Majors unleashed: unravelling students' personality profiles across academic disciplines

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Abstract

This study utilized Latent Profile Analysis to examine the correlation between personality and academic major choice among 1825 Greek university students, using the Five Factor Model (FFM) at the facet level. Four distinct personality profiles—resilients, overcontrollers, undercontrollers, and ordinaries—were identified. Female students predominantly chose Humanities, aligning with the overcontrollers profile while males leaned towards Sciences and Health Sciencesassociated with ordinaries, undercontrollers, and resilients profiles. Additionally, major choice varied, with Humanities and Sciences often linked to ordinaries, Health Sciences to resilients, and Economics/Information and Communication Technology to undercontrollers. This study emphasizes personalized interventions based on individual personality profiles for informed academic major choices.

Keywords FFM · Big five facets · Personality profiles · Gender · Academic major · University students

Introduction

The study of the association between academic major choice and the Five Factor Model (FFM) personality traits is beneficial because it provides researchers with a better knowledge of the personality characteristics of students, who are more inclined to choose specific academic majors. Most studies on personality utilize a "variable-centred" methodology, which assumes homogeneity and quantitativeness of individual differences and emphasizes exploring interactions between variables (Hickendorff et al., 2018). However, this approach has limitations in capturing individual and inter-individual variation, as well as identifying non-linear and interacting patterns, potentially leading to an inaccurate representation of distinct subgroups within a population. In contrast, "person-centred" analytic approaches focus on the individual and account for heterogeneous patterns of variable interactions. For instance, Latent Profile Analysis (LPA), identifies latent classes or unrecognized subgroups of individuals, revealing qualitative differences in personality traits that traditional analytic approaches may overlook (Lanza & Cooper, 2016). While analysing FFM at a trait-level provides valuable insights, examining facets can offer a deeper understanding (Denissen et al., 2020). Consequently, the purpose of this study was to identify distinct profiles among Greek university students based on the FFM at the facet-level using LPA, and examine if these profiles differed in relation to their choice of academic major.

Academic major choice and personality

The selection of an academic major is a significant and far-reaching decision for individuals pursuing higher education (Humburg, 2012). It not only determines the future career path and opportunities, but also profoundly influences their daily activities and overall life trajectory (Allida & Vyhmeister, 2004). At the individual level, the chosen major can lead to contentment with the academic field, future occupation, and career, fostering academic success and personal fulfillment. Several factors may be associated with academic major selection encompassing personal characteristics (e.g., gender, age, ethnicity/race, socio-economic status, academic performance, motivations, self-image,

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self-efficacy, interests, and personality), parental characteristics (e.g., education level, family income, family members' occupation and educational level), and the influence of significant others (e.g., siblings, teachers, advisors, peers; Iliashenko & Mardenova, 2023; Lakhal et al., 2012).

Unlike contextual factors, which may change over time, personality traits offer a stable lens through which to understand how individuals navigate academic decisions. Personality traits, being relatively stable and resistant to change, persist across various contexts and situations, influence individuals' interests and preferences (De Fruyt & Mervielde, 1999) and therefore warrant examination for its relationship with major choice (Pritchard et al., 2018). Various theories suggest that people seek careers that align with their self-concepts and desired work activities, as well as environments where they can express their personal traits (Vyakarnam, 2019). The importance of aligning one's personality with the university environment has been emphasized (Lakhal et al., 2012) and has practical implications for academic advising and counselling (Vedel, 2016). Indeed, Holland's vocational theory suggests that a good personality-university environment fit leads to student flourishing and reduced stress, while a poor one negatively affects well-being and performance (Balsamo et al., 2012).

According to Costa and McCrae's (1992) FFM, the traits of Extraversion (E), Agreeableness (A), Conscientiousness (C), Neuroticism (N), and Open-Mindedness (O) interact with the environment to form characteristic adaptations. Each trait is characterized by specific qualities such as focusing energy outwardly for E, possessing kindness and care for A, being organized and goal-oriented for C, experiencing moodiness and anxiety for N, and seeking new and creative experiences for O (Costa & McCrae, 1992). The FFM has been extensively used to understand individual differences in personality (Shekhar & Devi, 2012) and across academic majors, revealing that each factor can differentiate individuals in specific fields of study, highlighting the practical importance of understanding these associations (Lee et al., 2022). Although Holland's work on vocational aptitudes contributes to interpreting personality, the FFM provides a more direct and comprehensive measure of personality traits, predicting important life events and outcomes, including academic success (Pritchard et al., 2018).

