpha for positive affect was 0.84 and for negative affect 0.87. These values are similar to or the same as the values of 0.88 for positive affect and 0.87 for negative affect reported in Watson et al. (1988).

Entrepreneurial success Entrepreneurial success was measured using an average measure of standardized measures of past and current revenue growth (Hmieleski and Baron 2009; Wiklund et al. 2009). Past revenue growth indicated whether the revenue in 2014 was less than, equal to, or greater than the revenue in 2013. Current revenue growth was measured with an indication of whether the revenue at the end of 2014 was much less than (less than 20%), less than, similar to, greater than, or much greater than (more than 20%) the expectation of revenue in 2014 measured at the beginning of 2014. Cronbach’s alpha was 0.76.

Control variables Three control variables were used because of their well-documented associations with affect and entrepreneurship: gender (in which male is 1) (Kring and Gordon (1998) and Minniti and Nardone (2007), respectively), age of the entrepreneur (Santorelli et al. (2018) and Levesque and Minniti (2006), respectively), and education (Demenescu et al. (2014) and Dickson et al. (2008), respectively). Education was measured as the highest finished type of education, in which the options ranged from primary education to

university. We also controlled for experience, measured as the number of years one is a sole proprietor at the moment of measuring.

3.2 AMAROK

The AMAROK sample consisted of 349 French small business owners and was collected by Observatoire AMAROK,³ partner of Montpellier Business School. AMAROK runs a panel of these owners with the primary goal of analyzing the health of entrepreneurs. The data were collected in the winter of 2015–2016. There are 254 individuals in the final sample because some small business owners exited the panel, and there were some incomplete observations. A plurality of these small business owners had 2 to 3 years of higher education or had obtained a Bachelor’s degree (37%); the second-largest group had 4 to 5 years of higher education or had obtained a Master’s degree (26%). Four percent owned a business of size 1 (i.e., these owners can be classified as sole proprietors), 25% fit the definition of a micro-sized business (fewer than 10 employees), 56% fit the definition of a small-sized business (10 to 49 employees), and the remaining 15% were medium-sized business with more than 50 employees. The average age of these small business owners was 50 years, and 80% of them were male.

3.2.1 Variables and measures

Entrepreneurial orientation Because the AMAROK sample consisted of small business owners, who usually have employees, the strategic posture of the business usually depended not only on the owner but also on other board members. Therefore, firm entrepreneurial orientation was the appropriate measure for small business owners. Hence, we measure entrepreneurial orientation using the (slightly adapted) French version of the nine-item scale of Covin and Slevin (1989), using a seven-point Likert scale. Of these nine items, there were three items for innovativeness, three for proactiveness, and three for risk taking. Sample items were “In general, the top managers of my firm favor a strong emphasis on R&D, technological leadership, and innovation,” “In dealing with its competitors, my firm typically responds to actions which competitors initiate” (reversed), and “In general, the top managers of my firm have a strong

³ <http://www.observatoire-amarok.net/en>.

proclivity for high-risk projects (with chances of very high return),” respectively. Cronbach’s alpha was 0.73, indicating that internal reliability was good.

Affect For measuring affect, we used the PANAS with time frame “generally” as we did for the Panteia sample. Cronbach’s alpha for positive affect was 0.71 and for negative affect was 0.83, similar to the values reported in Watson et al. (1988).

Entrepreneurial success We used two measures for entrepreneurial success. The first measure, referred to as “entrepreneurial success,” was an average of three questions concerning finance, profitability, and turnover. The question concerning finance was, “Was your business this year?”: “strongly beneficial,” “beneficial,” “balanced,” “deficient,” and “strongly deficient.” Concerning profitability, the question was, “Compared to last year, your profit is?”: “strong increase,” “increase,” “stable,” “decrease,” and “strong decline.” Concerning business turnover, it was, “Compared to last year, your turnover is?”: strong increase, increase, stable, decrease, and strong decline. Cronbach’s alpha for these items is 0.78. The second measure, referred to as “entrepreneurial success (%)” or “percentage measure of entrepreneurial success” simply asked small business owners, “All things considered, how would you evaluate the success of your company/venture?” to which they responded with a number between 1 (“very unsuccessful”) and 100 (“very successful”). These two success measures were acquired at the same time as our measures for the main analysis.

Control variables Consistent with the controls used in the Panteia sample and due to the well-documented association between affect-entrepreneurship and these controls, we used gender (in which male is 1), age of the entrepreneur, education, and experience as control variables. Education was measured as the highest completed education level. Experience was measured as the number of years the small business owner owned the business. The larger the number of years one owns a business, the higher is the probability that the business’s entrepreneurial orientation is based on the owner (Quigley and Hambrick 2012).

3.3 Analysis

To investigate the role of positive and negative affect in entrepreneurial orientation, we used linear regression

models with entrepreneurial orientation as the dependent variable and both positive affect and negative affect, together with the controls, as independent variables. Positive affect and negative affect were assumed orthogonal, meaning that including them in one regression model did not cause a danger of multicollinearity. The coefficients of the regression models were estimated with ordinary least squares (OLS). To easily compare coefficients across the samples, we standardized all variables except gender. For our additional tests, we developed our model further. First, we analyzed our models by replacing entrepreneurial orientation with its different dimensions: innovativeness, proactiveness, and risk taking. Second, we analyzed our models by replacing entrepreneurial orientation with entrepreneurial success, and we added entrepreneurial orientation to our set of independent variables such that we could analyze the role of affect in entrepreneurial success (possibly indirectly through entrepreneurial orientation).

