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Personality and specialization choice

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Abstract
According to the person-environment fit theory, students choose their academic specialization based on their personality characteristics. However, existing research on personality trait differences across university majors has investigated few cultural contexts, relied on a limited set of measurement instruments, and offered inconsistent results. The current study addresses these shortcomings by exploring the relationship between student personality and university major choice based on the administration of the Zuckerman-Kuhlman Personality Questionnaire (ZKPQ) to 449 students pursuing six different majors at a Romanian university. The analysis revealed that students' personality traits varied significantly with their specialization. Notably, those pursuing a sports major exhibited the lowest neuroticism levels, while students in teacher education had significantly lower activity levels. Additionally, the study found that gender moderated the relationship between personality and specialization. These findings suggest that understanding students' personalities can aid in predicting their career interests. Furthermore, this knowledge can assist academic staff in adapting their teaching approaches to enhance student engagement in the learning process.

Keywords Personality traits · Zuckerman · Neuroticism · Personality profile · University specializations

Introduction

One of the priorities of adolescence is to choose a career that will lead to professional success. Psychology has proposed several approaches to support the career counseling process. The person-environment fit theory has crystallized as a major approach in this respect, and numerous studies have focused on it (Costa & McCrae, 1992; Kaufman et al., 2013; Lievens et al., 2002; Rubinstein, 2005). According to this theory, students choose their academic specialization based on their personality characteristics (Holland, 1997; Kaufman et al., 2013; Vedel, 2016). Personality traits refer to relatively stable dispositions expressed through behavior, thinking, and emotional patterns (Costa et al., 2019). The results of the studies demonstrate that aligning personality traits with university specialization is beneficial (Vedel, 2016; Wen et al., 2021).

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Personality and the alternative model

The study of personality has taken various directions throughout history, leading to the development of personality theories that have evolved from the intuitive ideas of ancient times to modern scientific approaches. One important area of research focuses on identifying the number of factors needed to describe personality dimensions, and there has been considerable variation in this regard over time. Some researchers have proposed models based on three factors (Eysenck, 1992), while others have suggested 16 factor (Cattell, 1957), six factor (De Vries et al., 2009), or five factor solutions (Costa & McCrae, 1992; Goldberg, 1992; McCrae & Costa, 1997; Zuckerman et al., 1993). In the last decades, this last approach has become the most influential in personality psychology.

Another interesting and influential model that emerged in the last two decades is the Alternative Five-Factor Model (AFFM), advanced by Marvin Zuckerman and his colleagues (Zuckerman et al., 1993). To define the basic factors of personality, these authors developed the ZKPQ

Personality Questionnaire by applying factor analysis to several existing personality and temperament scales (Gomà-i-Freixanet et al., 2005). The final version of the AFFM model includes five factors: Impulsive Sensation-Seeking, Sociability, Neuroticism-Anxiety, Aggressiveness-Hostility, and Activity. In principle, unlike the widely accepted Big Five Model, the AFFM measures concepts with a biological-evolutionary basis, such as aggressiveness or impulsive sensation-seeking. Studies have shown that sociability corresponds to extraversion, neuroticism-anxiety corresponds to emotional stability, aggressiveness-hostility correlates with openness to experience and agreeableness, whereas activity is associated with extraversion and conscientiousness (Joireman et al., 2004; Zuckerman, 2008).

Career choice and personality traits

A career requires specific personality traits related to job requirements (Caldwell & Burger, 1998). Several studies have focused on personality differences depending on the academic field, but the results are inconsistent and sometimes contradictory (Pozzebon et al., 2014).

For example, one study found that foreign language students have the highest extraversion scores but average scores on neuroticism (Banth & Mohan, 1985). This finding is not confirmed by all studies. Vedel (2016) uncovered that humanities and arts students have the highest level of neuroticism, significantly exceeding professions in physical sciences, business, engineering, and social services, whereas Lewis and Cardwell (2020) failed to find significant differences between students with respect to neuroticism.

