

THE IMPACT OF PERSONALITY AND ENTREPRENEURSHIP EDUCATION ON ENTREPRENEURIAL INTENTION

Panagiotis A. Tsaknis ^{*}, Alexandros G. Sahinidis ^{**},
Panagiota I. Xanthopoulou ^{**}, Evangelos E. Vassiliou ^{***}

^{*} Corresponding author, University of West Attica, Athens, Greece
Contact details: University of West Attica, 250 Petrou Ralli and Thivon, Egaleo 12243, Athens, Greece
^{**} University of West Attica, Athens, Greece
^{***} University of the Aegean, Mytilene, Greece



Abstract

How to cite this paper: Tsaknis, P. A., Sahinidis, A. G., Xanthopoulou, P. I., & Vassiliou, E. E. (2022). The impact of personality and entrepreneurship education on entrepreneurial intention. *Corporate Governance and Organizational Behavior Review*, 6(1), 130–138.
<https://doi.org/10.22495/cgobrv6i1p9>

Copyright © 2022 The Authors

This work is licensed under a Creative Commons Attribution 4.0 International License (CC BY 4.0).
<https://creativecommons.org/licenses/by/4.0/>

ISSN Online: 2521-1889
ISSN Print: 2521-1870

Received: 15.12.2021
Accepted: 09.02.2022

JEL Classification: I23, L26, I2, J24
DOI: 10.22495/cgobrv6i1p9

The purpose of this paper is to examine the role of entrepreneurship education on entrepreneurial intention, the personality traits that can affect entrepreneurial intention, and the traits that cause positive changes in entrepreneurial intention after the intervention of an entrepreneurship program. In order to measure the changes in entrepreneurial intention levels, two questionnaires (pretest-posttest group design) were used. Both questionnaires were completed by 202 business students, studying at a public university based in Athens, Greece. Our analysis indicates that the personality traits that affect entrepreneurial intention levels are openness, extraversion, and risk aversion. Using paired samples test we found an increase in entrepreneurial intention following the course attendance. Cluster analysis indicated that students with higher levels of extraversion, openness, conscientiousness, and lower levels of risk aversion and neuroticism demonstrated statistically significant and higher means change in entrepreneurial intention levels (at the end of the entrepreneurship program). The literature examining the personality traits of individuals who benefit most from entrepreneurship education has been developing in recent years. However, the studies that refer to this topic are scant (Burch, Murphy, & Tocher, 2019; Israr, 2017). The findings of this paper emphasize the need for further investigation of the results in different contexts in order to validate them.

Keywords: Entrepreneurial Education, Entrepreneurial Intention, Five-Factor Model, Personality Traits, Risk Aversion

Authors' individual contribution: Conceptualization — A.G.S., P.A.T., P.I.X., and E.E.V.; Methodology — P.A.T., A.G.S., E.E.V., and P.I.X.; Investigation — A.G.S., P.A.T., E.E.V., and P.I.X.; Resources — A.G.S., P.A.T., P.I.X., and E.E.V.; Writing — P.A.T., P.I.X., A.G.S., and E.E.V.; Supervision — A.G.S.

Declaration of conflicting interests: The Authors declare that there is no conflict of interest.

1. INTRODUCTION

The Big Five personality traits model was proposed in 1990, combining various personality variables in the literature into a five-factor model with relatively independent and distinct elements (Costa &

McCrae, 2008). The five personality traits are *extraversion*, *agreeableness*, *neuroticism* (also called “emotional stability”), *conscientiousness*, and *openness*. The five-factor model has been extensively used in the field of entrepreneurship in order to identify the personality traits associated with

entrepreneurs (Buschow & Laugemann, 2020; Zhao & Seibert, 2006). Existing entrepreneurship research emphasizes risk aversion as a crucial personality trait (Rauch & Frese, 2007). Researchers propose that *risk aversion* is a sixth characteristic that is not included in the five-factor model, however, because of its importance and the difficulty in clustering personality traits, it has been explored as an additional variable (Paunonen & Jackson, 1996; Sahinidis, Tsaknis, Gkika, & Stavroulakis, 2020; Sahinidis & Tsaknis, 2021).

Supporting entrepreneurship has never been as important as it is today. The role of education in promoting entrepreneurship was first proposed by Cantillon (1931), among others, who examined the effects of entrepreneurship education programs. Over the decades, entrepreneurship education has improved significantly. Entrepreneurial intention is one of the important variables to consider in education since it affects the awareness, knowledge, and career choices of individuals. Entrepreneurship education has innumerable benefits. Students who receive entrepreneurship education are three to six times more likely to start a business than those who do not (European Commission, 2014).

Entrepreneurship, the teaching of it, and the personality traits of young entrepreneurs have been central topics of discussion. It is imperative to understand the psychological processes that precede entrepreneurial intentions (Bazkiaei, Heng, Khan, Saufi, & Kasim, 2020; Palmer, Fasbender, Kraus, Birkner, & Kailer, 2019; Awwad & Al-Aseer, 2021). An important aspect of this research is to understand the personality traits of individuals who have the intention to start a business and the personality of those who have benefited from entrepreneurship education. Studies on the personality traits of individuals who benefit most from entrepreneurship education and show increased levels of entrepreneurial intent are scant (Burch, Murphy, & Tocher, 2019). Personality is directly related to entrepreneurship (Buschow & Laugemann, 2020; Zhao & Seibert, 2006). Implementing the right policies or teaching individuals with specific personality traits in the right way will maximize the benefits of entrepreneurship education. The theory that compiles the model of the five personality factors, risk aversion, education, and entrepreneurial intention raises some questions about whose solution leads to the accomplishment of the research goals.

The remainder of this paper is structured as follows. The literature review is presented in Section 2. Section 3 presents the methodology used to conduct the empirical research. The results of this study are presented in Section 4 and are followed by a description of the statistical analysis that was used in our analysis. The findings are discussed in Section 5 and the conclusions drawn are presented in Section 6.