Moreover, to obtain a more thorough view of our main goal, the association between affect and entrepreneurial orientation, we repeated the analysis (with respect to entrepreneurial orientation) for a student sample (referred to as Woudestein). The motivation behind using this sample, a description of the sample, and the corresponding results are presented in Appendix 1.

4 Results

Tables 1 and 2 present the unstandardized means, standard deviations (SDs), minima (min), maxima (max), percentage of missing observations (missing (%)), variance inflation factors (VIF), and a correlation matrix with the value of Cronbach’s alpha on the diagonal for the Panteia and AMAROK sample. The correlations of the Panteia sample (Table 1) varied from -0.20 to 0.75 . The correlations between positive affect and entrepreneurial orientation (0.27) and between negative affect and entrepreneurial orientation (-0.12) were significant and in the expected directions. For the AMAROK sample (Table 2), the smallest correlation was -0.31 , and the highest was 0.62 . For this sample, the correlation between positive affect and entrepreneurial orientation was significant and positive (0.16), but the correlation between negative affect and entrepreneurial orientation was not significant (0.07). For both samples, correlations between positive affect and entrepreneurial orientation were greater in absolute values than were the

Table 1 Means, standard deviations, minima, maxima, percentage of missing values, variance inflation factors, correlations, and Cronbach's alphas of the unstandardized variables of the Panteia sample ($N = 337$)

	Mean	SD	Min	Max	Missing (%)	VIF	Correlations and Cronbach's alpha								
							1	2	3	4	5	6	7		
1. Entrepreneurial orientation	3.52	0.61	1.7	5	0	1.12	0.81								
2. Entrepreneurial success	3.72	0.76	1	5	0	2.39	0.22***	0.76							
3. Positive affect	3.52	0.52	1	5	0	2.54	0.27***	0.75***	0.84						
4. Negative affect	1.56	0.54	1	5	0	1.10	-0.12*	-0.10	0.00	0.87					
5. Gender	0.69	0.47	0	1	0	1.07	0.11	-0.05	-0.04	0.06	-				
6. Age	53.07	8.77	24	76	0	1.19	0.04	0.02	-0.08	-0.19***	-0.03	-			
7. Education	5.05	1.29	1	6	0	1.12	0.09	0.12*	0.21***	-0.01	-0.19***	-0.07	-		
8. Experience	14.47	9.82	1	52	0	1.22	0.03	-0.12*	-0.17**	0.09	0.10	0.32***	-0.20***		

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

correlations between negative affect and entrepreneurial orientation. Additionally, correlations between positive affect and negative affect were (close to) zero (0.00 for Panteia and 0.02 for AMAROK) indicating that positive affect and negative affect are indeed orthogonal.

Furthermore, the maximum variance inflation factors for Panteia and AMAROK were 2.54 and 1.87, respectively. These variance inflation factors were below 4, thus indicating no danger of multicollinearity (Diamantopoulos et al. 2008; Hair et al. 2010). Additionally, common method bias was checked for by applying Harman's single factor test (Podsakoff et al. 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 of the indicators measured with the same method. The first principal component of Panteia explained 16.8% and that of AMAROK explained 15.4%. Hence, these low percentages indicated no serious threat of common method bias.

Table 3 shows the results of the linear regression models. We found confirming results for hypothesis 1 (the positive association between positive affect and entrepreneurial orientation) in both samples. Indeed, a significant and positive association between trait positive affect and individual entrepreneurial orientation was found for the 337 sole proprietors of the Panteia sample (coefficient = 0.27, $p < 0.001$) and the 254 small business owners of the AMAROK sample (coefficient = 0.15, $p < 0.05$).

With respect to hypothesis 2, we found confirming results for Panteia but not for AMAROK. That is, we found a significant and negative association between

trait negative affect and individual entrepreneurial orientation in the Panteia sample (coefficient = -0.13, $p < 0.05$). In the AMAROK sample, however, the association between trait negative affect and firm entrepreneurial orientation was insignificant and not even in the right direction (coefficient = 0.05, $p = 0.44$).

Moreover, we noted that the absolute coefficients between positive affect and entrepreneurial orientation were greater than the absolute coefficients between negative affect and entrepreneurial orientation. Because variables were standardized, the table presents standardized and thus comparable coefficients. In both samples, the coefficient for positive affect was more than two times as large as the coefficient for negative affect.

