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IMPULSIVITY AND ENTREPRENEURSHIP

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ABSTRACT
Action under uncertainty is the fundamental premise of entrepreneurship. Impulsive individuals are attracted to uncertain contexts and more likely to act in spite of uncertainty. Thus, impulsivity may represent an asset in entrepreneurship. This paper develops detailed propositions for the multifaceted influence of impulsivity on entrepreneurial action. It moves beyond entrepreneurship as a deliberate evaluative process to sufficiently account for how uncertainty influences action. In so doing, this paper constitutes a counterweight to the extensive examinations of positive personal attributes in entrepreneurship research. It also suggests a context in which a common trait with strong negative connotations may be advantageous.

INTRODUCTION
Action under uncertainty is a defining characteristic of entrepreneurship (McMullen & Shepherd, 2006). One important neurological insight supported by behavioral studies is the notion that two different decision systems are involved in decision making under uncertainty (e.g., Wood & Bechera, 2014). The ‘hot’ system is impulsive, rapid, and intuitive. The ‘cool’ system is slow, analytical, and reflective (Wood & Beshera, 2014; Kahneman, 2011). To date, however, the role of the cool reflective system in the entrepreneurial decision making process has received much more attention than the role of the hot impulsive system in extant entrepreneurship research.

There are stable individual differences in the extent to which people rely on their impulsive system, i.e., a person’s level of impulsivity is largely innate (Whiteside & Lynam, 2001). Entrepreneurs often make judgmental decisions guided by the impulsive system relying on heuristics and biases (Busenitz & Barney, 1997) and emotions (Loewenstein et al., 2001). Entrepreneurship may represent such an environment that reward impulsivity and rapid action. Therefore, based on the person-environment fit literature (Kristof, 1996), we propose that the nature of entrepreneurship is such that it attracts individuals who are higher on impulsivity and that these individuals can perform well in entrepreneurial endeavors.

The leading conceptualization and operationalization of impulsivity was developed by Whiteside and Lyman’s (2001) who proposed that impulsivity consists of four separate dimensions related to sensation seeking, lack of premeditation, lack of persistence, and urgency. Building on their conceptualization we hypothesize that these dimensions of impulsivity have different influences on the possibility of starting a business and on the entrepreneurial preferences.

1 The direction and significance of the coefficients does not substantially change when the complete sample of 381 observers is included in the analysis.
THEORETICAL DEVELOPMENT

Person-Environment Fit

The person-environment (P-E) fit literature examines the antecedents and outcomes of compatibility between a person and his or her work environment (Kristof, 1996). According to the theory, people are attracted to work environments that present work cultures, requirements, and demands that match their own personalities, needs and skills. Holland (1997) argued that personality influences preferred activities, interests, competencies and values and that career choice is an expression of personality. Consequently, people are attracted to vocations whose perceived characteristics and requirements are congruent with their personalities. A distinction can be made between perceived fit and actual fit. Individuals develop career preferences and may seek out vocations, on the basis of their perceived fit. Their performance at the job, however, will largely be determined by the actual fit, i.e., if they have the interests and abilities that are rewarded in that environment. When an individual can assess the environment accurately, the perceived subjective fit will correspond to the objective fit between the person and the work environment, but as Kristof-Brown and Stevens (2001) suggest, subjective and objective fit are often weakly related in practice.

Impulsivity, PE fit and Entrepreneurship

Impulsivity represents a multi-faceted super-construct with four underlying dimensions (Whiteside & Lynam, 2001). Using the Five-Factor Model as the starting point, Whiteside and Lynam (2001) mapped seventeen different conceptualizations of impulsivity onto the dimensions of personality in FFM, arriving at four facets of the impulsivity construct. (1) Sensation seeking, has two aspects: a tendency to enjoy and pursue activities that are exciting, and an openness to trying new experiences that may be dangerous; (2) (lack of) premeditation refers to a difficulty in deliberate thinking and considering the consequences of an act before engaging in that act; (3) (lack of) perseverance refers to the inability to remain focused on boring or difficult tasks, reflecting difficulty working under conditions that require resistance to distracting stimuli; and (4) urgency refers to the tendency to experience strong impulses, thus engaging in impulsive behaviors under the influences of affect, in order to reduce emotions despite potentially harmful long-term consequences.