2. LITERATURE REVIEW

2.1. Big Five personality traits and risk aversion

Personality traits are defined as features or behaviors that separate an individual from others. We will use the Big Five personality model (OCEAN) and risk aversion to investigate these traits, as this model offers a comprehensive framework that contains personality constructs rather than various

personality variables (Chhabra, Raghunathan, & Rao, 2020). The analysis of the theoretical background, on which the specific hypotheses are based, is proposed in the following paragraphs.

Openness

Openness to experience refers to a personality trait that describes individuals who are intellectually curious, imaginative, and creative in their approaches. An individual with this personality trait appreciates the importance of spiritual and artistic pursuits and is not afraid of new challenges (Hossain & Asheq, 2020; Udayanganie, Jusoh, & Chinna, 2019; Costa & McCrae, 2008). In order to keep up with the changing market trends, their competitors, and new technologies, businesses require creative solutions (Sahinidis et al., 2020; López-Núñez, Rubio-Valdehita, Aparicio-García, & Díaz-Ramiro, 2020; Brice, 2002; Chhabra et al., 2020). High levels of openness to experience is a characteristic associated with unpredictable and risky individuals who like change, while individuals with low levels of this trait prefer stability. Across various studies (Murugesan & Jayavelu, 2017) openness to experience was found to be associated with higher levels of entrepreneurship intentions. In light of the above, we suggest:

H1: There is a positive relationship between openness to experience and entrepreneurial intention.

Conscientiousness

Conscientiousness is defined as the ability to resolve conflicts, express emotions, control impulses, plan, accept traditional norms, and be responsible for others (Zhao, Seibert, & Lumpkin, 2010; Roberts, Chernyshenko, Stark, & Goldberg, 2005). McClelland (1961) posited that individuals with high needs for achievement would be more prone to undertake entrepreneurial action than individuals with low need for achievement. Conscientious individuals work hard and persist in achieving their goals, characteristics closely associated with entrepreneurship (Locke, 2000). It takes patience, hard work, and a set of goals to be an entrepreneur (Awwad & Al-Aseer, 2021). Entrepreneurship is more likely to attract individuals with this trait, according to research by Murugesan and Jayavelu (2017), and it is also positively related to the long-term survival of a business venture (Ciavarella, Buchholtz, Riordan, Gatewood, & Stokes, 2004). Based on the above, the following hypothesis is proposed:

H2: There is a positive relationship between conscientiousness and entrepreneurial intention.

Extraversion

Individuals with this trait are ambitious, altruistic, communicative, social, warm, friendly, energetic, spontaneous, and adventurous (Awwad & Al-Aseer, 2021; Clark & Schroth, 2010; Trapmann, Hell, Hirn, & Schuler, 2007; Sahinidis, Frangos, & Fragkos, 2013). Entrepreneurial careers may appear to be more exciting and stimulating than traditional business-related occupations, making them more appealing to extraverts. Several studies report findings with extraversion being a common characteristic among entrepreneurs (Chhabra et al., 2020; Baron, 1998a;

Locke, 2000; Vecchio, 2003). Since the presence of extraversion has been shown to be strongly correlated with an interest in enterprising occupations, it is expected that extraversion will have a direct link to entrepreneurial intention (Brice, 2002). As a result of the aforementioned, we can conclude that:

H3: There is a positive relationship between extraversion and entrepreneurial intention.

Agreeableness

Agreeableness refers to a person's attitude and behaviour towards other individuals. An agreeable personality is characterized by respect, acceptance, and love. Agreeable individuals, show emotional care for others, treat them with respect, take into account their rights and preferences (Pratama & Kristanto, 2020) they are trustworthy, altruistic, and cooperative (Pratama & Kristanto, 2020; Sahinidis et al., 2013). According to Barrick, Mount, and Li (2013), individuals with a high level of agreeableness have more career interests in occupations, such as social work and teaching, which provide frequent interpersonal interactions in which they can work for others. In contrast, entrepreneurship involves starting a profitable business based on the owner's interests and needs (Singh & DeNoble, 2003). Sometimes, the entrepreneur must disregard other stakeholders to ensure the survival of the new venture. Due to the limited altruistic behaviour (except for social entrepreneurs), and to the higher risk of interpersonal conflict associated with entrepreneurship, highly agreeable individuals are considerably less likely to show high levels of entrepreneurial intention (Murugesan & Jayavelu, 2017). The following hypothesis is proposed in accordance with the foregoing:

H4: There is a negative relationship between agreeableness and entrepreneurial intention.

Neuroticism

In this dimension of personality, individuals are tense, anxious, nervous, and highly emotional (De Feyter, Caers, Vigna, & Berings, 2012). Neuroticism refers to the degree to which an individual is able to manage his or her emotions at the time (Llewellyn & Wilson, 2003; Yong, 2007). A person who is neurotic demonstrates mood swings, is impulsive, is self-conscious, has low self-esteem, and suffers from depression (Costa & McCrae, 2008). Lack of self-esteem is a factor that hinders an individual's ability to start his or her own business due to the fact that self-confidence is a catalyst for starting a venture (Brice, 2002). On the other hand, individuals with low levels of neuroticism are described as stable, relaxed, resilient, and calm. Entrepreneurship is positively correlated with the possession of these characteristics (Baron, 1999b; Locke, 2000; Ahmed, Khattak, & Anwar, 2020; Zhao et al., 2010; Zhao & Seibert, 2006). Neuroticism may negatively influence entrepreneurial activities and orientation (Singh & DeNoble, 2003). In this sense, individuals with low neuroticism will be more likely to start their own new businesses, whereas individuals with high

neuroticism will be less likely to do so. Our hypothesis is thus as follows:

H5: High neuroticism is expected to have a negative relationship with entrepreneurial intention.

