

Entrepreneurial Intentions amongst Tunisian Students: an Empirical Investigation Applying the Big-Five Personality Traits Theory

SAID ABOUBAKER ETTIS

UR-RED, ISGG, Tunisia¹

MOHAMED KARIM KEFI

CERI, ISTECH Paris, France

UR-RED, ISGG, Tunisia

Keywords

Entrepreneurial intentions, Personality traits, Big-Five theory, Openness, Neuroticism, Agreeableness, Conscientiousness, Extraversion, Risk tolerance, Tunisia.

Unemployment and under-employment played a pivotal role in the dissatisfaction that resulted in the countries directly affected by the so-called Arab Spring. Promoting entrepreneurship can help these countries in moving towards the “entrepreneurial society”; a significant factor in economic growth. This study examines what drives entrepreneurial skills and encourages entrepreneurial intentions among students in Tunisia; the first Arab spring country. The objective is to understand the impact of individual traits of the Tunisian student on his entrepreneurial intentions. The conceptual model postulates an effect of personality traits (according to the Big-Five theory) and risk tolerance on entrepreneurial intentions. Data were collected through a survey of 300 students. The results indicate that the personality traits of openness, conscientiousness, neuroticism, and risk tolerance encourage entrepreneurial intentions. However, introversion and agreeableness reduce these intentions. The implications of these results, limitations, and future avenues of research are presented in the conclusion.

Introduction

Numerous factors have led to the protests in Arab spring countries such as Tunisia, Egypt, Libya and Yemen. Most of these factors including economic issues mainly unemployment and poverty (Campante and Chor, 2012). In these countries, promoting the emergence of an autonomous and dynamic private sector representative of small and medium enterprises is one of the most primary objectives that must guide the reform process (Paciello, 2011). The entrepreneurial activity of individuals is regarded as a significant factor of economic growth. Encouraging entrepreneurship is imperative to move towards the “entrepreneurial society.” A society, in which individuals are willing to deal with the risk of creating new businesses and promoting a favorable business culture (Audretsch, 2007). For the Arab spring countries, this can be achieved through learning (Campante and Chor, 2012).

The vast majority of the literature on management theories is based on research concerning developed economies. This study examines the entrepreneurship question among students in Tunisia; one of the Arab spring countries. Tunisian universities must create awareness that there is an alternative way of employment. They need to develop student's

¹ UR-RED, Higher Institute of Management of Gabes (ISGG), University of Gabes, Tunisia.

entrepreneurial potentials and competencies. Above all, universities must understand what drives entrepreneurial skills and encourages entrepreneurial intentions. The purpose of this study is to examine this question.

Individual traits are a needed factor in the complete entrepreneurial process (Galloway *et al.*, 2005). In Arab spring countries, these traits are critical, especially in the initiating step, where other financial and technical incentives are lacking. Therefore, it is important to establish which individual qualities Tunisian Universities should promote through education and training activities to stimulate student's desire of a self-employment career.

Related to entrepreneurship, previous research has indicated that the intention of carrying out entrepreneurial behaviors may be affected by several factors, such as needs, values, wants, habits, beliefs (Lee and Wong, 2004; Garg *et al.*, 2011), desirability, feasibility (Krueger *et al.*, 2000; Shapero and Sokol, 1982; Veciana *et al.*, 2005), culture (Hofstede *et al.*, 2004), and job satisfaction (Watson *et al.*, 1998). These factors are in most cases cognitive, organizational or behavioral. These studies offer a little on why these factors affect some individuals more than others? The psychological background and the personality characteristics are rarely studied (Brown, 2011; Fairlie and Holleran, 2012; Lee *et al.* 2011). Lee *et al.* (2011) recommend studying, in future research, the effects of individual factors on entrepreneurial intentions. Along the same lines, Fairlie and Holleran (2012) noticed that individual differences should be taken into account when designing and implementing training programs in entrepreneurship. Especially, as little has been done to examine the relationships between personality types and entrepreneurial intentions (Zarafshani and Rajabi, 2011; Viinikainen and Kokko, 2012).

This study seeks to extend the entrepreneurial knowledge by investigating the scope to which individual factors influence business creation intentions in the context of an Arab spring country. The aim of this paper is to examine which personality traits (according to the Big Five model; Openness, Conscientiousness, Extraversion/Introversion, Agreeableness, and Neuroticism, Eysenck, 1960) are likely to motivate entrepreneurship among Tunisian students. Also, we examine the role that risk tolerance plays in enhancing entrepreneurial intentions among students. Risk attitude forms a separate dimension of personality outside of the Big Five (Paunonen and Ashton, 2001). Students generally are afraid of risk starting a business. This individual characteristic seems essential to study because of their importance in determining who starts and operates businesses and in deciding between entrepreneurship and salary work. In the next section, we review the entrepreneurial intentions concept research. Then we use the Big-Five theory to exhibit the personality traits and we expose the risk tolerance literature. Also, we explain the relationship between these constructs and the entrepreneurial intentions. As well as, we present the methods and the results. Finally, we discuss the implications of the findings.

2. Conceptual framework and hypotheses

2.1 Entrepreneurial Intentions

Entrepreneurship is defined as the process of organizational emergence (Gartner *et al.*, 1992). Intentions are antecedents of actual behavior (Ajzen, 1991). Intentions refer to the extent to which people show willingness to put effort into executing that behavior (Ajzen, 1991).

According to Crant (1996, p. 43), entrepreneurial intentions refer to “one's judgments about the likelihood of owning one's own business.”

