



# The Impact of Positive Affect on Entrepreneurial Motivational Outcomes – A Self-regulatory Perspective

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**Abstract.** We investigate the effect of an overall positive affective state of individuals on motivational—rather than cognitive—outcomes in entrepreneurship. Drawing from a self-regulatory perspective, we emphasize the key role of positive affect in influencing three motivational behaviors in regards to entrepreneurial engagement: direction (intrinsic versus extrinsic orientation), intensity (amount of entrepreneurial effort), and persistence (likelihood of entrepreneurial persistence). We also argue that environmental uncertainty acts as a moderator between positive affect and entrepreneurial motivations. Utilizing a data sample of entrepreneurs from a nationally representative household survey for China, we find support for positive relationships between positive affect on the one hand and intrinsic entrepreneurial orientation and entrepreneurial persistence on the other. We also find support for the hypothesized moderating role of environmental uncertainty regarding these motivational outcomes.

**Keywords:** positive affect, entrepreneurial motivation, environmental uncertainty, entrepreneurial intrinsic orientation, entrepreneurial effort, entrepreneurial persistence.

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## 1. Introduction

Positive affect, incorporating positive feelings and emotions, is increasingly recognized as a significant force in entrepreneurship. From reviewing and utilizing key theories, such as the affect-infusion model (Forgas, 1995), and the affect-as-information model (Schwarz, 2001), Baron (2008) proposes that positive affect experienced by individuals may influence several aspects of cognition and cognitive outcomes related to entrepreneurship. Such cognitive outcomes involve elements of entrepreneurial perceptions and decision-making, including attention, memory, creativity, and opportunity recognition. Later

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empirical studies have rapidly expanded this area of research in entrepreneurship (e.g. Baron & Tang, 2011; Brundin & Gustafsson, 2013; Byrne & Shepherd, 2015; Delgado-Garcia et al., 2012; Foo et al., 2015; Hayward et al., 2010).

However, these efforts have largely ignored the role of positive affect in another important area within psychology—motivation, which is especially relevant to entrepreneurship, where individual actions such as venture creation are strongly in need of motivational support and explanation (O’Shea et al., 2017). Motivation, in its broadest sense, refers to a “psychological process that influences how personal effort and resources are allocated to actions pertaining to work, including the direction, intensity and persistence of these actions” (Kanfer et al., 2008, p. 5). Moreover, extant studies tend to focus on the influence of positive affect in entrepreneurs’ identification of an opportunity, and on the initial stage of launching a new venture, but tend to overlook the role of positive affect in the post-entry stage of the firm’s life cycle.

Since entrepreneurs’ emotions, cognitions, motivations, and actions (incorporating behavioral outcomes of motivations reflected largely in post-entry phases) are in fact closely interrelated and dependent on each other (O’Shea et al., 2017), it is important to study the relationship between positive affect and motivational outcomes in entrepreneurship.

In this study, using a Chinese household survey data base, we investigate whether and how positive affect influences three major motivational outcomes of work motivation (cf. Kanfer, 1991; Locke & Latham, 1990) within the entrepreneurship area: direction, intensity, and persistence of entrepreneurial engagement after the initial entry into entrepreneurship (i.e. focusing on entrepreneurs that are actively involved in setting up a new business, but already received salaries, wages, or any other payments from this new business).

*Direction* refers to behavioral options, often measured as choice selection between mutually exclusive courses of action (Kanfer, 1991). Applied in entrepreneurship, it indicates the behavioral choice entrepreneurs make to realize their goals of venture creation and development. In this paper we focus on the entrepreneurs’ choice of intrinsic-extrinsic orientation in pursuing entrepreneurship. We define intrinsic orientation as an orientation in pursuing entrepreneurship for internal “rewards”, i.e. the satisfaction of the innovative and dynamic entrepreneurial process and experience per se, while extrinsically orientated entrepreneurial engagement is focused on earning external rewards generated from entrepreneurial activity, such as money (financial-success-driven), control and freedom (life-style-driven), or punishment avoidance such as pressure from survival (necessity-driven) or family and social environment (norms-driven).

*Intensity*, often measured as task effort, denotes how hard a person works, and is the most frequently explored outcome of work motivation (cf. Staw, 1984). In this paper, we focus on the amount of entrepreneurial effort an entrepreneur commits to over the entrepreneurial engagement process.

*Persistence* indicates a behavioral pattern of maintaining the initially chosen course of action over time (Kanfer, 1991). It reflects the duration of action, and captures the longitudinal aspect of motivational outcomes that emerge over time. Reflected in entrepreneurship, persistence is, thus, about whether an entrepreneur changes the initially chosen behavior. In this paper, we define entrepreneurial persistence as whether the entrepreneur, over a period of time, maintains in entrepreneurial engagement or withdraws from the process.

Although the literature on the importance of positive affect for motivation and relevant motivational behaviors in entrepreneurship is scarce, some works deserve to be mentioned. Foo et al. (2009) find that positive affect predicts venture effort, but mainly related to future tasks which are not immediately required. This indicates that positive affect might have more influence on longer term goals and desires. Cardon & Kirk (2015) study the positive role of entrepreneurial passion, a strong and intense form of positive feelings associated with entrepreneurship, in entrepreneurial persistence. Hahn et al. (2012) examine the effect of life satisfaction and subjective vigor on task-oriented and relationship-oriented personal initiative in start-up actions, and find a positive function of vigor. Baron et al. (2012) also theorized the positive effect of dispositional positive affect on entrepreneurs' energy and optimism for taking actions.

However, these studies still bear deficiencies for further progressing the dialogue. First, although employing some affect-related theory, the studies lack overarching theoretical bases to connect positive affect and entrepreneurial motivational outcomes, going beyond specific variables such as entrepreneurial effort or entrepreneurial persistence. Second, little attention is paid to the interaction effect of positive affect with contextual or environmental factors on motivational outcomes. It is essential to explore this moderating role of the environment in order to get a more comprehensive picture of the relationship between positive affect and entrepreneurial motivations. Third, the definition of positive affect is sometimes questionable within these studies, which impedes the inference and generalization of their results. To begin with, some concepts such as life satisfaction and vigor are conceptually different from positive affect and actually belong to other dimensions of well-being or mental health (Keyes, 2002, 2007). More importantly, positive affect concerned in these studies mainly belong to high-activated forms of positive affect, such as entrepreneurial passion (Cardon et al., 2009). While high-activated forms of positive affect are generally more likely to induce actions (Cardon & Kirk, 2015), low-activated positive affect may also play an important role in entrepreneurship. Moreover, high-activated forms of positive affect are often accompanied with high-activated negative affect, which might balance out or exaggerate the benefits of positive affect (Larsen & Diener, 1987).

In this paper, we define positive affect as an overall positive affective state, represented by the frequency of experiencing positive emotion, thus

encompassing both high-activated and low-activated affective components. Positive affect, in the current study, is not a momentary feeling but a quite stable state. It is, however, not defined as a trait or disposition, and is still malleable and subjected to change and regulation.

We seek to contribute to the research of positive affect in entrepreneurship in three main ways. First, we adopt an overarching framework of self-regulation in explaining the relationship between entrepreneurs' positive affect and motivational outcomes. Integrating reasoning, feeling, and behavior into accord with desired objectives (Forgas et al., 2009), self-regulation has established itself to be one of the most important psychological processes explaining motivational phenomenon across the entire human lifespan (Forgas, et al., 2009; Kanfer, 1991). However, this framework is rarely employed in the entrepreneurial motivation context. Hence, the current study seeks to investigate the effect of positive affect on entrepreneurial motivational outcomes through the lens of self-regulation, and specifically suggests two central mechanisms: Indirectly, positive affect influences entrepreneurial motivation through its effect on entrepreneur's judgment components (expectancy judgments, utility judgments, and progress judgments) involved in conscious decision-making processes (e.g., Baron, 2008; Meyer, Gaschke, Braverman, & Evans, 1992). Positive affect also affects entrepreneurial motivation directly, in ways that are not mediated by such deliberative cognitive processes (e.g., O'Shea et al., 2017; Seo et al., 2004).