To test the robustness of the linear regression models, we repeated the procedure but with either positive or negative affect. Positive affect had a coefficient of 0.27 ($p < 0.001$) for Panteia and 0.15 ($p < 0.05$) for AMAROK, whereas negative affect had a coefficient of -0.13 ($p < 0.05$) for Panteia and 0.05 ($p = 0.43$) for AMAROK. Hence, results were, based on two decimals, the same as the main results. This is not surprising because positive affect and negative affect are independent dimensions (Watson et al. 1988) and orthogonal in a statistical sense (see also Tables 1 and 2). Fredrickson and Losada (2005) argued the usefulness of the ratio of positive affect to negative affect. Therefore, we also repeated the procedure with positive affect divided by negative affect as an independent variable. We found a coefficient of 0.22 ($p < 0.001$) for Panteia and 0.04 ($p = 0.49$) for

Table 2 Means, standard deviations, minima, maxima, percentage of missing values, variance inflation factors, correlations, and Cronbach's alphas of the unstandardized variables of the AMAROK sample ($N = 254$)

	Mean	SD	Min	Max	Missing (%)	VIF	Correlations and Cronbach's alpha										
							1	2	3	4	5	6	7	8			
1. Entrepreneurial orientation	4.05	0.94	1	7	0	1.08	0.73										
2. Entrepreneurial success	3.01	0.92	1	5	1	1.21	0.09	0.78									
3. Entrepreneurial success (%)	66.15	19.22	2	100	13	1.24	0.14*	0.33***	–								
4. Positive affect	3.56	0.51	1.4	4.7	0	1.08	0.16*	0.13*	0.11	0.71							
5. Negative affect	2.25	0.65	1	4.4	0	1.08	0.07	–0.06	–0.13	0.02	0.83						
6. Gender	0.80	0.40	0	1	0	1.03	0.00	0.04	–0.01	–0.10	–0.06	–					
7. Age	50.44	7.80	27	74	0	1.78	–0.08	–0.13*	0.08	–0.10	–0.10	–0.03	–				
8. Education	3.80	1.17	1	6	0	1.17	–0.01	0.09	–0.15*	0.03	–0.07	–0.04	–0.13*	–			
9. Experience	16.32	8.86	0.33	42	0	1.87	0.03	–0.06	0.16*	–0.08	0.03	0.04	0.62***	–0.31***	–		

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table 3 OLS results of the linear regression models for both samples

	Entrepreneurial orientation (Panteia)	Entrepreneurial orientation (AMAROK)
Intercept	-0.01 (0.05)	0.03 (0.06)
Positive affect	0.27*** (0.05)	0.15* (0.06)
Negative affect	-0.13* (0.06)	0.05 (0.06)
Gender	0.13* (0.05)	0.01 (0.06)
Age	0.03 (0.06)	-0.15 (0.09)
Education	0.07 (0.06)	0.01 (0.07)
Experience	0.07 (0.05)	0.12 (0.08)
F-statistic	6.80***	1.76
<i>p</i> value	0.00	0.11
Adjusted R squared	0.09	0.02
Number of observations	337	254

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$, SEs between brackets, *p* value for F-statistic

AMAROK. Hence, although the coefficients obviously have a different interpretation, the results remained similar.

As our first additional test, we analyzed the three dimensions of entrepreneurial orientation, i.e., innovativeness, proactiveness, and risk taking, separately (see Appendix Table 6 in Appendix 2). For positive affect, the results of the Panteia sample were similar to the main results. That is, positive and significant associations were found between positive affect and all entrepreneurial orientation dimensions. For negative affect, we found that innovativeness and risk taking are primarily responsible for the association. With respect to the association between positive affect and the entrepreneurial orientation dimensions in AMAROK, the results showed that innovativeness primarily drove the association.

For the second additional aim, we augmented our model with entrepreneurial success to investigate whether affect is associated (either directly or indirectly through entrepreneurial orientation) with entrepreneurial success. The results are presented in Table 7 in Appendix 2. In the Panteia sample, we found a direct association between trait positive affect and entrepreneurial success (coefficient = 0.16, $p < 0.01$) and between trait negative affect and entrepreneurial success (coefficient = -0.12, $p < 0.05$). For the AMAROK sample however, we found neither a significant association between positive affect and entrepreneurial success (coefficient = 0.11, $p = 0.10$) nor between positive affect and the percentage measure of entrepreneurial success (coefficient = 0.12, $p = 0.05$) although this latter coefficient was significant (coefficient 0.14,

$p < 0.05$) when the total effect was examined (i.e., without controlling for entrepreneurial orientation). With respect to negative affect, there was no significant and direct association with entrepreneurial success (coefficient = -0.08, $p = 0.05$), but there was a significant association between negative affect and the percentage measure of entrepreneurial success (coefficient = -0.16 $p < 0.05$). Note that some *p* values were slightly higher than 0.05, such that the results were insignificant. However, these low *p* values hint at an association between affect and entrepreneurial success.

In both samples, we tested for indirect associations (i.e., the association of positive or negative affect and entrepreneurial success through entrepreneurial orientation) using a Sobel test (Sobel and Leinhardt 1982) but found no significant results. This is possibly because none of the coefficients for entrepreneurial orientation (when associated with entrepreneurial success) was significant. That is, there was no significant association between entrepreneurial orientation and entrepreneurial success for the Panteia sample (coefficient = -0.07, $p = 0.22$) nor between entrepreneurial orientation and entrepreneurial success/the percentage measure of entrepreneurial success for the AMAROK sample (entrepreneurial success: coefficient = 0.07, $p = 0.22$; percentage measure of entrepreneurial success: coefficient = 0.13, $p = 0.05$).