Researchers (Laspita *et al.*, 2012; Lee *et al.*, 2011) indicated that our understanding of entrepreneurial intentions is guided by two models: Ajzen's (1991) theory of planned behavior and Shapero and Sokol's (1982) model of the entrepreneurial event. According to Ajzen's (1991) theory of planned behavior, an individual's entrepreneurial intentions are shaped by three attitudinal antecedents: attitudes toward behavior, subjective norms, and perceived behavioral control. The model of the entrepreneurial event states that entrepreneurial intentions are derived from perceptions of desirability, feasibility, and a propensity to act upon opportunities (Shapero and Sokol, 1982).

This research states that it is not only the above-mentioned variables are important determinants of entrepreneurial intentions but other personality characteristics are also important. A growing literature examines the relationship between individual traits and entrepreneurship (Caliendo and Kritikos, 2012). Here we are going to emphasize this question and we will investigate whether entrepreneurial intentions depending on individual's personality traits and risk tolerance or not.

2.2 Personality Traits and the Big-Five Theory

There is no one single way to define the personality (Saucier and Goldberg, 2006). Several psychologists have proposed definitions. Allport (1937, p.48) defined personality as "the dynamic organization, internal to the individual, of psychophysical systems that determine its special adaptation to the environment." This definition refers to the attributes considered to be present “within” the individual (Saucier and Goldberg, 2006). Other definitions highlight the stable nature of these attributes. To James and Mazerolle (2002), personality refers to stable mental structures and processes that influence interpretations and emotional and behavioral responses of individuals to the environment.

Following the work of Allport (1937), Cattell (1950), Eysenck (1960), Norman (1963), and Tupes and Christal (1961), many researchers (Costa and McCrae, 1992; Digman, 1990; John, 1990; Wiggins and Trapnell, 1997) propose the model of the five major factors, the “Big Five” as a framework for the study of personality. According to this model, personality can be described by five basic dimensions namely Openness, Conscientiousness, Extraversion/Introversion, Agreeableness, and Neuroticism (OCEAN). Studies have postulated that some psychological profiles tended to be more likely to become entrepreneurs, than others (Mitchell *et al.*, 2002; Routamaa and Miettinen, 2006).

The Openness describes the intellectual curiosity, imagination, and the proactive seeking and appreciation of experience for its own sake, based on characteristics such as openness to feelings, new ideas, flexibility of thoughts, and readiness to indulge into fantasy (McCrae and John, 1992). The Openness should relate positively with entrepreneurial intentions as entrepreneurship needs creativity, imagination, and curiosity. Hence an individual high on openness should show an indication of more entrepreneurial intentions than another with less openness.

The Conscientiousness in an individual is manifested by his scrupulous, responsible, disciplined, organized, and trustworthy characters. Conscientious individual strives after goals and adheres to principles (Costa and McCrae, 1992). Conscientiousness should be related positively to entrepreneurship. An entrepreneur needs to be organized, orderly, hard workers, and efficient in carrying out tasks.

The Extraversion (i.e., low introversion) is the tendency to be sociable, impulsive, likes to talk, and to have positive emotions (Costa and Widiger, 2002; Piedmont, 1998). Extraversion characterizes people with a need for activity, adventurous, excitement and stimulation (Costa and McCrae, 1992). Extroverted individuals should have stronger entrepreneurial intentions than introverted because they are more active, seek leadership roles, and more able to mobilize people in order to create a social network and to get involved in the hazard.

The Agreeableness is an interpersonal dimension corresponding to traits such as altruism, trust, modesty, and gentleness (Bergman *et al.*, 1993; McCrae and John, 1992). Agreeableness might inhibit the willingness to make hard bargains (Zhao and Seibert, 2006) as an individual high on agreeability will tend to agree with others, not to say “no” and to readily abdicate. This behavior doesn’t meet the requirement’s character of a negotiator essential to managers. Therefore, the trait of agreeability should relate negatively with entrepreneurial intentions.

Finally, *the Neuroticism*, which is opposed to emotional stability, is characterized by anxious behavior, unstable, melancholy, and nervous (Petot, 2004). The Neuroticism represents individual differences in the tendency to experience distress and involves aspects of depression, frustration, and guilt (McCrae and John, 1992). Entrepreneurship is a long and stressful process that requires patience, perseverance, tenacity, and intrinsic motivation (Afzalur, 1996; Boyd and Gumper, 1983; Shaver, 1995). Individuals with high neuroticism should be less ready to engage in such a process. Hence, neuroticism is expected to be negatively related to entrepreneurial intentions. Based on the above arguments, the following hypothesis is proposed:

H.1. *Personality traits will be related to entrepreneurial intentions as follows:*

- H.1.1. *Openness will be positively related to entrepreneurial intentions.*
- H.1.2. *Conscientiousness will be positively related to entrepreneurial intentions.*
- H.1.3. *Introversion will be negatively related to entrepreneurial intentions.*
- H.1.4. *Agreeableness will be negatively related to entrepreneurial intentions.*
- H.1.5. *Neuroticism will be negatively related to entrepreneurial intentions.*

2.3 Risk Tolerance

The risk-taker is someone “who in the context of a business venture, pursues a business idea when the probability of succeeding is low” (Chell, et al. 1991, p.42). In this study, the risk-taking must be analyzed as a stable trait of the entrepreneur. Some individuals are very reluctant when it is going to engage in risky activities. However, others have a less pronounced risk aversion (Arrow, 1965). This variable may affect the student’s entrepreneurial intentions. Entrepreneurship is inherently risky, so it is reasonable to think that individuals who are more risk tolerant are more likely to become entrepreneurs (Fairlie and Holleran, 2012).