Numerous studies provide evidence regarding the relationship between FFM traits and academic majors, and while there are some discrepancies, several consistent patterns emerge: Natural-science students tend to be more introverted than students in humanities, art, law or economics, and social science majors (Balsamo et al., 2012), whereas high extraversion scores increase the likelihood of choosing business, economics, or law majors (Humburg, 2012). In terms of N, natural-science majors have

lower scores than humanities, art, law or economics majors and social science majors (Balsamo et al., 2012). Several studies emphasize the significance of O, as higher scores have been associated with philosophy and theology majors (Balsamo et al., 2012) and generally arts, humanities, and social science majors (Lee et al., 2022), whereas business and physical science/math majors show lower levels of this trait (Ghimire et al., 2022; Lee et al., 2022). In terms of C, business students rate themselves higher on conscientiousness than humanities students (Balsamo et al., 2012), but they tend to score lower on A (Ghimire et al., 2022). Science majors, including nursing, have been found to be less agreeable and compassionate than other students (Schmid, 2021), while in other studies, psychology, arts/humanities, and science majors have been found to have higher scores (Vedel, 2016). Students in the health sciences were found to be nearly as conscientious as studes, but the E of health science students was greater (Balsamo et al., 2012).

Facet-level analyses

Trait-level analysis using the FFM is valuable in obtaining broad insights into personality characteristics. Nevertheless, a more detailed understanding of personality can be attained by examining specific facets within each trait. The hierarchical organisation of personality entails the subdivision of the FFM traits into more specific constituents known as facets. Soto and John (2017) developed a comprehensive measure that encompasses both the trait level and the fifteen facets, with three facets per trait, within a unified scale. Extraversion includes sociability (i.e., the degree to which an individual seeks and enjoys social interactions and the company of others), assertiveness (i.e., the tendency to express one's opinions, take charge of situations, and act confidently in social contexts), and energy (i.e., the overall vigor, enthusiasm, and intensity of an individual's approach to activities and interactions). Agreeableness is comprised of compassion (i.e., the extent to which an individual is caring, empathetic, and considerate of others' feelings and well-being), respectfulness (i.e., the inclination to treat others with courtesy, politeness, and a regard for their opinions and perspectives), and trust (i.e., the willingness to believe in the sincerity, reliability, and good intentions of others.). Conscientiousness encompasses organization (i.e., the degree to which an individual is structured and methodical), productiveness (i.e., the ability to set and achieve goals), and responsibility (i.e., the sense of duty, reliability, and accountability in fulfilling commitment and obligations). Neuroticism relates to three key traits: anxiety, which is characterized by frequent worries and a sense of unease; depression, marked by feelings of sadness, hopelessness, and a diminished interest or pleasure in activities; and emotional volatility, which involves a high

level of emotional instability and proneness to rapid mood changes. Finally, O consists of intellectual curiosity (i.e., the desire for knowledge and exploration of new ideas), aesthetic sensitivity (i.e., the appreciation for art, beauty, and creativity in various forms), and creative imagination (i.e., the ability to think innovatively, generate original ideas, and approach challenges with creativity). These fifteen facets of personality often provide valuable insights that cannot be obtained solely through trait analysis. Similarly, previous research on academic majors is significantly limited in that it has primarily examined broad factor-level personality variables rather than specific narrow facet-level traits, which have greater explanatory value in terms of academic-related variables (Jones et al., 2021).

Facet-level analyses used by Lee et al. (2022), provided further detail, as they often exhibit significantly different means within a given academic major area. Visual/Performing Art majors, for example, averaged lower in prudence but higher in perfectionism in their study, even though both features belong to the C domain. Accordingly, De Fruyt and Mervielde (1996) focused on facets of personality and discovered that the equation involving the facet scales outperformed that involving the factor scales in predicting academic group membership to a significant extent. However, the study of De Fruyt and Mervielde (1996) did not provide in-depth evaluations of how students in certain academic major groups differ at the facet-level of personality traits, whereas the study of Lee et al. (2022) focused on the HEXACO personality model. Given that facet-level personality assessment has been repeatedly demonstrated to be effective (Kokkinos et al., 2023), this is a significant omission in the literature. Numerous studies have delved into the nuanced associations between FFM facets and academic major choices among university students. In the realm of E, sociability, assertiveness, and energy level have been identified as influential factors in academic preferences. For instance, Digman (1990) found that students scoring higher on sociability facets were more inclined toward majors in communication and social sciences, where interpersonal skills are paramount. Research by Tracey and Robbins (2006) suggested that students with higher scores on A facets, characterized by compassionate and cooperative tendencies, may be drawn to majors in social work and counselling. Conscientiousness facets, including organization, productiveness, and responsibility, have been associated with majors requiring structured and goal-oriented approaches, such as business and sciences (Poropat, 2009). Negative Emotionality[1] facets, encompassing anxiety, depression, and emotional volatility, have been explored in relation to academic major choice, revealing

potential associations with fields that align with emotional stability requirements (Poropat, 2009). Finally, facets of O, such as intellectual curiosity, aesthetic sensitivity, and creative imagination, have been linked to majors in arts and humanities, as demonstrated by studies, such as Rammstedt and John (2007). These findings collectively underscore the nuanced role of FFM facets in shaping the intricate landscape of academic major choices among university students.