Finally, we investigated the role of affect in entrepreneurial orientation in a sample of students (see Appendix 1). The results of this student sample confirmed both of our hypotheses.

5 Discussion

Although affect plays a key role in the entrepreneurship literature (Baron 2008; Delgado García et al. 2015; Hahn et al. 2012), its role as a driver for entrepreneurial orientation has not thus far been established. To fill this gap, the present study investigated the association between affect (both positive and negative) and entrepreneurial orientation in two samples: 337 Dutch sole proprietors (Panteia) and 254 French small business owners (AMAROK). Additionally, we investigated the role of affect in three dimensions of entrepreneurial orientation and its role in entrepreneurial success. Our investigation led to several findings.

First, we found a positive association between positive affect and entrepreneurial orientation in both samples, despite using slightly different measures for entrepreneurial orientation (i.e., the individual variant versus the firm variant). Hypothesis 1 was convincingly confirmed: positive affect is positively associated with individual entrepreneurial orientation in sole proprietors and with firm entrepreneurial orientation in small business owners. This finding indicates that positive feelings and emotions are associated with acting more entrepreneurial in terms of innovativeness, proactiveness, and risk taking, although for the small business owners, positive feelings and emotions are mostly associated with innovativeness. The positive association between positive affect and innovativeness is consistent with earlier findings (Baron and Tang 2011; Rutherford and Holt 2007).

Second, the unambiguous result for positive affect did not hold for negative affect. Although there was a negative association between negative affect and individual entrepreneurial orientation for sole proprietors, there was no significant negative association between negative affect and firm entrepreneurial orientation in small business owners. Therefore, hypothesis 2 was only confirmed for sole proprietors. For these sole proprietors, the association was primarily visible in the innovativeness and risk taking dimensions of entrepreneurial orientation. The literature indeed shows more evidence for the associations between affect and these dimensions than between affect and proactiveness (Baron and Tang 2011; Isen and Geva 1987; Mittal and Ross Jr 1998; Rutherford and Holt 2007). Our finding could mean that for sole proprietors, having negative feelings and emotions is associated with a less entrepreneurial strategic posture (particularly with

respect to innovativeness and risk taking), whereas negative feelings and emotions experienced by small business owners do not impact their *firm's* strategic posture. Hence, the affective characteristics of the small business owner alone do not impact *firm* entrepreneurial orientation as is true for sole proprietors. A possible explanation is that firms, as opposed to sole proprietors, are confronted with task conflicts and relationship conflicts, both of which impact negative affect (Breugst and Shepherd 2017). These conflicts can also impact the strategic posture of the firm. Therefore, our estimated coefficient between negative affect and (firm) entrepreneurial orientation may be biased because conflicts have not been incorporated in our study.

Third, although prior studies focus on either positive affect or negative affect (Delgado García et al. 2015), our results show that it is important to distinguish between positive and negative affect and investigate both because they represent separate and independent dimensions (Watson et al. 1988). Our results confirm this in three ways. First, the correlations between both dimensions of affect are very small or even zero. Second, the coefficients of the linear regression models including only one of the affect dimensions, i.e., either positive affect or negative affect, are the same as the coefficients of the linear regression models including both affect dimensions simultaneously. Third, our results show that rather than only being opposites, positive and negative affect constitute completely separate associations with different signs, strengths, and significance.

Indeed, the positive association between positive affect and entrepreneurial orientation was stronger than the negative association between negative affect and entrepreneurial orientation. The absolute coefficient for positive affect was more than two times as large as the absolute coefficient of negative affect in the Panteia sample. Due to the insignificant association between negative affect and entrepreneurial orientation in the AMAROK sample, we did not compare the absolute coefficients for the AMAROK sample. Nonetheless, we can conclude that positive feelings and emotions play a more important role for entrepreneurial orientation than do negative feelings and emotions.

Finally, we investigated the role of affect in entrepreneurial success. We found evidence for a positive association between positive affect and entrepreneurial success and a negative association between negative affect and entrepreneurial success in the Panteia sample. This is consistent with the meta-analytic results of

Lyubomirsky et al. (2005) showing that positive affect is associated with many successful outcomes across different domains of life. The findings, however, were less evident in the AMAROK sample, in which we found a negative association between negative affect and the percentage measure of entrepreneurial success, but no clear association between positive affect and entrepreneurial success. Nevertheless, p values for positive affect (when associated with entrepreneurial success) were low and thus hinted at the existence of an association between affect and entrepreneurial success.