Second, compared with the large amount of works studying positive affect in relation to entrepreneurial intention (e.g. Hayton & Cholakova, 2012), entrepreneurial orientation or strategic posture (Bernoster et al., 2018), and initial entry into entrepreneurship (e.g. Foo, 2011), we focus on the effect of positive affect on entrepreneurs' subsequent behavior after initial engagement. Specifically, following the classification of notable works of work motivations (Kanfer, 1991; Locke & Latham, 1990; Seo et al., 2004), we examine positive affect on three motivational outcomes: intrinsic orientation versus extrinsic orientation (direction), entrepreneurial effort (intensity), and entrepreneurial persistence (persistence), through which we aim to provide a more comprehensive understanding of positive affect in the dynamic entrepreneurial process over time. Mainly due to conceptual challenges, the direction and persistence dimensions of motivational outcomes have received far less attention from organizational researchers, and thus we attempt to illustrate these two dimensions with more depth.

Third, within the self-regulation perspective, motivation is argued to be affected by a triadic process of interactions among personal, behavioral and environmental factors (Bandura, 1986). We adopt this perspective by examining the joint impact of entrepreneurs' positive affect and a key environmental variable—environmental uncertainty—on entrepreneurial motivational outcomes, besides from the main effects of positive affect, while we empirically measure environmental uncertainty using an objective measure following Boyd (1990).

The paper is structured as follows. The next section presents the theory we employ to guide our empirical work. We first elaborate on the construct of positive affect, and then propose the relationships between entrepreneurs' level of positive affect and three motivational outcomes, as well as the moderating role of environmental uncertainty. We then demonstrate our methodology and data, and present our empirical results. Specifically, we adopt data from the China Financial Household Survey, and estimate logit models to explain entrepreneurial intrinsic orientation and entrepreneurial persistence, and a linear regression model to explain entrepreneurial effort. The final section discusses the findings in the light of theory, draws theoretical and practical implications, and suggests possible avenues for further research.

## 2. Theory and Hypotheses

### 2.1. Positive Affect

Affect incorporates the basic and general experience of moods, emotions, and feelings (Frijda, 1993, 1999). While moods are often taken as unconscious states without specific trigger, and emotions are generally regarded as shorter-term and more intense affective experiences coupled with trigger, feelings are more complicated including components of cognition and affection, making them the most conscious states of affective experiences. Although some have collapsed concepts such as emotions, moods, and feelings (Lucas, Diener, & Larsen, 2003), there is still no universal agreement about the definitions of affective phenomena and their underlying components (see Larsen & Fredrickson, 1999).

Despite this divergence, researchers studying affect agree with the classification in terms of two characteristics—structure and stability. In regards to structure, affect can be divided into two core dimensions: valence (or hedonic tone) and arousal (or activation) (Russell, 1980; Russell & Barrett, 1999). While the first refers to the degree of pleasantness or attractiveness of an emotional experience (positive or negative), the latter reflects the degree of intensity and action tendency that accompanies the hedonic experience. Previous studies often study and measure *high-activated* positive affect, which is positive valence combined with high arousal. In this paper, we do not differentiate positive affect along the arousal dimension, i.e. we include both high-activated and low-activated positive affect.

In regards to stability, there are generally two types of affect—dispositional affect and event-generated affect. While dispositional affect refers to relatively stable and cross-situational tendencies to experience specific affect, event-generated affect emphasizes the temporary shifts in such affective experience generated from certain situations. Since entrepreneurial engagement and motivational outcomes are continuing processes, we expect that there is a

stronger influence of entrepreneurs' more stable affective state than fleeting or temporary affective experience. Hence, our study defines positive affect as an emotional state, which is a relative stable concept (emotional state of affect) but still malleable along with personal development. Furthermore, our definition of positive affect is an overall state, reflecting to what extent one's overall emotional status is occupied by a positive hedonic tone. Therefore, the definition inherently involves a balanced judgment between positive affect and negative affect, which is significant for investigating its effect on entrepreneurship.

## 2.2. Positive Affect and Entrepreneurial Motivational Outcomes

A wide range of scholars agree that human motivations occur within the context of self-regulations (cf. Carver & Scheier, 1998; Kanfer & Ackerman, 1989; Klein, 1991). Through a self-regulation process, i.e. a process of planning and cyclically adapting self-generated thoughts, feelings, and actions (Zimmerman, 2000), human beings form their motivations, i.e. deciding how to allocate their personal effort and resources in order to attain personal goals (Kanfer et al., 2008). In consequence, notable theories of work motivation have coalesced around an overarching framework of self-regulation perspective, including needs theory (e.g., Maslow, 1943), goal-setting theory (Locke & Latham, 1990), expectancy theory (Vroom, 1964), and control theory (Carver & Scheier, 1998).

More importantly, we can see that the affective phenomenon is one fundamental element of the self-regulation process (cf. Aspinwall, 1998; Damasio, 1999), rendering it a significant link through which positive affect can be conceptually integrated into the motivational phenomenon. Thus, many researchers have spent efforts in bringing emotion and affect into the self-regulation dialogue (e.g., Damasio, 1994; Gollwitzer & Bayer, 1999; Izard, 1993).

And this link, we believe, is especially relevant and essential in the entrepreneurship context, in which self-regulation requirements are more strict than in other work contexts (O'Shea, et al., 2017). Compared with employees, entrepreneurs work in more autonomous conditions, and they often need to handle potentially conflicting goals simultaneously (see Nambisan & Baron, 2013). In addition, major phases of venture launching and post-launching processes require longer time to achieve, and thus need goal setting and implementation within a longer-time horizon. Bateman & Barry (2012) indicate that self-regulation is more important for realizing long-term goals. Therefore, the unique characteristics of entrepreneurship present us a context to deeply understand the relationship between positive affect and motivational outcomes from the self-regulation perspective, although it is a useful theoretical anchor to understand the relationship for any individual.

From the self-regulation perspective, we mainly argue that positive affect influences entrepreneurial motivational outcomes through two mechanisms: an intentional (cognitive) as well as an aroused and non-informative (affective and behavioral) route (McClelland, 1985) to achieve a goal. On one hand, it can affect entrepreneur's mind or psychological system indirectly through cognitive process. On the other hand, it can directly influence entrepreneur's motivation through affective and somatic processes.

Furthermore, the effect of positive affect on motivations might be determined by its interaction with other behavioral and environmental factors (Wood & Bandura, 1989). This is supported by the social cognitive perspective, in which self-regulation is distinctively viewed as an interaction of personal, behavioral, and environmental triadic processes (Bandura, 1986). Thus, we further investigate the moderating role of a key environmental variable: environmental uncertainty, in affecting the relationship between positive affect and entrepreneurial motivational outcomes.

### 2.2.1. Positive Affect and Intrinsic versus Extrinsic Entrepreneurial Orientation

We suggest that positive affect influences the entrepreneur's motivational choice between intrinsic and extrinsic orientation indirectly via its influence on expectancy judgments and utility judgments involved in conscious, evaluative and deliberative processes. Expectancy theory (Vroom, 1964) in work motivation states that people, when deliberating, make a within-person choice between behavioral options based on two judgments on (1) the expectancy of certain actions leading to certain outcomes (expectancy judgment) and (2) the allure of those outcomes (utility judgment). Employed in entrepreneurship context, expectancy theory implies that the entrepreneur's motivational choice hinges on the combination of judgments in regards to the strength of their expectations in successfully establishing or growing their ventures, and the extent to which they evaluate such outcomes as attractive or desirable. This view is also supported by entrepreneurship studies (e.g., Krueger & Brazeal, 1994; Shane, Locke, & Collins, 2003).

The level of individuals' positive affect influences both expectancy and utility judgments (Forgas, 1995). First, individuals in an overall positive emotional state tend to recall and focus on favorable and positive outcomes, and have more self-efficacy in expecting to achieve those favorable outcomes from mood congruence theory (e.g., Meyer et al., 1992; Wegener & Petty, 1996). Thus, the higher level of positive affective state entrepreneurs possess, the more likely they believe their actions are able to realize their potential goals, and the more willing they are to proactively engage in this process. On the contrary, the lower the level of positive affective state entrepreneurs have, the less likely they

are confident to see the enjoyment of their actions, and the more likely they are to seek extrinsic rewards in their entrepreneurial engagement process.