Risk aversion is one of the characteristics of the entrepreneur that can determine his intention of starting a business (Kihlstrom and Laffont, 1979; Knight, 1921; Rees and Shah, 1986;

Valdez *et al.*, 2011). Empirical studies find that risk aversion is one of the most influential antecedents of the decision of going into business (Begley and Boyd, 1987; Bonnett and Furnham, 1991; Caliendo *et al.* 2010; Zhao and Seibert, 2006). For this reason, we have chosen as a variable in the conceptual model. The second research hypothesis is formulated as follows:

H.2. *Risk tolerance will be positively related to entrepreneurial intentions.*

3. Research methodology

3.1. Data Collection and Sample

Data collection was a paper-and-pencil survey administered to college students from five Tunisian universities located across the country. A total of 300 students completed the survey. Students were recruited with a convenience sampling method.

3.1.1. Measurements

To measure the constructs of the model, we used scales from the literature. The scales were selected based on their psychometric properties. The entrepreneurial intentions were measured by six items developed by Liñán and Chen (2009). Personality traits were measured by items adapted from the scale of Saucier (1994), which is a brief version of the Big-Five scale of Goldberg (1981). Risk tolerance was measured by the four items scale of Kau and Serene (1997). For these three constructs, items were assessed on a seven-point Likert scale. Items are presented in Table 2.

3.1.2. Respondent Demographics

A total of 72% female and 28% male completed the survey. Students with a Master's degree (five years) were 57 % and those with a Licence's degree (three years) were 36 %, including mainly four specialties: Management (48.5 %), Economics (13 %), Scientific (23.1 %), and literary (5 %) specialties. About 49% of all students have followed an entrepreneurship training programs. The age group of 19-29 years is well represented (85.7%) (See table 1).

Table 1. Respondent demographic characteristics (N=300)

Demographics	%
Gender	
- Female	72.0 %
- Male	28.0 %
Age	
- <19	1.00 %
- 19 - 24 years	51.9 %
- 25 - 29 years	33.8 %
- 30 - 34 years	10.9 %
- 35 - 39 years	01.7 %
- > 40 years	00.7 %
Current level of study	
- License	36.5 %
- Master	57.0 %
- PhD	06.5 %

Demographics	%
Education	
- Management	48.5 %
- Economics	13.0 %
- Scientific	23.1 %
- Literary	05.0 %
- Other	10.4 %
Entrepreneurship training	
- Yes	49.1 %
- No	50.9%

3.2. Data analysis and results

The proposed model shown in Figure 1 was tested with IBM SPSS AMOS 20.0, using the two-step model-building approach as specified by Anderson and Gerbing (1988). The measurement model, including the latent constructs and their respective observed variables, was first analyzed to measure convergent and discriminant validity. Then, the structural model with the hypothesized relationships was tested and refined in an attempt for a better explanation of the data. A final, modified model was determined as a result. All analyses used maximum likelihood estimation.

3.2.1. Measurement Model Evaluation

A confirmatory factor analysis of the full measurement model showed all the indicators significantly loaded on their corresponding latent constructs ($p < 0.001$). The Cronbach's alpha reliability of the scales varies between 0.69 and 0.90. The internal consistency of the scales is satisfactory observing in this way the minimum of 0.60 (Nunnally, 1978). Several measures were used to assess the validity and reliability of the measurement model. All constructs exhibited levels of Composite Reliability (CR) exceeded 0.7, the Average Variance Extracted (AVE) surpassed the recommended value of 0.50 and CR was above the AVE value suggesting adequate convergent validity (Hair et al., 2010). The measurement model shows a good fit (Chi-square = 316.010, $df = 187$; RMSEA=0.048; CFI= 0.943; TLI= 0.923) with all the fit-indices greater than the recommended cut-off values (Hair et al. 2010) (See Table 2).

Table 2. Indicators of reliability and validity of measurement scales (N = 300)

Items	Standardized Regression Weights	Reliability Cronbach alpha	Composite Reliability(CR)	Average Variance Extraded (AVE)	Maximum Shared Variance (MSV)	Average Shared Variance (ASV)
<i>Entrepreneurial intentions</i>						
I am ready to do anything to be an entrepreneur.	Deleted					
My professional goal is to become an entrepreneur.	0.732	0.90	0,903	0,702	0,309	0,123
I will make every effort to start and run my own firm.	Deleted					
I am determined to create a	0.896					

Items	Standardized Regression Weights	Reliability Cronbach alpha	Composite Reliability(CR)	Average Variance Extraded (AVE)	Maximum Shared Variance (MSV)	Average Shared Variance (ASV)
firm in the future. I have very seriously thought of starting a firm. I have the firm intention to start a firm someday.	0.868 0.845					
<i>Openness</i> Imaginative Creative Inventive Deep	Deleted 0.999 0.707 Deleted	0.75	0,853	0,749	0,221	0,072
<i>Conscientiousness</i> Organized Efficient Systematic Practical	0.667 0.833 Deleted 0.667	0.76	0,783	0,548	0,158	0,068
<i>Introversion</i> Bashful Shy Withdrawn Extroverted*	0.689 0.559 0.914 0.811	0.82	0,837	0,570	0,097	0,031
<i>Agreeableness</i> Warm Sympathetic Kind Cooperative	0.499 0.950 0.782 0.514	0.76	0,793	0,507	0,049	0,011
<i>Neuroticism</i> Envious Worried Touchy Jealous Relaxed*	Deleted 0.695 0.648 Deleted 0.832	0.77	0,771	0,532	0,097	0,043
<i>Risk tolerance</i> I like taking chances I like people who take risks in life without fear of what will happen If you want big gains, you have to take risk Investing in the stock market is too risky for me*	0.802 0.664 Deleted Deleted	0.69	0,701	0,542	0,309	0,081
<i>Model Fit:</i> Chi-square = 316.010; df = 187; CMIN/DF = 1.690; RMSEA = 0.048; PCLOSE = 0.628; NFI = 0.875; TLI =						

Items	Standardized Regression Weights	Reliability Cronbach alpha	Composite Reliability(CR)	Average Variance Extraded (AVE)	Maximum Shared Variance (MSV)	Average Shared Variance (ASV)
0.923; CFI = 0.943						

*: Inverted item

As shown in Table 3, the square root of the Average Variance Extracted of each construct was greater than the correlations between the construct and any other construct in the model, satisfying Fornell and Larckers' (1981) criteria for discriminant validity. Discriminant validity was examined further by ensuring that Maximum Shared Variance (MSV) and Average Shared Variance (ASV) was less than AVE (Hair et al. 2010).