Well-known personality profiles have emerged from prior research, including resilients (scoring high on E, A, C facets), overcontrollers (scoring low on N, high on C, and low on E facets), undercontrollers (scoring lower on A and C facets and high on N), and ordinaries (average scores on all facets). While prevailing research on these profiles predominantly focuses on distinguishing traits at a trait level, certain studies that delve into facet-level analyses have revealed significant distinctions (e.g., Chapman & Goldberg, 2011; Kövi et al., 2019). Conversely, some research proposes that disparities in personality traits among distinct personality types may not consistently manifest as differences in more specific facets (Xie et al., 2016). Furthermore, some authors posit that profiles constructed from the personality facets of the Big Five offer the most accurate predictions of behaviour (Organ, 1994). In general, the personality profiles have been examined in relation to antisocial behaviour among young individuals (Yin et al., 2021), as well as academic dishonesty and academic procrastination (Kokkinos et al., 2023). However, no research has investigated the relationship between these personality profiles at facet-level and the selection of academic majors. Consequently, this study aimed to extend prior research by investigating the facet-level personality profiles of Greek university students using LPA and explore how these profiles relate to the choice of academic majors.

It is expected that the LPA analysis would identify four distinct personality profiles (resilients, overcontrollers, undercontrollers, and ordinaries) based on previous research (Kokkinos et al., 2023). Resilients are hypothesized to select humanities and health sciences, as resilients are adaptable, optimistic, and possess strong emotional stability. These fields often require strong interpersonal skills, empathy, and the ability to cope with stressful situations and navigate complex social dynamics (Balsamo et al., 2012). Undercontrollers could be characterized as impulsive, risk-taking, and novelty-seeking, and therefore their innovative thinking and willingness to take risks can contribute to breakthroughs in fields like technology and entrepreneurship (Lakhal et al., 2012). Conversely, given overcontrollers' cautious and organized nature, they may gravitate toward economics, finance, or data analysis. Their attention to detail and ability to process complex information can be valuable in these domains (Lee et al., 2022). Finally, ordinaries characterized

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[1] The term that the Big Five Inventory uses for Neuroticism.

by average scores on most facets except for relatively low scores on N, may demonstrate a tendency to opt for academic majors that offer a balanced and moderate level of challenge, such as social sciences or education (e.g., Garcia-Sedeño et al., 2009).

Gender differences

Although some studies have shown no significant gender differences across the personality profiles (e.g., Lau et al., 2023), women are more likely to be undercontrollers and men overcontrollers (Akse et al., 2004). Academic majors appear to be segregated by gender and consequently women are underrepresented in some fields (e.g., business, economics. engineering) while others have a higher female concentration (e.g., psychology, education, humanities and health; Lakhal et al., 2012). When examining the personality traits of students in different majors, it is essential to take into account both the gender composition of each major and gender personality differences (Jones et al., 2021).

Method

Participants

A sample of 1825 Greek university students (976 females; mean age = 25.36 yrs, SD = 8.77 yrs), participated in the study. The students were pursuing majors in various fields, including Humanities/Law/Social Sciences (52.7%), Maths/ Natural/Technological Sciences (15.3%), Economics/ Information Sciences (10.1%), and Health/Life Sciences (21.9%)[2]. The data used in this study were part of a project on university students' mental health and well-being. Participants were recruited through Facebook and online Greek student networks, following approval from the institutional ethics committee. Data were collected using an anonymous questionnaire administered through Limesurvey, an online survey software. Before participating, students were informed about the purpose of the study, their right to withdraw, and the confidentiality and anonymity of their responses. They provided electronic consent at the beginning of the survey.

Measures

Participants' demographics

The initial part of the questionnaire gathered information about participants' age, gender, and academic field of study.

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[2] Hereafter referred to as: Humanities, Sciences, Economics/ICT, Health.

Personality

The Greek translation of the revised Big Five Inventory-2 (BFI-2) (Kokkinos et al., 2023; Soto & John, 2017) was used to assess the five factors and the respective 15 facets of the FFM. The factors include Extraversion (Sociability; *Is outgoing, sociable*, Assertiveness; *Is dominant, acts as a leader*, Energy Level; *Is full of energy*), Agreeableness (Compassion; *Is compassionate, has a soft heart*, Respectfulness; *Is respectful, treats others with respect*, Trust; *Assumes the best about people*), Conscientiousness (Organization; *Keeps things neat and tidy*, Productiveness; *Is persistent, works until the task is finished*, Responsibility; *Is reliable, can always be counted on*), Negative Emotionality (Anxiety; *Worries a lot*, Depression; *Tends to feel depressed, blue*, Emotional Volatility; *Is temperamental, gets emotional easily*), and Open-Mindedness (Intellectual Curiosity; *Is complex, a deep thinker*, Aesthetic Sensitivity; *Is fascinated by art, music, or literature*, Creative Imagination; *Is original, comes up with new ideas*). The assessment was conducted on a 5-point scale, ranging from *1 = Strongly Disagree* to *5 = Strongly Agree*. The Greek translation of the scale has maintained the same scoring procedures as the original. The BFI-2 has demonstrated reliability and validity as a measure of personality (Soto & John, 2017).