Second, positive affect level is able to affect individuals' utility judgments through affect infusion (e.g., Forgas, 1995; Schwarz, 1990), such that immediate positive affective experiences induce a greater level of utility judgments (Damasio, 1994). Considering that people with a higher level of positive emotional state tend to experience positive feelings more frequently, they, thus, are more likely to find potential outcomes more attractive. In entrepreneurship, this suggests that the higher the level of positive affect entrepreneurs possess, the more likely they will feel the fruitful and interesting rewards from the successful engagement of the entrepreneurial process per se. If entrepreneurs have a rather low level of positive affect, they are less likely to be gripped by the entrepreneurial process but favor extrinsic orientations and retain an adaptive position in this process.

While traditional theories of motivation, such as expectancy theory (Vroom, 1964) and the theory of planned behavior (Ajzen, 1991), typically focus on people's cognitions in explaining motivational processes, the fact that they routinely underestimate the effects of affective processes limits the scope of explanation they can offer. As a result, entrepreneurship researchers fail to explain motivational phenomena in entrepreneurship that are not based on individuals' conscious decision-making processes, but related to the other non-informative mechanism. In this case, we argue that entrepreneurs' positive affect can play a central role in directly influencing their intrinsic motivations through this non-informative and affective route (Parker, Bindl, & Strauss, 2010). From Isen & Reeve (2005), positive affective experience was found to enhance the expectation of how interesting a task is and the experience of interest, enjoyment, and satisfaction derived from engaging in the activity, demonstrating that a positive emotional state can foster the entrepreneurs' intrinsic motivation during the engagement process even though they might not hold it at the beginning. However, the study also demonstrated that this influence is not experienced in the same way across all types of activities (Isen & Reeve, 2005), such that this effect might not hold for a dull and routine task. But it also indicates that the effect might be much stronger for a challenging, innovative and fulfilling activity, which is exactly the type of activity involved in entrepreneurial engagement.

Based on the above arguments, we formulate the following hypothesis:

*H1: The level of overall positive affective state is positively related to the likelihood of the entrepreneur being motivated by intrinsic orientation relative to extrinsic orientation.*



### 2.2.2. Positive Affect and Entrepreneurial Effort

In regards to the amount of effort, representing the intensity of motivational outcomes, the level of entrepreneur's positive affect might also influence it via two mechanisms. Indirectly, positive affect can influence entrepreneurial effort through influencing expectancy judgment and goal difficulty, and utility judgment and goal commitment. Based on goal-setting and goal-striving theory in work motivation (Locke & Latham, 1990), the amount of effort is directly affected by goal commitment—the determination to realize the goal, and goal level—the level or difficulty selected to reach the goal (Locke, Motowidlo, & Bobko, 1986). Besides, researchers have examined the relationships between expectancy theory and goal-setting theory, demonstrating that when all possible behavioral options are considered, goal level is positively affected by expectancy judgments, and goal commitment is positively affected by utility judgments (e.g., Klein, Wesson, Hollenbeck, & Alge, 1999).

Therefore, applied in the entrepreneurial context, entrepreneur's positive affect is likely to influence entrepreneurial effort via two identified paths. First, entrepreneurs who have a higher level of positive affect are likely to have higher expectancy judgments about their action leading to entrepreneurial success, and this, in turn, will direct them to set a greater difficulty goal level and to dedicate more effort to achieving the goal. Second, entrepreneurs' positive affect is likely to enhance the attractiveness or importance of pursuing entrepreneurial activity, and thus, they will feel more committed to and devote more effort toward creating and growing their ventures.

Perhaps more importantly, entrepreneurs' positive affect can influence the amount of entrepreneurial effort directly through a non-informative route that is not a deliberating and conscious process. Tice et al. (2007) found that positive affect is beneficial for restoring and boosting energetic resources for self-regulation. In addition, Bernoster et al. (2018) empirically tested and confirmed the direct positive effect of positive affect on entrepreneurs' proactiveness as one dimension of entrepreneurial orientation. Therefore, an overall positive emotional state is one component of entrepreneurs' mental wellness, reflecting the nutriment level of entrepreneurs for future recovery and coping, and is likely to directly enhance the amount of effort spent over future entrepreneurial engagement.

This leads to the following hypothesis:

*H2: The level of overall positive emotional state is positively related to the amount of entrepreneurial effort the entrepreneur commits to.*

### 2.2.3. Positive Affect and Entrepreneurial Persistence

For the cognitive route, the entrepreneur's level of positive affect can influence entrepreneurial persistence through affecting the progress judgment based on control theory (Carver & Scheier, 1998), which suggests that people tend to change or withdraw their intended course of action when they have a negative perception of the progress they are making toward reaching their intrinsic or extrinsic goals, and this progress judgment can be affected by one's core affect (Seo et al., 2004). We predict two ways in which positive affect of entrepreneurs can influence their progress judgments.

First, positive affect can influence information process and response, thus affecting the frequency and depth of making progress judgment. Positive affect is found to foster more automatic, unsystematic, and experience-based processing (e.g., Bless, Bohner, Schwarz, & Strack, 1990; Mackie & Worth, 1989), implying that entrepreneurs, all else being equal, with a greater level of positive emotional state might be less attentive to progress feedback and, hence, make progress judgments less frequently and thoroughly, resulting in greater likelihood of persistence. Second, people might have a greater confidence and belief in their current action if they are in greater level of positive affective states, according to mood congruence theories (e.g., Meyer et al., 1992; Johnson & Tversky, 1983). Thus, entrepreneurs with higher levels of positive affective state tend to make more favorable progress judgments than those with lower levels of affective state, leading to a greater likelihood to maintain their current course of action.

Perhaps more importantly, entrepreneurs' positive affect can influence entrepreneurial persistence directly through non-informative and affective processes. Such direct effects are indicated through the "affect maintenance" theory, which states that people tend to behave in a way to maintain their current positive affective states if they are relatively high, but to adjust them if they are relative low (cf. Isen, 2000; Forgas, 1995). This suggests that high or low level of positive affect might generate two distinctive motivational impetuses for either maintaining or altering the current course of action (cf. Oatley & Johnson-Laird, 1996), i.e. indicating persistence or withdrawal respectively, and neither of them requires conscious awareness and control (Wegener & Petty, 1996). To conclude, we hypothesize that:

*H3: The level of overall positive emotional state is positively related to the likelihood of entrepreneurial persistence.*

### 2.3. Moderating Effects of Environmental Uncertainty

Self-regulation, from the social cognitive theory, incorporates and blends dispositional, behavioral, and environmental perspectives into a comprehensive

framework, implying interactions between personal and environmental variables on human motivational outcomes. Environmental uncertainty is one variable that defines the entrepreneurial context and is fundamental to the entrepreneurial process in that entrepreneurial decision-making happens in uncertain environments whereas non-entrepreneurial decision-making takes place under conditions of risk (Alvarez & Barney, 2005).

Although uncertainty is a broad and complex concept viewed by scholars from numerous perspectives (e.g., Andersson, 2017; Dequech, 2011; Ellsberg, 1961; Knight, 1921; Milliken, 1987; Spender, 1989), scholars mainly focus on *environmental* uncertainty, which Miles and Snow (1978, p. 195) defined as “the predictability of conditions in the organization’s environment”. More specifically, environmental uncertainty is one of the four distinct types of uncertainty classified by Packard, Clark, & Klein (2017), embodying the complexity and dynamism (Downey et al., 1975), as well as the collective effect of various actors.

