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RELATIONSHIP BETWEEN PERSONALITY TRAITS AND VOCATIONAL INTERESTS: A LONGITUDINAL STUDY

Kişilik Özellikleri ve Mesleki İlgiler Arasındaki İlişki: Boylamsal Bir Çalışma

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Abstract

The purpose of the present study was to examine the changes of personality traits and vocational interest dimensions as well as the dynamic correlations between the personality traits and vocational interests of Turkish undergraduate students at two different time points. This study utilises data from 977 undergraduate students, where students scored higher on Emotionality, Openness, Enterprising, Narcissism and Psychopathy and lower on Honesty-Humility and Agreeableness from T1 to T2. The results provide two suggestions:(i) there were not any significant changes in the relationship between personality traits and vocational interests; (ii) Apart from other relations, Extraversion and Dark Triad personality traits are positively, while Honesty-humility is negatively related with Enterprising across time.

Keywords: HEXACO, Dark Triad, Vocational Interests, Longitudinal

Öz

Bu çalışmanın ana amacı, Türkiye'deki üniversite öğrencilerinin kişilik özellikleri ve mesleki ilgilerinin değişimi ve bunlar arasındaki ilişkinin değişiminin iki farklı zamanda nasıl olduğunu belirlemesidir. Çalışmaya 977 üniversite öğrencisi katılmış olup, Duygusallık, Açıklık, Girişkenlik, Narsistlik ve Psikopatlık ta yükselme; Dürüstlük ve alçakgönüllülük ve Uyumlulukta zaman içerisinde düşüş görülmüştür. Bu sonuçlar iki şeyi ortaya koymaktadır: (ii) kişilik ve mesleki ilgiler arasındaki ilişki zaman içerisinde değişiklik göstermemiştir (i) diğer ilişkiler dışında, Dışadönüklülük ve Karanlık Üçlü kişilik özellikleri Girişimcilikle pozitif, Dürüstlük ve alçak gönüllülük ise Girişimcilikle zaman içerisinde negatif bir ilişki göstermiştir.

Anahtar Kelimeler: HEXACO, Karanlık Üçlü, Mesleki İlgiler, Boylamsal

1. INTRODUCTION

Frese (1982), in exploring the view of personality and interest change, concluded that a general career and environmental demands might

result in changes to personality and interests. Judge, Klinger, Simon & Yang (2008) stated that additional studies were needed to explore personality changes through role of work itself and the environment in which it is undertaken. However, there is limited evidence for these particular psychological features and how their relationships are affected by their environments over time (Wille & de Fruyt, 2014). A particular reason as to why limited evidence exists in this area is due to the lack of longitudinal designs in which data is collected from the same subjects over years or even decades with repeated measures that have been produced in the field (Wille & de Fruyt, 2014; Woods *et al.*, 2013).

A longitudinal design could provide a wide variety of developmental increases or decreases in personality and vocational interests during adulthood; it could also test the relationship between these variables to identify any consistency. In recent decades, studies in this area have been heavily dependent upon a static approach to the relationship and on the congruence between personality and interests, with few studies having explored the dynamic aspects of this relationship (e.g. Donohue, 2006). One study which has taken such a dynamic approach, thereby seeing the relationship between personality (person) and interests (environment) as being mutually affecting, was conducted by Wille *et al.* (2012). An inference of this view is that changes in both personality and interests represent an ongoing adjustment of a person (Chartrand, 1991). However, both personality (Elkins *et al.*, 2017) and vocational interests (Rounds & Su, 2014) remain stable, especially in certain career life-stages. In line with this, the development of personality and vocational interests are relatively stable but are subject to change over time because these two variables shift as individuals pass through different life circumstances vary. However, in building upon Super's (1990) career adaptability construct, Savickas (1997) established a life-role adaptability approach. Here, Savickas (1997, p. 254) holds that adaptability can be described as "the quality of being able to change, without great difficulty, to fit new or changed circumstances". This approach also represents the role of the interplay between an individual and their environment.

