

**IMPACT OF BIG FIVE, NARCISSISM AND MACHIAVELLIANISM ON
ENTERPRISE POTENTIAL AND INDIVIDUAL ENTREPRENEURIAL
ORIENTATION**

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ABSTRACT

The paper examines the influence of dimensions of the Big Five, Narcissism, and Machiavellianism on dimensions of Enterprise potential and Individual entrepreneurial orientation. The research was carried out in Serbia, and the respondents were students, with the sample consisting of 400 respondents (students). Openness to experience has the strongest positive influence on the Enterprise potential and Individual entrepreneurial orientation dimensions, followed by Narcissism, Conscientiousness, and Extroversion. In doing so, the following influences are especially highlighted: Openness to experience on Creativity and Innovativeness; Narcissism on Leadership and Achievement; Conscientiousness on Proactiveness; Extroversion on Achievement and Risk-taking. The positive influence of Conscientiousness and Machiavellianism on Leadership, as well as the negative influence of Neuroticism on the observed dependent variables, should still be highlighted. The results are discussed in the paper. The theoretical significance of the work is that the influence of personal characteristics and internal mechanisms of individuals, which activate entrepreneurial potential and entrepreneurial orientation, were examined as a basis for the subsequent possible development of immediate entrepreneurial intentions. Previous research

<http://doi.org/10.47063/EBTSF.2023.0019>

<http://hdl.handle.net/20.500.12188/28857>

is mainly based on examining the direct effects of personal characteristics on entrepreneurial intentions.

Keywords: *Big Five, Narcissism, Machiavellianism, Enterprise potential, Individual entrepreneurial orientation, Students, Serbia.*

1. INTRODUCTION

In this paper, the authors investigate the influence of the Big Five personality traits, narcissism, and Machiavellianism on enterprise potential and individual entrepreneurial orientation. The paper begins with an introduction that provides context and outlines the significance of the study. In the subsequent section, the authors review relevant literature to establish the theoretical foundation and identify existing gaps; also the hypotheses are lined out here. The methodology section details the research design, instruments, and data collection. Following this, the authors present the findings, which are then discussed in light of the existing literature. In the conclusion, the key findings are summarized, as well as the implications.

Entrepreneurship is one of the most important pillars of a country's economy. Entrepreneurship creates new jobs, helps grow and develop the economy, and inspires innovation (Bazkiaei et al., 2020). Countries should work on empowering the population, especially young people, and on creating such an atmosphere, that the population creates as many entrepreneurial ventures as possible in order to strengthen and preserve the economy of that region. In addition to investing in the education of young people, it is necessary to develop special programs from which the right people can use their maximum potential. Psychological traits are closely related to business creation and success (Frese and Gielnik, 2014). In some research, entrepreneurial behavior is observed only through the examination of entrepreneurial intentions, however, some authors believe that, due to the complexity of these processes, other variables should be included in the research, in order to observe the broader picture, that is, something called intrapreneurship (Mahmoud et al., 2020). Other variables can be corporate venturing, entrepreneurial orientation, or enterprise potential. Especially the Big Five personality traits are associated with entrepreneurship (Zhao et al., 2010). This is not unusual, as it is natural for certain personality traits to influence an individual's behavior. For example, extraversion in an individual can lead to behavior characterized by energy, empathy, as well as the desire to be in a group and to act according to their enthusiasm (Ariani, 2013). As entrepreneurs have to cooperate with a large number of people such as consumers, co-workers, employees, and even investors, extroversion is certainly a very useful personality trait in entrepreneurship. Also, to a certain extent, conscientiousness is an indicator of how persistent and willing a person is to work in order to achieve a goal, so it can be assumed that people with this personality trait will be more suitable as entrepreneurs compared to people who are not inclined to such behavior.