Entrepreneurship scholars have largely studied the impact of environmental uncertainty on entrepreneurship, with one stream focusing on entrepreneurial opportunities (Kirzner, 1997; Shane & Venkataraman, 2000), and another stream presenting immense difficulties and challenges for entrepreneurs (e.g., Chandler, Honig, & Wiklund, 2005; Markman, Baron, & Balkin, 2005). In consequence, we have reasons to believe that the degree of environmental uncertainty can alter the effect of entrepreneurs’ positive affect on their motivational behaviors.

We first discuss the moderating impact of environmental uncertainty on the relationship between positive affect and the direction of entrepreneurial orientation. First, the effect of entrepreneurs’ expectancy and utility judgement on entrepreneurial orientation choice is closely contingent upon environment uncertainty. While the increased level of expectancy judgment and utility judgment promotes intrinsic orientation relative to extrinsic orientation in entrepreneurial engagement, this effect might be severely reduced in contexts with high environmental uncertainty. Due to the heavy information processing burdens (Chandler et al., 2005), and thus higher levels of distress and anxiety (Markman et al., 2005) in more uncertain environments, entrepreneurs tend to subject to extrinsic considerations (e.g., financial return, family companionship, social norms) even if they are highly optimistic about their success and they are highly satisfied from the intrinsic rewards of entrepreneurial engagement per se. Hence, entrepreneurs are more likely to have an intrinsic orientation towards entrepreneurial engagement in an environment with a lower level of uncertainty.

Moreover, in regards to the direct effect of positive affect on entrepreneurial motivations, the environmental uncertainty might alter the entrepreneurial orientation. According to affect maintenance hypotheses (Isen, 2000), entrepreneurs who obtained positive affect from entrepreneurial engagement tend to strive for this experience and maintain the level of positive affect. As a result, in situations of lower environmental uncertainty with higher predictability,

entrepreneur's positive affect is more likely to engender flexibility and open-mindedness, broaden the attention and perception scope and create new goals, and thus leads to higher level of intrinsic motivation in pursuing entrepreneurship. On the contrary, in high environmental uncertainty with more information burdens and stress, entrepreneur's positive affect is (relatively) more likely to foster a risk avoidance approach, and thus triggers more extrinsic concerns in terms of entrepreneurial engagement.

Therefore, we propose the following hypothesis based on the above arguments:

*H4a: The effect of overall positive emotional state on the likelihood of the entrepreneur being motivated by intrinsic orientation relative to extrinsic orientation is stronger when the venture is within a less uncertain, as opposed to a more uncertain, industry environment.*

While we propose a negative moderating effect of environmental uncertainty on the relationship between positive affect and intrinsic versus extrinsic entrepreneurial orientation, we suggest that environmental uncertainty can positively moderate the effect of entrepreneur's positive affect on entrepreneurial effort and persistence mainly from the following two reasons.

First, environmental uncertainty can positively moderate the indirect effect of positive affect on entrepreneurial effort through goal level and commitment, and on entrepreneurial persistence through progress judgment. Goal level and commitment are significantly more important for fostering entrepreneurial effort in more uncertain environments, where unknown changes emerge relentlessly over time and the outcomes of any chosen action is hard to fully predict (Packard et al., 2017). And progress judgment becomes increasingly essential in uncertain circumstances where the goal attainments require a series of action steps based on intermediate, ambiguous, and/or complex feedback.

Second, in more uncertain environment, entrepreneurs' positive affect is more influential in affecting entrepreneurial effort and persistence directly through affect maintenance. Working in an environment with high levels of distress and anxiety, entrepreneurs are more likely to cherish and strive for positive experience, without conscious awareness (e.g., Wegener & Petty, 1996). Thus, they are more likely to maintain their efforts and persist in this process towards their long-term goals. Besides, there is both theoretical and empirical support that affect is generally more influential in highly uncertain and unpredictable environments (Baron, 2008; Baron & Tang, 2011; Hmieleski & Baron, 2009).

Based on these evidences, we propose that:

*H4b: The effect of overall positive emotional state on the amount of entrepreneur's entrepreneurial effort is stronger when the venture is within a more uncertain, as opposed to a less uncertain, industry environment.*

*H4c: The effect of overall positive emotional state on the likelihood of entrepreneurial persistence is stronger when the venture is within a more uncertain, as opposed to a less uncertain, industry environment.*

### **3. Methodology**

#### **3.1. Data**

The data source used in the present study is the CHFS (China Household Finance Survey). CHFS is until now the only nationally representative survey in China that contains detailed information about household demographic characteristics, occupational and entrepreneurship information, assets and debts, insurance and social welfare, and income and expenditures. The survey is conducted every two years initiated by SWUFE (Southwestern University of Finance and Economics) in 2011 and is increasingly getting support from major banks and local government in China. The present paper uses the 2011 and 2013 waves of CHFS. As one of the co-authors participated in the data collection of the 2013 CHFS, we have access to the full dataset of CHFS 2011 and 2013.

The survey sampling design consists of two major components: an overall sampling scheme and an on-site sampling scheme based on mapping. The overall sample scheme employs a stratified three-stage (counties/cities from provinces, residential committees/villages from counties, households from committees) probability proportion to size (PPS) random sample design. Based upon the framework of the cutting-edge CAPI (Computer-Assisted Personal Interviewing) system, CHFS developed a proprietary interview system and management platform. The CAPI system effectively decreases potential man-made non-sampling errors, by presetting the range of possible answers, catching typing errors, and avoiding general human errors (such as skipping questions), and ensures the confidentiality of the data as well as real-time accessibility, significantly improving data quality. The 2011 CHFS collected information from 8,438 households, and the 2013 CHFS increased the number to a total of 28,228 households based on tracking the same households in 2011 survey as far as possible, covering 29 provinces (except Tibet, Xinjiang, Inner Mongolia, Hong Kong, Macau, and Taiwan), 262 counties, and 1,048 communities. The 2013 CHFS was not only nationally representative but also representative at the provincial level, offering a more comprehensive and detailed reflection of the condition of Chinese households. The overall refusal rate is 11.6%, where the urban refusal rate is 16.5% and the rural refusal rate is 3.2% (See Gan et al., 2013 for more details).

Attempting to go beyond cross-sectional data and correlational claims, we included all entrepreneurs who participated in CHFS 2011 and have been still surveyed in CHFS 2013. Our predictor data of positive affect are from CHFS

2011, and the data of subsequent motivational outcomes are from CHFS 2013 tracking the same sample of entrepreneurs correspondingly. We define entrepreneurs as respondents who answered yes to the following question: “Are you currently engaging in a start-up activity (actively involved in setting up a business you will own or co-own, and you have already received salaries, wages, or any other payments from this new business)?”. As we mentioned, we focus on the start-up engagement phase beyond entrepreneurial intention, opportunity recognition, and initial venture creation. 1391 entrepreneurs, surveyed in 2011 CHFS, were successfully tracked by 2013 CHFS. Hence, we have 1391 initial observations for our regressions explaining entrepreneurial persistence. Among these entrepreneurs, 369 do not persist in engaging in this business activity in 2013, resulting in 1022 observations left for our regressions explaining entrepreneurial orientation and entrepreneurial effort. After excluding missing values for all variables, we performed our analysis for entrepreneurial persistence on a final sample of 1237 entrepreneurs, and our analyses for entrepreneurial orientation and entrepreneurial effort on 868 entrepreneurs.

### 3.2. Variables and Measures

***Dependent Variables.*** Our dependent variable *intrinsic versus extrinsic orientation* was measured as a dummy variable. Specifically, CHFS asked one question about the main reason of entrepreneurs for currently engaging in new business activity, with the following answer categories: 1 = find no other better option for work; 2 = increase income; 3 = want to be own boss and eager of freedom; 4 = interested by the entrepreneurial experience itself; 5 = other reasons. Option 4 was coded as 1, and all other options were coded as 0. *Entrepreneurial effort* was measured by the question: “In an average week, how many days do you spend working on this start-up project?”, thus with a range from 0 to 7. *Entrepreneurial persistence* reflected whether the entrepreneur maintains in engaging new business activity in 2013. The entrepreneurs who engaged in new business activity in both CHFS 2011 and 2013 were coded as 1, and the entrepreneurs who engaged in new business activity in CHFS 2011 but dropped out in CHFS 2013 were coded as 0.