Table 3. Indicators of discriminant validity of constructs (Correlation coefficient matrix; N = 300)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Entrepreneurial intentions (1)	0,838						
Openness (2)	0,470	0,865					
Conscientiousness (3)	0,398	0,320	0,740				
Introversion (4)	-0,217	-0,090	-0,160	0,755			
Agreeableness (5)	-0,042	-0,016	0,061	0,027	0,712		
Neuroticism (6)	-0,055	-0,215	-0,201	0,311	0,222	0,729	
Risk tolerance (7)	0,556	0,236	0,277	-0,102	0,091	-0,153	0,736

Note: The diagonal elements show the square root of the average variance extracted; the off diagonal elements show the correlations between the constructs

3.2.2. Structural Model Evaluation and Hypotheses Testing

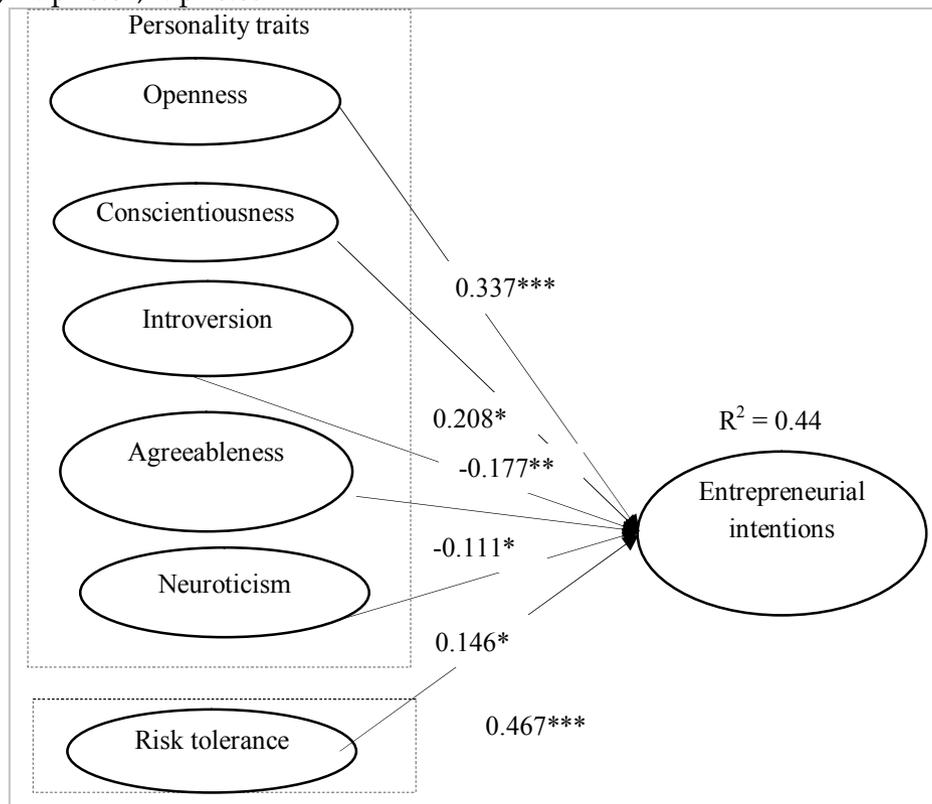
The results show that the fit of the model was satisfactory. Chi-square was 102.060 with 48 degrees of freedom. The RMSEA was 0.054; the TLI was 0.903; and the the CFI was 0.923, all of which were well within recommended guidelines. Five out of the hypothesized relationships were supported. Openness, conscientiousness, introversion, agreeableness, and risk tolerance were statistically significant in the predictable direction ($p < 0.05$).

As expected, entrepreneurial intentions were positively influenced by openness (Standardized Regression Weights $\beta = 0.337$; t -value = 5.550; $p < 0.001$) and conscientiousness (Standardized Regression Weights $\beta = 0.208$; t -value = 1.933; $p < 0.05$). Entrepreneurial intentions were negatively influenced by introversion (Standardized Regression Weights $\beta = -0.177$; t -value = -3.234; $p < 0.01$) and Agreeableness (Standardized Regression Weights $\beta = -0.111$; t -value = -2.407; $p < 0.05$). These results lead us to accept the hypotheses H1.1, H.1.2, H.1.3, and H.1.4. However, neuroticism was found to be significant, but influence student's entrepreneurial intentions in a positive manner, disconfirming H.1.5, which postulated a negative effect. Further, we found that there is a significant and positive relationship between risk tolerance and students' entrepreneurial intentions (Standardized Regression Weights $\beta = 0.467$; t -value = 7.122; $p < 0.001$), suggesting support for Hypothesis H.2. These variables together explained 44% of the variance of students' entrepreneurial intentions ($R^2 = 0.44$, coefficient of determination). Key statistics for the final structural model evaluation are reported in Figure 1.