Research that examines more deeply the connection between personal characteristics and entrepreneurship is necessary for a better understanding and clarification of the profile of a successful entrepreneur (Lackéus, 2015). A better understanding can enable the development of an adequate theoretical basis that can help educate young people and thus encourage entrepreneurship in a sustainable way. This is precisely why López-Núñez et al. (2019) examined the possibility that the Big Five personality traits predict entrepreneurial intentions. According to Zhao et al. (2010), successful entrepreneurship is associated with high values of extraversion, conscientiousness, and openness and low values of agreeableness and neuroticism. In addition to the Big Five personality traits, self-confidence, and problem-solving are certainly useful for entrepreneurs (Chen et al., 2015). Specific psychological traits such as the need for achievement, locus of control, as well as the tendency to take risks

determine entrepreneurial intentions (Owoseni, 2014). Also, a higher level of emotional intelligence, which enables better handling of tense situations, as well as higher creativity and proactivity, has a positive effect on entrepreneurial intentions (Farrington et al., 2012).

Deeper research into the personality traits of entrepreneurs is important for understanding the leadership style as well as the enterprise potential of individuals. According to Ignatieva, Serbenivska, and Babina (2023), psychological profile and personal traits, such as value orientation and willingness to change, influence the leadership style, which directly affects the enterprise potential of people. Of course, in order to realize entrepreneurial potential, depends on creativity, but also on the individual's intention, which is timely and effective (Hou et al., 2022). For a successfully implemented entrepreneurial project, it is necessary, first of all, to recognize the opportunity, and then to react in a timely and effective manner to the implementation. That is the only way entrepreneurial intentions and potential come to fruition. This further implies that it is necessary to learn to recognize opportunities and choose the right time, and such internal processes depend precisely on personal characteristics. The cognitive characteristics of an individual make them sensitive enough to process certain information in a certain way so that they nurture entrepreneurial awareness and mindset, which Krueger (2007) considers crucial in the education and creation of entrepreneurs.

In addition to the mentioned personal traits, the Dark Triad of psychological traits (narcissism, Machiavellianism, and psychopathy) are also often investigated as influential factors on certain human behaviors, including entrepreneurial intentions, but the influence of the Dark Triad on enterprise potential and individual entrepreneurial orientation is rarely examined. According to some authors, these personal characteristics show a negative impact on entrepreneurship (Bouncken et al., 2020), while other authors find that narcissism and Machiavellianism have a positive effect on entrepreneurial intentions (Hanson et al., 2023; Liu et al., 2021). In their research, Burger et al. (2023) came to an interesting result according to which narcissism has a positive effect on starting a business and an entrepreneurial venture, but after a certain time, the influence of narcissism on the success of that venture becomes extremely negative.

In the landscape of entrepreneurship research, a predominant focus has traditionally centered on examining the direct effects of various personal characteristics and traits, including the Big Five dimensions, Narcissism, and Machiavellianism, on entrepreneurial intentions. While this line of inquiry is valuable, it often bypasses a critical intermediary stage in the entrepreneurial process—the nurturing of individual entrepreneurial potential and orientation. Surprisingly, there is a paucity of research that delves deeply into the mechanisms by which these personal characteristics initially stimulate and cultivate an individual's Enterprise potential, encompassing facets like Leadership, Creativity, Achievement, and Personal control, as well as their Individual entrepreneurial orientation, encompassing Risk-taking, Innovativeness, and Proactiveness.

This research addresses this significant gap in the literature. It seeks to unveil the intricate relationship between personal characteristics and the development of an individual's entrepreneurial potential and orientation, which in turn serve as pivotal indicators of entrepreneurial intentions at the firm level. By probing these uncharted territories, this study contributes to a more nuanced understanding of how personal traits shape an individual's propensity to engage in entrepreneurial activities. This research, conducted in the context of Serbia with a focus on students as respondents, thus positions Enterprise potential and Individual entrepreneurial orientation as key mediators between personal characteristics and the ultimate manifestation of entrepreneurial intentions, shedding light on an essential yet underexplored facet of entrepreneurship dynamics.

2. THEORY AND HYPOTHESES

2.1. Big Five, Narcissism, Machiavellianism and Enterprise potential

Big Five personality traits are often associated with other psychological traits, as well as with the personality type of the "perfect" entrepreneur. The literature shows that the Big Five personality traits also influence psychological factors such as achievement, initiative, and motivation (Şahin et al., 2019). Also, the Big Five personality traits are associated with ethical behavior, as well as leadership in managers (Simha and Parboteeah, 2020). In addition, the Big Five personality traits are also associated with creativity, self-confidence, and achievement (Zare and Flinchbaugh, 2018).