Statistical analyses

Data analyses were conducted using IBM SPSS 26 and Mplus 8.6. Internal consistency coefficients and descriptive analyses, Pearson correlations were calculated. Confirmatory factor analysis (CFA) was used to analyze the structure of the BFI-2, combining a maximum likelihood estimate technique with the Satorra-Bentler scaled chi-square test for non-normal data. Fit indices, namely Comparative Fit iIndex (CFI), Tucker-Lewis Index (TLI), Root Mean Squared Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR) evaluated the model's fit (Jackson et al., 2009). Following, an LPA using Mplus 8.6 (Muthen & Muthen, 2017) was conducted at the facet level of the FFM to identify students' personality profiles using statistical criteria, such as the Bayesian Information Criterion (BIC) and Lo-Mendel- Rubin (LMR) statistic (Nylund et al., 2007). More specifically, the model with the lower BIC value is selected. A non-significant chi-square value ($p > .05$) in the LMR statistic indicates that the model with one fewer class should be chosen. Finally, average posterior probabilities and entropy values greater than 0.80 imply good model classification and class membership. Missing data were handled using full information maximum likelihood. Finally, the association between gender and academic

major in relation to profile membership was examined using the chi-square test of independence.

Results

Preliminary analyses

Descriptive statistics, reliabilities and correlations between the variables are reported in Table 1. Total scores were calculated by averaging item responses. Internal consistency coefficients were deemed adequate. CFA for the FFM showed good fit indices for the *15-facet model* [SB-χ^2 = 11234.74, df = 4589, CFI = 0.97, TLI = 0.95, SRMR = 0.048, RMSEA = 0.059 (0.056–0.062)].

Gender and academic major choice

The results of a chi-square test of independence indicated a statistically significant relationship between gender and major choice [χ^2(3, N = 1816) = 59.82, p = .000]. Specifically, it was observed that women tended to select Humanities majors, while men were more inclined to choose Sciences and Health majors.

Latent profile analysis

A four-profile model fit the data best. Details about the model's fit indices are reported in Table 2. The decision of selecting the model with four profiles is supported by a combination of lower AIC and BIC values, a relatively balanced minimum class size (15.41%), high entropy (0.90), and a significant likelihood ratio test (136.89, $p < .05$). The statistically significant aLRT values for the 3- and 4-profile models suggest that these models provide a significantly better fit than models with fewer profiles. The model's fit seems to improve up to the 4-profile solution, as indicated by decreasing AIC (from AIC = 19796.26 for the 3-profiles model to AIC = 19598.78 for the 4-profiles model) and BIC values (from BIC = 20122.46 for the 3-profiles model to BIC = 19991.81 for the 4-profiles model). Beyond this point, the improvement in fit is less substantial.

The results replicated previous research that identified four profiles, so conventional names were used. Figure 1 shows FFM facet means across profiles. *Resilients* (n = 482) scored highest on facets of E (lowest on Energy), A, and C (lowest on Productiveness), but lowest on N facets (highest on Depression). *Ordinaries* (n = 549) scored average scores on all facets other than N, for which they scored relatively low. *Overcontrollers* (n = 281) followed the same general pattern as *ordinaries* but scored higher on N facets (lowest on Anxiety). Finally, *undercontrollers* (n = 511) scored low

Table 1 Sample means, standard deviations, cronbach's alpha values (on the diagonal) and pearson correlations among the constructs (N = 1823)