Moreover, there have been relatively few studies on the dynamic and longitudinal relationships between individual traits and vocational outcomes (interests, preferences), with longitudinal studies thus being urgently needed (Woods, *et al.*, 2013). The current study is thus significant in terms of examining changes in the personality trait and vocational interest

dimensions alongside the dynamic relationship between personality traits (bright and dark) and vocational interests (RIASEC) and how these changes occur over time. Notably, this will give more information for other researchers to replicate and extend. Besides this, there is a certain lack of clarity as to the definition of these relations in individuals with more diverse educational levels (Wille & de Fruyt, 2014). Consequently, the Turkish undergraduate students who were recruited were tracked across a critical period which represented the first step of their educational lives. The sample was then followed for the first fifteen-month stage of their respective occupational careers.

2. PERSONALITY TRAIT CHANGE

Recently, there is an emerging debate as to the stability of personality. One view is that this is a consistent response to specific situational cues and provides information that predicts an individual's characteristics (Woods & West, 2010). Similarly, personalities are shown to be relatively consistent in their overview in the long-term and increasingly consistent with age (Roberts & DelVecchio, 2000). Some personality-related scientists point out that personality becomes more static during adulthood and becomes increasingly stable. As Glenn (1980) explained, when people get older, their personality, values, attributes, and beliefs are less likely to change. However, this does not mean that personality stops changing. Instead, it means that the possibility of personality development and change is more likely to change. On the one hand, studies that are comprised more explicitly from young adulthood samples show an explicit mean-level change in personality, with changes in personality being more significant among those aged 18 to 30 years old. Personality development proceeds over young adulthood, with many longitudinal studies have provided comprehensive findings that support this view (e.g. Watson & Walker, 1996).

Some studies exploring early-adult samples have demonstrated meaningful personality deviations with specific decreases for some individuals and increases for others in personality traits at different time points (e.g. Lu'dtke, Trautwein & Husemann, 2009). More specifically, there is a growing body of literature that supports the idea that personality can change across an individual's life-span. In a recent study, as used the Big Five model of personality, Donnellan and Lucas (2008) provided evidence that Extraversion and Openness to Experience were found to be inversely related with age whereas Agreeableness was found to be positively

correlated with age. Middle-age individuals were found to score significantly high in relation to Conscientiousness, while Emotionality showed inconsistent results in regards to age. Using a nationally-representative samples, some researchers have found that older individuals scored slightly lower in Emotionality, Extraversion and Openness to Experience, while Emotionality was found to be rather stable in middle-age and older-adulthood alongside some apparent increases in late life.

As detailed above, a number of explanations have been given as to personality trait changes. Normative changes were accounted for in the current study as the present research focuses on individuals undergoing an exploration stage – with this corresponding with Super's Career Development Theory and the notion that the personality of individuals can be developed and can shift towards specific career preferences (Greenhouse & Callanan, 2006). In this regard, Roberts and colleagues (2006, p.2) have stated that “it also is possible that normative changes in personality traits arise because of engagement in normative life tasks and roles, such as leaving home, establishing a family, and starting a career, for example, which all happen in the period of young adulthood”. One can think, for instance, of entering a new career and this change bringing different types of responsibility and social expectancies whereby the personality of individuals change to accommodate the demands of the new social environment. More specifically, when an individual enters into a new career, and this brings about a new environment in which that individual encounters unexperienced social norms and novelties, personality shifts must occur towards meeting the expectancies of the new role and the newly-arisen rules.