According to some data, openness to experience is highest among students in the arts and humanities (Lievens et al. 2002; Pozzebon et al., 2014; Vedel, 2016; Vedel et al., 2015). However, other studies revealed different results (Balsamo et al., 2012; Kaufman et al., 2013). Compared with students from other fields of study, students in the arts and social sciences are more sociable, sensitive to sensory experiences, aggregable, and less conscientious (Harris, 1993; Vedel, 2016).

Science and engineering students report higher levels of conscientiousness than students in other academic fields (Kline & Lapham, 1992; Van der Molen et al., 2007), but significantly lower scores in extraversion-introversion (Banth & Mohan, 1985).

Students in medical sciences are characterized by higher levels of agreeableness than law students (Lewis & Cardwell, 2020; Vedel, 2016), higher extraversion (Vedel, 2016; Costa & McCrae, 1992), but average scores in openness to experiences, neuroticism, and conscientiousness (Costa & McCrae, 1992). On the other hand, medical science students tend to overvalue cooperation compared to students in other specializations (Hojat & Zuckerman, 2008). Studies show that the level of conscientiousness is higher in fifth-year students than in first-year students (Tett et al., 1991), which leads us to the idea that it could be shaped during studies in this field.

Students enrolled in sports programs, are less neurotic, more extroverted, more conscientious, and show a higher level of risk predisposition than other reference groups (Steinbrink et al., 2020). Sports students score higher in activity and lower in anxiety neuroticism (O'Sullivan et al., 1998). These personality traits are also associated with more intense sports activity in general (Culjak & Mlačić, 2014; Wilson & Dishman, 2015). Results on the personality traits of students in economics are inconsistent. Some studies (Vedel, 2016) describe them as extroverted, while others describe them as more introverted (Borg et al., 2002; Ziegert, 2000).

Students preparing to become teachers or educators are described as having higher levels of extraversion, agreeableness, conscientiousness, openness to experience, and social conformity than other categories of teachers, and the lowest level of neuroticism (Tatalović Vorkapić et al., 2016; Vorkapić, 2012). Decker and Rimm-Kaufman argue that students studying to become elementary school teachers scored higher in agreeableness and conscientiousness and lower in openness to experience than those studying to become middle and high school teachers (Decker & Rimm-Kaufman, 2008).

The role of gender in analyzing personality differences

When analyzing personality differences based on academic field, it is important to consider the unequal distribution of gender in different academic fields. For example, in academic fields such as the humanities, females predominate, while in engineering fields, males predominate. Gender appears to be relevant in studying specific personality traits in different academic fields, (Bloshchynskyi et al., 2022) as they can provide alternative explanations for personality differences among different specializations, even though these personality differences are not solely a result of unequal gender distributions (Vedel, 2016).

An interaction between gender and field of study indicates that women studying natural sciences are significantly more agreeable than male students in natural sciences and law, overall. Furthermore, males are more aggressive than females (Björkqvist, 2018; Rubinstein, 2005) whereas women have higher levels of conscientiousness (Mac Giolla & Kajonius, 2019; Beauchamp & McKelvie, 2006; Vianello et al., 2013). Zuckermann also highlighted significant differences between males and females (Zuckerman et al., 1978). Men scored higher on Impulsive Sensation Seeking, Aggression-Hostility, and Activity, while women scored higher on Neuroticism-Anxiety (Zuckerman et al., 1993). These differences have been confirmed by other studies (Ball et al., 1984). Female students score higher in neuroticism and conscientiousness

than male students (Hartmann & Ertl, 2021; Vedel et al., 2015). Gender characteristics also play an important role in the communication process (Fanaja et al., 2023).

Overall, we can identify three important limitations of previous research. First, the existing literature is not always clear on how personality traits vary with each specialization. Some studies argue that there are significant personality differences between specializations but do not agree on the specifics of these differences, whereas other studies failed to reveal significant differences between personality traits across different specializations (Pozzebon et al., 2014; Pringle et al., 2010; Rubinstein, 2005).

Second, we can also notice that most studies have been based on the Big Five model and too few have looked at personality from a different perspective. Moreover, the role of gender differences as a moderator of the relationship between choice of major and personality is under-researched.

