

An Investigation of the Differences in the Dark Triad and the Big Five Personality Traits Across Majors

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Abstract

The Dark Triad (DT) personality traits include interrelated personality constructs which are Machiavellianism, narcissism, and psychopathy, and research has shown that individuals who are high on the DT personality traits tend to choose occupations that provide outcomes compatible with these traits. Supporting this reasoning, the DT is suggested to have impacts on major choices of university students. Previous research has also shown that the Big Five (BF) personality traits influenced educational choices. The main aim of the current study was to examine whether or not self-selection based on these personality characteristics predicted career choices. Data was collected from 659 (359 female) newly enrolled students in seven academic majors (i.e., psychology, law, economics/business, engineering, political science, medicine, and education) in Turkey. Mean scores of the groups were compared using two (gender) by seven (major) analysis of variance with the DT and BF personality traits as the

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dependent variables. The results revealed that Machiavellianism scores of economics/business and engineering students were significantly higher than those of psychology students. In addition, psychopathy scores of engineering, economics/business, and political science students were higher than those of psychology students. Neuroticism scores of students from psychology departments were higher than those of engineering, economics/business, and political science students. Law and education students' neuroticism scores were also higher than those of students from engineering and economics/business departments. Finally, interaction effects of major and gender were significant for openness to experience and conscientiousness. The findings are discussed regarding theoretical and practical implications along with suggestions for future research.

Keywords: The dark triad personality traits; The Big Five personality traits; Academic major choices.

Bölüm Seçimine Göre Karanlık Üçlü ve Büyük Beşli Kişilik Özelliklerinin İncelenmesi

Öz

Karanlık Üçlü (KÜ) kişilik özellikleri, birbirleriyle ilişkili kişilik özelliklerinden Makyavelizm, narsisizm ve psikopatili kapsamaktadır ve arařtırmalar KÜ kişilik özelliklerinde yüksek skor alan bireylerin bu kişilik özelliklerine uygun olan ödüllere/çıktılara ulaşmalarını sağlayacak meslekler seçme eğiliminde olduklarını göstermektedir. Bu bulgular ve önermeyle uyumlu olarak, KÜ kişilik özelliklerinin üniversite öğrencilerinin bölüm tercihlerini etkileyeceği önerilmektedir. Önceki arařtırmalar Büyük Beşli (BB) kişilik özelliklerinin de eğitim tercihlerini etkilediğini göstermektedir. Bu çalışmanın temel amacı, kariyer seçimlerinde bu kişilik özelliklerine bağlı olarak yapılan öz-seçimlerin etkili olup olmadığını arařtırmaktır. Veri, Türkiye’de yedi farklı alanda (psikoloji, hukuk, iktisat/işletme, mühendislik, siyaset bilimi, tıp ve eğitim bilimleri) henüz eğitime başlamış 659 (359 kadın) üniversite öğrencisinden toplanmıştır. Grupların değişkenlerdeki ortalamaları KÜ ve BB kişilik özelliklerinin bağımlı değişken olduğu 2 (cinsiyet)×7 (bölüm) varyans analizi yöntemiyle karşılaştırılmıştır. Sonuçlar, iktisat/işletme ve mühendislik öğrencilerinin Makyavelizm skorlarının psikoloji öğrencilerinin skorlarından daha yüksek olduğunu; ayrıca, mühendislik, iktisat/işletme ve siyaset bilimi öğrencilerinin psikopati skorlarının psikoloji öğrencilerinin skorlarından yüksek olduğunu göstermiştir. Psikoloji öğrencilerinin nevrozizm skorlarının, mühendislik, iktisat/işletme ve siyaset bilimi öğrencilerinin skorlarından daha yüksek olduğu bulunmuştur. Hukuk ve eğitim fakültesi öğrencilerinin nevrozizm skorları da

mühendislik ve iktisat/işletme öğrencilerinin skorlarından daha yüksektir. Son olarak, sonuçlar deneyime açıklık ve dürüstlük kişilik özellikleri için bölüm ve cinsiyetin etkileşim etkisinin olduğunu göstermiştir. Bulgular, kuramsal ve uygulamaya yönelik çıkarımlar ile gelecekteki araştırmalar için öneriler bağlamında tartışılmıştır.

Anahtar Kelimeler: Karanlık üçlü kişilik özellikleri; Büyük beşli kişilik özellikleri; Akademik alan seçimi.