Scale	M	SD	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
1. SOC	3.08	0.77	(0.73)														
2. ASS	3.46	0.79	0.42**	(0.62)													
3. ENL	3.73	0.79	0.39**	0.37**	(0.67)												
4. COM	4.07	0.65	0.12**	0.06*	0.32**	(0.55)											
5. RESPE	4.34	0.64	−0.07**	−0.03	0.23**	0.53**	(0.67)										
6. TRU	3.43	0.73	0.08**	0.04	0.32**	0.49**	0.41**	(0.56)									
7. ORG	3.84	0.96	0.05*	0.16**	0.27**	0.23**	0.29**	0.11**	(0.83)								
8. PRO	3.75	0.80	0.20**	0.35**	0.44**	0.28**	0.32**	0.19**	0.59**	(0.70)							
9. RESPO	3.77	0.67	0.07**	0.26**	0.23**	0.32**	0.38**	0.13**	0.53**	0.53**	(0.57)						
10. ANX	3.52	0.86	−0.06**	−0.23**	−0.16**	0.03	−0.06*	−0.20**	0.07**	−0.06**	−0.08**	(0.69)					
11. DEP	2.84	0.91	−0.26**	−0.41**	−0.47**	−0.15**	−0.19**	−0.27**	−0.21**	−0.35**	−0.30**	0.57**	(0.75)				
12. EMV	2.90	0.93	−0.01	−0.21**	−0.22**	−0.14**	−0.28**	−0.24**	−0.24**	−0.31**	−0.37**	0.52**	0.57**	(0.75)			
13. ICU	3.75	0.75	0.08**	0.20**	0.12**	0.10**	0.05*	−0.02	−0.01	0.13**	0.04	0.11**	0.11**	0.10**	(0.59)		
14. ASE	3.64	0.81	0.04	0.08**	0.15**	0.17**	0.11**	0.12**	0.07**	0.13**	0.08**	0.11**	0.06**	0.05*	0.51**	(0.59)	
15. CIM	3.79	0.72	0.19**	0.41**	0.40**	0.14**	0.11**	0.07**	0.10**	0.32**	0.14**	−0.04	−0.17**	−0.03	0.39**	0.30**	(0.61)

Note. SOC = Sociability, ASS = Assertiveness, ENL = Energy Level, COM = Compassion, RESPE = Respectfulness, TRU = Trust, ORG = Organization, PRO = Productiveness, RESPO = Responsibility, ANX = Anxiety, DEP = Depression, EMV = Emotional Volatility, ICU = Intellectual Curiosity, ASE = Aesthetic Sensitivity, CIM = Creative Imagination

Cronbach's alpha values in parentheses. $^*p < .05$ $^{**}p < .01$

Table 2 LPA FFM facet level model fit statistics

Number of Profiles	AIC	BIC	Minimum Class Size	Entropy	aLRT
2	20702.16	20114.54	43.92%	0.81	373.614
3	19796.26	20122.46	32.34%	0.89	263.384***
4	**19598.78**	**19991.81**	**15.41%**	**0.90**	**136.186***
5	19499.25	19959.28	7.63%	0.88	95.445

Note. Shaded values indicate final chosen model. AIC = Akaike Information Criteria; BIC = Bayesian Information Criteria; aLRT = adjusted Lo-Mendell-Rubin Likelihood Ratio Test

*$p < .05$; ***$p < .001$
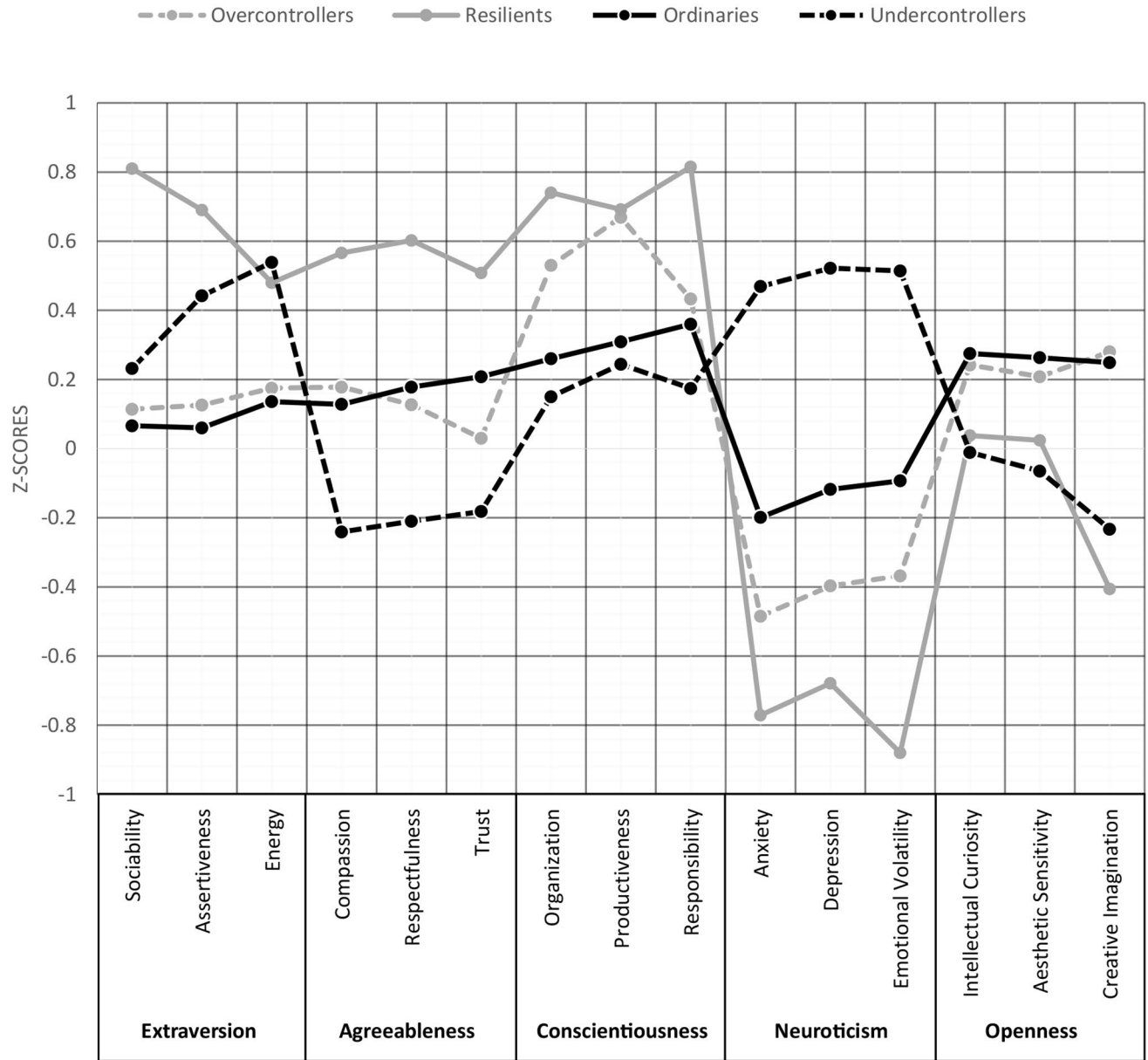
Fig. 1 Latent profile analysis of FFM facets