Finally, while we know that career choice can vary according to culture and socio-cultural background, in Romania, there are no previous studies analyzing the link between students' specialization and personality. The current research will address these issues by focusing on a wider range of academic majors, employing an alternative measure of personality, and focusing on an under-researched context.

Objectives and hypotheses

The basic objective of this study is to investigate the relationship between personality traits and academic major choice and to test if gender moderates this relationship. This will be accomplished by applying the alternative five-factor model to analyze the link between personality traits and academic major choice in a sample of 449 Romanian students pursuing six academic majors.

Based on the data from the existing literature and observations from the activities carried out with students from different specializations, we have formulated the following working hypotheses:

Hypothesis 1. Students from humanities majors will obtain higher scores on neuroticism anxiety and lower scores in impulsive sensation seeking;
Hypothesis 2. Medical students score higher in sociability and lower in aggressiveness-hostility.
Hypothesis 3. Students from the primary and preprimary education specialization present a high level of sociability and activity.
Hypothesis 4. Sport students have lower scores in neuroticism-anxiety and higher scores in impulsive sensation seeking.
Hypothesis 5. Gender will moderate the relationship between personality factors and specialization choice.

Method

Participants

Throughout the duration of this study, ethical protocols were followed, and participation in the research was voluntary. All participants were required to provide written informed consent, and the confidentiality and anonymity of their data were guaranteed.

We used a cross-sectional research design and collected data from 449 UMFST students, comprising 156 boys and 293 girls. During their class, participants were given a link and asked to complete a questionnaire if they wished to participate in the study. The average age of the participants was 21 years and ranged between 19 and 27. The students were enrolled in the following specializations: Humanities (Philology, History)—66 (15%), Engineering—72 (16.4%), PIPP—49 (11.2%), Physical Education and Sport—58 (13.2%), Medical Sciences—162 (37%), and Economics and Law—31 (7.1%).

Measures

The study utilized the Zuckerman-Kuhlman Personality Questionnaire (ZKPQ), which was adapted for the Romanian population by Opre and Albu in 2010, and Sârbescu and Neguţ 2013. Zuckerman et al. (1993) defined the five factors from the alternative factor model as follows:

Impulsive Sensation Seeking consists of two facets: impulsivity and sensation seeking. Impulsivity refers to a lack of planning and a tendency to act quickly on impulse without consideration. Sensation-seeking describes a general desire for thrills or the willingness to take risks for excitement, a preference for unpredictable friends and situations, and a need for change and novelty (Cronbach's alpha = 0.760).

Neuroticism-Anxiety describes emotional upset, fearfulness, tension, worry, lack of self-confidence, sensitivity to criticism, and obsessive indecision (Cronbach's alpha = 0.869).

Aggression-Hostility depicts readiness to express verbal aggression, rude, antisocial behavior, vengefulness, spitefulness, a quick temper, and impatience with others (Cronbach's alpha = 0.632).

Sociability is differentiated into two aspects: enjoying large social events, interacting with many people, and having many friends, and intolerance for social isolation (Cronbach's alpha = 0.784).

Activity also consists of two facets: the need for general activity, impatience, and restlessness when there is nothing to do, and a preference for challenging and hard work, and an active and busy life (Cronbach's alpha = 0.718). The descriptive statistics and correlation coefficients for the five personality scales are presented in Tables 1, 2, 3, 4 and 5.

The present study reports slightly to moderately lower average scale values for aggression-hostility (Δ_{AH} = -1.88, d = -0.576 [-0.710,-0.443]), impulsive sensation seeking (Δ_{ISS} = -1.30, d = -0.338 [-0.469,-0.206]), and sociability (Δ_{S} = -0.90, d = -0.237 [-0.368,-0.106]), compared to previous findings on Romanian samples (Sârbescu & Neguţ, 2013). Conversely, the study found moderately higher values for neuroticism-anxiety (Δ_{NA} = 1.63, d = 0.338 [0.206, 0.469]) and negligible differences for activity (Δ_{A} = -0.19, d = -0.059 [-0.189, 0.072]). The scale reliabilities were quite similar between the two studies, with the previous studies ranging between 0.69 and 88 and the current study ranging from 0.63 to 0.87. The only exception was that the lowest reliability value in the previous study was recorded for the aggression-hostility scale, while in the present study, it was recorded for the activity scale.