Introduction

We all have some stereotypical impressions about people who are doctors, businessmen, lawyers, psychologists, politicians and artists when we encounter with them both in real life (e.g., Vladimir Putin as a politician, Steve Jobs as an entrepreneur and a businessman, Michael Jackson as a music star) or just in TV series/movies (e.g., Gregory House as a doctor). That is, we assume that individuals who choose particular occupations have some particular personality characteristics that make them fit to those occupations. However, empirical studies investigating the links of personality characteristics with occupational and/or academic major choices are very few in number (Jonason, Wee, Li and Jackson, 2014). In line with the theories of the Dark Triad (DT) personality (Paulhus and Williams, 2002) and the Big Five (BF) personality (Costa and McCrae, 1992), the present study aimed to be the first research in Turkey that investigated the effects of these personality traits on academic major choices of Turkish university students who have just started studying in one of the seven academic fields (i.e., psychology, law, economics/business, engineering, political science, medicine and education). In addition, in the exploratory analyses the relationships between the students' DT personality traits and the BF personality traits were also examined in order to compare the results with the findings of previous research which were mostly conducted in Western countries such as USA (e.g., Vize, Lynam, Collison and Miller, 2018). Finally, possible reflections of the investigated personality traits on major choices of undergraduate students were discussed along with practical implications and suggestions for future research.

The Dark Triad Personality Traits

According to Paulhus and Williams (2002), the DT personality traits refer to three interrelated personality characteristics which are psychopathy, narcissism and Machiavellianism. According to Cleckley (1964) and Hare (1993), psychologists define subclinical psychopathy as the tendency to dis-

play anti-social behaviors, lack of feelings such as conscience, fear and empathy, being manipulative, irritable and having a tendency for criminality. The other “dark” personality trait, subclinical narcissism, is characterized by excessive need for admiration, being highly dominant and arrogant (Paulhus, 2001). Finally, Machiavellianism is defined as a stable social strategy which is comprised of manipulateness, vindictiveness and a strong tendency to try every way to achieve a goal (e.g., Gunthorsdottir, McCabe and Smith, 2002; Paulhus, 2001; Paulhus and Williams, 2002). The high level of DT traits one person has may interfere with other individuals’ psychological and even physical well-being in many social environments and work environment is not an exception. Therefore, it is important to understand the relation of the DT traits with individuals’ job-choices and such an understanding may help us further explore potential interpersonal and organizational outcomes.

The Dark Triad Personality Traits and Major/Occupation Choice

The DT personality traits are suggested to affect individuals’ job or occupational choices through the way they are related to “power” and “others” or “people” (Furnham, Hyde and Trickey, 2014). Individuals who are high on Machiavellianism are suggested to be less likely to prefer jobs that involve caring for others than those who are low on Machiavellianism. Rather, these individuals are likely to prefer careers and jobs that give them opportunity for social influence and power (Jonason et al., 2014). On the other hand, narcissists are expected to prefer jobs that provide them frequent social interactions with others as well as opportunity to be continuously admired by others. Therefore, they are proposed to be more likely to choose artistic careers or social occupations. Individuals who are high on psychopathy are expected to prefer jobs that isolate them from others and they may be likely to avoid jobs that involve helping or caring for others (that is, jobs that are incompatible with their antisocial tendencies and lack of empathy), and jobs that require compliance and application of strict rules (which would be incompatible with their high level of impulsivity and low level of self-control). Therefore, such individuals are suggested to prefer realistic and/or practical occupations.

Although small in number, there are studies which focus on effects of the DT personality traits on university major and occupational choices. For example, Jonason, Wee, Li and Jackson (2014) conducted two studies. In their

first study, they found positive relationships between narcissism and selections of entrepreneurship and society-related occupations and artistic professions. Machiavellianism was found to have negative relationships with social occupations. In their second study, which was replicated by using an alternative measure of the dark triad and a sample composed of directly contacted employees (as opposed to the participants of the first study who were recruited via Mechanical Turk), the authors found that psychopathy was positively correlated with preference for applied occupations, whereas, narcissism was positively associated with choices of crafting and care-oriented jobs. In line with the expectations, Machiavellianism was found to be negatively correlated with desire to have jobs that involve caring and practice.