Risk aversion

Risk aversion can be defined as a trait involving the willingness to engage in actions or decisions with uncertain consequences (Jackson, 1979; Sahinidis et al., 2020). Zhang and Cain (2017) suggest that risk aversion negatively impacts entrepreneurial intentions. Additionally, a study by Sahinidis et al. (2020) corroborated earlier findings showing that risk aversion is an important factor in impeding the development of new businesses, thereby suppressing entrepreneurial intention. Risk-averse individuals tend to consider career paths other than entrepreneurship. Other studies (e.g., Mayfield, Perdue, & Wooten, 2008) have found that there is a significant negative relationship between risk aversion and investment intentions. Researchers have suggested that entrepreneurship activities require higher levels of risk-taking behaviours due to the high risk involved in entrepreneurship (Tubadji, Dietrich, Angelis, Haas, & Schels, 2019; Ahmed et al., 2020). Similar results were found by Zhao et al. (2010), after analysing the relationship between risk aversion and entrepreneurial intentions, finding that the two were positively correlated. Consequently, it is proposed that:

H6: There is a negative relationship between risk aversion and entrepreneurial intention.

2.2. Entrepreneurship education

According to Liñán (2004), entrepreneurship education is the set of education and training activities, inside and outside the education system, with the purpose to develop participants' intention to undertake entrepreneurial action, or to offer entrepreneurial knowledge and enhance the desire to start a business, thus affecting intention. The concept should be built upon strong theoretical foundations and, according to Sexton and Bowman (1984), entrepreneurship education should be seen as an extension of entrepreneurship.

There is a general perception that the mood, abilities, and skills of company founders, characteristics that can be shaped by education, have a crucial role in its success (Unger, Rauch, Frese, & Rosenbusch, 2011). Education helps develop students' abilities and enables them to acquire skills they can use to gain a competitive advantage of business opportunities (Maresch, Harms, Kailer, & Wimmer-Wurm, 2016). Education in entrepreneurship stimulates student motivation to go into self-employment after graduation. By participating in the educational program, students become familiar with various ways to start new businesses (Iwu et al., 2021). An important demographic factor that has been studied in the literature is entrepreneurial education, that is, a pedagogical program or a process for fostering entrepreneurial behaviour and skillsets (Patricia & Silangen, 2016). The role of education in entrepreneurship is primarily to increase awareness of the process of starting a business, establish a business culture among students, and improve their career choices towards

entrepreneurship (Deakins, Glancey, Menter, & Wyper, 2005). Many researchers in the field concur that entrepreneurial education programs aim to develop students' entrepreneurial skills and emphasize the entrepreneurial path as a career option, by increasing their awareness of entrepreneurship and allowing them to further develop their skills (Lopez, Alvarez, Martins, Perez, & Román-Calderón, 2021; Boubker, Arroud, & Ouajdouni, 2021; Mukhtar, Wardana, Wibowo, & Narmaditya, 2021; Kefis & Xanthopoulou, 2015; Shahid & Ahsen, 2021).

In accordance with the findings of Ojogbo, Idemobi, and Ngige (2016), entrepreneurship education has a positive relationship with entrepreneurial intention and perceived desirability. However, there is no relationship between perceived feasibility and self-efficacy. Sahinidis and Tsaknis (2020) state that entrepreneurship education can help students gain a better understanding of entrepreneurship logic, challenges, and factors involved in entrepreneurship. Based on the above-mentioned, the following hypothesis is proposed:

H7: There is a significant relationship between entrepreneurial education and students' entrepreneurial intentions.

3. METHODOLOGY

Given the initial aim of the proposed study and the complexity of the design, a pretest-posttest group design was chosen, to measure changes in students' entrepreneurial intentions following the attendance of an entrepreneurship course. A questionnaire method was used in the study asking the students to respond on a 7-point Likert scale, using google forms. The questionnaire was sent to all second-year students of the undergraduate business studies program ($N = 350$) of a public university in Athens. It was completed by 202 students. A total of 87 men and 115 women aged 18 to 25 are included in this sample. Considering the limited resources available, the sample was a convenience one. However, the number of participants allows us to make reliable statistical analyses and come up with valuable conclusions. All participants in the study were voluntarily tested both times. At the beginning of the 13-week compulsory entrepreneurship course (spring semester 2019-2020), a questionnaire was filled out to determine personality traits, risk aversion, and entrepreneurial intention. To measure personality factors, Costa and McCrae's (2008) questionnaire was used, among the most widely

found in the related literature. The follow-up questionnaire was sent to students who had responded to the first one, at the end of the course, asked the same questions measuring their entrepreneurial intentions only.

An empirical analysis was conducted using the SPSS Statistics Version 24 software. To test the linear components in the data, the principal component analysis (PCA) with Varimax rotation was used. Cronbach's alpha reliability test was used to measure the internal consistency of our sample. A multiple regression model demonstrated the predictive power of the independent variables (Big Five personality traits and risk aversion) in predicting entrepreneurial intentions. Paired samples T-test was used to measure the changes in entrepreneurial intention after entrepreneurship education. Finally, in order to discern the personality traits of the students that benefited from entrepreneurship education, we used cluster analysis and we identified homogeneous subgroups of students, within our sample and two clusters created.

4. RESULTS AND FINDINGS

In order to verify the linear components presented in the data, we used PCA with Varimax rotation. All of the components have a reliability coefficient higher than 0.5. In the literature, PCA is the most common method for the analysis of these questionnaires (Sahinidis et al., 2020; Sahinidis et al., 2021; Hair, Black, Babin, & Anderson, 2010). Six components were formed (conscientiousness, risk aversion, extraversion, neuroticism, agreeableness, openness) ($KMO = 0.728$, $\chi^2 = 1163$, $p\text{-value} < 0.01$).