It is worth noting that the mean differences observed in our study, compared to the one conducted by Sârbescu and Neguţ (2013), should be interpreted in light of the differences in participant characteristics. While their study relied heavily on social science students, our sample is more diverse and aims to facilitate cross-specialization comparisons.

To test the main hypotheses of the study, we conducted a multivariate analysis of variance (MANOVA) using mean ZKPQ scale scores as dependent variables and the student field of study (i.e., humanities, preschool, and primary teaching, sports and physical education, engineering and IT, medical science, law, and economics) as the independent variable. Since the assumption of the homogeneity of the

Table 1 Means, standard deviations, and correlations with confidence intervals

Variable	*M*	*SD*	Range	Reliability	1	2	3	4
1. Impulsive Sensation Seeking	9.99	3.80	0–19	.760				
2. Neuroticism-Anxiety	8.64	4.96	0–19	.869	.14** [.05, .23]			
3. Aggression-Hostility	5.50	2.96	0–15	.632	.32** [.23, .40]	.35** [.27, .43]		
4. Activity	9.08	3.30	0–16	.718	.12* [.03, .21]	-.22** [-.31, -.13]	-.09* [-.18, -.00]	
5. Sociability	6.93	3.75	0–17	.784	.23** [.14, .32]	-.20** [-.28, -.11]	.07 [-.03, .16]	.22** [.13, .30]

M and *SD* are used to represent mean and standard deviation, respectively. Values in square brackets indicate the 95% confidence interval for each correlation. * indicates $p < .05$. ** indicates $p < .01$

Table 2 Means, standard deviations, and d-values with confidence intervals for the impulsive sensation seeking scale by field of study

Field of study	*M*	*SD*	1	2	3	4	5
1. Humanities	10.53	3.97					
2. Teaching	9.12	3.83	.36 [-.01, .73]				
3. Sport and Physical education	10.36	3.43	.05[-.31, .40]	.34 [-.04, .73]			
4. Engineering and IT	9.83	3.44	.19 [-.15, .52]	.20 [-.17, .56]	.15 [-.19, .50]		
5. Medical sciences	10.03	3.96	.13 [-.16, 0.41]	.23 [-.09, 0.55]	.09 [-.21, 0.39]	.05 [-.23, .33]	
6. Law and Economics	9.45	4.35	.26 [-.17, .69]	.08 [-.37, .53]	.24 [-.20, .68]	.10 [-.32, .52]	.14 [-.24, .53]

M indicates mean. *SD* indicates standard deviation. *d*-values are estimates calculated using formulas 4.18 and 4.19 from Rosenblad, (2009). Values in square brackets indicate the 95% confidence interval for each *d*-value

Table 3 Means, standard deviations, and d-values with confidence intervals for the neuroticism-anxiety scale by field of study

Field of study	*M*	*SD*	1	2	3	4	5
1. Humanities	9.86	4.96					
2. Teaching	10.55	5.24	.14 [-.24, .50]				
3. Sport and Physical education	6.19	4.48	.78 [.41, 1.14]	.90 [.50, 1.30]			
4. Engineering and IT	8.89	4.66	.20 [-.13, .54]	.34 [-0.03, .70]	.59 [.24, .94]		
5. Medical sciences	8.34	4.74	.32 [.03, .60]	.45 [.13, .78]	.46 [.16, .76]	.12 [-.16, .39]	
6. Law and Economics	9.55	5.30	.06 [-.36, .49]	.19 [-.26, .64]	.70 [.25, 1.15]	.14 [-.29, .56]	.25 [-.14, .63]

M indicates mean. *SD* indicates standard deviation. *d*-values are estimates calculated using formulas 4.18 and 4.19 from Borenstein, Hedges, Higgins, & Rothstein (2009). Values in square brackets indicate the 95% confidence interval for each *d*-value