When it comes to the effects of the Dark Triad of psychological traits, some authors find that narcissism, Machiavellianism, and psychopathy have a very negative effect on entrepreneurial intentions (Bouncken et al., 2020), while others find that narcissism and Machiavellianism have a positive effect on creativity and achievement. (Guo et al., 2023). Similarly, narcissism and Machiavellianism can positively influence creativity in individuals, as well as higher motivation and a greater desire for achievement (Gala et al., 2020). Narcissism strongly affects achievement as well as the need for control (Martinsen et al., 2019). However, narcissism in leaders negatively affects the perceived leadership effectiveness of employees, then the work performance of employees, as well as employee creativity (Zhang et al., 2023), which can have a very negative impact on the business of any organization, including entrepreneurial ones. Exploring enterprise potential is very important because it is a fundamental economic concept and it is crucial for modern business trends, and understanding it is essential for adapting to changing economic conditions and maintaining competitiveness (Turylo and Bohachevska, 2014). Also, Gonchar et al. (2021) find that enterprise potential is vital for addressing financial challenges and ensuring economic security, especially in unstable environments (such as Serbia).

2.2. Big Five, Narcissism, Machiavellianism and Individual entrepreneurial orientation

Entrepreneurial orientation is crucial for a nation's development and it drives economic growth and innovation. Personal characteristics have a significant impact on entrepreneurial orientation, such as proactiveness and innovativeness (Koe, 2016). Not only the Big Five personality traits but also other personal traits, such as passion and perseverance, have a very strong influence on entrepreneurial orientation (Santos et al., 2020). Big Five personality traits influence entrepreneurial orientation in small and medium enterprises (Mahmoud et al., 2020). According to (Awwad and Al-Aseer, 2021), people with higher conscientious values are often oriented toward success, and are more entrepreneurially oriented.

However, dark triad personality traits also have an impact on entrepreneurial orientation. According to Wu et al. (2019), Machiavellianism and psychopathy, as personality traits, have a very negative effect on entrepreneurial orientation, while narcissism has a positive effect on entrepreneurial orientation among students in China. The influence of narcissism on entrepreneurial orientation was also noted by Leonelli et al. (2019), but it is somewhat more complex, so the exhibitionistic side of narcissism has a positive effect, while the manipulative side of narcissism has a negative effect. Another study from China confirms that narcissism in CEOs can predict entrepreneurial orientation (Li et al., 2021). In addition to narcissism, Machiavellianism also has an impact on entrepreneurial orientation. Kraus et al. (2020) find that all three traits of the dark triad influence entrepreneurial activity, entrepreneurial orientation, and entrepreneurial leadership, where Machiavellianism has the strongest influence on opportunity recognition. Also, Machiavellianism has a complex impact on fundraising, which can be important when starting an entrepreneurial venture, and according to Calic et al. (2023), some hard tactics of Machiavellianism, such as revenge and intimidation, have a negative effect, while some of the soft tactics, such as persuasion and

ingratiation, have a positive effect on fundraising. In the end, entrepreneurial orientation is of paramount importance as it plays a direct and indirect role in shaping entrepreneurial intention, which can help in developing society (Hassan et al., 2021). Entrepreneurial orientation can also influence the adoption of new technologies which can lead to better market adaptation and competitiveness (Gupta et al., 2016), both are also very important in developing markets such as Serbia.

Bearing in mind the previous considerations, four hypotheses are created in this paper:

H1: There is a statistically significant correlations between the dimensions of Big Five, Narcissism, Machiavellianism and Enterprise potential.

H2: There is a statistically significant correlations between the dimensions of Big Five, Narcissism, Machiavellianism and Individual entrepreneurial orientation.

H3: There is a statistically significant predictive effect of the Big Five, Narcissism, Machiavellianism on the Enterprise potential dimensions.

H4: There is a statistically significant predictive effect of the Big Five, Narcissism, Machiavellianism on the Individual entrepreneurial orientation dimensions.

3. METHOD

3.1. Survey instruments (measures)

The Ten Item Personality Inventory (TIPI) was used to assess personality types, created by Gosling et al. (2003). The study analyzed the following Big Five personality dimensions: openness to experience, conscientiousness, extraversion, agreeableness, and emotional stability. To determine the respondents' Big Five personality traits, their responses were rated using a seven-point Likert scale.