5.1 Implications for theory and practice

The findings of the present study have several theoretical implications. *First*, the present study adds to our knowledge of the entrepreneurial profile (Gartner 1990). Specifically, it investigates the role of affect in entrepreneurship (Delgado García et al. 2015; Hahn et al. 2012). Our findings reveal that both positive and negative affect play different but significant roles in entrepreneurial orientation—and partly in entrepreneurial success—and thus qualify as drivers of entrepreneurial orientation and entrepreneurial success. Earlier studies have shown several other entrepreneurial characteristics to be associated with decision-making. For instance, in their review, Shepherd et al. (2015) elucidate how decision-making strategies can differ among entrepreneurs due to gender, national and cultural heritage, and differences in experience. The last enhances self-efficacy, leading to strategies that could be more aggressive and seemingly riskier. The Shepherd et al. (2015) review shows that risk and problem framing impact entrepreneurial decision-making. The work of Lawrence et al. (2008) shows that there is no difference in entrepreneurs and managers when they execute cold decision-making (i.e., risk-free decision-making), whereas entrepreneurs tend to take more risk in hot decision-making, (i.e., decision-making with risk involved). This higher risk taking among entrepreneurs is accompanied by enhanced impulsivity. Furthermore, Dew et al. (2009) show that problems are framed differently by expert entrepreneurs when compared with MBA students. Although expert entrepreneurs use “effectual” logic, students tend to go by the textbook. Hence, entrepreneurial decision-making is associated with gender, culture, risk taking, and problem framing. The present study adds affect to this list by emphasizing the importance of affect in the strategic posture and success of entrepreneurs.

Second, results of our study show the importance of investigating both positive affect and negative affect as separate concepts. We found no correlations between the two dimensions of affect, and the results differed in sign, strength, and significance. Although many studies have reported results of only one measure of affect (Baron and Tang 2011; Baron et al. 2011; Foo et al. 2008), our work shows the importance of investigating both.

Third, the present study contributes to the rationality debate, concerned with the rationality of individuals in (economic) decision-making, which has recently entered the field of entrepreneurship (Zhang and Cueto 2017). With the present study, we show that irrational characteristics, such as affect, could have an effect on (rational) strategic postures. The work of Smith et al. (1988) showing that an entrepreneur’s decision behavior follows a less formal and rational decision process than that of professional managers from a larger firm lends support to our results. Smith et al.’s (1988) study also showed that for both entrepreneurs and managers, decline in the degree of formality and rationality in the decision process lowered organizational performance.

From a practical point of view, the present study adds value to the understanding of how affect influences the degree of entrepreneurship in the strategic posture of sole proprietors and small business owners. For sole proprietors, trait positive affect implies a more entrepreneurial strategic posture in terms of innovativeness, proactiveness, and risk taking, whereas for small business owners, trait positive affect implies a more entrepreneurial strategic posture in terms of innovation. However, although for sole proprietors, negative affect is negatively associated with individual entrepreneurial orientation, for small business owners, negative affect does not impact their strategic posture. One could speculate that having other members in the organization buffers the negative affect of small business owners from influencing the firm’s strategic position negatively, because these other members also influence the firm’s strategy, either directly or indirectly (Quigley and Hambrick 2012). Because an appropriate strategic posture leads to higher performance in the business environment, this knowledge of the association between affect and entrepreneurial orientation can inform sole proprietors and small business owners on how to better run their business and can help future entrepreneurs make a deliberate choice on whether to start a business. Encouraging everyone to become an entrepreneur is not

our message; only high-growth-potential enterprises are beneficial for the economy (Shane 2009). Finally, knowledge about the important link between affect and entrepreneurial orientation can also guide mental health intervention programs to help entrepreneurs unleash their full potential.

5.2 Limitations and future research directions

Our study has certain limitations, and at the same time, has opened an avenue for future research directions.

First, some may view using both individual and firm entrepreneurial orientation as a limitation. Indeed, one may be concerned about using two different measures and comparing their results. However, we believe that in this specific situation, the use of both individual entrepreneurial orientation and firm entrepreneurial orientation is appropriate. Several reasons guide our belief in this respect. First, the measure of entrepreneurial orientation fits the type of subjects we studied in our sample; whereas sole proprietors are individually responsible for their firm outcomes, small business owners are influenced by/influence their employees so that the firm-level outcome is a more appropriate measure. Second, although the items of the measures differ in their wording, they show similarity in the sub dimensions (innovativeness, proactiveness, and risk taking). Third, although one could argue that affect is an individual-level measure and hence cannot be associated with a firm-level concept such as entrepreneurial orientation, the upper echelon theory suggests that individual characteristics can predict organizational outcomes (Hambrick and Mason 1984).

Second, one may question the credibility of the results from the Panteia sample because two different temporal points were used when collecting the data. Nevertheless, we believe that our results are trustworthy for two reasons. First, we intentionally measured trait affect instead of state affect. Trait affect measures *general* affect, i.e., affect deeply embedded in a person. This deeper form of affect is more stable and is considered to remain the same over years. Second, the results of the Panteia sample are consistent with the results of the Woudestein (Appendix 1) and AMAROK samples, which provide confidence in our results.

Third, our measure of entrepreneurial success is not embedded in the literature, which could raise doubt about our results on entrepreneurial success. For this reason, we included multiple measures and multiple-

item constructs. The constructs show high internal reliability and are therefore trustworthy. Additionally, results are in the expected direction. Nevertheless, the use of well-validated measures of entrepreneurial success in the future could lead to clearer (i.e., significant) results, because our results signal such a significance. The insignificant results for entrepreneurial success could also arise from the use of entrepreneurial orientation as *one* construct instead of using its dimensions. As mentioned by Kreiser et al. (2013), the different dimensions of entrepreneurial orientation can have different effects on entrepreneurial success. Hence, future studies should adopt well-validated measures of entrepreneurial success and investigate the relationship of entrepreneurial orientation and success through the three dimensions of entrepreneurial orientation.