Uncertainty is the cornerstone of entrepreneurship. Because entrepreneurship entails the creation of new means-ends frameworks (Schumpeter, 1934), judgment is carried out under uncertainty. Thus, the desirability of entrepreneurship is influenced by the prospective entrepreneur’s subjective evaluation of uncertainty and their willingness to bear uncertainty (McMullen & Shepherd, 2006). There is research to suggest that uncertainty itself exerts a pull on people high on sensation seeking (Leland et al., 2006). Sensation seekers find uncertainty rewarding in and of itself, and are more prone to act under uncertainty than others (Rosenbloom, 2003). At the neurological level, uncertainty triggers a greater striatal activation response, which provides greater salience to the experience, enhances dopamine release and makes the experience more rewarding (Leland et al., 2006). People high on sensation seeking therefore find it more desirable to bear the uncertainty associated with entrepreneurial action, thus having a higher perceived fit with entrepreneurship. People who are sensation seeking may also approach new situations more positively (Nicolaou et al., 2008). Specifically, some researchers interpret sensation seeking as a desire to explore and learn about the environment (e.g. Jackson, 2011) and stimulus-seeking curiosity (e.g. Raine et al., 2002). Sensation seekers’ intrinsic urge to explore their environment could help them to follow
an adaptive learning pattern and subsequently achieve better performance (O’Connor & Jackson, 2008). In the entrepreneurship context that is a highly exploratory, sensation seekers may thus be less discouraged by setbacks that could be encountered in the entrepreneurship context and instead view them as valuable learning opportunities for mastering new skills and situations. Such attitudes can be important for forging ahead in the direction chosen and overcoming obstacles such as the liability of newness and smallness. As a result, sensation seekers are also likely have a high level of objective fit with entrepreneurship. This leads to the following hypothesis:

**Hypothesis 1.** Sensation seeking is positively related to (a) entrepreneurial preference and (b) business startup.

Entrepreneurial opportunities are fleeting. Windows of opportunities are open for limited amounts of time before they close. This creates time pressure for entrepreneurs (Baron, 1998). In such settings, rapid decision making is important to capture the market and to generate profits (Eisenhardt, 1989). Coupled with uncertainty and complexity of entrepreneurial tasks, more comprehensive and cautious decision-making is often not applicable and may even be counterproductive (Busenitz & Barney, 1997). Thus, people who don’t premeditate can have an advantage because their decision making style is characterized by a bias for acting, while exhibiting limited planning and reflection (Dickman, 1990). Thus, people high on lack of premeditation are likely to find entrepreneurship attractive. The extent to which forging ahead relying on decision biases rather than careful analysis makes for a productive strategy in entrepreneurship can be debated (Brinckmann et al., 2010). However, under conditions of high uncertainty, when there is little reliable information on which to build plans, planning likely has a small effect on the probability of success. Further, if the uncertainty regarding how actions are converted into outcomes is sufficiently high, then the potential learning from feedback will be limited. Instead, frequent and rapid action can increase the probability of being successful. Empirical studies by Dickman (1990), replicated by Smillie and Jackson (2006) suggest that under such circumstances, people who forge ahead without premeditating outperform those who have a more cautious approach. This suggests that lack of premeditation can also positively influence entrepreneurial outcomes. Thus:

**Hypothesis 2.** Lack of premeditation is positively related to (a) entrepreneurial preference and (b) business startup.