Narcissism was assessed using a shortened version of the Narcissistic Personality Inventory (NPI-16) (Ames et al., 2006). The same questionnaire was employed in the reference study (Mathieu and St-Jean, 2013). The questionnaire comprises 16 items, each containing two statements, and participants were required to select the value that best aligns with their perception of reality regarding themselves. A seven-point Likert scale was utilized, with a score of 1 indicating the strongest endorsement of a "non-narcissistic" statement and a score of 7 representing the strongest agreement with a "narcissistic" statement.

Machiavellianism was assessed using a questionnaire developed for the research by Pekdemir and Turan (2015), which drew inspiration from earlier studies (Dahling et al., 2009; Valentine and Fleischman, 2003). The questionnaire consists of seven items, all contributing to the measurement of the Machiavellianism dimension. Respondents provided their ratings on a seven-point Likert scale.

The entrepreneurial potential of students was assessed using the Attitude toward Entrepreneurship (ATE) questionnaire, created by Athayde (2009). This questionnaire comprises 18 items, which are categorized into four dimensions: Leadership, Creativity, Achievement, and Personal control. Participants rated their responses on a seven-point Likert scale.

To measure Individual Entrepreneurial Orientation (IEO), the questionnaire developed by Bolton and Lane (2012) was used. The questionnaire includes 10 items, which contribute to three dimensions: Risk-taking, Innovativeness, and Proactiveness. Respondents provided their evaluations using a seven-point Likert scale.

3.2. Participants and data collection

The participants in the study were students from seven faculties in Serbia. They completed the questionnaires through two methods: electronically, using the Google Forms platform, and

also by manually filling out the questionnaires. Subsequently, all responses were compiled into a single database, resulting in a total of 400 valid questionnaires.

4. RESULTS

4.1. Descriptive statistics

Descriptive statistics for the dimensions of the Big Five, Narcissism, Machiavellianism, Enterprise potential, and Individual entrepreneurial orientation, are shown in Table 1. Cronbach's alpha values range from $\alpha=0.703$ do $\alpha=0.895$.

Table 1: Descriptive statistics

Names of dimensions	Abbr	N	Min	Max	Mean	Std. Deviation	α
Extroversion	E	400	1,00	7,00	5,20	1,42	0,81
Agreeableness	A	400	1,00	7,00	5,34	1,15	0,70
Conscientiousness	C	400	2,00	7,00	5,78	1,12	0,77
Neuroticism	N	400	1,00	7,00	3,08	1,30	0,75
Openness to experience	O	400	1,50	7,00	5,89	1,06	0,72
Narcissism	NAR	400	1,00	6,62	3,66	1,11	0,89
Machiavellianism	MAC	400	1,00	7,00	3,62	1,21	0,77
Leadership	LEA	400	1,00	7,00	4,37	1,29	0,85
Creativity	CRE	400	1,00	7,00	5,48	1,21	0,82
Achievement	ACH	400	1,00	7,00	4,72	1,39	0,83
Personal control	PC	400	1,00	7,00	4,37	1,40	0,75
Risk-taking	RT	400	1,33	7,00	4,56	1,32	0,73
Innovativeness	IN	400	1,00	7,00	5,09	1,08	0,74
Proactiveness	PR	400	1,00	7,00	5,56	1,14	0,75

(Source: Authors)

4.2. Correlation analysis

Coefficients of correlation between the dimensions of Big Five, Narcissism, Machiavellianism, Enterprise potential and Individual entrepreneurial orientation, are shown in Table 2. Pearson's correlation was used: * $p<0.05$; ** $p<0.01$.

Table 2: Correlation analysis

	LEA	CRE	ACH	PC	RT	IN	PR
E	,298**	,299**	,366**	,132**	,304**	,250**	,163**
A	-,094	,174**	,006	-,020	,111*	,142**	,173**
C	,210**	,318**	,251**	,085	,073	,198**	,458**
N	-,108*	-,143**	-,185**	-,171**	-,203**	-,210**	-,149**
O	,179**	,521**	,264**	,157**	,310**	,434**	,311**
NAR	,404**	,166**	,379**	,229**	,195**	,183**	,092
MAC	,169**	-,025	,097	,042	,084	,030	-,046

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

(Source: Authors)

4.3. Regression analysis

The predictive effect of the Big Five, Narcissism, and Machiavellianism (independent variables) on the Enterprise potential and Individual entrepreneurial orientation dimensions

(dependent variables), was examined using Multiple Regression analysis. The results of the regression analysis are given in Table 3 (statistically significant predictive effects are marked with bold font and shaded fields).