Fourth, the well-known psychological concept of the Big Five could play a mediating role between affect and entrepreneurship for several reasons. First, the literature that shows the relationship between affect and the Big Five indicates that there is a positive association between positive affect and conscientiousness, extraversion, and openness to experience, and between negative affect and neuroticism (Costa and McCrae 1980; Gutiérrez et al. 2005; Roccas et al. 2002; Shiota et al. 2006). Second, with respect to the Big Five entrepreneurship literature, Zhao and Seibert (2006) have shown that entrepreneurs score higher than managers do on conscientiousness and openness to experience and lower on neuroticism and agreeableness. Similarly, Caliendo et al. (2014) show that entry into self-employment is positively impacted by extraversion and openness to experience. The Big Five further plays a role in entrepreneurial performance (Zhao et al. 2010); conscientiousness, extraversion, and openness to experience positively impact success, whereas neuroticism negatively impacts it. Finally, taking these two fields of literature together, we expect a positive association between positive affect and entrepreneurship (because both are positively associated with conscientiousness, extraversion, and openness to experience) and a negative association between negative affect and entrepreneurship (because both are negatively associated with neuroticism). Indeed, the present study shows positive associations between positive affect and entrepreneurial orientation and success and negative associations between negative affect and (some of) our entrepreneurship measures. One could go a step further and explicitly investigate the mediating role of the Big Five.

Our work does not claim to have identified any causality between affect and entrepreneurial orientation. On the one hand, feelings and emotions may influence strategy, but on the other hand, strategy can also lead to certain feelings and emotions, possibly through entrepreneurial success. Hence, we used the word “associations” throughout the paper. Although we cannot formally identify causality, we can surmise that the direction of affect to entrepreneurial orientation is a more reasonable direction, given that we investigated trait affect in two of the three samples. Trait affect is related to a general characteristic of a person and is a long-term concept. However, entrepreneurial orientation is more likely to change because the characteristics of the market, the product, the competitors, and the business themselves can change. Therefore, it is more conceivable that long-term affect influences dynamic strategic posture rather than a dynamic strategic posture influencing the long-term feelings and emotions of an entrepreneur. Nevertheless, we recommend future studies use experimental or panel data to obtain a clearer understanding of which of the two causal directions prevails.

Future studies may also want to focus on the measurement of the construct “affect.” First, the work of Feldman Barrett and Russell (1998) shows that affect consists of four dimensions—high activation positive affect, low activation positive affect, high activation negative affect, and low activation negative affect. Future studies replicating our work could use these four dimensions of affect, because studies suggest that the four dimensions of affect could be helpful to explain entrepreneurship (e.g., Williamson et al. (n.d.)). Second, a certain score on affect can impact the self-reported measures on other outcome measures. For instance, a higher score on positive affect may lead to a more entrepreneurial evaluation of the company, thus raising reporting bias. Hence, future studies should focus on a correction for over- or underestimation of the outcome measures for a certain measure of affect.

6 Conclusion

Entrepreneurial orientation is often associated with venture success (Rauch et al. 2009). However, the drivers of entrepreneurial orientation have not thus far been firmly established. Recent studies have called for investigating the links between affect and entrepreneurial orientation (Delgado García et al. 2015; Hahn et al. 2012). Our

study empirically investigated the role of both (orthogonal) dimensions of affect, i.e., positive and negative, on two variants of entrepreneurial orientation (i.e., the original firm-level variant and the individual-level variant). It additionally tested the role of affect in the separate dimensions of entrepreneurial orientation and in entrepreneurial success. Using two samples, we show that positive affect is positively associated with both variants of entrepreneurial orientation, whereas negative affect is negatively associated with only individual entrepreneurial orientation. Results for entrepreneurial success are mixed. Our findings contribute to the entrepreneurship literature by showing the role played by both positive and negative affect in *entrepreneurial orientation*.

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Appendix 1 presents the results with respect to a student sample (referred to as Woudestein). These results are not part of the main text for two reasons. First, the focus is on actual sole proprietors/business owners, who possess a strategic posture or entrepreneurial orientation because they own a business. Students can answer questions about a strategic posture, but for most students, the answers are hypothetical and hence not based on actual behavior. Furthermore, it is difficult, if not impossible, to measure entrepreneurial success in students who are in a different phase of life. The few that started a business most likely could not say much about actual success thus far.

Nevertheless, we see merit in adding the results for students. Although the results are not an internal replication, they do add to our knowledge of the main goal—investigating the affect-entrepreneurial orientation association. In the present appendix, we discuss the sample and present the results.