Table 4 Means, standard deviations, and d-values with confidence intervals for the aggression-hostility scale by field of study

Field of study	*M*	*SD*	1	2	3	4	5
1. Humanities	5.77	3.29					
2. Teaching	6.02	2.82	.08 [-.29, .45]				
3. Sport and Physical education	6.28	2.67	.17 [-.19, .52]	.09 [-.29, .47]			
4. Engineering and IT	5.29	2.98	.15 [-.18, .49]	.25 [-.11, .61]	.35 [-.00, .69]		
5. Medical sciences	4.97	2.86	.27 [-.02, .56]	.37 [.05, .69]	.46 [.16, .77]	.11 [-.17, .39]	
6. Law and Economics	5.65	3.23	.04 [-.39, .47]	.13 [-.32, .58]	.22 [-.22, .66]	.12 [-.31, .54]	.23 [-.15, .62]

M indicates mean. *SD* indicates standard deviation. *d*-values are estimates calculated using formulas 4.18 and 4.19 from Borenstein, Hedges, Higgins, & Rothstein (2009). Values in square brackets indicate the 95% confidence interval for each *d*-value

Table 5 Means, standard deviations, and d-values with confidence intervals for the activity scale by field of study

Field of study	*M*	*SD*	1	2	3	4	5
1. Humanities	8.26	3.68					
2. Teaching	7.37	3.16	.26 [-.12, .63]				
3. Sport and Physical education	9.60	2.54	.42 [.06, .77]	.79 [.39, 1.18]			
4. Engineering and IT	9.22	3.06	.29 [-.05, .62]	.60 [.23, .97]	.13 [-.21, .48]		
5. Medical sciences	9.52	3.47	.36 [.07, .65]	.63 [.31, .96]	.02 [-.28, .32]	.09 [-19, .37]	
6. Law and Economics	9.48	2.76	.36 [-.07, .79]	.70 [.24, 1.16]	.05 [-39, 048]	.09 [-.33, .51]	.01 [-.37, .40]

M indicates mean. *SD* indicates standard deviation. *d*-values are estimates calculated using formulas 4.18 and 4.19 from Borenstein, Hedges, Higgins, & Rothstein (2009). Values in square brackets indicate the 95% confidence interval for each *d*-value

variance–covariance matrices was met (Box's M = 92.796, F(75, 99,974) = 1.190, $p = 0.125$) we proceeded with ordinary MANOVA. It is important to note that the results revealed by this approach were similar to those obtained with robust MANOVA or with non-parametric tests.

The analyses found a significant overall multivariate effect for students' field of specialization (Wilks' $\lambda = 0.848$, F(25, 1527) = 2.88, $p < 0.001$, partial $\eta^2 = 0.032$). The tests of between-subject effects further revealed significant effects on neuroticism anxiety (F(5, 431) = 5.710, $p < 0.001$, partial $\eta^2 = 0.062$), activity (F(5, 431) = 4.544, $p < 0.001$, partial $\eta^2 = 0.050$), and aggressivity-hostility scales (F(5, 431) = 2.355, $p < 0.05$, partial $\eta^2 = 0.027$). On the other hand, there were no significant effects on impulsive sensation seeking (F(5, 431) = 1.025, $p = 0.402$, partial $\eta^2 = 0.012$) and sociability (F(5, 431) = 1.818, $p = 0.108$, partial $\eta^2 = 0.021$).

Pairwise comparisons with Sidak's adjustment for multiple comparisons were conducted to determine differences between the six fields of specializations for the personality scales where the between-subjects effects were relevant. These differences can be visualized in Fig. 1, which depicts the violin plots of the five personality scales by field of specialization. The means for each specialization and their corresponding Cohen's d differences with 95% confidence intervals are described in Table 2, 3, 4, and 5. When looking at the differences in the neuroticism-anxiety scale, the field that stands out from the rest is sports and physical education. The students enrolled in this specialization have significantly lower scores on this scale than the students from all other specializations: humanities ($\Delta_M = -3.674$, $p < 0.001$), preschool and primary education ($\Delta_M = -4.361$, $p < 0.001$), engineering and IT ($\Delta_M = -2.699$, $p < 0.05$), medical sciences ($\Delta_M = -2.183$, $p < 0.05$), and law and economics ($\Delta_M = -3.359$, $p < 0.05$).