***Predictor of Positive Affect.*** Positive affect was measured in 2011 on the basis of the Gurin Scale (Gurin et al., 1960), which appears in major surveys such as the World Values Survey and the General Social Surveys: “Taking all things together, what is your overall positive emotional state would you say you are in”? 1 = not at all positive, 2 = not too positive, 3 = fairly positive, 4 = very positive and 5 = extremely positive. Though the measure has statistical limitations due to its single-item nature, this global measure is argued to be the simplest and most readily used self-reported measure of positive affect (Lucas, Diener, and Larsen,

2003), and does not restrain positive affect to high-activated or intense feelings. The measure is also recommended for its appropriate sensitivity to changing life circumstances (Diener et al., 1991). Moreover, the measure adds to the Gurin Scale through taking overall state and frequency into account. Hence, it is more consistent with our definition, reducing the concerns for paralleling negative affect that might alter the real effect.

**Moderator of Environmental Uncertainty.** Following Boyd (1990), we measured industry-level environmental uncertainty as the standard errors of the regression slopes of regressing industry revenues against time. Industry revenue has been widely perceived as a way to reflect uncertainty (e.g., Keats & Hitt, 1988; Sharfman & Dean, 1991), and this approach has been used as an archival measure of environmental dynamism in several previous studies (e.g., Hmieleski and Baron, 2009). We obtained the data from the National Bureau of Statistics of the People's Republic of China, and for each industry we regressed industry revenues against time for the ten-year period of 2002-2011. Specifically, time (2002–2011) was entered as an independent variable and annual revenues as dependent variable for each industry category according to the GICS code. Then, the standard errors of the regression coefficients were divided by the mean revenues values of the 10 years. The mean of the environmental uncertainty variable was 0.89, indicating moderate change in sales levels, and we did not observe potential outliers.

**Control Variables.** We controlled for a number of influences at the individual level, the firm level, and the household and regional level. At the individual level, we controlled for entrepreneur's gender (female=1), age (continuous variable), education (in years)<sup>2</sup>, risk attitude (1= highest risk averse and 5 = highest risk preference), dummy variable of time preference (1= emphasize more for the future)<sup>3</sup>, and entrepreneur's entrepreneurial experience (the amount of ventures the entrepreneur previously founded) (Parker et al., 2010). Firm-level variables include firm age (in years), the industry that the venture is active in expressed as a set of dummies<sup>4</sup>, and the log value of 2011 firm revenue (in 10-thousand Chinese Yuan) as a measure of firm size. Household-level characteristics include household yearly income<sup>5</sup>, and region-level characteristics include GDP per capita of the local city, and dummy for urban or rural of business activity location (Stam, Thurik, & Van der Zwan, 2010).

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2. In the survey, the education level options were: "1. Never Attended School; 2. Primary School; 3. Junior High; 4. High School; 5. Secondary/Vocational School; 6. College/Vocational; 7. Undergraduate Degree; 8. Masters Degree; 9. PhD Degree". According to the Chinese situation, we transformed it to education years as 0, 6, 9, 12, 13, 15, 16, 19, 22 years.
  3. The item is "assume that the current interest rate is zero, without considering price fluctuations, you can either receive 1000 RMB tomorrow or 1100 RMB in one year. What's your choice? (0 = "Get 1000 RMB tomorrow"; 1 = "Get 1100 a year from now")".

### 3.3. Statistical Analysis

We utilized the logit model for explaining the binary outcomes of entrepreneurial orientation and persistence, and the linear regression model for explaining entrepreneurial effort. All the regressions were adjusted using sampling weights<sup>6</sup> with robust standard errors. We calculated variance inflation factors (VIF) to assess multicollinearity. The maximum VIF within all the models was 1.58, which is well below the rule-of-thumb cut-off of 10 (Neter et al., 1990).

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4. 1. Mining; 2. Manufacturing; 3. Electricity, gas and water production and supply; 4. Construction; 5. Transportation, storage and postal industry; 6. Information transmission, computer services and software industry; 7. Wholesale and retail trade; 8. Hospitality; 9. Finance; 10. Real Estate; 11. Leasing and Business services; 12. Scientific research, technical services and geological prospecting; 13. Water environment and public facilities; 14. Residential services; 15. Education; 16. Health, social welfare and social welfare; 17. Culture, sports, entertainment; 18. Public administration and social groups; 19. International organizations; 20. Other
  5. We winsorized the variable of household income at the 1% and 99% levels.
  6. Sampling weights were computed as follows based on the three-stage probability proportion to size (PPS) random sample design of CHFS. Three probabilities were calculated as P1 (the probability of the chosen county/city from the provinces), P2 (the probability of the chosen residential committee/village from that county), and P3 (the probability of the chosen household from that committee). Thus, the overall sampling weight equals  $1/(P1*P2*P3)$ .



Table 1 Summary Statistics and Correlations<sup>a</sup>

| Variable                                 | Mean  | s.d.  | 1              | 2              | 3      | 4      | 5    | 6    | 7       | 8     | 9    | 10      | 11     | 12    | 13      | 14     | 15      |
|--|-------|-------|----------------|----------------|--------|--------|------|------|---------|-------|------|---------|--------|-------|---------|--------|---------|
| 1. Entrepreneurial intrinsic orientation | 0.13  | 0.34  |                |                |        |        |      |      |         |       |      |         |        |       |         |        |         |
| 2. Entrepreneurial effort                | 6.52  | 1.23  | .00            |                |        |        |      |      |         |       |      |         |        |       |         |        |         |
| 3. Entrepreneurial persistence           | 0.59  | 0.49  | . <sup>b</sup> | . <sup>b</sup> |        |        |      |      |         |       |      |         |        |       |         |        |         |
| 4. Positive affect                       | 3.78  | 0.80  | .07*           | -.03           | .06*   |        |      |      |         |       |      |         |        |       |         |        |         |
| 5. Env uncertainty                       | 0.89  | 0.74  | -.03           | .03            | -.01   | .08*   |      |      |         |       |      |         |        |       |         |        |         |
| 6. Time preference                       | 0.31  | 0.46  | .03            | .00            | -.03   | .07*   | -.01 |      |         |       |      |         |        |       |         |        |         |
| 7. Age                                   | 47.02 | 12.09 | -.11*          | .01            | -.11   | .02    | .02  | .05  |         |       |      |         |        |       |         |        |         |
| 8. Gender (female)                       | 0.57  | 0.50  | .00            | .00            | .03    | .00    | .01  | .03  | .13***  |       |      |         |        |       |         |        |         |
| 9. Education                             | 16.86 | 5.26  | .02            | .04            | .08*   | .06    | -.01 | -.05 | -.14*** | .04   |      |         |        |       |         |        |         |
| 10. Risk attitude                        | 2.46  | 1.25  | .04            | -.12**         | -.01   | .04    | .01  | -.04 | -.31*** | .09** | -.04 |         |        |       |         |        |         |
| 11. Entre experience                     | 1.11  | 0.51  | .05            | -.04           | .03    | .03    | -.03 | .02  | -.12*** | -.02  | .00  | .05     |        |       |         |        |         |
| 12. Firm age                             | 8.46  | 7.41  | -.05           | .05            | .05    | -.01   | .04  | .02  | .24***  | .09*  | -.05 | -.12*** | -.06   |       |         |        |         |
| 13. Log revenue                          | 10.71 | 1.66  | .16***         | -.06           | .12*** | .13*** | -.03 | -.04 | -.24*** | .04   | .04  | .18***  | .16*** | -.07* |         |        |         |
| 14. Log hi income                        | 10.33 | 1.09  | .01            | -.09           | .04    | .12*** | -.01 | .01  | -.06    | .08*  | -.02 | .12***  | .13*** | .07*  | .45***  |        |         |
| 15. Log GDP                              | 10.58 | 0.37  | .02            | -.05           | .04    | .04    | -.06 | .02  | -.04    | .00   | -.02 | .02     | .07*   | .00   | .25***  | .20*** |         |
| 16. Rural                                | 0.32  | 0.47  | .04            | -.08           | -.08   | .07    | -.04 | .07  | .22***  | .09** | -.06 | -.02    | -.04   | .09** | -.13*** | .00    | -.17*** |

<sup>a</sup> \*\*\* p < 0.001, \*\* p < 0.01, \* p < 0.05; n = 1237

<sup>b</sup> The value is missing since there is no variation of Eship persistence (all with value of 1) for Eship orientation.