Woudestein

The Woudestein sample consisted of 182 students of the Erasmus University of Rotterdam in the

Table 4 Means, standard deviations, minima, maxima, variance inflation factors, correlations, and Cronbach's alphas of the unstandardized variables of the Woudestein sample ($N = 177$)

	Mean	SD	Min	Max	VIF	Correlations and Cronbach's alpha					
						1	2	3	4	5	
1. Entrepreneurial orientation	3.55	0.50	2.3	5.0	1.29	0.76					
2. Positive affect	3.68	0.45	2.2	4.9	1.30	0.44***	0.79				
3. Negative affect	2.25	0.68	1.1	4.0	1.05	-0.16*	0.00	0.89			
4. Gender	0.44	0.50	0	1	1.02	-0.02	-0.02	-0.12	-		
5. Age	20.67	2.06	18	30	1.02	0.04	0.04	0.04	0.04	-	
6. Education	6.86	0.86	4.0	9.0	1.05	-0.01	0.17*	0.05	-0.01	0.10	

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Netherlands who were recruited from different faculties by various university recruitment systems, i.e., that of the economics department, that of the psychology department, and one to which students of all schools could apply. Most students studied economics (41%), psychology (28%), or other social sciences (14%). Approximately 35% of the students were taking entrepreneurship courses. The data were collected between May 2015 and April 2016. Although 182 students completed the questionnaire, due to missing observations, only 177 were analyzed. The average age of these 177 students was 21 years (median was 20 years), and slightly more than half of the sample (56%) was female.

Variables and measures

Entrepreneurial orientation To measure entrepreneurial orientation among students, who are usually individuals without a business, it was appropriate to use an individual-level scale. Hence, we used the individual entrepreneurial orientation scale of Langkamp Bolton and Lane (2012). To avoid repetition, we refer to the “Variables and measures” section in our section about the Panteia sample for more information about this scale. Cronbach's alpha was equal to 0.76, indicating a good reliability for this scale.

Affect To measure affect, we used the PANAS (as explained in the section for the Panteia sample) with the time frame “generally,” i.e., participants must indicate to what extent they *generally* feel a certain

feeling or emotion. Cronbach's alpha for positive affect was 0.79 and for negative affect 0.89, similar to those (0.88 for positive affect and 0.87 for negative affect) reported by Watson et al. (1988).

Control variables For the same reasons as mentioned in the sections for the Panteia and AMAROK samples and to be able to compare results across samples, we included the same three control variables as we did for these earlier samples, viz. gender (in which male is 1), age, and education. Education was measured as the average grade of the last year. Experience was not added because (most) students simply had no experience in their own business.

Results

Appendix Table 4 presents the unstandardized means, standard deviations (SDs), minima (min), maxima (max), variance inflation factors (VIF), and a correlation matrix with the value of Cronbach's alpha on the diagonal for the Woudestein sample. The correlations range from -0.16 to 0.44. These two extreme correlations are exactly the correlations of our focal associations, i.e., the correlation between negative affect and entrepreneurial orientation is significantly negative (-0.16), and the correlation between positive affect and entrepreneurial orientation is significantly positive (0.44). Results for the Woudestein sample were similar to the results for the Panteia and AMAROK samples. The correlation between positive affect and entrepreneurial orientation was greater in absolute values than was the correlation between negative affect and entrepreneurial orientation. Additionally, the correlation

Table 5 OLS results of the linear regression models (with the three dimensions of entrepreneurial orientation as dependent variable) for the Woudestein sample

	Entrepreneurial Orientation (Woudestein)	Entrepreneurial Orientation - Innovativeness (Woudestein)	Entrepreneurial Orientation - Proactiveness (Woudestein)	Entrepreneurial Orientation - Risk taking (Woudestein)
Intercept	0.02 (0.07)	0.01 (0.07)	0.01 (0.07)	0.01 (0.07)
Positive Affect	0.45***(0.07)	0.22**(0.07)	0.43***(0.07)	0.40***(0.07)
Negative Affect	-0.16*(0.07)	-0.12 (0.07)	-0.16*(0.07)	-0.09 (0.07)
Gender	-0.03 (0.07)	-0.08 (0.07)	-0.12 (0.07)	0.12 (0.07)
Age	0.04 (0.07)	0.08 (0.07)	-0.05 (0.07)	0.04 (0.07)
Education	-0.08 (0.07)	-0.12 (0.08)	0.14*(0.07)	-0.18* (0.07)
F-statistic	10.06***	2.86*	11.64***	8.29***
p-value	0.00	0.02	0.00	0.00
Adjusted R squared	0.21	0.05	0.23	0.17
Number of observations	177	177	177	177

Note: *: $p < 0.05$, **: $p < 0.01$, and ***: $p < 0.001$, SEs between brackets, p-value for F-statistic

between positive affect and negative affect was 0.00, indicating that positive affect and negative affect are indeed orthogonal

The maximum variance inflation factor for Woudestein was 1.30 and thus far below 4, indicating no danger of multicollinearity (Diamantopoulos et al. 2008; Hair et al. 2010). Additionally, common method bias was assessed by applying Harman's single factor test (Podsakoff et al. 2003). The first principal component of Woudestein explained 17.0% of the variance, indicating no serious threat of common method bias.