Another scale where we can observe a field of study standing out is activity: in this case, students enrolled in the preschool and primary education program have lower scores than those from sports and physical education ($\Delta_M = -2.236$, $p < 0.01$), engineering and IT ($\Delta_M = -1.855$, $p < 0.05$), medical sciences ($\Delta_M = -2.142$, $p < 0.01$), law and economics ($\Delta_M = -2.117$, $p < 0.07$), and humanities ($\Delta_M = -0.890$, $p = 908$). The first three differences are statistically significant.

For the three remaining scales, these conservative pairwise comparisons show no significant differences. However, there was a marginal difference between medical studies and sports students on aggressiveness-hostility, indicating that the first category of students tended to have lower scores on this scale compared with the last category ($\Delta_M = -1.307$, $p < 0.06$).

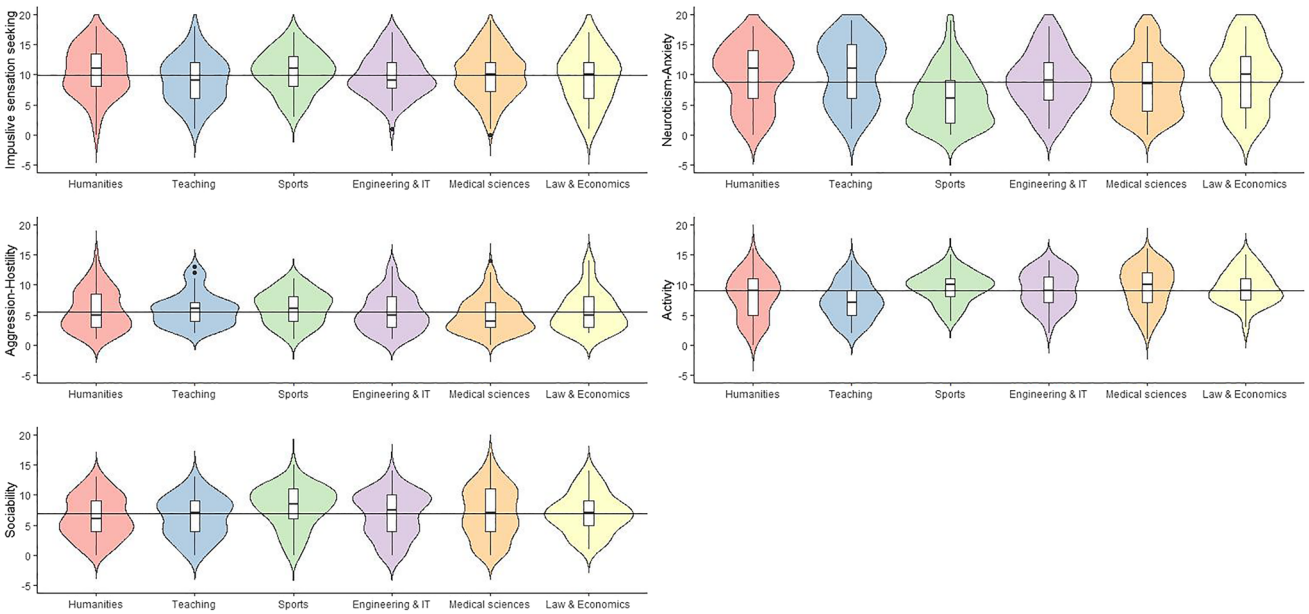

Fig. 1 Violin plots of the five personality scales by field of specialization

An important hypothesis of this research was that the participants' gender should also play a significant role. Indeed, when we added gender as a predictor, there was a significant interaction of gender with the field of study on participants' impulsive sensation seeking ($F(5,424) = 3.101$, $p < 0.001$, partial $\eta^2 = 0.035$). This interaction, which qualifies the previously reported result can be seen in Fig. 2.