Using Cronbach's alpha reliability test we measured the internal consistency of our sample. The results have shown that the alpha coefficient for the component openness is 0.768 ($N = 4$ questions), for the component conscientiousness, it is 0.682 ($N = 4$ questions), for extraversion, it is 0.733 ($N = 4$ questions), for agreeableness, it is 0.657 ($N = 3$ questions), for neuroticism, it is 0.739 ($N = 3$ questions) and for risk aversion, it is 0.683 ($N = 4$ questions). In terms of skewness and kurtosis, values lie between the ranges of $[-2, 2]$. Variable distributions show a small deviation from the normal distribution, so parametric statistical controls can be used. The following table (Table 1) displays the descriptive statistics of the variables.

Table 1. Descriptive statistics

Statistics (Students sample $N = 202$)								
	Openness	Conscientiousness	Extraversion	Agreeableness	Neuroticism	Risk aversion	EI before education	EI after education
Mean	5.152	5.875	4.895	4.817	3.761	2.812	4.767	4.927
Std. deviation	0.983	0.764	1.124	0.986	1.118	0.964	1.573	1.426
Variance	0.966	0.584	1.263	0.973	1.251	0.930	2.474	2.032
Range	4.500	3.750	5.250	5.000	6.000	3.750	6.000	6.000
Skewness	-0.298	-0.589	-0.443	-0.557	0.197	-0.117	-0.263	-0.610
Kurtosis	0.78	0.143	-0.271	0.338	0.081	-0.765	-0.772	-0.136

Table 2 shows the predictive power of the independent variables in terms of entrepreneurial intention, based on the data obtained from the questionnaire. The results show that 22.6% of the variance in the dependent variable is explained

by the independent variables. Table 3 shows the predictive ability of the five factors, plus risk aversion, concerning entrepreneurial intention. Openness, extraversion, and risk aversion are important factors influencing entrepreneurial

intention. Openness to experience and extraversion, have a positive relationship with entrepreneurial intention while risk aversion has a negative one. The variable that affects entrepreneurial intention the most is openness. Openness, extraversion, and risk aversion have a statistically significant impact

on the outcome variable (p-values < 0.05) while conscientiousness, agreeableness, and neuroticism were found to be non-significant predictors (p-value = 0.076, p-value = 0.465, p-value = 0.699, respectively).

Table 2. Model summary

Model summary									
Model	R	R-square	Adjusted R-square	Std. error of the estimate	Change statistics				
					R-square change	F-change	df1	df2	Sig. F-change
1	0.499 ^a	0.249	0.226	1.384	0.249	10.780	6	195	0.000

Note: a. Predictors: (Constant), risk aversion, neuroticism, conscientiousness, agreeableness, extraversion, openness.

Table 3. ANOVA

Model	Sum of squares	df	Mean square	F	Sig.	
1	Regression	123.834	6	20.639	10.780	0.000 ^b
	Residual	373.341	195	1.915		
	Total	497.175	201			

Notes: a. Dependent variable: EI before education. b. Predictors: (Constant), agreeableness, extraversion, neuroticism, risk aversion, conscientiousness, openness.

Table 4. Coefficients^a

Model		Unstandardized coefficients		Standardized coefficients	t	Sig.
		B	Std. error	Beta		
1	(Constant)	3.130	1.228		2.549	0.012
	Openness	0.461	0.110	0.288	4.207	0.000
	Conscientiousness	-0.239	0.134	-0.116	-1.787	0.076
	Extraversion	0.299	0.092	0.213	3.240	0.001
	Agreeableness	0.075	0.102	0.047	0.731	0.465
	Neuroticism	-0.035	0.090	-0.025	-0.387	0.699
	Risk aversion	-0.365	0.109	-0.224	-3.346	0.001

Note: a. Dependent variable: EI before education.

In Table 5, the results of the paired samples test indicate a statistically significant change in

entrepreneurial intentions after entrepreneurship education (p-value < 0.05).

Table 5. Paired samples test

Pair 1	Mean	Std. deviation	Std. error mean	95% confidence interval of the difference		t	df	Sig. (2-tailed)
				Lower	Upper			
EI 2-1	0.160	1.048	0.074	0.015	0.305	2.171	201	0.031

In Table 6, cluster analysis divided our sample into two groups. In the first group, there were 109 students and in the second group, there were 93 students. The findings indicate that students that have higher levels of extraversion, openness, conscientiousness, and lower levels of neuroticism and risk aversion, displayed higher and statistically significant means of changes in entrepreneurial intention levels (Table 7) (Crum, Nelson, de Borst, &

Byrnes, 2020). One-way ANOVA indicated that there is a statistically significant difference in the inputs (openness, conscientiousness, extraversion, neuroticism, risk aversion, entrepreneurial intention 2-1) between the clusters. Agreeableness did not indicate a statistically significant difference between the clusters and we can not export valid results for this characteristic.

Table 6. Cluster analysis

Inputs	Cluster 1 (n = 109) 54%	Cluster 2 (n = 93) 46%	One-way ANOVA
Openness	5.454	5.152	p < 0.01
Conscientiousness	5.977	5.875	p < 0.05
Extraversion	5.135	4.895	p < 0.01
Agreeableness	4.719	4.817	p = 0.126
Neuroticism	3.596	3.761	p < 0.05
Risk aversion	2.248	2.812	p < 0.01
EI 2-1	0.428	-0.160	p < 0.01

In Table 7, the t-test for paired samples indicated that the difference in entrepreneurial intention levels between clusters 1 and 2 was statistically significant. In the first cluster, there is a statistically significant and positive difference

in the entrepreneurial intention levels after the entrepreneurship education, while in the second cluster, there is not a statistically significant difference in the entrepreneurial intention levels.