In a more recent study, Southard and Zeigler-Hill (2016) revealed that narcissism and psychopathy were associated with various dimensions of fame interest which is an important indicator of choosing artistic occupations. However, Machiavellianism was found to be negatively associated with altruistic or “motivation to help others dimension” of fame interest.

Another recent study revealed that while narcissism had a positive relationship with artistic interests; Machiavellianism and psychopathy did not have a meaningful relationship with them (Kowalski, Vernon and Schermer, 2017). It was also found that the DT personality had non-significant correlations with interest in science; however, psychopathy was positively correlated with physical and engineering dimensions of science factors. Interests in nature and agricultural jobs were unrelated to the DT personality traits and interest in medical occupations had a negative relationship with them. In line with the propositions, interest in skilled trade jobs were not correlated with narcissism and Machiavellianism but it was positively related to psychopathy. Finally, interest in business was positively associated with both narcissism and psychopathy, whereas Machiavellianism had a non-significant relationship with it (Kowalski et al., 2017).

In a very recent study in Denmark, Vedel and Thomsen (2017) examined the relationship between the DT personality traits and the BF personality traits and the effects of these traits on major choices of students in college. It was found that students in economics/business major got significantly higher scores on Machiavellianism than all other students and significantly higher scores on narcissism than students in psychology and political science majors. Law students had also higher scores on Machiavellianism than psychology

students. However, they did not get higher scores on Machiavellianism than political science students or significantly higher scores on narcissism than any other major students.

In line with the theoretical background and previous findings, it was expected that individuals who are high on Machiavellianism would prefer occupations that would give them opportunities to reach power and status and would be likely to prefer careers in economics/business, law, medicine, and political science. Individuals who are high on narcissism were expected to be more likely to choose careers in psychology, education, economics/business, law, medicine, and political science since such occupations might provide them frequent social interactions with others and occasions for admiration by others. Finally, those who are high on psychopathy were proposed to be likely to choose engineering since the jobs that these students would hold after graduation are likely to be realistic and practical jobs and are less likely to involve frequent social interaction with others and/or caring for others. Therefore, the first three hypotheses of the present study are as follows:

Hypothesis 1: Machiavellianism scores of students from economics/business, law, medicine, and political science departments will be significantly higher than Machiavellianism scores of students from psychology, education, and engineering departments.

Hypothesis 2: Narcissism scores of students from psychology, education, economics/business, law, medicine, and political science departments will be significantly higher than narcissism scores of students from engineering departments.

Hypothesis 3: Psychopathy scores of students from engineering departments will be significantly higher than psychopathy scores of students from psychology, education, economics/business, law, medicine and political science.

The Big Five Personality Traits and Major/Occupation Choice

In their early studies, Costa and McCrae (1992; 1995) proposed that personality can be defined and explained by five traits. These personality traits are agreeableness, neuroticism (vs. emotional stability), extraversion, conscientiousness and openness to experience. Agreeableness refers to be cooperative, sincere, understanding, and compatible. Neuroticism is defined as being

tense, highly intolerable to stress, and being emotionally unbalanced. Extraversion refers to be sociable, friendly, active, energetic and being able to form relationships easily. Conscientiousness is described as being reliable, responsible, ambitious, rigorous, tidy, and systematic. Finally, openness to experience refers to be creative, open to different opinions and being analytical.

Both vocational interests and personality traits show considerable stability over time (Costa, McCrae and Holland, 1984). According to Holland's (1973) Theory of Vocational Choice, occupations can be classified into six different categories depending on their shared psychological characteristics. These six categories are social, conventional, realistic, artistic, investigative and enterprising. Early studies focused on the match between personality traits and these categories and investigated how the match between personality characteristics and occupational categories affected outcome variables such as success/performance on the job and well-being (e.g., Barrick and Mount, 1991; Costa et al., 1984; Mount, Barrick and Stewart, 1998). Regarding the match between personality traits and occupational features, it is suggested that individuals who are energetic, extraverted, and sociable may be more likely to choose occupations that involve frequent interaction with others such as business administration or sales than those who are introverted; whereas, individuals who are highly open to experience and who are high on risk-taking tendencies may be more likely to choose investigative and/or artistic jobs than those who are low on open to experience or who have conservational tendencies (e.g., Costa et al., 1984; Holland, 1973). People who are high on neuroticism may be expected to be more comfortable with and to prefer conventional jobs rather than investigative and/or social occupations. Highly agreeable individuals are proposed to seek for occupations that involve team work and cooperation. Finally, individuals who are high on conscientiousness are expected to prefer jobs that include caring for others, clear rules and regulations and high level of responsibility.