As evident in the interaction plot, the average score of male students enrolled in preschool and primary education was considerably lower than all other scores (all ps < 0.05). These male students also stood apart in other respects (e.g., less sociable, less aggressive, and more neurotic) except that these differences did not reach statistical difference. It should be noted that these analyses are constrained by the low number of male students enrolled in the preschool and primary education program: there were only 4 such students and they represent the entire population of male students enrolled in this program.

Discussion

This study tested five hypotheses on personality differences and academic major choice by applying the Zuckerman-Kuhlman Personality Questionnaire to a sample of 449 Romanian students pursuing six academic majors. The hypotheses predicted higher scores on neuroticism-anxiety and lower scores on impulsive sensation seeking among students in humanities (H1), higher sociability and lower

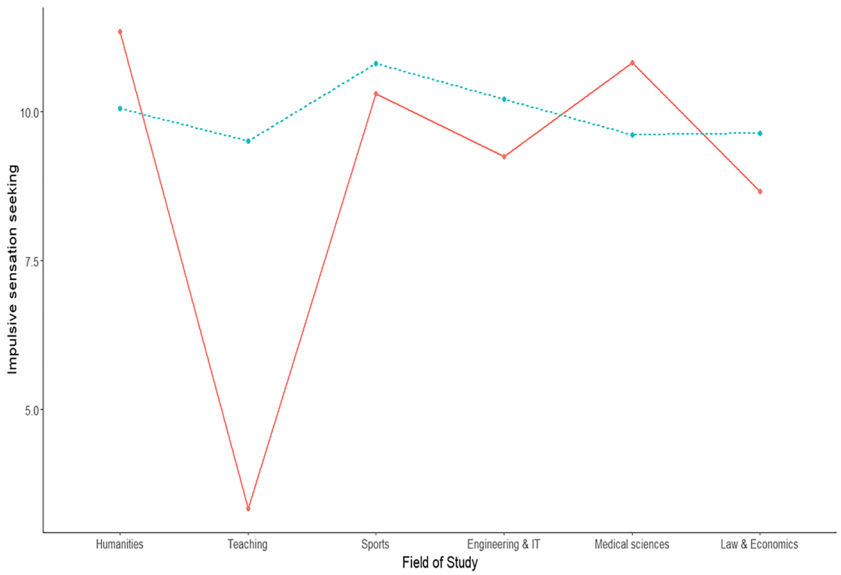

Fig. 2 The interaction between gender and field of study on impulsive sensation seeking

aggressiveness-hostility among medical students (H2), high level of sociability and activity among the primary and preprimary education students (H3), lower neuroticism-anxiety and higher impulsive sensation seeking among students pursuing a sport major (H4), as well as the moderating role of gender (H5).

Consistent with H1, the results show that preschool and primary education and humanities students have higher levels of neuroticism-anxiety among the analyzed specializations. This information is consistent with the results of Vedel's studies (2016). However, contrary to H1, the analysis failed to reveal significant differences in impulsive sensation seeking.

In the second hypothesis, we assumed that medical students have a higher score on sociability and lower scores on aggression-hostility. The analyses showed that medical students had marginally lower levels of aggression-hostility compared with the students pursuing the sport and physical education major. In terms of score differences in sociability, the most sociable students seemed to be sports students, followed by medical and economics students, respectively, whereas the least sociable were humanities and preschool and primary education students. However, although these differences went in the predicted direction, they did not reach statistical significance.

Contrary to H3, we have found a statistically significant lower level of activity among students specializing in preschool and primary education. Thus, the scores obtained by the preschool and primary education students from our sample are not in line with previous findings, which described teacher education students as extraverted, sociable, friendly, and conscientious (Vorkapić, 2012; Tatalović Vorkapić et al., 2016). Of all the fields of specialization, sports students obtain the highest scores for activity, which is supported by other studies that describe them as active (O'Sullivan et al., 1998).