Table 4. Results of Hypotheses H.1 and H.2 Testing (N = 300)

Hypo.	Path	Regression Weights	Standard Error	C.R t-value	Testing
H.1.1	Openness → Entrepreneurial intentions	0.261	0.050	5.550***	Accepted
H.1.2	Conscientiousness → Entrepreneurial intentions.	0.357	0.191	1.933*	Accepted
H.1.3	Introversion → Entrepreneurial intentions	-0.156	0.052	-3.243**	Accepted
H.1.4	Agreeableness → Entrepreneurial intentions	-0.200	0.105	-2.407*	Accepted
H.1.5	Neuroticism → Entrepreneurial intentions	0.131	0.056	3.191**	Rejected
H.2.	Risk tolerance → Entrepreneurial intentions	0.443	0.087	7.122***	Accepted
Model Fit	Chi-square = 102,060; df = 48; CMIN/DF = 1.876; RMSEA = 0.054; PCLOSE = 0.205; NFI = 0.851 ; TLI = 0.903 ; CFI = 0.923				
Squared Multiple Correlations		0.44			

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



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

Figure 1. Structural model

Conclusion

Discussion and Implications

This study adds to the body of research in important ways. Relatively new and growing empirical studies examine whether the psychological characteristics or personality of individuals is significant determinants of entrepreneurship, in addition to the more traditionally identified determinants such as socio-demographic variables (Fairlie and Holleran, 2012; Sakkthivel and Sriram, 2012). As noted earlier, this research is one of the few empirical studies that has conceptualized and implemented the effect of personality factors on the entrepreneurial intentions of students in an emerging country. It helps to answer the question of which traits and which personality characteristics lead individuals to become entrepreneurs.

In this study, based on the Big-Five theory, various personality traits are considered to predict student's entrepreneurial intentions. Furthermore, the effect of risk tolerance on student's entrepreneurial intentions was examined. In the past, researchers stressed the role of cognitive, organizational, and behavioral factors like financial performance, environmental uncertainty, distinguishing entrepreneurs from the general population (Begley and Boyd, 1987; Bonnett and Furnham, 1991; Nwachukwu 1995; Sandberg and Hofer, 1987). Especially, personality factors are rarely investigated (Brown, 2011; Fairlie and Holleran, 2012; Lee *et al.* 2011). This research finds evidence that not only these variables are important determinants of entrepreneurship but also the traits of personality may be important, too. Moreover, this research gives support that the Big-Five approach is useful in the context of entrepreneurship. Our findings show that the openness personality trait could enhance student's entrepreneurial intentions. The more the student is curious and imaginative the more he will tend to start a business after graduation. Among the Big-Five traits, openness is strongly related to innovation. This finding supports Schumpeter (1911) who states that exploring new ideas, being creative, and taking novel approaches to the complete entrepreneurial process is essential for starting a new venture. This result meets also the finding of Caliendo *et al.* (2011) about the effect of openness on self-employment.

Furthermore, in our research conscientiousness is found to be positively related to student's entrepreneurial intentions. An organized, efficient, systematic, and practical personality will lead a student to be an entrepreneur. Caliendo *et al.* (2011) found no significant effect of conscientiousness on self-employment. Uysal and Pohlmeier (2011) concluded that conscientiousness had a positive association with the probability of finding a job.

The relationship between entrepreneurial intentions and extraversion/introversion was found to be significant. Introversion (*versus* extraversion) reduce the student's entrepreneurial intentions. This result confirms findings from the leadership literature suggest that extraversion is positively related to leadership (Burch and Anderson, 2009), but deviates from the research of Zhao and Seibert (2006) who found no support to the hypothesis that entrepreneurs score higher than managers on extraversion.

Similarly, there is evidence that agreeableness trait is negatively related to the intention to start up a company. The more the student needs to express kindness and sympathy, in order to agree with others and to have good interpersonal relationships, the less he will tend to decide to be an entrepreneur. This result deviates from Caliendo *et al.* (2011) who argue that

agreeableness does not influence the self-employment probability. However, it supports the conclusions of Zhao and Seibert (2006) who find that entrepreneurs score significantly lower than managers on agreeableness.

Unexpectedly, our findings reveal that neuroticism, a negative emotionality such as feeling anxious, worried, touchy, and tense enhance entrepreneurial intentions. We hypothesized a negative effect. Uysal and Pohlmeier (2011) revealed that neuroticism had a negative association with the probability of finding a job. Thus, it seems that the lack of amiability and vulnerability motivate people with high neuroticism to build up their own business.

Moreover, our results show that students who are more risk tolerant have more entrepreneurial intentions than those less risk tolerant. This finding is consistent with many previous researches. Douglas and Shepherd (2002) found attitudes towards risk to be related to entrepreneurial intentions. Considerable research indicates that entrepreneurial individuals are generally more risk tolerant than less entrepreneurial individuals (Begley, 1995; Caird, 1991; Sexton and Bowman, 1984). A range of other studies carried out in the context of developed countries have explained entrepreneurial intentions by means of risk tolerance, report a positive relationship (e.g.: Caliendo *et al.* 2009; Cramer *et al.* 2002; Fairlie and Holleran, 2012).

These results have a number of theoretical and managerial implications. From a theoretical point of view, our research endorses that personality significantly influences entrepreneurial processes and that the Big-Five theory is a suitable framework to explain entrepreneurial intentions.

From a practical point of view, and seeing that in Arab spring countries, efficient financial and technical incentives are lacking, it's possible to rely on individual entrepreneurial qualities to promote entrepreneurship and to stimulate student's desire of a self-employment career. Educators may be able to strengthen psychological qualities of openness, conscientiousness, extraversion, competition, and risk tolerance to enhance student's entrepreneurship orientation. This is possible throughout creating education programs that offer students appropriate support and challenges that develop these personality traits.

Moreover, the awareness of students about taking risk and personality characteristics needed for self-employment may be changed when they are brought into contact with entrepreneurs who can serve as role models (Henderson and Robertson, 2000).

Another implication is in the field of teaching entrepreneurship, the relationship between openness, conscientiousness, extraversion, agreeableness, and risk tolerance and entrepreneurial motivation could be used as criteria for identifying students for entrepreneurial training programs.