## 4. Results

Table 1 presents the descriptive statistics and correlations for the covariates of entrepreneurial orientation, effort, and persistence. Entrepreneurs' positive affect level displays significant positive correlations with entrepreneurial intrinsic orientation and entrepreneurial persistence, consistent with our hypotheses, but does not significantly correlate with entrepreneurial effort. We seek to gain more insight from our multivariate regression analysis.

Table 2 displays the findings for the effect of positive affect, along with the interaction with environmental uncertainty, on intrinsic versus extrinsic orientation (Model 1-3), and entrepreneurial effort (Model 4-6). Table 3 reports the effect of positive affect and environmental uncertainty on entrepreneurial persistence.

### 4.1. Positive Affect, Environmental Uncertainty and Intrinsic versus Extrinsic Entrepreneurial Orientation

As can be seen in Table 2, Model 2 shows that there is a direct and positive effect of positive affect on the likelihood of pursuing entrepreneurship from intrinsic orientation rather than extrinsic orientation ( $B = 0.21, p < 0.05$ ), and the Wald test shows a significant improvement in model fit after adding positive affect and environmental uncertainty ( $\chi^2(2) = 4.93, p < 0.05$ ), supporting our H1 that entrepreneurs with a greater level of positive affect are more likely to engage in the entrepreneurial process with intrinsic motivations as opposed to extrinsic motivations. Moreover, we can see, in Model 3, that environmental uncertainty negatively moderates the relationship between positive affect and entrepreneurial orientation ( $B = -1.39, p < 0.05$ ), and the Wald test supports a significant improvement of model fit versus Model 2 which includes only the main effects ( $\chi^2(3) = 4.06, p < 0.05$ ). This confirms our H4a that entrepreneurs with higher positive affect are more likely to favor intrinsically entrepreneurial engagement than extrinsically engagement within a less uncertain environment. The interaction effect is depicted in Figure 1. Regarding control variables, only firm revenue, as an indicator of firm size, demonstrates a consistent and significant positive effect on entrepreneurial intrinsic orientation.

Table 2: Effects of Positive Affect and Environmental Uncertainty on Entrepreneurial Orientation and Entrepreneurial Effort <sup>a</sup>

| VARIABLES                                   | Intrinsic Entrepreneurial orientation |           |           | Entrepreneurial effort |          |          |
|---|---------------------------------------|-----------|-----------|------------------------|----------|----------|
|   | Model1                                | Model2    | Model3    | Model4                 | Model5   | Model6   |
| <i>Main effect</i>                          |                                       |           |           |                        |          |          |
| Positive affect                             |                                       | 0.21*     | 1.42*     |                        | -0.14    | -0.35    |
|   |                                       | (0.10)    | (0.63)    |                        | (0.12)   | (0.65)   |
| Environmental uncertainty                   |                                       | -1.81     | 5.18      |                        | 1.92     | 1.06     |
|   |                                       | (1.86)    | (2.97)    |                        | (2.08)   | (3.29)   |
| <i>Interaction effect</i>                   |                                       |           |           |                        |          |          |
| Positive affect × Environmental uncertainty |                                       |           | -1.39*    |                        |          | 0.24     |
|   |                                       |           | (0.67)    |                        |          | (0.67)   |
| <i>Controls</i>                             |                                       |           |           |                        |          |          |
| Time preference <sup>b</sup>                | 0.37                                  | 0.35      | 0.41*     | 0.12                   | 0.13     | 0.12     |
|   | (0.22)                                | (0.22)    | (0.21)    | (0.18)                 | (0.17)   | (0.17)   |
| Age   | -0.00                                 | -0.00     | -0.01     | 0.00                   | 0.00     | 0.00     |
|   | (0.01)                                | (0.01)    | (0.01)    | (0.01)                 | (0.01)   | (0.01)   |
| Gender (1=Female) <sup>b</sup>              | -0.22                                 | -0.21     | -0.15     | -0.16                  | -0.17    | -0.17    |
|   | (0.22)                                | (0.22)    | (0.21)    | (0.17)                 | (0.17)   | (0.17)   |
| Education                                   | 0.03                                  | 0.03      | 0.02      | 0.03                   | 0.03     | 0.03     |
|   | (0.02)                                | (0.02)    | (0.02)    | (0.02)                 | (0.02)   | (0.02)   |
| Risk attitude                               | 0.09                                  | 0.09      | 0.10      | -0.02                  | -0.02    | -0.02    |
|   | (0.09)                                | (0.09)    | (0.09)    | (0.07)                 | (0.07)   | (0.07)   |
| Entrepreneurial Experience                  | -0.08                                 | -0.07     | -0.00     | -0.05                  | -0.04    | -0.05    |
|   | (0.22)                                | (0.22)    | (0.21)    | (0.10)                 | (0.10)   | (0.10)   |
| Firm age                                    | -0.02                                 | -0.02     | -0.02     | -0.02                  | -0.01    | -0.01    |
|   | (0.02)                                | (0.02)    | (0.01)    | (0.02)                 | (0.01)   | (0.01)   |
| Log firm revenue                            | 0.36***                               | 0.35***   | 0.35***   | 0.15**                 | 0.16**   | 0.16**   |
|   | (0.07)                                | (0.07)    | (0.07)    | (0.06)                 | (0.06)   | (0.06)   |
| Log hh income                               | -0.08                                 | -0.09     | -0.03     | -0.08                  | -0.08    | -0.08    |
|   | (0.09)                                | (0.09)    | (0.09)    | (0.07)                 | (0.07)   | (0.07)   |
| Log GDP                                     | -0.14                                 | -0.13     | 0.03      | 0.02                   | -0.02    | -0.01    |
|   | (0.26)                                | (0.26)    | (0.26)    | (0.26)                 | (0.27)   | (0.27)   |
| Rural (1=Rural) <sup>b</sup>                | 0.06                                  | 0.04      | 0.08      | -0.21                  | -0.20    | -0.20    |
|   | (0.24)                                | (0.25)    | (0.23)    | (0.17)                 | (0.17)   | (0.17)   |
| Wald test (d.f.) <sup>c</sup>               |                                       | 4.93* (2) | 4.06* (3) |                        | 0.24 (2) | 0.85 (3) |

<sup>a</sup> n = 868; Robust standard errors in parentheses

Industry dummies have been included in the model, but are not reported.

Sampling weights were utilized to compute the final results.

<sup>b</sup> Dummy variable

<sup>c</sup> Compare the current model to the previous model in the table.

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05

#### 4.2. Positive Affect, Environmental Uncertainty and Entrepreneurial Effort

From Model 5 in Table 2, we find a non-significant and negative relationship between positive affect and entrepreneurial effort, which confirms the correlation analysis but differs from our hypotheses 2: the level of positive affect is positively related to the entrepreneur’s entrepreneurial effort. The interaction effect of positive affect and environmental uncertainty on entrepreneurial effort is not significant as well. We believe this non-result may be related to the rough measure of entrepreneurial effort employed in this paper, i.e. effort is measured

in terms of the number of *days* in the week an entrepreneur is working on his or her start-up (see Section 3.2) rather than the number of *hours*. This suspicion is reinforced by the high average value for our effort variable (6.52 days per week, see Table 1). Firm revenue still maintains to be the only control variable which displays consistent and significant effects on entrepreneurial effort.