In an early study Wankowski (1969) showed that students who scored low on neuroticism (and high on emotional stability) were inclined to choose practice-oriented courses; whereas those who scored high on neuroticism were likely to select people-oriented courses. In addition, extraverted students were likely to choose to get education at practical departments whereas introverted individuals were likely to select theoretical subjects. Costa, McCrae and Holland (1984), Gottfredson, Jones and Holland (1993) and De Fruyt (1996)

found that individuals who were high on openness to experience were likely to be successful in artistic departments. Moreover, subjects with higher conscientiousness scores were likely to choose majors with a conventional profile, whereas people with high conscientiousness but low agreeableness scores were more likely to be successful at enterprising occupations. Barrick and Mount (1991) examined the effects of the proposed matches between personality traits and occupational choices on performance and found that extraversion was related to higher job performance in management and sales professions. Agreeableness and emotional stability were shown to be especially critical in occupations containing considerable amounts of dyadic (mutual) client interplay and teamwork (Mount, Barrick and Steward, 1998).

De Fruyt and Mervielde (1996) investigated individual differences among study majors and the effects of these differences on academic success. Students from languages and history, and bio-engineering departments had significantly lower scores on extraversion than students enrolled in psychology and educational sciences. Behavioral and social science students had higher scores on openness to experience than students from engineering, biology, chemistry, physics and applied disciplines. The sciences faculty students had the highest scores on agreeableness dimension. Finally, students from economics and law faculty had the highest conscientiousness scores; while, students of languages and history, psychology and education along with students of bio-engineering had the lowest conscientiousness scores.

In another study, Humburg (2012) showed that emotional stability was positively correlated with choosing mathematics, natural sciences, engineering or other technical majors as well as business, economics and law majors; however, it was negatively correlated with preference for humanities and social sciences.

Vedel and Thomsen (2017) investigated the relationships between the BF personality traits (along with the DT personality traits) and major choices of students in college. It was found that psychology students got significantly higher scores on neuroticism than students from economics/business and political science majors; however, they did not get significantly higher scores on neuroticism than law students. Moreover, psychology students had significantly higher scores on both agreeableness and openness to experience than economics/business and law students but they did not have significantly

higher scores on agreeableness than political science students. In addition, political science students got significantly higher scores on agreeableness and openness to experience than economics/business and law students. It was found that economics/business and law students' scores on extraversion were not significantly different from those of psychology students. Finally, political science students got significantly lower scores on conscientiousness than students from any other major and both political science and law students had significantly higher scores on neuroticism than economics/business students.

In line with the previous findings, psychology students' neuroticism and agreeableness scores were expected to be significantly higher than economics/business, law, medicine and political science students' neuroticism and agreeableness scores. Economics/business, political science and law students' extraversion scores were expected to be significantly higher than psychology and engineering students' extraversion scores. Political science students' openness to experience and agreeableness scores were expected to be significantly higher than economics/business and law students' openness to experience and agreeableness scores. Finally, we expected that medicine and law students would get the highest scores and that their scores would not be significantly different; and that the political science students would get the lowest conscientiousness scores. Therefore, the next set of hypotheses of the present study is presented as follows:

Hypothesis 4: Neuroticism and agreeableness scores of students from psychology departments will be significantly higher than neuroticism and agreeableness scores of students from economics/business, law, medicine and political science departments.

Hypothesis 5: Extraversion scores of students from economics/business, political science and law departments will be significantly higher than extraversion scores of students from psychology and engineering departments.

Hypothesis 6: Openness to experience and agreeableness scores of students from political science departments will be significantly higher than openness to experience and agreeableness scores of students from economics/business and law departments.

Hypothesis 7: Conscientiousness scores of students from medicine and law departments will be the highest scores; whereas, conscientiousness scores of students from political science departments will be the lowest scores.

Method

Study Group

Data were collected from 659 (N=359; 54.5% female) students of five universities in Turkey who volunteered to participate in the study. The age of the participants ranged from 18 to 34 (M=19.11; SD=1.61). Students were from seven majors: Psychology (N=95; 14.4%), law (N=80; 12.1%), economics/business (N=94; 14.3%), education (N=80; 12.1%), medicine (N=80; 12.1%), political science (N=80; 12.1%) and engineering (N=150; 22.8%).