Finally, in line with Okhomina (2010), our research shows that the characteristics of the openness, conscientiousness, extraversion, agreeableness, and risk tolerance propensity may be meaningful indicators for team member's selection for starting new projects or new-product launches and evaluating candidates for posts that need an entrepreneur profile in company, among others.

Limitations and Future Research

This study is prone to some limitations that require further future investigations. The convenience sample may affect the validity of results. The results would have been more relevant if a probabilistic sampling method were used. An additional limitation is that female students are more represented than male students in the research sample. A more heterogeneous sampling is needed. Also, our sample was Tunisian students; thus, the study has a limitation in generalizing our findings in other cultural environments.

Subsequently, the findings of this study offer a number of opportunities for future research to advance our knowledge of the individual factors that predict intentions to start businesses. Future research could analyze several other interesting issues, which fall outside the scope of the present article. It will be desirable to replicate this research in other spring Arab countries' universities. Qualitative and longitudinal approaches would be also useful to monitor student's individual antecedents of entrepreneurship. Finally, it is important to examine the moderating role of socio-demographic characteristics (gender, age, education...) and situational factors (perceived risk of unemployment, region economic growth, parent's occupational status...) and the mediating role of entrepreneurship attitude, subjective norms and perceived feasibility.

References

- Afzalur, R. (1996) 'Stress, Strain, and Their Moderators: an Empirical Comparison of Entrepreneurs and Managers', *Journal of Small Business Management*, Vol. 34, No. 1, pp.46-58.
- Ajzen, I. (2001) 'Nature and Operation of Attitudes', *Annual Review of Psychology*, Vol. 52, pp.27-58.
- Allport, G.W. (1937) *Personality: a Psychological Interpretation*, Holt, New York.
- Anderson, J.C. and Gerbing, D.W. (1988) 'Structural equation modeling in practice: a review and recommended two steps approach', *Psychological Bulletin*, Vol. 49, pp.411-23.
- Arrow, K.J. (1965) 'The Theory of Risk Aversion', in Yrjo Jahanssonin Saatio (Eds.), *Aspects of the Theory of Risk Bearing*, Markham Publ. Co., Chicago, pp.90-109.
- Audretsch, D. B. (2007) *the Entrepreneurial Society*, Oxford University Press, Oxford.
- Begley, T. (1995) 'Using founder status, age of firm and company growth rate as the basis for distinguishing entrepreneurs from managers of smaller businesses', *Journal of Business Venturing*, Vol. 10, No. 3, pp.249-263.
- Begley, T. and Boyd, D. (1987) 'Psychological Characteristics Associated with Performance in Entrepreneurial Firms and Smaller Businesses', *Journal of Business Venturing*, Vol. 2, pp.79-93.
- Bonnett, C. and Furnham, A. (1991) 'Who Wants to be an Entrepreneur? A Study of Adolescents Interested in a Young Enterprise Scheme', *Journal of Economic Psychology*, Vol. 12, No. 3, pp.465-478.
- Boyd, D. P. and Gumpert, D. E. (1983) 'The effects of stress on early age entrepreneurs', in J. A. Hornaday, J. A. Timmons, and K. H. Vesper (Eds.), *Frontiers of entrepreneurship research*, Wellesley, MA: Babson College, pp.180-191.

- Brown, U. J., Beale, R. L. and White-Johnson, S. (2011) 'Perceptions of Entrepreneurial Intentions and Risk Propensity: Self-Reliance and Self-Efficacy in College Students to Encourage Knowledge', *Review of Business Research*, Vol. 11, No. 5, pp.169-177.
- Burch, G., and Anderson, N. (2009). Personality at work. In P. J. Corr and G. Matthews (Eds.), *The Cambridge handbook of personality psychology* (pp. 748-763). Cambridge, UK: Cambridge University Press.
- Caird, S. (1991) 'The enterprising tendency of occupational groups', *International Small Business Journal*, Vol. 9, pp.75-81
- Caliendo, M. and Kritikos, A. (2012) 'Editorial: Searching for the Entrepreneurial Personality: New Evidence and Avenues for Further Research', *Journal of Economic Psychology*, Vol. 33, pp.319-324.
- Caliendo, M., Fossen F. M. and Kritikos A. S. (2009) 'Risk Attitudes of Nascent Entrepreneurs- New Evidence from an Experimentally-Validated Survey', *Small Business Economics*, Vol. 32, No. 2, pp.153-167.
- Caliendo, M., Fossen F. M. and Kritikos, A. S. (2011) 'Personality Characteristics and the Decision to Become and Stay Self-Employed', SOEP papers on Multidisciplinary Panel Data Research at DIW Berlin, [online] <http://www.diw.de/soeppapers> (Accessed 24 August 2016).
- Caliendo, M., Fossen, F. M. and Kritikos, A. S. (2010) 'The Impact of Risk Attitudes on Entrepreneurial Survival', *Journal of Economic Behavior and Organization*, Vol. 76, No. 1, pp.45-63.
- Campante, F. R. C. and Chor, D. (2012), 'Why was the Arab World Poised for Revolution? Schooling, Economic Opportunities, and the Arab Spring', *Journal of Economic Perspectives*, Vol. 26, No. 2, pp167-188.
- Cattell, R.B (1950) *Personality: A Systematic Theoretical and Factual Study*, New York: McGraw-Hill.
- Costa, P.T. and McCrae, R.R. (1992) 'Four Ways Five Factors are Basic', *Personality and Individual Differences*, Vol. 13, No. 6, pp.653-665.
- Costa, P.T. and Widiger, T.A. (2002) *Personality Disorders and the Five-Factor Model of personality*, American Psychological Association, Washington, DC.
- Cramer, J., Hartog, J., Jonker, N. and Van Praag, C. (2002) 'Low Risk Aversion Encourages the Choice for Entrepreneurship: An Empirical Test of a Truism', *Journal of Economic Behavior and Organization*, Vol. 48, pp.29-36.
- Crant, J.M., (1996) 'The Proactive Personality Scale as a Predictor of Entrepreneurial Intentions', *Journal of Small Business Management*, Vol. 34, pp.42-49.
- Digman, J.M. (1990) 'Personality Structure: Emergence of the five-Factor Model', *Annual Review of Psychology*, Vol. 41, No. 1, pp.417-40.
- Eysenck, H.J. (1960) 'Levels of Personality, Constitutional Factors and Social Influences: an Experimental Approach', *International Journal of Social Psychiatry*, Vol. 6, pp.12-24.
- Fairlie, R. W. and Holleran, W. (2012) 'Entrepreneurship Training, Risk Aversion and Other Personality Traits: Evidence from a Random Experiment', *Journal of Economic Psychology*, Vol. 33, pp.366-378.