Compared to traditional work, entrepreneurs need to perform a variety of tasks, engaging in every aspect of the business (Miner, 1994). These tasks include but not limited to obtaining funds, dealing with legal issues, marketing, and keeping books. As a consequence, research found that entrepreneurs exhibit a jack-of-all-trades quality to some extent, meaning that they need not to be expert in any single skill but may be familiar with a wide variety of areas (Lazear, 2004). Such broad varieties of activities may be particularly attractive to individuals who lack perseverance because they have challenges with sustained attention, especially in fulfilling boring tasks preferring, instead, non-repetitive and novel tasks (Whiteside & Lynam, 2001). Because of the varieties of entrepreneurial activities that can be tried and performed with limited need for mastery (Lazear, 2004), individuals who lack perseverance may find such contexts desirable. Therefore, it is likely that entrepreneurship provides high perceived fit for people who lack perseverance. However, in terms of actual fit, people who score high on lack of perseverance have difficulties forcing themselves to persist in boring tasks. They have a tendency to interrupt such tasks because they are drawn to activities that are considered more fun. While the engagement in entrepreneurship is volitional and many of the tasks and roles can be highly stimulating and may evoke a positive
affect such as passion (Cardon et al., 2009), given the range of tasks needed to be completed in the entrepreneurship process it is likely that some of them will be considered tedious and boring by entrepreneurs lacking perseverance, making it hard for them to persist. Therefore, while people who score high on lack of perseverance are like to find entrepreneurship attractive, it is less likely that they will persist and actually successfully start a business:

Hypothesis 3. Lack of perseverance is (a) positively related to entrepreneurial preference and (b) negatively related to business startup.

Entrepreneurial firms suffer from a liability of newness (Stinchcombe, 1965). The internal infrastructure needs to be built over time and resources need to be accumulated during the venture creation process. During this process many challenges and obstacles need to be overcome, which often causes stress and anxiety (Baron, 1998). The personal responsibility for success or failure and the large financial consequences of failure (Zhao et al., 2010) can be particularly stressful and may cause anxiety (van Gelderen et al., 2015). Anxiety is a negative emotion that is important for the inhibition of behavior under uncertainty (Paulus, 2007). Specifically, people high on urgency are more likely to perceive uncertain situations as threatening as they are sensitive to the negative cues of the situation (Paulus, 2007). They experience negative emotions more frequently and more strongly than others (Billieux et al., 2010). Emotionally unstable persons are vulnerable to psychological stress and are sensitive to negative feedback tending to become discouraged by small failures under difficult situations (Zhao et al., 2010). The anticipation or experience of negative emotions may inhibit people from engaging in behavior (Loewenstein et al. 2001). Because the task characteristics of entrepreneurship are likely to induce anxiety, people high on urgency are likely to find entrepreneurship less attractive. High urgency is also likely to impede entrepreneurial actions because within the entrepreneurial process it is often necessary to withstand challenges, negative news and to encourage oneself in order to stay focused on the goal of conducting the activities needed to start a business (Zhao et al., 2010). This leads to the following hypothesis:

Hypothesis 4. Urgency is negatively related to (a) entrepreneurial preference and (b) business startup

**METHOD**

**Data**

To test our hypotheses, we collected survey data from MBA alumni, who graduated from a university in southern USA. On September 1, 2015, we sent out emails with a link to a Qualtrics survey to 4,574 MBA alumni. Two follow-up reminders were sent on September 10, 2015 and September 16, 2015, respectively. The survey was open for one month from the initial submission. At that time, a total of 565 individuals had completed the survey, resulting in a response rate of 12%. For our analyses, we removed 86 of the 565 observations because of missing data regarding our focal variables. As a result, our final sample consists of 479 individuals

**Measures**

Dependent variables: Entrepreneurial preference. We employed the 4-item measure developed by Zhao, Seibert and Hills (2005) to capture our measure of perceived vocational fit, i.e., entrepreneurial preference. This measure has been validated in other studies (e.g., Gupta et al., 2008). As there are many paths to reaching the entrepreneurial vocation, we asked respondents how interested they were in engaging in four prototypical entrepreneurial activities (starting a
business, acquiring a small business, starting and building a high-growth business, and acquiring and building a company into a high-growth business) within the next 5 to 10 years. A 5-point Likert scale was used. The four items were averaged to form an overall composite measure. Business startup is our second dependent variable. In order to measure actual vocational fit, i.e., actual business startup, we asked respondents: “Have you ever started a business”. Respondents that indicated “yes” were coded 1 and respondents who answered “no” were coded 0.