Data Collection

Participants were contacted face to face and informed about study. Students who has just enrolled their majors or were in their preparatory school participated in the study. Informed consent of each participant was taken. There were no incentives for participants while collecting data. The data was collected via paper-pencil surveys. The response rate was 65.9%.

Measures

The survey package consisted of the demographics section, which included questions regarding gender, age, university, major, rank of choice of the major in university entrance exam, which major would the participant choose if they did not have to take the university entrance exam, and the standardized measures of the DT and the BF.

The Dark Triad Personality Traits

“The Short Dark Triad Scale” which was developed by Jones and Paulhus (2014) was used to measure the DT personality traits. It was adapted to Turkish by Özsoy, Rauthmann, Jonason and Ardiç (2017). The scale consists of 27 items (9 questions per trait) in total. Participants gave their answers on a 5-point likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

Cronbach’s α of the 9-item Machiavellianism scale was .69. Examination of the corrected item-total correlations revealed that two items had very low item-total correlations (.20 and .18, respectively) in the present study. Both of the items were related to “giving secrets to someone”. When these two items were excluded, Cronbach’s α increased to .71.

Cronbach’s α of the 9-item narcissism scale was .63. Again, examination of the corrected item-total correlations revealed that three items had very low item-total correlations (.17, .17, and .18, respectively) in the present study.

These items were related to “desire to meet famous people”, “not to be embarrassed by compliments”, and to “insist on getting respect that one believes to deserve”. When these three items were excluded, Cronbach’s α of the narcissism scale increased to .65.

Finally, Cronbach’s α of the 9-item psychopathy scale was .64. Examination of the corrected item-total correlations revealed that one item had very low item-total correlation (.05) in the present study and the item was related to “not getting into trouble with illegal actions” (reverse coded). When this item was excluded, Cronbach’s α of the psychopathy scale increased to .70.

The Big Five Inventory

The BF personality traits were measured by using the Big Five Inventory (BFI) developed by John, Donahue, and Kentle (1991). The inventory was adapted to Turkish by Sümer, Lajunen and Özkan (2005). The inventory is composed of 44 items (8 items for extraversion, 8 items for neuroticism, 9 items for agreeableness, 9 items for conscientiousness, and 10 items for openness to experience) in total. The statements are self-rated on a 5-point likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The reliabilities of the subscales were .81, .70, .66, .73 and .77, respectively.

Data Analysis

The interrelationships between the study variables were analyzed by using correlation analyses based on the 0.05 significance level and the main and interaction effects of gender and major on the DT and BF scores were analyzed by conducting two (gender) by seven (majors: engineering, psychology, economics/business, law, political science, medicine, teaching) analyses of variance using IBM SPSS 22.0 software.

Findings

Descriptive Statistics, Reliability Coefficients and Intercorrelations among the Study Variables

Initial frequency analyses revealed that 31.4% of the participants reported that their major was their first choice, 12.6% of the participants reported that their major was their second choice and 12.0% of the participants reported that their major was their third choice in the university exam. Furthermore, 57.7% of the participants reported that they would choose the same major if they did not have to get in university exam. Regarding the interrelationships between the components of the DT, the findings were consistent with

Vedel and colleagues' (2018) meta-analysis which revealed that Machiavellianism was more closely associated with psychopathy than narcissism. Gender was positively associated with Machiavellianism ($r=.10, p<.05$) and psychopathy ($r=.23, p<.001$) meaning that males' Machiavellianism and psychopathy scores were higher than females' scores. In addition, gender was negatively correlated with agreeableness ($r=-.10, p<.05$), openness to experience ($r=-.11, p<.01$) and neuroticism ($r=-.31, p<.001$). That is, females were more likely to score higher on agreeableness, openness to experience and neuroticism than males. Therefore, partial correlations were calculated by controlling for the effect of gender (Table 1).