Table 3: Regression analysis

Depend	Independent							R ²	F	Sig.
	E	A	C	N	O	NAR	MAC			
	β									
LEA	,146	-,087	,158	,001	,070	,317	,092	0,241	17,829	,000
CRE	,027	,043	,134	,028	,447	,137	,008	0,309	25,087	,000
ACH	,185	-,026	,144	-,047	,111	,296	,047	0,258	19,517	,000
PC	-,013	-,043	,019	-,124	,126	,199	,009	0,088	5,373	,000
RT	,156	,084	-,101	-,096	,234	,127	,100	0,175	11,846	,000
IN	,001	,055	,018	-,084	,388	,148	,057	0,226	16,387	,000
PR	-,060	,037	,394	-,020	,169	,092	-,017	0,242	17,834	,000

(Source: Authors)

5. DISCUSSION

5.1. Discussion of correlation analysis results

The results of the correlation analysis (Table 2) show that, of the observed independent variables, Openness to experience has the greatest influence, followed by Extroversion and Narcissism. Openness to experience can especially encourage Creativity and Innovativeness. It is clear that innovation and creation, among other things, require a person's curiosity, unconventional approaches, and openness to everything that is new and unexplored. Extroversion has a strong effect on Achievement and Risk-taking. The explanation for these connections is that extroverted people express their enthusiasm, conspicuousness, and sociability through their achievements, which often require certain risks. The impact of the Big Five on creativity is also shown in a study (Zare and Flinchbaugh, 2018), while the impact of the Big Five on achievement was confirmed in research (Şahin et al., 2019).

Narcissism has the greatest impact on Leadership and Achievement. People with pronounced narcissism are characterized by the desire to be at the center of attention, the belief that they are exceptional and capable, the need to praise themselves and to be praised by others, and the imposition of authority, all of which cause these people to feel like leaders and want to be leaders, and they also believe that they deserve to achieve as much as possible. A large number of previous research also link narcissism and achievement (Guo et al., 2023; Gala et al., 2020; Martinsen et al., 2019). We should also highlight the strong influence of Conscientiousness on Proactiveness. It is quite certain that reliability, self-discipline, and good organization strongly favor a proactive way of thinking.

On the other hand, the independent variables Agreeableness and Machiavellianism have the weakest influence. These are, obviously, the personal characteristics that have the least impact on the Enterprise potential and Individual entrepreneurial orientation dimensions. However, it should be noted that Agreeableness has a statistically significant and positive effect on Creativity and Proactiveness. Calmness, tolerance, and compassion are characteristics that can create conditions for creativity and proactivity. Likewise, Machiavellianism has a statistically significant positive and strong influence on Leadership. Machiavellian-minded individuals may view leadership as a means to achieve certain goals. Perhaps this is at least a partial explanation for the fact that some studies show positive effects of Machiavellianism on entrepreneurial intentions (Hanson et al., 2023; Liu et al., 2021).

Finally, Neuroticism is a dimension that has negative and statistically significant effects on all observed dependent variables. Nervousness, change of emotions, worry and anxiety are certainly not qualities that can encourage Enterprise potential and Individual entrepreneurial orientation dimensions. This is a common occurrence in research on Big Five traits, so Neuroticism negatively affects entrepreneurial intentions (Brandstätter, 2011; Sahinidis et al., 2020) and entrepreneurial performance (Brandstätter, 2011).

Most of the observed correlations (Table 2) have statistically significant values, that is, dimensions of Big Five, Narcissism, and Machiavellianism, in most cases, have a statistically significant effect on Enterprise potential and Individual entrepreneurial orientation dimensions. Bearing this in mind, it can be stated that hypotheses H1 and H2 have been confirmed.