- Fornell, C.D. and Larcker, F. (1981) 'Evaluating structural equation models with unobservable variables and measurement errors', *Journal of Marketing Research*, Vol. 18, No. 3, pp.39-50
- Galloway, L., Anderson, M., Brown, W. and Wilson, L. (2005) 'Enterprise Skills for Economy', *Education, and Training*, Vol. 47, No. 1, pp.7-17.
- Garg, A.K., Matshediso, I.B., and Garg D. (2011) 'An individual's motivation to become entrepreneur: evidences from a mineral based economy', *International Journal of Entrepreneurship and Small Business*, Vol. 12, No. 1, pp. 109-127.
- Gartner, W., Bird, B. and Starr, J. (1992) 'Acting as if: Differentiating Entrepreneurial from Organizational Behavior', *Entrepreneurship Theory and Practice*, Vol. 16, pp.13-30.
- Goldberg, L.R. (1981) 'Language and Individual Differences: the Search for Universals in Personality Lexicons', *Review of Personality and Social Psychology*, Vol. 2, pp.141-165.
- Hair, J., Black, W., Babin, B. and Anderson, R. (2010) *Multivariate data analysis*, 7th ed., Prentice-Hall, Inc, Upper Saddle River, NJ, USA.
- Henderson, R. and Robertson, M. (2000) 'Who wants to be an entrepreneur? Young adult attitudes to entrepreneurship as a career', *Career Development International*, Vol. 5, No. 6, pp.279-287.
- Hofstede, G., Noorderhaven, N., Thurik, A.R., Uhlaner, L.M., Wennekers, A.R.M., & Wildeman, R.E. (2004). Culture's role in entrepreneurship: Self-employment out of dissatisfaction. In T.E. Brown & J.M. Ulijn (Eds.), *Innovation, entrepreneurship and culture* (pp. 162-203). Cheltenham: Edward Elgar.
- James, L. R. and Mazerolle, M. D. (2002) *Personality in Work Organizations: An Integrative Approach*, Beverly Hills: Sage.
- John, O.P. (1990) 'The "Big Five" Factor Taxonomy: Dimensions of Personality in the Natural Language and in Questionnaires', in Pervin, L.A. (Eds.), *Handbook of Personality: Theory and Research*, Guilford, New York, pp.66-100.
- Kau, A.K. and Serene, L. (1997) 'Personal Values and Complaint Behavior the Case of Singapore Consumers', *Journal of Retailing and Consumer Services*, Vol. 4, No. 2, pp.89-97.
- Kihlstrom, R. and Laffont, J.J. (1979) 'A General Equilibrium Entrepreneurial Theory of firm Formation Based on Risk Aversion', *Journal of Political Economy*, Vol. 87, No. 4, pp.719-748.
- Knight, F.H. (1921) *Risk, Uncertainty and Profit*, New York: Houghton Mifflin.
- Krueger, N.F., Reilly, M.D. and Carsrud, A.L. (2000) 'Competing Models of Entrepreneurial Intentions', *Journal of Business Venturing*, Vol. 15, No. 5-6, pp.411-432.
- Laspita S., Breugst N., Heblich S., and Patzelt H. (2012) 'Intergenerational Transmission of Entrepreneurial Intentions', *Journal of Business Venturing*, Vol. 27, 414-435.
- Lee, H. and Wong, P. K. (2004) 'An Exploratory Study of Technopreneurial Intentions: A Career Anchor Perspective', *Journal of Business Venturing*, Vol. 19, No. 1, pp.7-28.
- Lee, L., Wong, P. K., Foo, M.D. and Leung, A. (2011) 'Entrepreneurial Intentions: the Influence of Organizational and Individual Factors', *Journal of Business Venturing*, Vol. 26, pp.124-136.
- Liñán, F. and Chen, Y.W. (2009) 'Development and cross-cultural application of a specific instrument to measure entrepreneurial intentions', *Entrepreneurship Theory and Practice*, Vol. 33, No. 3, pp.593-617.