On the other hand, consistent with H4, the results showed that physical education students have the lowest scores on neuroticism. This is in line with previous studies on this topic, which revealed a significant correlation between sports and low levels of neuroticism (Steinbrink et al., 2020; Culjak & Mlačić, 2014; Wilson & Dishman, 2015; O'Sullivan et al., 1998). Both results contradict studies that refute the presence of a higher level of neuroticism in one of the specializations (Lewis & Cardwell, 2020; Pozzebon et al., 2014; Pringle et al., 2010; Rubinstein, 2005).

In terms of impulsive sensation seeking, physical education students do not differ significantly from students in other areas of specialization. They are in second place, after students in the humanities, in this regard. On the other hand, if we take into account the fact that there were more male students in the sports specialization than in the humanities specialization and that males have a higher tendency towards impulsive sensation seeking (Zuckerman et al., 1978, Zuckerman et al., 1993), then we cannot attribute this factor as being more specific to physical education and sports students. The results on impulsive sensation seeking are qualified by a significant interaction of gender and field of study. This interaction showed that male students pursuing a teacher education major displayed lower levels of impulsive sensation seeking compared to both female students from the same major and male students from the other majors. Although the moderating role of gender is confirmed by numerous studies (Zuckerman et al., 1978; Zuckerman et al., 1993) our analyses do not reveal any other significant interactions.

In attempting to construct a profile of the medical student's personality, we identified medium sociability, medium level of sensation seeking, and medium to low hostility. The most interesting profile can be attributed to students specializing in sports. They have a low level of neuroticism, a medium to high level of aggression-hostility, a medium level of sociability, and a medium level of impulsive sensation-seeking tendencies.

To resume, our study confirms previous findings in the literature while bringing new information about the personality traits of students pursuing different majors. Thus, we have identified significant differences in personality traits across the six analyzed majors and identified gender as a significant moderator in this respect. Since the model used by us was based on the alternative five-factor model, we compared our results with the results obtained by similar studies.

Limitations

While this study provides valuable information, it has a number of limitations. Personality is a multifaceted construct and the assessment instrument used, whatever it may be, cannot capture its full complexity. Some traits or factors may be overlooked. On the other hand, several inaccuracies may arise from the fact that this assessment instrument involved self-assessment of personality which may be influenced by individual misperceptions of their own traits and the need for social desirability.

Career choices can vary across cultures, socioeconomic backgrounds, and time periods. Since the sample of subjects analyzed is not representative, we are reserved in generalizing the results and consider that it is necessary to complement the data obtained with other studies carried out on a much larger sample of students from all universities in Romania.

Conclusions

Based on the analysis of the literature on the role of personality in career choice and of differences in personality traits across university majors, the current research identified several shortcomings and sought to address them by

employing a sample covering six university majors and an instrument assessing the alternative five-factor model. The most salient differences concerned neuroticism and activity. Consistent with previous findings, neuroticism was lower among students pursuing a sports major and higher among students in the humanities and the primary and pre-primary teacher education programs. Another important finding was that activity was significantly lower among teacher education students. Sociability and impulsive sensation-seeking did not show significant differences across the six majors.

The usefulness of these findings on the differences in personality traits between different academic specializations could help the teaching–learning process in terms of adapting the working methodology used by teachers to the specific personality of the respective specialization. This would facilitate student engagement and learning. Another benefit is related to career counselling of students according to their personality profile.

Author contributions All authors contributed to the study conception and design. Material preparation, data collection and analysis were performed by [Coșa Lucica; Cernat Vasile], The first draft of the manuscript was written by [Coșa Lucica] and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

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Data availability The datasets generated during and/or analyzed during the current study are available from the corresponding author upon reasonable request.

Declarations

Ethics approval This is an observational study, Research Ethics Committee has confirmed that no ethical approval is required.

Research involving humans and animals All authors certify that they have no affiliations with or involvement in any organization or entity with any financial interest or non-financial interest in the subject matter or materials discussed in this manuscript.

Consent to participate Informed consent was obtained from all individual participants included in the study.

Competing interests None of the authors have any conflicts of interest.

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