Independent variables: Impulsivity. Impulsivity was assessed using the 45-item UPPS Impulsive Behavior Scale developed by Whiteside and Lynam (2001) which has been validated in numerous studies. All items measure the general tendency of individuals to act impulsively. 4-point Likert scale was used for all items, ranging from 1 (strongly disagree) to 4 (strongly agree). Average scores were calculated for each participant on each dimension, with higher scores indicating higher levels of impulsivity.

Control Variables: We controlled general self-efficacy, gender, age, race and working experience. General self-efficacy was measured in terms of the belief in one's general capabilities in performing activities and overcoming challenges under different kinds of situations (Chen et al., 2001; Eden & Aviram, 1993). This measure was an eight-item, five-point scale (1 = strongly disagree; 5 = strongly agree). The eight items were averaged to form an overall measure.

Statistical Analysis

We ran logit analyses of the respondents’ business startup status. Using the same independent and control variables, we performed hierarchical ordinal logit regression analyses of entrepreneurial preferences.

RESULTS

The validity of the impulsivity scale was confirmed using exploratory factor analysis and confirmatory factory analysis (Anderson and Gerbing, 1988). Exploratory factor analysis showed that all items loaded on their corresponding factors with limited cross loadings. Confirmatory factor analysis showed satisfactory model fit: Comparative Fit Index (CFI) was 0.931, the Tucker Lewis Index (TLI) was 0.924, the Incremental Fit Index (IFI) was 0.932, and the Root Mean Square Error of Approximation (RMSEA) was 0.039. All items load on corresponding factors significantly (p<0.001) and satisfactorily (range from 0.44 to 0.84 with mostly above 0.6). Composite reliability (CR) for each dimension was also well above the recommended level for scale development (Murphy & Davidshofer, 1988). Discriminant validity was also established, with the average shared variance for four dimensions ranging from 0.01 to 0.08, and the average variance explained for four dimensions ranging from 0.36 to 0.62.

Logit and ordinal logit regression results largely support our hypotheses. As anticipated, sensation seeking (0.06; p<0.001) and lack of premeditation (0.06; p<0.01) positively influence business startup, whereas urgency (-0.03; p<0.05), lack of premeditation (0.07; p<0.01), and sensation seeking (0.08; P<0.001) influence entrepreneurial preference.

DISCUSSION AND IMPLICATIONS

This research has extensive implications for entrepreneurship research and practice. First, we provide a counterweight to existing work that typically focuses on the reflective system emphasizing the rational and planning aspects of entrepreneurship (cf. Krueger, 2000). We develop
a conceptual model and show empirically that the hot impulsive system has an important role to play in this context. Our finding that impulsivity can explain why people have entrepreneurial preference and why people successfully start businesses informs research on entrepreneurial decision making. Departing from the idea that venture creation is mainly based on rationality and extensive planning, recent studies have increasingly emphasized the role of biases, heuristics, and affect in making entrepreneurial decisions (for a recent review see Shepherd et al., 2015). These studies often explain entrepreneurs’ biases, heuristics, and affect based on experience (Parker, 2006) or contextual factors (Forbes, 2005), but less often based on personality traits (for exceptions see, e.g., Baron, 2008). Our theorizing suggests that impulsivity as a stable personality trait characterized by a tendency to act rapidly without consideration of negative consequences (Moeller et al., 2001) can lead to fast entrepreneurial decisions. This is in line with the wider trend in psychology of examining the influence of how stable psychological characteristics operate in concert with environmental influences to explain behavior.

Second, our research also informs work trying to understand opportunity exploitation decisions. Current models have explained these decisions in terms of engagement in business planning (Delmar & Shane, 2003), knowledge and experiences (Choi & Shepherd, 2004), personal values and attitudes (Mitchell & Shepherd, 2010), and emotions (e.g., Baron, 2008). However, these factors appear insufficient to understand why some people decide on the exploitation of new entrepreneurial opportunities while others do not. Our theorizing and findings based on the impulsive system of decision making provides an explanation for such behavior.

Finally, many people struggle with impulsivity as indicated by the rapid rise of psychiatric diagnoses such as ADHD. Entrepreneurship may provide a suitable career choice for these individuals. While we have not examined the performance implications of impulsivity, it appears that impulsivity, at least to some extent, can be an asset in entrepreneurship as opposed to many other professions.

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