Main and Interaction Effects of Gender and Major on the DT and BF Scores

Two (gender) by seven (majors: engineering, psychology, economics/business, law, political science, medicine, teaching) analyses of variance in which the dependent variables were the DT and the BF personality traits were conducted (Table 2). In contrast to the results of the previous studies (e.g., Vedel and Thomsen, 2017) which revealed that gender had significant main effects on the all of the DT traits, it was found that gender had significant main effects only on psychopathy scores. That is, males scored significantly higher on psychopathy than females. Regarding the effects of gender on the BF personality traits, the results partially supported the previous studies: Females had significantly higher scores on agreeableness and neuroticism than males. In addition, females had significantly higher scores on openness to experience than males in the present study. In contrast to the previous literature, gender had no significant main effect on conscientiousness scores.

Academic major had significant main effects on Machiavellianism, psychopathy and neuroticism scores (ANOVA revealed that academic major had also significant main effect on conscientiousness scores. However, the results of Bonferroni post-hoc analyses revealed that there were no significant differences between majors in conscientiousness scores). Partially supporting Hypothesis 1, which stated that Machiavellianism scores of students from economics/business, law, medicine and political science departments would be significantly higher than Machiavellianism scores of students from psychology, education and engineering departments, Machiavellianism scores of students from economics/business departments were significantly higher than those of psychology students. In contrast to expectations, Machiavellianism

scores of students from engineering departments were also significantly higher than those of psychology students. Since academic major did not have a significant main effect on narcissism, Hypothesis 2 which stated that narcissism scores of students from psychology, education, economics/business, law, medicine, and political science departments would be significantly higher than narcissism scores of students from engineering departments, was not supported. Partially supporting Hypothesis 3, which stated that psychopathy scores of students from engineering departments would be significantly higher than psychopathy scores of students from psychology, education, economics/business, law, medicine, and political science, psychopathy scores of students from engineering departments were significantly higher than those of students from psychology departments. However, unexpectedly, psychopathy scores of students from economics/business, and political science departments were also found to be significantly higher than those of students from psychology departments. Hypothesis 4 posited that neuroticism and agreeableness scores of students from psychology departments would be significantly higher than neuroticism and agreeableness scores of students from economics/business, law, medicine, and political science departments. Partially supporting Hypothesis 4, the results revealed that neuroticism scores of students from psychology departments was significantly higher than those of students from economics/business, political science, and engineering departments. The findings also showed that both law and education students' neuroticism scores were significantly higher than economics/business and engineering students' neuroticism scores.

For other BF personality traits, significant main effects were not found. Therefore, Hypotheses 5, 6 and 7 were not supported. However, unexpectedly, interaction effects of gender and major were significant for openness to experience and conscientiousness: Among students from psychology and economics/business departments, females had significantly higher scores than males on openness to experience. In the departments of psychology females had significantly higher scores than males on conscientiousness; whereas, in the departments of education males had significantly higher scores than females on conscientiousness.

Table 1. Means and Standard Deviations, Cronbach's α and Correlations for the Dark Triad and the Big Five Personality Traits

	Mean	SD	1	2	3	4	5	6	7	8
Machiavellianism	3.32	.85	(.71)							
Narcissism	3.05	.79	.25***	(.65)						
Psychopathy	2.49	.77	.42***	.25***	(.70)					
Extraversion	3.49	.81	.19***	.52***	.18***	(.81)				
Agreeableness	3.80	.61	-.19***	-.06	-.57***	.12**	(.66)			
Openness to Experience	3.86	.67	.10*	.33***	-.08*	.29***	.29***	(.77)		
Conscientiousness	3.35	.67	.04	.11**	-.13**	.13**	.23***	.24***	(.73)	
Neuroticism	3.25	.74	-.08	-.18***	.02	-.28***	-.07	-.03	-.14**	(.70)

Note. Numbers on the Diagonal are Cronbach's Alpha coefficients. ***Correlation is significant at the 0.001 level (2-tailed). **Correlation is significant at the 0.01 level (2-tailed). *Correlation is significant at the 0.05 level (2-tailed).