3. HOW RIASEC CHANGES

Within the area of vocational interests, there has been a recent move towards examining how vocational interests vary across the course of life-spans. Vocational interests are assumed to be stable dispositions in regard to their facilitation of individuals and their work environments (Holland, 1985). According to the gravitation hypothesis (Wilk *et al.*, 1995), however, individuals are prone to change their environments in relation to their expectations while also gradually evolving and shaping their tendencies towards more appropriate environments. This is to say that “[a]cknowledging change in interests implies that occupations at a later point in time (e.g., half way through one's career) should not only be evaluated against the initial interests (e.g., at the beginning of a career), but also against the interests that may have evolved over time” (Wille *et al.*, 2014, p.

60).

Assessing vocational interests within career counselling is an appropriate way of examining stability assumptions. More clearly, the remaining relative stability, as represents vocational interests, does change across different career life-spans. However, vocational interests remain stable in a particular kind of career life-span (Rounds & Su, 2014). A recent meta-analysis employed in reviewing longitudinal studies as to the stability of vocational interests from early-adolescence to middle-adulthood has revealed that vocational interests remain reasonably stable, with this being measured by rank-order and profile correlations. However, major changes in these interests were indicted at the end of high school and were found to peak during an individual's college years and then remain unchanged for the following two decades. In particular, vocational interests associated with Realistic and Artistic show more stability than the interests that relate to Investigative, Social, Enterprising and Conventional characteristics (Low *et al.*, 2005). On the one hand, a small change can be seen in vocational interests prior to middle-adulthood and these changes might continue in the individual's subsequent career trajectory. Parallel to this study, some changes have been found to occur in different career life-spans within 15 years. In particular, Wille and De Fruyt (2014) found that there is a significant increase in the mean-level change for Conventional, Social and Enterprising interests while, conversely, a significant decrease was found for Realistic interests. In a similar study, comprehensive findings were represented across three longitudinal environment measures. More specifically, in regards to the mean level change of vocational interests, the Realistic, Investigative, Artistic and Social interests were found to decrease significantly over time.

In a general manner, in regards to the mean comparison of interests across time, a lack of change was found. Notably, across three-time points, the mean levels of the vocational interests explored were found to have decreased. However, continuing stability remains approximately the same across a single career life-span. For instance, during adulthood, such interests remain moderately stable. However, this does not mean that there is no change during a career trajectory. In a single career life-span trajectory, certain kinds of interest tend to show small changes. More specifically, the changes are usually seen in the late-adolescence and early-adulthood career stages. This was closely investigated by researchers, noting that in regards to the early-adulthood stage, vocational interests tend to increase over time. Between the ages of 18 and 25 years old particularly, vocational interests

peak in regards to their changes. After this point, the interests of individuals tend to remain relatively stable. As the present study focused on undergraduate students aged between 17 and 25 years old, their interests are expected to change even by a small degree. This is because, as with personality, the undergraduate level of education can be assumed to represent the start of a new career and thus brings about various novelties in the lives of individuals.

4. RESEARCH QUESTIONS

- (i) Is there a relationship between personality traits and vocational interests?
- (ii) How do these relationships change over time and through exposure to Higher Education?

5. SAMPLING AND PARTICIPANTS

Participants were selected randomly from undergraduate students of four different Turkish universities in the South-East of Turkey. Due to the nature of this study, participants were followed in two waves. In the first wave, 1,026 undergraduate students voluntarily participated. In the second wave, 49 of the participants had dropped out and 977 students, of whom 480 were males and 497 females, voluntarily participated. All analyses were conducted on those students that participated in both waves. More than half of the students were in their first year ($N=554$), 56.7%, with second-year ($N=339$) and third-year students ($N=84$), 34.7% and 8.6% respectively, comprising the remainder of the sample. In the first wave, the age range was between 17 and 39 years old, with the mean age being 20.29 years (Standard Deviation=2.13). In the second wave, the age range was between 18 and 40 years old, with the mean age being 21.74 years ($SD=2.85$).