Table 3 Crosstabulation between gender and profiles of FFM facet level (%)[a]

| | Groups | | | | Total |
	Ordinaries	Over-Controllers	Under-controllers	Resilients	
Females	283 (15.6)	174 (9.5)	265 (14.5)	254 (13.9)	976
Males	266 (14.6)	107 (5.9)	246 (13.5)	228 (12.5)	847
Total	549 (30.2)	281 (15.4)	511 (28)	482 (26.4)	1823

[a](χ^2 (3, N = 1823) = 9.53, p = .023)

Table 4 Crosstabulation between academic major and profiles of FFM facet level (%)[a]

| | Groups | | | | Total |
	Ordinaries	Over-Controllers	Under-controllers	Resilients	
Humanities	319 (58.5)	142 (50.5)	272 (53.4)	224 (46.6)	957
Sciences	91 (16.7)	35 (12.5)	79 (15.5)	74 (15.4)	279
Health	88 (16.1)	78 (27.8)	98 (19.2)	133 (27.7)	397
Economics/ICT	47 (8.6)	26 (9.3)	60 (11.8)	50 (10.4)	183
Total	545	281	509	481	1816

[a](χ^2 (9, N = 1816) = 33.86, p = .000)

on O facets (lowest on Creative Imagination) and low on facets of A (lowest on compassion and second lowest on respectfulness) and C. The facet level of A was mixed for all the profiles, with highest scores on respectfulness, mid-level on compassion, and lowest on trust in each profile. The O facets were unhelpful in differentiating profiles, other than for *undercontrollers* who scored lower than all other profiles on each of the O facets.

Gender and academic major profile membership

The chi-square test results (Table 3), indicated the distribution of FFM personality profile membership across gender. Females were more likely to be identified in all personality profiles compared with males. Traditional gender roles and societal expectations may influence how individuals, especially women, express and cope with their emotions. Therefore, socialization processes could lead women to exhibit a range of coping styles, contributing to their presence across different personality profiles.

Further analysis revealed that students majoring in Humanities and Sciences tend to be ordinaries. This finding suggests that individuals pursuing academic disciplines within the Humanities and Sciences often possess personality traits characterized by a balanced profile, with average scores across various facets. On the other hand, students pursuing majors related to healthcare were categorized as resilients. Conversely, those pursuing majors in Economics/Information and Communication Technology (ICT) were frequently classified as undercontrollers reflecting a profile characterized by lower scores in O and A facets. Detailed information regarding the cross-tabulation of academic majors and FFM profiles are reported in Table 4.

Discussion

The objective of the study was to uncover specific patterns among Greek university students by analyzing the Five-Factor Model at the facet level using Latent Profile Analysis. Additionally, it aimed to investigate potential variations in these patterns concerning students' academic majors and gender. Surprisingly, women mostly chose Humanities majors, while men preferred Sciences and Health Sciences majors. The finding that women exhibit a greater tendency to select Humanities majors aligns with broader societal stereotypes and historical patterns, where women have often been encouraged or stereotypically associated with academic fields emphasizing interpersonal skills, creativity, and language proficiency (e.g., Trusz, 2020). Humanities majors, encompassing disciplines such as literature, sociology, and arts, may attract women who are drawn to the qualitative and socially oriented aspects of these fields. Despite the anticipation that Health Sciences would be a more common choice among women, it was observed that men exhibited a higher frequency of selection in this field. The inclination of men toward Sciences and Health majors reflects both traditional gender norms and contemporary shifts in gender dynamics. Men choosing Sciences majors might be influenced by cultural expectations emphasizing logical reasoning, quantitative skills, and analytical thinking traditionally associated with these fields. Similarly, the observation that men are more inclined to select Health majors aligns with evolving gender roles, as men increasingly pursue careers in healthcare professions, challenging historical gender norms in this domain (Quadlin, 2020).