Table 2. Two (Gender) by Seven (Academic Major) Analyses of Variance with the Dark Triad and the Big Five Personality Traits as the Dependent Variables

	Gender		Major		Gender \times Major	
	F (df)	η^2	F (df)	η^2	F (df)	η^2
Machiavellianism	0.77 (1.645)	.00	2.95 (6.645)**	.03	0.61 (6.645)	.01
Narcissism	1.08 (1.645)	.00	0.49 (6.645)	.01	1.85 (6.645)	.02
Psychopathy	16.98 (1.645)***	.03	2.91 (6.645)**	.03	1.47 (6.645)	.01
Extraversion	0.35 (1.645)	.00	1.99 (6.645)	.02	0.72 (6.645)	.01
Agreeableness	7.78 (1.645)**	.01	0.74 (6.645)	.01	0.86 (6.645)	.01
Openness to exp.	7.41 (1.645)**	.01	0.25 (6.645)	.00	2.36 (6.645)*	.02
Conscientiousness	1.01 (1.645)	.00	2.39 (6.645)*	.02	2.58 (6.645)*	.02
Neuroticism	37.54 (1.645)***	.06	2.55 (6.645)*	.02	0.87 (6.645)	.01

Note. * $p < .05$, ** $p < .01$, *** $p < .001$. Openness to exp. = Openness to experience

Discussion

The current study is among the few attempts to investigate the links of both the DT and the BF personality traits with major choices of university students in a single study. In addition, the present research aimed to provide a response to Vedel and Thomsen's (2017) call for future research on this issue. In order to improve the previous methodology and external validity of the results, in addition to the four majors in Vedel and Thomsen's (2017) study, majors of medicine, engineering and education were included in the present research and the data were collected from students of seven majors (rather than four) who were also from a different cultural context, namely, Turkey.

The results regarding the relationships between the DT and BF personality traits partially replicated Vedel's (2016) and Vedel and Thomsen's (2017) previous findings. That is, Machiavellianism and psychopathy were negatively correlated with agreeableness. Narcissism was positively correlated with conscientiousness, while psychopathy was negatively associated with conscientiousness. Narcissism was also positively related to extraversion and openness to experience; whereas, it was negatively correlated with neuroticism. Extraversion and agreeableness were positively associated with openness to experience. Extraversion and conscientiousness were negatively correlated with neuroticism. Finally, extraversion was positively related to conscientiousness. However, a number of results were contrary to Vedel and Thomsen's (2017) findings. Machiavellianism was significantly positively associated with extraversion and openness to experience in the current study while it was significantly and negatively related to both extraversion and openness to experience in Vedel and Thomsen's study. Narcissism and agreeableness had a non-significant relationship in the current study; while they were significantly and negatively associated in Vedel and Thomsen's study. As additional findings which were not found in Vedel and Thomsen's research, the results revealed that psychopathy was significantly and positively correlated with extraversion, and it was significantly and negatively correlated with openness to experience.

Partially supporting the previous findings, engineering, economics/business students as well as political science students were found to have "darker" personalities than psychology students. Personality differences found in the current study were not likely to be influenced by socialization processes because the participants were newly enrolled students. The results suggested that, individuals who chose economics/business and engineering majors were more likely to have higher scores on Machiavellianism than those who chose psychology major and that, individuals who chose engineering, economics/business and political science majors were more likely to have higher scores on psychopathy than those who chose psychology major. It can be argued that careers in economics/business may provide opportunities for people who are high on Machiavellianism to manipulate others and may seem compatible with these individuals' tendency to apply every means towards a desired end. In addition, jobs related to both economics/business and political science seem to be compatible with goals and personalities of people who are high on psychopathy. This result is argued to be partly explained by previous

and existing examples of successful individuals in these job clusters in Turkey. Unfortunately, success and reputation in both business and political science in Turkey may not be mainly associated with conscientiousness and honesty; rather, with coercive power, ability to manipulate others, and being “politically correct”. The finding that engineering students also scored higher on Machiavellianism and psychopathy than psychology students was not revealed by previous studies conducted in other cultural contexts. It can be speculated that, individuals who score high on psychopathy may be more likely to search for occupations which do not involve frequent contact with others and social networks. Engineering may be evaluated as a mechanical job that is compatible with such an occupational preference. Similarly, individuals who score high on Machiavellianism may be more likely to avoid close personal relationships at work contexts unless they provide themselves some benefits and may prefer engineering jobs since such occupations are not highly “social” jobs which require empathy and concern for others on a daily basis. Fortunately, on the other hand, individuals who chose psychology major were found to score significantly lower on Machiavellianism and psychopathy than students in these three other majors. Psychologists who are expected to help others and behave strongly in accordance with ethical conduct should better be lower on these dark traits than individuals from other occupations. Of course, students of medicine and education majors are also expected to score low on the DT; however, the findings of the present study did not reveal any significant differences between the DT scores of these students and the scores of students from other majors. In summary, it is argued that the present results partially confirm the expectations regarding the personality traits of individuals who choose psychology major in Turkey; however, the findings may also be interpreted as a warning regarding self-selection processes and stereotypical characteristics associated especially with economics/business and political science occupations.