6. MEASURES

(Mini-International Personality Item Pool 6): This scale includes 24 items, 20 of which were developed by Goldberg in 1999 and incorporated by Donnellan et al. in 2006 in the original Mini-IPIP Scale. This scale includes the five-factor items. The remaining four items, which represent Honesty-Humility, were then added. The first two items, as adapted from the Narcissism Scale, were developed by Campbell et al. in 2004. The last two items, as developed by Ashton and Lee (2009), were adapted from their HEXACO Honesty-Humility Scale. The scale was described by Sibley *et al.* (2011) and the items were rated on a seven-point scale ranging from 1 (Very Inaccurate) to 7 (Very Accurate). This represents the short form of the

personality traits and includes “six broad-bandwidth dimensions of personality” (Sibley, 2012, p.21).

The internal reliabilities of the scales were .70 and .74 for Honesty-humility, .69 and .72 for Emotionality, .75 and .63 for Extraversion, .70 and .71 for Agreeableness, .68 and .69 for Conscientiousness, and .63 and .68 for Openness at T1 and T2, respectively. Exploratory (EFA) and Confirmatory factor analysis (CFA) can be used as evidence of construct validity (Cronbach & Meehl, 1955). Studies investigating the factor structure of Mini-IPIP confirmed a six-factor solution for the inventory for providing evidence of construct validity. Using EFA yielded a six underlying factor solution and CFA provided a best-fit model for the six-factor solution ($\chi^2(237; N=2782)=3772.94$, $p<.01$; SRMR=.057, RMSEA=.073, Model CAIC=4335.57) (Sibley *et al.*, 2012), suggesting that the scale was valid.

Short Dark Triad (3): This scale was developed by Paulhus and Jones (2011) to assess the Dark Triad variables. The scale has three subscales and includes 27 items on a five-point Likert-type scale ranging from Strongly Disagree (1) to Strongly Agree (5). The Psychopathy scale consists of 9 items, while the Narcissism scale consists of 9 items and the Machiavellianism scale consists of 9 items (McLarnon *et al.*, 2015). There are 5 reserved items; the second, sixth and eight items from the Narcissism scale and the second and seventh items from the Psychopathy scale.

The internal reliabilities of Machiavellianism, Narcissism and Psychopathy were .66 and .70, .59 and .67, and .60 and .70 at T1 and T2, respectively. The study examined the factor structure of the SDS (3) and the three-factor solution for the used scales for construct validity. The EFA findings provided a three-factor solution which was confirmed by CFA by providing the best-fit model, ($\chi^2= 708.38$, $p<0.01$, $\chi^2/df=2.21$, TLI=0.79, CFI=0.81, RMSEA=0.06) (Ozsoy *et al.*, 2017).

The Interest Profiler Short Form: This scale was developed by Rounds, Mazzeo, Smith, Hubert, Lewis, and Rivkin in 1999 and has six RIASEC dimensions; Realistic, Investigative, Artistic, Social, Enterprising and Conventional. The original scale consisted of 180 items, but the short version includes 60 items. The scale was ranging from 1 (Strongly Dislike) to 5 (Strongly Like). This scale helps people to explore their careers in terms of the kinds of activities that are primarily related to their interests.

The internal reliabilities of Realistic, Investigative, Artistic, Social, Enterprising and Conventional were .86 and .86, .86 and .84, .85 and .82, .83

and .84, .86 and .84, and .90 and .90 at T1 and T2, respectively. The construct validity of this inventory was examined by EFA and subsequently CFA. The findings showed a six factors solution and the best-fit model ($\chi^2(300) = 2,899.25$, CFI=.88, TLI=.87, RMSEA=.07) (Warlick *et al.*, 2018). This short-form version of the scale was developed for application to counselling and consulting settings because it can be completed in a short time (Rounds *et al.*, 1999).

7. PROCEDURES

This study consists of two waves. The first wave of the study was conducted in September 2015 while the second wave was conducted after 15 months in December, 2016. In all cases, the students participated in the study in their respective classrooms. The questionnaire was self-report and paper-based and was given to the students to complete during classes. Their participation took around 20 minutes for each wave.