LPA analysis confirmed four distinct personality profiles (resilients, overcontrollers, undercontrollers, and ordinaries) based on prior research (Kokkinos et al., 2023). Resilients scored high in the facets of E, A, and C, but low in N. Ordinaries had average scores on all facets and relatively low N facets, while overcontrollers also scored higher on

N. Undercontrollers had low facet scores on O, A, and C. The multifaceted nature of A, underscored by studies such as those conducted by Soto and Luhmann (2019), highlights the necessity for a nuanced exploration of its facets. The observed mixed pattern, characterized by consistent high scores on respectfulness and mid-level scores on compassion across all profiles, resonates with contemporary perspectives on personality dynamics (Lynam & Widiger, 2001). This aligns with the notion that individuals may exhibit distinct manifestations of agreeable traits based on contextual factors and situational demands (Srivastava, 2010). The consistently low scores on the trust facet across all profiles draw attention to the nuanced nature of trust within the A domain. Ozer and Benet-Martínez's (2006) work has emphasized the dynamic and context-dependent nature of trust within A, aligning with the idea that trust is influenced by various factors, including past experiences and individual differences (Rotter, 1980). Turning to the O facets, recent studies (Soto & Luhmann, 2019) have noted that certain facets within the O domain may be less informative in distinguishing personality profiles. However, the exception of undercontrollers consistently scoring lower on each O facet aligns with contemporary perspectives on the resistance to novel experiences or unconventional ideas associated with lower O (Lynam & Widiger, 2001). The observed lower scores on the O facet of creative imagination among resilients compared to the other facets (i.e., intellectual curiosity and aesthetic sensitivity) and the lower score in creative imagination indicates a potential inclination toward more pragmatic and concrete thinking. This aligns with the idea that individuals with high resilience may prefer stability and goal-oriented behaviors, influencing their cognitive preferences (Srivastava, 2010). Notably, women were more likely to be identified in all the profiles compared with men. Previous studies have shown that females are overrepresented among overcontrollers (Akse et al., 2004). The socialization process may result in women showcasing a spectrum of coping strategies, influencing their representation in different personality profiles (Farhane-Medina et al., 2022). In terms of communication styles, women, on average, tend to be more expressive and forthcoming in conveying their emotions. This heightened expressiveness could result in a more pronounced display of their coping mechanisms, thereby increasing the likelihood of their recognition across diverse personality classifications (Barnett et al., 2021). Cultural factors play a significant role as well. More specifically, variances in cultural norms and values may exist, with certain cultures actively encouraging women to be more open about their feelings. Such cultural dynamics might contribute to the observed dispersion of personality profiles among women.

Students in Humanities and Sciences were more likely to belong to the ordinaries group, suggesting a balanced and average profile in terms of personality facets, without extreme scores in any particular directions. Students majoring in Health were mostly classified as resilients and those in Economics/ICT were classified as undercontrollers. The likelihood of healthcare students being classified into resilients suggests some specialties within the healthcare profession. Nevertheless, in healthcare professions, resilience assumes a pivotal significance due to the inherent presence of elevated stress levels, emotional requisites, and exposure to distressing circumstances (McCann et al., 2015). Resilient individuals possess effective coping mechanisms, and a commitment to assisting others, making them well-suited for rigorous academic disciplines related to health (Tugade & Fredrickson, 2004). Students classified as resilients had high scores in all A facets (compassion, respect, trust), which are fundamental attributes for healthcare practitioners, given their close interactions with patients and exposure to emotionally intense circumstances (Perez-Bret et al., 2016). The high scores in all A facets among resilients, particularly compassion, respect, and trust, align with the interpersonal and empathetic skills crucial for healthcare practitioners. The selection of health professions by resilient individuals holds promise, as their personality traits may inherently drive them to help others, motivated by a sense of purpose and a desire to positively influence the lives of individuals (Louwen et al., 2023). The low scores on creative imagination do not necessarily imply a lack of innovation or problem-solving skills among resilients in healthcare. Instead, it may reflect a preference for practical and realistic approaches over more abstract or unconventional thinking (Perez-Bret et al., 2016). In healthcare, the ability to apply knowledge to real-world situations and make sound, evidence-based decisions are crucial, and resilients may excel in these aspects (McCann et al., 2015).