#### 4.3. Positive Affect, Environmental Uncertainty and Entrepreneurial Persistence

As can be seen in Table 3, Model 2 demonstrates a direct and positive effect of positive affect on the likelihood of entrepreneurial persistence ( $B = 0.26$ ,  $p < 0.05$ ), and the Wald test shows a significant improvement in model fit after adding positive affect and environmental uncertainty ( $\chi^2(2) = 8.22$ ,  $p < 0.01$ ), supporting our H3 that entrepreneurs with a greater level of positive affect are more likely to persist in the postlaunch entrepreneurial process. Furthermore, we can see, in Model 3, that environmental uncertainty positively moderates the relationship between entrepreneur positive affect and entrepreneurial persistence ( $B = 1.54$ ,  $p < 0.01$ ), and the Wald test supports a significant improvement of model fit versus Model 2 ( $\chi^2(3) = 6.95$ ,  $p < 0.01$ ), confirming our H4c that the effect of positive affect on entrepreneurial persistence is much stronger in a more uncertain environment. The interaction effect is depicted in Figure 2.

Table 3: Effects of Positive Affect and Environmental Uncertainty on Entrepreneurial Persistence<sup>a</sup>

| VARIABLES                                   | Entrepreneurial persistence |           |           |
|---|-----------------------------|-----------|-----------|
|   | Model1                      | Model2    | Model3    |
| <i>Main effect</i>                          |                             |           |           |
| Positive affect                             |                             | 0.26*     | -1.08*    |
|   |                             | (0.13)    | (0.52)    |
| Environmental uncertainty                   |                             | -2.34     | -8.29**   |
|   |                             | (1.69)    | (2.77)    |
| <i>Interaction effect</i>                   |                             |           |           |
| Positive affect × Environmental uncertainty |                             |           | 1.54**    |
|   |                             |           | (0.58)    |
| <i>Controls</i>                             |                             |           |           |
| Time preference <sup>b</sup>                | -0.01                       | -0.12     | -0.15     |
|   | (0.25)                      | (0.24)    | (0.25)    |
| Age   | -0.01                       | -0.01     | -0.01     |
|   | (0.01)                      | (0.01)    | (0.01)    |
| Gender (1=Female) <sup>b</sup>              | 0.20                        | 0.24      | 0.22      |
|   | (0.25)                      | (0.24)    | (0.24)    |
| Education                                   | 0.03                        | 0.03      | 0.02      |
|   | (0.02)                      | (0.02)    | (0.02)    |
| Risk attitude                               | -0.08                       | -0.07     | -0.06     |
|   | (0.10)                      | (0.10)    | (0.10)    |
| Entrepreneurial Experience                  | 0.03                        | 0.06      | 0.04      |
|   | (0.22)                      | (0.26)    | (0.20)    |
| Firm age                                    | 0.01                        | 0.01      | 0.01      |
|   | (0.02)                      | (0.02)    | (0.02)    |
| Log firm revenue                            | -0.03                       | 0.18*     | 0.19*     |
|   | (0.13)                      | (0.09)    | (0.09)    |
| Log hh income                               | 0.27                        | 0.08      | 0.06      |
|   | (0.32)                      | (0.10)    | (0.10)    |
| Log GDP                                     | -0.28                       | 0.48      | 0.50      |
|   | (0.25)                      | (0.31)    | (0.32)    |
| Rural (1=Rural) <sup>b</sup>                | 0.20*                       | -0.36     | -0.38     |
|   | (0.09)                      | (0.25)    | (0.25)    |
| Wald test (d.f.) <sup>c</sup>               |                             | 8.22**(2) | 6.95**(3) |

<sup>a</sup> n = 1237; Robust standard errors in parentheses

Industry dummies have been included in the model, but are not reported.

Sampling weight was utilized to compute the final results

<sup>b</sup> Dummy variable

<sup>c</sup> Compare the current model to the previous model in the table.

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05

#### 4.4. Marginal Effect Size of Positive Affect on Entrepreneurial Orientation and Persistence

The logit model is nonlinear in nature, which is intuitively attractive but also complicates the interpretation of regression findings (Hoetker, 2007). In other words, the regression coefficients from logit models do not reflect marginal effects, i.e. how much a change in predictor influences the probability change of the dependent variable. Therefore, following recommendations in Hoetker (2007), we computed the marginal effects of positive affect, for each possible value of positive affect (i.e. 1-5), on entrepreneurial orientation and

entrepreneurial persistence in Table 4, which is more informative for interpreting the effect size than considering coefficients.

Table 4: Marginal effects of positive affect on entrepreneurial orientation and persistence<sup>a</sup>

| Variable           | Entrepreneurial orientation |                | Entrepreneurial persistence |                |
|--------------------|-----------------------------|----------------|-----------------------------|----------------|
|                    | Effect size                 | Conf. Interval | Effect size                 | Conf. Interval |
| Positive affect at |                             |                |                             |                |
| 1                  | 0.03**<br>(0.01)            | [.01 .06]      | 0.06*<br>(0.03)             | [.00 .12]      |
| 2                  | 0.04**<br>(0.01)            | [.01 .07]      | 0.06*<br>(0.03)             | [.00 .12]      |
| 3                  | 0.04*<br>(0.02)             | [.01 .08]      | 0.06<br>(0.03)              | [-.00 .12]     |
| 4                  | 0.05*<br>(0.02)             | [.00 .09]      | 0.06*<br>(0.03)             | [.00 .11]      |
| 5                  | 0.05*<br>(0.02)             | [.00 .10]      | 0.05*<br>(0.02)             | [.01 .10]      |

<sup>a</sup> The marginal effect is computed upon Model 2 in Table 2 & Table 3  
 95% Confidence interval of the marginal effect  
 Robust standard errors in parentheses  
 \*\*\* p<0.001, \*\* p<0.01, \* p<0.05

We can see that the marginal effect size of positive affect on entrepreneurial orientation increases with the level of positive affect, meaning that the higher the level of positive affect the entrepreneur currently has, the greater enhancement of the likelihood of pursuing entrepreneurship from intrinsic orientation relative to extrinsic orientation one unit increase of positive affect level will exert. We will take one instance to explain. The marginal effect is 0.03 with confidence interval from 0.01 to 0.06, when positive affect value is 1. This is interpreted as, when the entrepreneur's positive affect level is 1 (i.e. the lowest possible value indicating the overall positive emotional state is not positive at all), a one-unit increase of positive affect level increases the probability of her entrepreneurial engagement orientation from intrinsic motivation by 0.03 (3%-points).<sup>7</sup> In contrast, when the level of positive affect is 4, a further increase with one unit increases the probability of intrinsic orientation with 0.05. For entrepreneurial persistence we find the marginal effect size to be largely independent of the level of positive affect.

7. Note that the mean probability of intrinsic entrepreneurial orientation is 0.13 (see Table 1), i.e. an (absolute) increase of 0.03 corresponds to a relative increase in probability of almost 25%.

Figure 1. The moderating effect of environmental uncertainty on the relationship between positive affect and entrepreneurial orientation.

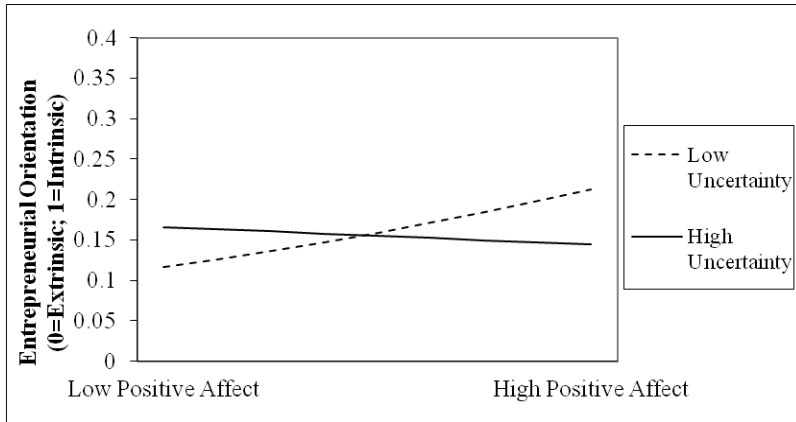
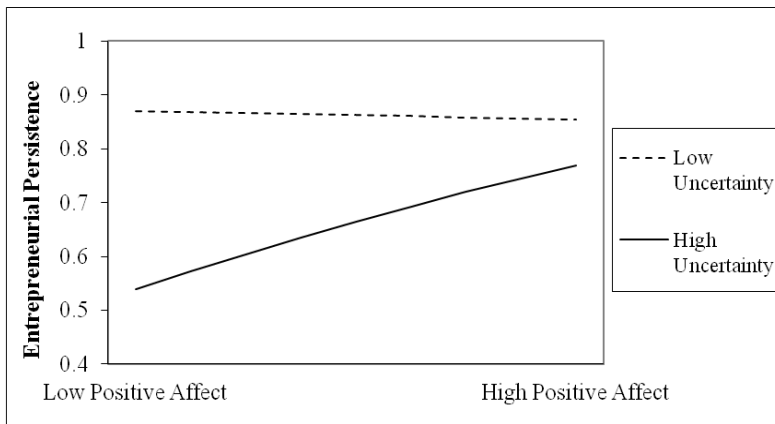


Figure 2. The moderating effect of environmental uncertainty on the relationship between positive affect and entrepreneurial persistence.