8. ETHICS

Prior to the instigation of this study, ethical approval forms were received from the Ethics Boards of the University of Leicester's School of Psychology.

9. DATA ANALYSIS

In this study, several analyses were undertaken by using the SPSS (v24). First, preliminarily analysis was conducted to test whether the assumptions for the analysis were met. A paired sample T-test was also used to examine the mean difference over time in terms of their personality and vocational interests characteristics. Furthermore, Pearson product-moment correlations were carried out in order to explore the relationship between personality and vocational interests. Finally, a dependent sample Z-test was used to investigate whether the correlation change was statistically significant across groups and over time.

10. RESULTS

10.1. Preliminary Analyses

Preliminary analyses were carried out to ensure that there was no violation of the assumptions for the data. For this reason, the level of measurement, identifying potential outliers, normality assessment have been performed. In particular, no outliers were detected and examining the distribution of the variables, the scores of skewing and kurtosis were used.

The accompanying criteria for the skewing and kurtosis of the scores for normal distribution ranged between $-/+2$ and $-/+1$ and were considered as 'acceptable' and 'very good' (George & Mallery, 2010). The parametric tests were therefore suitable for the data analysis.

10.2. Paired Sample T-Test

In order to identify the significance of the differences of personality traits and vocational interests over Time 1 and Time 2, a paired sample T-test was conducted. Table 1 illustrates that the students scored significantly higher on Agreeableness ($M=23.21$, $SD=3.75$ vs $M=22.58$, $SD=3.90$), $t(976)=3.58$, $p=.00$, and Honesty ($M=17.20$, $SD=5.43$ vs $M=16.50$, $SD=5.39$), $t(976)=2.89$, $p=.00$ at Time 1 than at T2. Additionally, the students scored significantly higher on Emotionality ($M=15.80$, $SD=3.89$ vs $M=15.00$, $SD=4.00$), $t(976)=-4.57$, $p=.00$, Openness ($M=22.10$, $SD=3.84$ vs $M=19.07$, $SD=2.84$), $t(976)=-19.90$, $p=.00$, Enterprising ($M=31.29$, $SD=8.00$ vs $M=27.47$, $SD=7.34$), $t(976)=-11.41$, $p=.00$, Narcissism ($M=25.69$, $SD=5.50$ vs $M=25.15$, $SD=5.67$), $t(976)=-2.12$, $p=.03$ and Psychopathy ($M=23.27$, $SD=6.27$ vs $M=22.01$, $SD=6.12$), $t(976)=-4.38$, $p=.00$ at Time 2 than at T1. Apart from these, no significant difference was found for personality traits and vocational interests over time.

10.3. Pearson product-moment Correlation Analysis and Z-Test

A Pearson product-moment correlation was used to explore the relationships between the variables included in the study. After exploring the general pattern of the correlations between the variables, an estimated Z-test was applied to test whether the mean difference of two correlations was greater than, less than, or equal to 0, on dependent samples were conducted to examine whether the significant emerging relationships between variables at Time 1 and Time 2 were increased or decreased for the variables. A summary of specific correlations and Z-scores for all the participants were represented in Table 2.

The correlation results demonstrate that a negative significant correlation was obtained between Honesty and Enterprising [$(r=-.25$, at T1), $(r=-.27$, at T2)], $(Z=0.52$; $p=.60$), and Emotionality and Realistic [$(r=-.17$, at T1), $(r=-.15$, at T2)], $(Z=-0.61$; $p=.54$). Additionally, the Z-test shows that none of the negative relations above failed to change over time.