Table 7. Paired samples t-test on entrepreneurial intention differences in each cluster

Cluster 1								
Pair 1	Mean	Std. deviation	Std. error mean	95% confidence interval of the difference		t	df	Sig. (2-tailed)
				Lower	Upper			
EI 2-1	0.428	0.993	0.095	0.240	0.617	4.502	108	0.000

Cluster 2								
Pair 1	Mean	Std. deviation	Std. error mean	95% confidence interval of the difference		t	df	Sig. (2-tailed)
				Lower	Upper			
EI 2-1	-0.154	1.028	0.107	-0.366	0.058	-1.446	92	0.152

The findings above underline the importance of personality factors and the attention that should be paid to the personal differences of students when teaching entrepreneurship courses, in order to maximize the impact of entrepreneurship education. Students with high levels of conscientiousness, extraversion, and openness and lower levels of neuroticism and risk aversion, will respond more positively to entrepreneurship courses, which can ultimately boost the course's success. Through the findings that emerge as predictors of entrepreneurial intention, this study contributes to the identification of the examined models and to the limited literature on personality traits of individuals who benefit most from entrepreneurship education.

5. DISCUSSION

Researchers have explored the relationship between personality, entrepreneurship education, and entrepreneurial intention using the five-factor model, risk aversion and have drawn some interesting conclusions, many of which require further research (Sahinidis et al., 2020; Zhang & Cain, 2017; Şahin, Karadağ, & Tuncer, 2019). As a result of our research, we concluded that the Big Five personality traits and risk aversion affect entrepreneurial intention, which is also impacted upon by entrepreneurial education. The improvement in the quality of entrepreneurship education offered by universities is related to higher levels of entrepreneurial intention (Sahinidis & Tsaknis, 2020), although one should bear in mind that students with specific personality characteristics benefit more from entrepreneurship education.

Our results distinguish the statistically significant personality traits that affect entrepreneurial intention, openness, extraversion, and risk aversion. Extraversion and openness to experience are positive predictors of entrepreneurial intention, while risk aversion is negative. Openness is the most important predictor of entrepreneurial intention. Following the entrepreneurship course, the entrepreneurial intention of the students increased significantly. Cluster analysis identified homogeneous subgroups of students and divided our sample into two groups. The results indicate that the individuals who experienced a positive statistically significant change in entrepreneurial intention had higher levels of conscientiousness, openness to experience, extraversion and were less risk-averse and less neurotic. Individuals who did not present a significant change in their entrepreneurial intention after the course had the opposite characteristics.

6. CONCLUSION

Promoting entrepreneurship is one of the government's strategic goals since it contributes to economic growth and reduces poverty and unemployment (Ahuja, Akhtar, & Wali, 2019). This paper explores questions based on recent research that are particularly important for educators, students, universities, society, researchers, and policymakers. Entrepreneurship education offers numerous individual benefits, including developing critical thinking skills, evaluating, and taking advantage of new opportunities, and gaining a deeper understanding of entrepreneurship. It would be useful if universities and other educational institutions designed the entrepreneurship courses to be tailored to the characteristics of their students so as to maximize their effectiveness. It is important to note that the implications of the findings of this study are far-reaching and are likely to benefit teaching staff by providing more targeted approaches based on student personality characteristics, generating greater awareness or increasing entrepreneurial intention, or both, depending on what the goal of a program is.

The contributions mentioned above aside, there are also a few limitations that need to be addressed in future studies. The present study's findings were derived from a setting of university students which limits their generalizability. Despite the fact that we were able to produce reasonable and reliable statistical analyses with the size of the sample in this study, students in university business programs do not represent the entire student population (Tsaknis & Sahinidis, 2020). A further limitation of our study is that we did not incorporate sample characteristics, such as age, gender, and year of the study into our regression model, focusing on the second year of the study of the student group. The characteristics of individuals also have an important role in determining the entrepreneurial engagement of youth (Dvouletý, Mühlböck, Warmuth, & Kittel, 2018). Finally, another limitation is that cluster analysis identified the characteristics of the students that had improvement in entrepreneurial intent following the entrepreneurship course. In the course of our research, after the entrepreneurship program, we did not identify the characteristics of students who scored lower levels in entrepreneurial intentions.

Each limitation stated above provides an opportunity for future research. Future studies can examine a number of variables outside the scope of this paper, to determine if the findings of this study are valid in different contexts. Such variables

are previous entrepreneurial education, educational quality, work experience, or latent variables that may cloud the relationship under consideration. It would be interesting to consider which of the following can better predict entrepreneurial intention, combining or comparing theories of personality traits, the theory of planned behavior, or other theories, such as role models, or the theory of motivation combined with education. The use of many factors in an attempt to predict entrepreneurial intention requires special attention because complex results can be produced that are difficult to explain.

In this study, we address the influence of personality factors on entrepreneurial intention and provide empirical evidence helpful in developing policies that will encourage university students to engage in entrepreneurship, attracting the interest of educators and policymakers. As entrepreneurship research continues to center its understanding of the entrepreneurial process around models of entrepreneurial intentions, these will become even more important (Butz, Hanson, Schultz, & Warzynski, 2018; Belias, 2019).