Consistent with Vedel and Thomsen’s (2017) results, law and education students’ neuroticism scores were found to be significantly higher than economics/business students’ scores. Additionally, in the present study engineering students’ neuroticism scores were found to be significantly lower than law and education students’ neuroticism scores. Psychology students’ neuroticism scores were significantly higher than those of economics/business, political science, and engineering students. As mentioned before, economics/business, political science, and engineering students had higher scores on the two of the

DT personality traits (i.e., Machiavellianism and psychopathy) than psychology students. It can be speculated that, while individuals with “darker” personalities may be more likely to choose economics/business, political science, and engineering majors, individuals with high scores on the negative dimension of the BF (i.e. neuroticism) may be more likely to choose psychology, law, and education majors. Taking into account that all of the latter three majors (psychology, law, and education) require close contact with other individuals (including children), underlying reasons and consequences of high level of neuroticism that people choosing these occupations have need further empirical investigation.

Contrary to the previous literature (e.g., Vedel and Thomsen, 2017) in the present study significant interaction effects of gender and major were found for openness to experience and conscientiousness. That is, female students from psychology and economics/business departments had significantly higher scores than male students in those departments on openness to experience. In addition, female students in psychology departments had significantly higher scores than males on conscientiousness. Taking into account that most of the students in psychology departments are female, these may be evaluated as “good news”. On the other hand, in the departments of education males had significantly higher scores than females on conscientiousness. It may be speculated that, males who are highly idealist and who are high on conscientiousness are more likely to choose education departments since teaching as an occupation is a low-income job in Turkish economic conditions. However, to our knowledge the present study is the first one that found these interaction effects and rationale presented here need to be supported by research data.

Consistent with Vedel and Thomsen (2017), the current study also suggests that future studies should employ longitudinal design to examine possible effects of socialization involved in education as well as career processes on increased salience of DT and BF personality traits. To illustrate, when people expose to some stereotypical qualities and attitudes related to their majors during their education, existing traits may deliberately or unintentionally become salient. If some individuals associate becoming successful at their jobs with certain personality characteristics, they may also start to behave in manner that would confirm these stereotypical characteristics related to their occupations. In addition, future studies are suggested to investigate the effects of DT personality and BF personality on academic success across different

majors, as well as their roles in possible variances between academic and career success. That is, some of the personality traits may help individuals to become successful during their formal education processes; whereas, some other traits may be predictors for future career success in actual work life for certain occupations.

No study is without limitations and the present one has also a number of them. First, the design of the current study was cross-sectional; therefore, it cannot provide causal inferences regarding the relationships. Second, the sample included only seven academic majors from five different universities. Future studies are suggested to examine these links with larger samples and by including participants from other majors. To illustrate, it would be very interesting to examine the effects of DT personality traits on artists, dancers', and actors'/actress' career choices. Also, major and job choices of military school students are likely to be affected by DT as well as BF personality traits. Therefore, future studies are suggested to include conservatory as well as military school students as participants. In addition, collecting data from different universities that vary in terms of structure (i.e., public vs. private), geography, and organizational culture may contribute to our understanding of not only the links of DT and BF personality traits with major choice but also effects of these variables on combined major-university choices.

Conclusion

In Turkey, academic major choices are more likely to be shaped by the possibility of finding a decent job rather than general personality traits of people. Economic conditions in Turkey are highly unstable and unemployment rates are considerably high and rising (e.g., İdiküt-Özpençe, 2017). Indeed, the average overall unemployment rates were reported as 10.3% in October 2017 and as 12.3% in November 2018 in Turkey (Turkish Statistics Association, 2018, 2019). This situation may lead people to choose academic majors which would primarily provide them employability and immediate financial resources. However, as the first study investigated the relationships between personality traits and major choices in Turkey, the present study is a humble attempt and it revealed significant associations between the DT, the BF personality traits and major choices. It is hoped to that the study provides insights and suggestions for researchers and practitioners in both Turkey and in other cultural contexts.

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