On the contrary, undercontrollers (low O, A and C facets), are more likely to study economics. Previous research has demonstrated personality differences related to O, A, and C traits among individuals majoring in economics (Vedel, 2016). Undercontrollers, due to their low O scores, may prefer economic majors due to the practical and tangible nature of these fields, which contrast with high O individuals who are involved in culture, media, sports, teaching and research (Törnroos et al., 2019). Economic majors often emphasize concrete thinking, analytical skills, and problem-solving, making them suitable for individuals with low O, who exhibit executive and conservative thinking styles (Lakhal et al., 2012). Concerning the O facets, elevated scores in creative imagination among undercontrollers may prove advantageous in economic disciplines that place increasing value on innovative problem-solving,

strategic thinking, and entrepreneurship. Economic majors often involve analyzing complex systems, understanding market dynamics, and devising innovative solutions to economic challenges. Undercontrollers' reduced trust and compassion in the A facets may contribute to a preference for economic academic majors that emphasize individual success and financial gain. According to Frank et al. (1993), economists behave differently from students of other disciplines, often displaying self-interestedness, free-riding, and cooperation. The observed variation could stem from individuals' exposure to economics education, be attributed to inherent dissimilarities, or a combination of both (Frank et al., 1993). Despite undercontrollers' low scores on C, higher scores on productiveness facet are associated with majoring in economics. The productiveness facet reflects traits such as diligence, industriousness, and goal-directed behavior. Higher scores on this facet are often associated with a strong work ethic and the ability to effectively manage tasks and responsibilities. The observed connection between higher productiveness scores and a preference for economics suggests that, despite the overall low C, individuals within the undercontrollers group exhibit specific industrious and goal-oriented characteristics relevant to economic studies. Finally, the undercontrollers' higher scores in energy facet, compared to sociability and assertiveness, suggests a preference of dynamic and active environments. Individuals with these traits may be drawn to fields like economics that involve constantly evolving economic landscapes, market dynamics, and policy changes.

Implications

Students often select their undergraduate majors without sufficient personal development or a clear understanding of realistic career paths (Pritchard et al., 2018). The process of choosing an academic major is influenced by numerous factors, but the crucial question is not which factors have the most impact on a student's decision, but rather which factors drive students to choose majors that align with their satisfaction levels (De Fruyt & Mervielde, 1999).

Wen (2021) points out that there are no inherently good or bad personality profiles; the key is whether the chosen personality profile is suitable for academic pursuits, work, and social interactions. The study's findings emphasize the significance of tailored interventions, where counselors can encourage students to pursue disciplines that match their unique personality profiles (Jones et al., 2021). By examining the relationship between academic major selection and the Five-Factor Model (FFM) of personality, career counseling and guidance practices can be better informed, allowing individuals to make more well-informed decisions about their career paths(De Fruyt & Mervielde, 1999).

It is important to note that even if a student's personality profile differs from the majority of students in a particular major, s/he can still succeed in it. Two strategies are suggested: first, by being aware of potential challenges and adapting accordingly (e.g., an undercontroller in a major that requires innovation and teamwork), and second, by seeking avenues within that major that align with their personality (Jones et al., 2021). Faculty members can also play a role by tailoring their instructional methods based on the personality profiles of their students, leading to improved learning experiences and overall well-being (Vedel, 2016).

Regarding gender differences in academic major choices, it remains uncertain whether these differences are influenced by personality traits or social factors, such as the social acceptability of certain majors (Jones et al., 2021). It is possible that gender norms limit female students from exploring career options that align with their personality. In such cases, counselors, faculty, and visiting professionals can assist female students from an early age in the major decision-making process to counter potential gender norms that restrict academic freedom (Jones et al., 2021; Pritchard et al., 2018).

Limitations

This study on Greek university students' personality profiles associated to academic majors has certain limitations due to its cross-sectional design, convenience sample usage, and reliance on self-report questionnaires. Further, in terms of reliability some FFM facets show low reliability coefficients. While this study provides valuable insights into the association between personality facets and academic major selection, the reliability limitations of some FFM facets suggest caution in generalizing the findings.

A notable constraint relates to the issue of causality, particularly the temporal sequence between individual personality variations and the choice of an academic major (Lee et al., 2022). Previous studies have suggested that pre-existing personality differences are well-documented, but social learning may also influence personality development, making it challenging to draw definite conclusions (Shekhar & Devi, 2012). Moreover, gender differences in major choice and the inability to separate socialization from selection effects present further limitations (Balsamo et al., 2012).

To address these limitations, future research endeavors should aim to replicate the findings using longitudinal designs to observe changes over time with larger and more diverse samples. Additionally, exploring differences across broader or more fine-grained categories of majors rather than the existing Greek higher education admissions system classifications could offer a better understanding of the

mechanisms underlying different personality types and attributes (Lee et al., 2022).

Declarations

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