REFERENCES

- Ahmed, M. A., Khattak, M. S., & Anwar, M. (2020). Personality traits and entrepreneurial intention: The mediating role of risk aversion. *Journal of Public Affairs*, 22(1), e2275. <https://doi.org/10.1002/pa.2275>
- Ahuja, V., Akhtar, A., & Wali, O. P. (2019). Development of a comprehensive model of social entrepreneurial intention formation using a quality tool. *Journal of Global Entrepreneurship Research*, 9(1), 41. <https://doi.org/10.1186/s40497-019-0164-4>
- Awwad, M. S., & Al-Aseer, R. M. N. (2021). Big Five personality traits impact on entrepreneurial intention: The mediating role of entrepreneurial alertness. *Asia Pacific Journal of Innovation and Entrepreneurship*, 15(1), 87-100. <https://doi.org/10.1108/APJIE-09-2020-0136>
- Baron, N. S. (1998a). Letters by phone or speech by other means: The linguistics of email. *Language and Communication*, 18(2), 133-170. [https://doi.org/10.1016/S0271-5309\(98\)00005-6](https://doi.org/10.1016/S0271-5309(98)00005-6)
- Baron, R. A. (1998b). Cognitive mechanisms in entrepreneurship: Why and when entrepreneurs think differently than other people. *Journal of Business Venturing*, 13(4), 275-294. [https://doi.org/10.1016/S0883-9026\(97\)00031-1](https://doi.org/10.1016/S0883-9026(97)00031-1)
- Barrick, M. R., Mount, M. K., & Li, N. (2013). The theory of purposeful behavior: The role of personality, higher-order goals, and job characteristics. *Academy of Management Review*, 38(1), 132-153. <https://doi.org/10.5465/amr.2010.0479>
- Bazkiaei, H. A., Heng, L. H., Khan, N. U., Saufi, R. B. A., & Kasim, R. S. R. (2020). Do entrepreneurial education and big-five personality traits predict entrepreneurial intention among universities students? *Cogent Business & Management*, 7(1), 1801217. <https://doi.org/10.1080/23311975.2020.1801217>
- Belias, D. (2019). Entrepreneurship in the age of digital tourism: The future prospects from the use of robots. *Zeszyty Naukowe Małopolskiej Wyższej Szkoły Ekonomicznej w Tarnowie*, 2(2), 89-99. <https://doi.org/10.25944/znmwse.2019.02.8999>
- Boubker, O., Arroud, M., & Ouajdouni, A. (2021). Entrepreneurship education versus management students' entrepreneurial intentions. A PLS-SEM approach. *The International Journal of Management Education*, 19(1), 100450. <https://doi.org/10.1016/j.ijme.2020.100450>
- Brice, J. (2002). *The role of personality dimensions and occupational preferences on the formation of entrepreneurial intentions* (Doctoral dissertation, Mississippi State University). Retrieved from https://www.academia.edu/32255175/The_role_of_personality_dimensions_on_the_formation_of_entrepreneurial_intentions
- Burch, T., Murphy, G., & Tocher, N. (2019). Entrepreneurship education enrollment intentions: The effect of attitudes, norms and personality. *Journal of Developmental Entrepreneurship*, 24(03). <https://doi.org/10.1142/S1084946719500201>
- Buschow, C., & Laugemann, R. (2020). What makes a media entrepreneur? Factors influencing entrepreneurial intention of mass communication students. *Journalism & Mass Communication Educator*, 75(3), 321-334. <https://doi.org/10.1177/1077695820912146>
- Butz, N. T., Hanson, S., Schultz, P. L., & Warzynski, M. M. (2018). Beyond the Big Five: Does grit influence the entrepreneurial intent of university students in the US? *Journal of Global Entrepreneurship Research*, 8(1), 1-16. <https://doi.org/10.1186/s40497-018-0100-z>
- Cantillon, R. (1931). *Essai sur la nature du commerce en général*. London, England: Macmillan and Co.
- Chhabra, S., Raghunathan, R., & Rao, N. V. M. (2020). The antecedents of entrepreneurial intention among women entrepreneurs in India. *Asia Pacific Journal of Innovation and Entrepreneurship*, 14(1), 76-92. <https://doi.org/10.1108/APJIE-06-2019-0034>
- Ciavarella, M. A., Buchholtz, A. K., Riordan, C. M., Gatewood, R. D., & Stokes, G. S. (2004). The Big Five and venture survival: Is there a linkage? *Journal of Business Venturing*, 19(4), 465-483. <https://doi.org/10.1016/j.jbusvent.2003.03.001>
- Clark, M. H., & Schroth, C. A. (2010). Examining relationships between academic motivation and personality among college students. *Learning and Individual Differences*, 20(1), 19-24. <https://doi.org/10.1016/j.lindif.2009.10.002>
- Costa, P., & McCrae, R. (2008). The revised neo personality inventory (NEO-PI-R). In G. J. Boyle, G. Matthews, & D. H. Saklofske (Eds.), *The SAGE handbook of personality theory and assessment: Volume 2 — Personality measurement and testing* (pp. 179-198). SAGE Publications Ltd. <https://doi.org/10.4135/9781849200479.n9>
- Crum, M., Nelson, T., de Borst, J., & Byrnes, P. (2020). The use of cluster analysis in entrepreneurship research: Review of past research and future directions. *Journal of Small Business Management*. Advance online publication. <https://doi.org/10.1080/00472778.2020.1748475>
- De Feyter, T., Caers, R., Vigna, C., & Berings, D. (2012). Unraveling the impact of the Big Five personality traits on academic performance: The moderating and mediating effects of self-efficacy and academic motivation. *Learning and Individual Differences*, 22(4), 439-448. <https://doi.org/10.1016/j.lindif.2012.03.013>
- Deakins, D., Glancey, K., Menter, I., & Wyper, J. (2005). Enterprise education: The role of head teachers. *The International Entrepreneurship and Management Journal*, 1(2), 241-263. <https://doi.org/10.1007/s11365-005-1131-9>