5.2. Discussion of regression analysis results

The results of the regression analysis (Table 3) show that, of the observed independent variables, Openness to experience has the strongest statistically significant predictive effect, followed by Narcissism, Conscientiousness, and Extroversion. These results are almost entirely consistent with the results of the correlation analysis discussed above.

Due to the effect of a larger number of independent variables, the predictive effect of Conscientiousness on Risk-taking has now manifested itself as statistically significant and negative. This is also the biggest difference compared to the results of the correlation analysis. Conscientious, diligent, well-organized people obviously value certainty and security, so this does not favor undertaking risky activities, as is logical. At the same time, it should be noted that the predictive effect of dimension Conscientiousness is also expressed according to most of the remaining dependent variables, which indicates that, in the sum of various independent influences, conscientiousness plays a significant role and that without conscience it is difficult to do something useful and great. In this sense, it may be particularly interesting that Conscientiousness appears as a significant predictor of Leadership, not as the strongest but very influential predictor. So, in addition to people who want to become leaders because of their narcissistic and/or extroverted nature, there are also people who want to become leaders because of their conscience, apparently ready to do something useful for their organization, because they feel it is their duty.

The values of the corrected determination indexes R^2 range from 0.088 to 0.309, and all are statistically significant. Therefore, all dependent variables are under a statistically significant predictive effect of observed independent variables. The predictive effects are strongest on the Creativity dimension, followed by the Achievement, Proactiveness, and Leadership dimensions, which is a result that is also largely consistent with the results of the correlation analysis. Based on these results for the values of the corrected determination indexes, it can be concluded that hypotheses H3 and H4 are confirmed.

6. CONCLUSION

Taking into account the results of correlation and regression analysis, it can be concluded that Openness to experience has the strongest positive influence on the Enterprise potential and Individual entrepreneurial orientation dimensions, followed by Narcissism, Conscientiousness, and Extroversion. In doing so, the following influences are especially highlighted: Openness to experience on Creativity and Innovativeness; Narcissism on Leadership and Achievement; Conscientiousness on Proactiveness; Extroversion on Achievement and Risk-taking. We should also point out the positive influence of Conscientiousness and Machiavellianism on Leadership, as well as the negative influence of Neuroticism on the observed dependent variables.

Another study of the influence on entrepreneurial intentions among students in Serbia (Rajković et al., 2023) showed that, of the Enterprise potential and Individual entrepreneurial orientation dimensions, the strongest influence on Entrepreneurial intentions has the dimensions Leadership, Personal control, and risk-taking. These dimensions are, in this research, dependent variables, which are most influenced by Narcissism and Extroversion, followed by Openness to experience and Conscientiousness. Thus, these personal characteristics can be considered the most influential on Entrepreneurial intentions, with the mediation of Leadership, Personal control, and Risk-taking.

This paper carries significant theoretical and practical implications. The theoretical significance lies in its unique exploration of the intricate interplay between personal traits and the internal mechanisms that act as catalysts for entrepreneurial potential and orientation. Unlike previous research, which predominantly focuses on examining the direct impact of personal traits on entrepreneurial intentions, our study delves deeper into the foundational elements that precede these intentions. This approach enhances our understanding of the underlying processes that lead individuals toward entrepreneurship. From a practical standpoint, our findings offer actionable insights for educators, institutions, and policymakers. By identifying specific groups of students who exhibit a higher potential for entrepreneurial desires and intentions, our research enables targeted interventions. Institutions can implement tailored programs aimed at nurturing, guiding, and educating these individuals, fostering entrepreneurial attitudes, and intentions, and, crucially, activating entrepreneurial behavior. Such initiatives can have a substantial impact on fostering a culture of entrepreneurship and driving economic growth by channeling the potential of those individuals who are most inclined to embark on entrepreneurial ventures. In essence, this research provides a roadmap for harnessing the latent entrepreneurial talent within our student population, potentially shaping the future landscape of entrepreneurship in our region.

Acknowledgment

This paper was supported by the Provincial Secretariat for Science and Technological Development, Autonomous Province of Vojvodina; Project number: 142-451-2706/2021; Project name: Analysis of entrepreneurial activity aspects in the context of society 5.0 - the possibility of implementation in AP Vojvodina; Project manager: PhD Sanja Stanisavljev, docent.

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