#### 4.5. Robustness Checks

First, we constructed an alternative measure for environmental uncertainty—perceived environmental uncertainty—from items in the CHFS 2011. The questions ask the entrepreneur to predict (‘perceive’) the dynamism of environment in terms of economy, interest rates, and local social welfare in the next three to five years (1 = changing slowly; 5 = changing rapidly). We averaged the three scores to obtain the final value of perceived environmental uncertainty. Our results remain consistent when applying this measure for all our analyses.

Second, endogeneity problems could always be a concern for non-experimental studies. For “happy” entrepreneurship research, one cause of

endogeneity would be the loop of causality between positive affect and entrepreneurship. Although we deliberately constructed the predictor of positive affect and entrepreneurial outcomes with a clear time order, we still performed another robustness check by regressing entrepreneurs' level of positive affect in 2013 (dependent variable) on entrepreneurial outcomes in 2011 (independent variables), i.e. we estimated the reverse causality relation. We did not find significant results for this reverse effect, further confirming our findings.

## **5. Discussion and Conclusions**

Drawn from a self-regulation perspective, the present study examines the overall positive emotional state as a resource for entrepreneurs' motivational outcomes in terms of the direction of entrepreneurial orientation from intrinsic perspective relative to extrinsic perspective, the amount of entrepreneurial effort, and the persistence of entrepreneurial engagement.

After controlling for other potential critical influences, we found that the level of positive affect significantly increases the likelihood that entrepreneurs are motivated by intrinsic orientation rather than extrinsic orientation, and significantly increases entrepreneurial persistence during a certain amount of time. Moreover, entrepreneurs are more likely to engage in entrepreneurship with an intrinsic motivation in situations of lower environmental uncertainty, whereas the effect of positive affect on entrepreneurial persistence is greater within a more uncertain and dynamic environment. We did not find evidence for a relationship between positive affect and entrepreneurial effort.

The contribution of our study is two-fold: theoretical and practical. First, we have advanced theory on the resource role of positive affect in entrepreneurship. We examine the effect of positive affect on entrepreneurial motivational outcomes, extending the effect of positive affect on entrepreneurial cognition and various cognitive outcomes. Specifically, we introduce the self-regulation perspective into the dialogue of positive affect and entrepreneurial motivations. Second, our findings could induce great practical implications for potential and actual entrepreneurs to be aware of, and if possible, to regulate their positive affect state. Since our study is based on representative entrepreneurship information from China, it is, thus, more important for understanding the role of positive affect in entrepreneurship in the Chinese context. We will elaborate on each of these contributions in the following paragraphs.

### **5.1. Theoretical Implications**

First, we contribute to the theory of entrepreneurial motivation research. We introduce the self-regulation perspective and social cognitive theory into the entrepreneurial motivation dialogue, and specifically examine the effect of one



personal variable, entrepreneurs' positive affect, and its interaction with one environmental variable, environmental uncertainty, on the direction, intensity, and persistence of entrepreneurial engagement, which form three major motivational outcomes in work motivation (Kanfer, 1991). Through our study, we highlight the role of positive affect and environmental uncertainty for entrepreneurial motivations.

Second, the present study specifically contributes to the study of positive affect in entrepreneurship. Through the lens of self-regulation perspective, we connect positive affect to entrepreneurial motivational outcomes, extending previous entrepreneurship studies that link positive affect and cognitive outcomes. Moreover, we believe our findings contribute to the wider literature on happiness and well-being. As an important component of well-being or happiness, positive affect, specifically an overall positive emotional state, is important for affecting entrepreneurial behaviors, not only as a universally accepted goal.

## 5.2. Practical Implications

The current research can provide practical implications for potential entrepreneurs, current entrepreneurs, and current top managers or organizations. For potential entrepreneurs, it is important to know and understand the importance of positive affect for entrepreneurial engagement, especially the long-term process of entrepreneurship. For current entrepreneurs, it is more relevant to pay attention to their positive affect levels, considering their importance for entrepreneurial orientation, effort and for persistence in the entrepreneurial process. First, it is essential to assess the positive affect levels, whether it is high, low or medium. If they do not seek to understand their positive affect, they will never succeed in regulating it. Moreover, they should bear in mind that frequency of positive affect is the thing that matters rather than intensity. They do not need to worry if they get into distress and loneliness over a manageable period of time for instance. They just need to try and keep an overall long-term positive affective state. Besides, it is important to know that the effect of positive affect hinges on environmental uncertainty. For instance, within an environment of low uncertainty, a high level of positive emotional state is more likely to lead the entrepreneur to an intrinsic motivated orientation. For current CEOs or organizations, this study also has practical implications. Top managers and organizations need to realize the importance of stimulating positive affect among employees to foster persistent intrapreneurship and innovation. Besides, we should mention that our findings are particularly valuable for Chinese entrepreneurs and readers, since we used a dataset which is currently the biggest and contains the most representative national entrepreneurship information for China.

### 5.3. Limitations and Suggestions for Future Research

Our study has limitations. First, we are lacking relevant variables, due to the limitations of CHFS, to explore further interesting questions. For instance, we do not have relevant variables such as self-efficacy and entrepreneurial passion, which have been found to influence entrepreneurship engagement and entrepreneurial persistence in previous studies (Cardon & Kirk, 2015). Considering these two variables also have associations with positive affect levels, future studies should add these two variables into the regressions to examine the results. In addition, we cannot test and empirically analyze the theoretical mechanisms between positive affect and subsequent motivational outcomes with one indirect mechanism related to cognitive judgment and the other mechanism stemming directly from the affective process. Perhaps more importantly, we strongly need a concept of *entrepreneurial* positive affect which is specifically induced and generated through entrepreneurial engagement since some theories such as the affect maintenance theory (Isen, 2000) implies an iterative process or relationship between positive affect generated from entrepreneurship and subsequent entrepreneurial outcomes. Thus, we appeal for more future research investigating the effect of general positive affect, and entrepreneurial positive affect on entrepreneurship to confirm and extend our results, and explore potential mediating factors between positive affect and entrepreneurial outcomes.

A second limitation involves the rough nature of our entrepreneurial effort variable, possibly explaining the lack of a significant relationship between positive affect and entrepreneurial effort found in this paper. Future research should measure effort in terms of hours per week instead of days per week in order to measure effort more accurately.

Third, as the present study focused on China, future research should investigate to what extent our results can be generalized to other socio-economic contexts.

Fourth and finally, a longer period of longitudinal data structure is needed to further confirm our results. With longer periods and time lags, we have more possibilities to model the lag structure between positive affect and entrepreneurial motivational outcomes. In particular, longer periods make it possible to explore more complex relationships between positive affect and entrepreneurship. Inspired by the affect maintenance hypothesis (Isen, 2000), the reciprocal relationship between positive affect and entrepreneurship might manifest itself as an internal dialogue by entrepreneurs who consider more or less the following: "Doing entrepreneurship makes me happy. Since I'm happy about it, let me persist in it."

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