22. Dvoutely, O., Mühlböck, M., Warmuth, J., & Kittel, B. (2018). 'Scarred' young entrepreneurs. Exploring young adults' transition from former unemployment to self-employment. *Journal of Youth Studies*, 21(9), 1159-1181. <https://doi.org/10.1080/13676261.2018.1450971>
23. European Commission. (2014). *Entrepreneurship education: A guide for educators*. Directorate-General for Enterprise and Industry, European Commission. Retrieved from <https://ec.europa.eu/docsroom/documents/7465/attachments/1/translations/en/renditions/pdf>
24. Hair, J. F., Jr., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis* (7th ed.). Upper Saddle River, NJ: Prentice-Hall.
25. Hossain, M. U., & Asheq, A. A. (2020). Do leadership orientation and proactive personality influence social entrepreneurial intention? *International Journal of Management and Enterprise Development*, 19(2), 109-125. <https://doi.org/10.1504/IJMED.2020.107396>
26. Israr, A. (2017). *Impact of personality traits on entrepreneurial intentions in Pakistan: The moderating role of teaching methodology* (Doctoral dissertation, Universiti Utara Malaysia). Retrieved from https://etd.uum.edu.my/7324/1/s95933_01.pdf
27. Iwu, C. G., Opute, P. A., Nchu, R., Eresia-Eke, C., Tengeh, R. K., Jaiyeoba, O., & Aliyu, O. A. (2021). Entrepreneurship education, curriculum and lecturer-competency as antecedents of student entrepreneurial intention. *The International Journal of Management Education*, 19(1), 100295. <https://doi.org/10.1016/j.ijme.2019.03.007>
28. Jackson, D. N. (1979). *Jackson personality inventory-manual*. Research Psychologists Press: Incorporated.
29. Kefis, V., & Xanthopoulou, P. (2015). Teaching entrepreneurship through E-learning: The implementation in schools of social sciences and humanities in Greece. *International Journal of Sciences*, 4(8), 17-23. <https://doi.org/10.18483/ijSci.794>
30. Liñan, F. (2004). Intention-based models of entrepreneurship education. *Piccola Impresa*, 3(1), 11-35. Retrieved from https://www.researchgate.net/publication/235937886_Intention-Based_Models_of_Entrepreneurship_Education
31. Llewellyn, D. J., & Wilson, K. M. (2003). The controversial role of personality traits in entrepreneurial psychology. *Education + Training*, 45(6), 341-345. <https://doi.org/10.1108/00400910310495996>
32. Locke, K. D. (2000). Circumplex scales of interpersonal values: Reliability, validity, and applicability to interpersonal problems and personality disorders. *Journal of Personality Assessment*, 75(2), 249-267. https://doi.org/10.1207/S15327752JPA7502_6
33. Lopez, T., Alvarez, C., Martins, I., Perez, J. P., & Román-Calderón, J. P. (2021). Students' perception of learning from entrepreneurship education programs and entrepreneurial intention in Latin America. *Academia Revista Latinoamericana de Administración*, 34(3), 419-444. <https://doi.org/10.1108/ARLA-07-2020-0169>
34. López-Núñez, M. I., Rubio-Valdehita, S., Aparicio-García, M. E., & Díaz-Ramiro, E. M. (2020). Are entrepreneurs born or made? The influence of personality. *Personality and Individual Differences*, 154, 109699. <https://doi.org/10.1016/j.paid.2019.109699>
35. Maresch, D., Harms, R., Kailer, N., & Wimmer-Wurm, B. (2016). The impact of entrepreneurial education on the entrepreneurial intention of students in science and engineering versus business studies university programs. *Technological Forecasting and Social Change*, 104, 172-179. <https://doi.org/10.1016/j.techfore.2015.11.006>
36. Mayfield, C., Perdue, G., & Wooten, K. (2008). Investment management and personality type. *Financial Services Review*, 17(3), 219-236. Retrieved from <https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.320.6394&rep=rep1&type=pdf>
37. McClelland, D. C. (1961). *The achieving society*. Princeton, NJ: Van Nostrand Reinhold.
38. Mukhtar, S., Wardana, L. W., Wibowo, A., & Narmaditya, B. S. (2021). Does entrepreneurship education and culture promote students' entrepreneurial intention? The mediating role of entrepreneurial mindset. *Cogent Education*, 8(1), 1918849. <https://doi.org/10.1080/2331186X.2021.1918849>
39. Murugesan, R., & Jayavelu, R. (2017). The influence of big five personality traits and self-efficacy on entrepreneurial intention: The role of gender. *Journal of Entrepreneurship and Innovation in Emerging Economies*, 3(1), 41-61. <https://doi.org/10.1177/2393957516684569>
40. Ojogbo, L. U., Idemobi, E. I., & Ngige, C. D. (2016). The impact of entrepreneurship education on the development of entrepreneurial career intentions and actions. *International Journal of Entrepreneurship*, 1(1), 27-49. Retrieved from <https://ajpojournals.org/journals/index.php/IJE/article/view/257>
41. Palmer, C., Fasbender, U., Kraus, S., Birkner, S., & Kailer, N. (2019). A chip off the old block? The role of dominance and parental entrepreneurship for entrepreneurial intention. *Review of Managerial Science*, 15, 1287-307. <https://doi.org/10.1007/s11846-019-00342-7>
42. Patricia, P., & Silangen, C. (2016). The effect of entrepreneurship education on entrepreneurial intention in Indonesia. *DeReMa (Development Research of Management): Jurnal Manajemen*, 11(1), 67-86. <https://doi.org/10.19166/derema.v11i1.184>
43. Paunonen, S. V., & Jackson, D. N. (1996). The Jackson Personality Inventory and the five-factor model of personality. *Journal of Research in Personality*, 30(1), 42-59. <https://doi.org/10.1006/jrpe.1996.0003>
44. Pratama, R. W., & Kristanto, H. (2020). Effects of the neuroticism and agreeableness personality types on entrepreneurial intention with subjective norm as moderator. *Expert Journal of Business and Management*, 8(1), 57-66. Retrieved from https://business.expertjournals.com/ark:/16759/EJBM_803pratama57-66.pdf
45. Rauch, A., & Frese, M. (2007). Let's put the person back into entrepreneurship research: A meta-analysis on the relationship between business owners' personality traits, business creation, and success. *European Journal of Work and Organizational Psychology*, 16(4), 353-385. <https://doi.org/10.1080/13594320701595438>
46. Roberts, B. W., Chernyshenko, O. S., Stark, S., & Goldberg, L. R. (2005). The structure of conscientiousness: An empirical investigation based on seven major personality questionnaires. *Personnel Psychology*, 58(1), 103-139. <https://doi.org/10.1111/j.1744-6570.2005.00301.x>
47. Şahin, F., Karadağ, H., & Tuncer, B. (2019). Big five personality traits, entrepreneurial self-efficacy and entrepreneurial intention: A configurational approach. *International Journal of Entrepreneurial Behavior & Research*, 25(6), 1188-1211. <https://doi.org/10.1108/IJEBR-07-2018-0466>
48. Sahinidis, A. G., & Tsaknis, P. A. (2020). Shaping entrepreneurial intentions: The impact of entrepreneurship education on university students. *Zeszyty Naukowe Malopolskiej Wyższej Szkoły Ekonomicznej w Tarnowie*, 48(4), 49-58. <https://doi.org/10.25944/znmwse.2020.04.4958>