Appendix Table 5 shows the results of the linear regression model. As with our main samples, we find confirming results for hypothesis 1; a significant and positive association between trait positive affect and individual entrepreneurial orientation is found for the 177 students of the Woudestein sample (coefficient = 0.45, $p < 0.001$). With respect to hypothesis 2, we also find confirming results—a significant and negative association (coefficient = -0.16, $p < 0.05$) between trait negative affect and individual entrepreneurial orientation. Moreover, we note that, also for the Woudestein sample, the absolute coefficients between positive affect and entrepreneurial orientation are greater than are the coefficients between negative affect and entrepreneurial orientation; the coefficient for positive affect is almost three times greater than the coefficient for negative affect

To test the robustness of these results, we repeat the procedure but with either positive or negative affect. Positive affect has a coefficient of 0.45 ($p < 0.001$), whereas negative affect has a coefficient of -0.16 ($p < 0.05$); thus, the results are the same as the main results. This proves independency of positive and negative affect (Watson et al. 1988) and that they are orthogonal in a statistical sense (see also Appendix Table 4). For the same reason as explained in the main text, we repeat the procedure with positive affect divided by negative affect as independent variable. We find a coefficient of 0.33 ($p < 0.001$). Hence, although coefficients obviously have a different interpretation, results remain similar.

For the student sample, we could also analyze the three dimensions of entrepreneurial orientation, i.e., innovativeness, proactiveness, and risk taking (see Appendix Table 5). Positive affect is significantly and positively associated with all three dimensions. We find that negative affect is mostly associated with proactiveness, which drives the negative association for the students in the Woudestein sample.

Appendix 2

In Appendix 2, we present the tables for our additional tests. The first table (Appendix Table 6) shows results when analyzing the different dimensions of entrepreneurial orientation. The second table (Appendix Table 7) shows results corresponding to the analysis of entrepreneurial success

Table 6 OLS results of the linear regression models with the three dimensions of entrepreneurial orientation as dependent variable for all three samples

	Entrepreneurial orientation—innovativeness (Panteia)	Entrepreneurial orientation—proactiveness (Panteia)	Entrepreneurial orientation—risk taking (Panteia)	Entrepreneurial orientation—innovativeness (AMAROK)	Entrepreneurial Orientation—Proactiveness (AMAROK)	Entrepreneurial Orientation—Risk taking (AMAROK)
Intercept	-0.02 (0.05)	0.02 (0.06)	-0.01 (0.06)	0.02 (0.06)	0.03 (0.06)	0.02 (0.06)
Positive affect	0.23*** (0.05)	0.23*** (0.06)	0.17** (0.06)	0.17** (0.06)	0.07 (0.06)	0.07 (0.06)
Negative affect	-0.11* (0.06)	-0.04 (0.06)	-0.12* (0.06)	0.06 (0.06)	0.06 (0.06)	0.09 (0.06)
Gender	0.07 (0.05)	0.04 (0.06)	0.18*** (0.06)	0.04 (0.06)	0.04 (0.06)	0.02 (0.07)
Age	0.09 (0.06)	0.00 (0.06)	-0.05 (0.06)	0.06 (0.09)	-0.22* (0.09)	0.05 (0.09)
Education	0.12* (0.06)	-0.02 (0.06)	0.04 (0.06)	0.02 (0.07)	0.00 (0.07)	0.04 (0.07)
Experience	0.02 (0.05)	0.07 (0.06)	0.09 (0.06)	0.11 (0.08)	0.12 (0.08)	0.02 (0.09)
F-statistic	5.71***	2.98**	4.32***	1.97	1.49	0.72
p value	0.00	0.01	0.00	0.07	0.18	0.63
Adjusted R squared	0.08	0.03	0.06	0.02	0.01	0.01
Number of observations	337	337	337	254	254	254

$p < 0.05$; ** $p < 0.01$; *** $p < 0.001$, SE between brackets, p value for F-statistic

Table 7 OLS results of the linear regression models for entrepreneurial success

	Entrepreneurial success (Panteia)		Entrepreneurial success (AMAROK)		Entrepreneurial success (%) (AMAROK)	
Intercept	0.05 (0.06)	0.05 (0.06)	0.00 (0.06)	-0.00 (0.06)	-0.00 (0.07)	-0.01 (0.07)
Entrepreneurial orientation		-0.07 (0.06)		-0.07 (0.06)		0.13 (0.06)
Positive affect	0.14* (0.06)	0.16** (0.06)	0.12 (0.06)	0.11 (0.06)	0.14* (0.07)	0.12 (0.07)
Negative affect	-0.11 (0.06)	-0.12* (0.06)	-0.07 (0.06)	-0.08 (0.06)	-0.15* (0.07)	-0.16* (0.07)
Gender	0.02 (0.06)	0.03 (0.06)	0.05 (0.06)	0.05 (0.06)	-0.00 (0.07)	-0.01 (0.07)
Age	-0.15* (0.06)	-0.14* (0.06)	-0.17 (0.09)	-0.16 (0.09)	-0.03 (0.10)	-0.01 (0.10)
Education	-0.01 (0.06)	-0.01 (0.06)	0.09 (0.07)	0.09 (0.07)	-0.12 (0.07)	-0.11 (0.07)
Experience	-0.06 (0.06)	-0.05 (0.06)	0.07 (0.08)	0.06 (0.08)	0.16 (0.09)	0.14 (0.09)
F-statistic	3.41**	3.14**	1.98	1.87	2.78*	2.90**
p value	0.00	0.00	0.07	0.08	0.01	0.01
Adjusted R squared	0.04	0.04	0.02	0.02	0.05	0.06
Number of observations	331	331	252	252	221	221

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$, SE between brackets, p value for F-statistic

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