- Mccrae, R.R. and John, O.P. (1992) 'An Introduction to the five-Factor Model and its Applications', *Journal of Personality*, Vol. 60, pp.175-215.
- Mitchell, R., Busenitz, L., Lant, T., Mcdougall, P., Morse, E. and Smith, B. (2002) 'Toward a Theory of Entrepreneurial Cognition: Rethinking the People Side of Entrepreneurship Research', *Entrepreneurship Theory and Practice*, Vol. 27, No. 2, pp.93-104.
- Norman, W.T. (1963), 'Toward an Adequate Taxonomy of Personality Attributes: Replicated Factor Structure in Peer Nomination Personality Ratings', *Journal of Abnormal and Social Psychology*, Vol. 66, pp.574-583.
- Nunnally, J.C. (1978) *Psychometric Theory*, 2nd ed., McGraw-Hill Book Company, New York, NY.
- Nwachukwu, O. C. (1995) 'CEO Locus of Control, Strategic Planning, Differentiation, and Small Business Performance: a Test of Path Analytic Model', *Journal of Applied Business Research*, Vol. 11, pp.9-14.
- Okhomina, D. (2010) 'Entrepreneurial Orientation and Psychological Traits: the Moderating Influence of Supportive Environment', *Journal of Behavioral Studies in Business*, 2, May, [online] <http://www.aabri.com/manuscripts/10450.pdf> (Accessed 24 August 2016).
- Paciello, M. C. (2011), 'The Arab Spring: Socio-economic Challenges and Opportunities', Documenti Istituto Affari Internazionali, [online] www.iai.it/sites/default/files/iai1115e.pdf (Accessed 24 August 2016).
- Paunonen, S.V. and M.C. Ashton (2001) 'Big Five Factors and the Prediction of Behavior', *Journal of Personality and Social Psychology*, Vol. 81, pp.524-539.
- Petot, J. M. (2004) 'Le modèle de personnalité en cinq facteurs et le test de rorschach', *Psychologie Française*, Vol. 49, pp.81-94.
- Piedmont, R.L. (1998) *The Revised Neo Personality Inventory: Clinical Research Applications*, Plenum Press, New York, NY.
- Rees, H. and Shah, A. (1986) 'An Empirical Analysis of Self-Employment in the UK', *Journal of Applied Econometrics*, Vol. 1, No. 1, pp.95-108.
- Routamaa, V. and Miettinen, A. (2006) 'Knowing Entrepreneurial Personalities: A Prerequisite for Entrepreneurial Education', *International Journal of Entrepreneurship Education*, Vol. 23, No. 4, pp.45-57.
- Sakkthivel, A.M. and Sriram B. (2012), 'Modelling the determinants that impact risk-taking and entrepreneurship behaviour in emerging economies', *International Journal of Entrepreneurship and Small Business*, Vol. 15, No. 3, pp.376-388.
- Sandberg, W. R. and Hofer, C. W. (1987) 'Improving New Venture Performance: the Role of Strategy, Industry Structure, and the Entrepreneur', *Journal of Business Venturing*, Vol. 2, pp.5-28.
- Saucier, G. (1994) 'Mini-Markers: A Brief Version of Goldberg's Unipolar Big-five Markers', *Journal of Personality Assessment*, Vol. 63, December, pp.506-516.
- Saucier, G. and Goldberg, L. R. (2006) 'Personnalité, caractère et tempérament: la structure translinguistique des traits', *Psychologie Française*, Vol. 51, pp.265-284.
- Schumpeter, J.A. (1911) *The theory of economic development*, Harvard University Press, Cambridge (Mass.).

- Sexton, D., Bowman, N. (1984) 'Personality Inventory for potential Entrepreneurs: Evaluation of a modified JPI/PRF-E test instrument', in J. Hornady, F. Trpley, J. Timmons and K Vesper (Eds.), *Frontiers of Entrepreneurship Research*, Babson Park, US: Babson College, pp.513-28.
- Shapero, A., Sokol, L. (1982) *The Social Dimensions of Entrepreneurship*, *Encyclopedia of Entrepreneurship*, Englewood Cliffs, N. J, Prentice Hall.
- Shaver, K.G. (1995) 'The Entrepreneurial Personality Myth', *Business and Economic Review*, Vol. 41, No. 3, pp.20-23.
- Tupes, E. C and Christal, R.C. (1961) *Recurrent Personality Factors Based on Trait Ratings* (Tech Rep.), Lack-Land Air Force Base, TX: USAF.
- Uysal, S. D. and Pohlmeier, W. (2011) 'Unemployment duration and personality', *Journal of Economic Psychology*, Vol. 32, No. 6, pp. 980-992.
- Valdez, M. E., Doktor, R. H., Singer, A. E. and Dana, L. P. (2011) 'Impact of tolerance for uncertainty upon opportunity and necessity entrepreneurship', *Human Systems Management*, Vol. 30, pp.145-153.
- Veciana, J. M, Aponte, M. and Urbano, D. (2005) 'University Students' Attitudes towards Entrepreneurship: A Two Countries Comparison', *International Entrepreneurship and Management Journal*, Vol. 1, pp.165-182.
- Viinikainen, J. and Kokko K. (2012) 'Personality traits and unemployment: Evidence from longitudinal data' *Journal of Economic Psychology*, Vol. 33, pp.1204-1222.
- Watson, K., Hogarth-Scott, S. and Wilson, N. (1998) 'Small Business Start-Ups: Success Factors and Support Implications', *International Journal of Entrepreneurial Behavior and Research*, Vol. 4, No. 3, pp.217-238.
- Wiggins, J. S. and Trapnell, P. D. (1997) 'Personality Structure: the Return of the Big Five', In: R. Hogan, J. Johnson, and S. Briggs (Eds.), *Handbook of Personality Psychology*, San Diego, CA: Academic Press, pp.737-765.
- Zarafshani, K. and Rajabi, S. (2011) 'Effects of Personality Traits on Entrepreneurial Intentions: An Empirical Study in Iran', *International Journal of Management*, Vol. 28, No. 3, Part 1, Sept, 630-641.
- Zhao, H., Seibert, S.E. (2006) 'The Big Five Personality Dimensions and Entrepreneurial Status: A Meta-Analytical Review', *Journal of Applied Psychology*, Vol. 91, No. 2, pp.259-271.

Authors and submission details

Said Aboubaker Ettis

UR-RED, ISGG, Tunisia

said.ettis@gmail.com

Professor Mohamed Karim kefi

CERI, ISTECH Paris, France; UR-RED, ISGG, Tunisia

kefikarim@yahoo.fr

First submission: 12th May 2016

Revised submission: 12th August 2016

Paper accepted: 22nd August 2016