49. Sahinidis, A. G., & Tsaknis, P. A. (2021). Exploring the relationship of the big five personality traits with student satisfaction with synchronous online academic learning: The case of covid-19-induced changes. In A. Kavoura, S. J. Havlovic, & N. Totskaya (Eds.), *Strategic innovative marketing and tourism in the COVID-19 era* (Springer Proceedings in Business and Economics, pp. 87–94). Springer. https://doi.org/10.1007/978-3-030-66154-0_10
50. Sahinidis, A. G., Frangos, C. C., & Fragkos, K. C. (2013). The relationship between personality type and academic performance. The case of Greek University's students. In *Proceedings of the 3rd International Conference: Quantitative and Qualitative Methodologies in the Economics and Administrative Sciences (QMAS 2013) Athens, Greece* (pp. 333-344). Retrieved from https://www.academia.edu/3638543/the_relationship_between_personality_type_and_academic_performance_the_case_of_greek_universitys_students_2013
51. Sahinidis, A. G., Tsaknis, P. A., Gkika, E., & Stavroulakis, D. (2020). The influence of the big five personality traits and risk aversion on entrepreneurial intention. In A. Kavoura, E. Kefallonitis, & P. Theodoridis (Eds.), *Strategic innovative marketing and tourism* (Springer Proceedings in Business and Economics, pp. 215-224). Springer. https://doi.org/10.1007/978-3-030-36126-6_24
52. Sahinidis, A. G., Xanthopoulou, P. I., Tsaknis, P. A., & Vassiliou, E. E. (2021). Age and prior working experience effect on entrepreneurial intention. *Corporate & Business Strategy Review*, 2(1), 18-26. <https://doi.org/10.22495/cbsrv2i1art2>
53. Sexton, D. L., & Bowman, N. B. (1984). Entrepreneurship education: Suggestions for increasing effectiveness. *Journal of Small Business Management*, 22(000002), 18. Retrieved from <https://www.proquest.com/docview/210763584>
54. Shahid, M. S., & Ahsen, S. R. (2021). Linking entrepreneurship education and entrepreneurial intentions: An interactive effect of social and personal factors. *International Journal of Learning and Change*, 13(1), 14-33. <https://doi.org/10.1504/IJLC.2021.111670>
55. Singh, G., & DeNoble, A. (2003). Early retirees as the next generation of entrepreneurs. *Entrepreneurship Theory and Practice*, 27(3), 207-226. <https://doi.org/10.1111/1540-8520.t01-1-00001>
56. Trapmann, S., Hell, B., Hirn, J.-O. W., & Schuler, H. (2007). Meta-analysis of the relationship between the Big Five and academic success at university. *Journal of Psychology*, 215(2), 132-151. <https://doi.org/10.1027/0044-3409.215.2.132>
57. Tsaknis, P. A., & Sahinidis, A. G. (2020). An investigation of entrepreneurial intention among university students using the theory of planned behavior and parents' occupation. In A. Masouras, G. Maris, & A. Kavoura (Eds.), *Entrepreneurial development and innovation in family businesses and SMEs* (pp. 149-166). IGI Global. <https://doi.org/10.4018/978-1-7998-3648-3.ch009>
58. Tubadji, A., Dietrich, H., Angelis, V., Haas, A., & Schels, B. (2019). Fear-of-failure and cultural persistence in youth entrepreneurship: Comparative analysis: Greece versus Germany. *Journal of Small Business & Entrepreneurship*, 33(5), 513-538. <https://doi.org/10.1080/08276331.2019.1692999>
59. Udayanganie, W. M. I., Jusoh, M., & Chinna, K. (2019). Impact of big five personality traits on entrepreneurial intention of engineering undergraduates. *Research in Business and Management*, 6(2), 35-44. <https://doi.org/10.5296/rbm.v6i2.15147>
60. Unger, J. M., Rauch, A., Frese, M., & Rosenbusch, N. (2011). Human capital and entrepreneurial success: A meta-analytical review. *Journal of Business Venturing*, 26(3), 341-358. <https://doi.org/10.1016/j.jbusvent.2009.09.004>
61. Vecchio, R. P. (2003). Entrepreneurship and leadership: Common trends and common threats. *Human Resource Management Review*, 13(2), 303-327. [https://doi.org/10.1016/S1053-4822\(03\)00019-6](https://doi.org/10.1016/S1053-4822(03)00019-6)
62. Yong, L. (2007). *Emotional excellence in the workplace: Leonard Personality Inventory (LPI) personality profiling* (1st ed.). Kuala Lumpur, Malaysia: Leonard Personality Incorporated.
63. Zhang, P., & Cain, K. W. (2017). Reassessing the link between risk aversion and entrepreneurial intention: The mediating role of the determinants of planned behavior. *International Journal of Entrepreneurial Behavior & Research*, 23(5), 793-811. <https://doi.org/10.1108/IJEBR-08-2016-0248>
64. Zhao, H., & Seibert, S. E. (2006). The big five personality dimensions and entrepreneurial status: A meta-analytical review. *Journal of Applied Psychology*, 91(2), 259-271. <https://doi.org/10.1037/0021-9010.91.2.259>
65. Zhao, H., Seibert, S. E., & Lumpkin, G. T. (2010). The relationship of personality to entrepreneurial intentions and performance: A meta-analytic review. *Journal of Management*, 36(2), 381-404. <https://doi.org/10.1177/0149206309335187>