A significant positive correlation was found between Openness and Artistic [$(r=.15$, at T1), $(r=.21$, at T2)], $(Z=-1.28$; $p=.20$), Extraversion and Enterprising [$(r=.14$, at T1), $(r=.15$, at T2)], $(Z=-0.16$; $p=.87$),

Conscientiousness and Investigative [($r=.12$, at T1), ($r=.07$, at T2)], ($Z=1.03$; $p=.31$), Agreeableness and Social [($r=.37$, at T1), ($r=.36$, at T2)], ($Z=0.26$; $p=.80$), Machiavellianism and Enterprising [($r=.26$, at T1), ($r=.25$, at T2)], ($Z=0.07$; $p=.94$), Narcissism and Enterprising [($r=.29$, at T1), ($r=.27$, at T2)], ($Z=0.31$; $p=.76$), and Psychopathy and Enterprising [($r=.19$, at T1), ($r=.21$, at T2)], ($Z=-0.39$; $p=.70$).

The Z-test results indicate that none of these relations failed to change over time.

11. DISCUSSION

The purpose of the present study was mainly to examine the dynamic association between personality traits and vocational interests over time. It was primarily focused on how personality characteristics and vocational interests change at both the mean level and correlation level while undergraduate students proceeded from Time 1 to Time 2 which represent the first term of each academic cycle.

In general, the paired sample T-test results show that the students became less Agreeable and Honest. Nonetheless, they scored highly in relation to Emotionality, Openness, Enterprising, Narcissism, and Psychopathy. These results are relatively consistent with previous studies which utilising early-adulthood samples. Previous research has indicated that meaningful personality deviations can be observed with specific decreases for some individuals and with increases for others in personality traits at different time points (e.g. Lüdtke *et al.*, 2009). Parallel to this study's findings, vocational interests are understood to be a relatively stable construct but this does not mean that no changes are expected (Tracey *et al.*, 2005). To conclude, it can be seen that vocational interests remained more stable than personality traits, with this also being consistent with earlier studies (e.g., Low & Rounds, 2007).

This study also investigated the changes witnessed in relation to the Dark Triad traits, finding that while Narcissism and Psychopathy increased, Machiavellianism remained stable.

According to O'Boyle *et al.* (2013), Machiavellianism is expected to decrease as individuals get older. Sutton and Keogh (2001) also found that Machiavellianism peaked during adolescent and gradually decreased subsequently. Due to the lack of research as to young adulthood in this area, present study's results do not provide broad clarity.

In regards to Narcissism, previous studies have provided varied results. According to Carlson and Gjerde (2009), Narcissism tends to increase until individuals are 18 years old and subsequently does not change thereafter. Another study gained different findings, whereby Narcissism decreased from middle-adolescence to early-adulthood.

Previous studies have shown that from childhood to adolescence, Psychopathy increases and then remains stable during adulthood (Lynam & Gudonis, 2005). Similarly, Blonigen *et al.* (2006) claimed that Psychopathy did not change between the ages of 17 and 24. To conclude, the Dark Triad traits are expected to be stable during early-adulthood, yet the current study mainly found opposing results to this.

Aside from the dimensions of the other vocational interests, Enterprising significantly increased. This finding is also consistent with that of previous studies (Schultz *et al.*, 2017; Wille & de Fuyt, 2014). The main reason for this could derive from the new life demands encountered. Undergraduate education in Turkey is the first step in which individuals leave their family house and begin to manage themselves. Additionally, they are expected to manage their money by working part-time and selling unused stuff to continue their lives. Every aspect of these demands must be fulfilled and undergraduates in this cohort could encounter more Enterprising tendencies.

The Z-test showed that the relationship between Honesty-Humility and Enterprising did not change over time, although Honesty was negatively related with Enterprising at both time periods. The observing of a negative relationship between these variables was not surprising because, as McKay and Tokar (2012) have stated, Honesty-Humility refers to honest and modest characteristics and these are not represented in Enterprising properly as individuals high in Enterprising interests are reinforced to be more ambitious and assertive, with this differing from the basis of the Honesty-Humility principle. It is unsurprising that a negative relation was observed at both time periods. When taking into consideration the relationship between these variables as the final and main aim, it is seen that this relationship did not change over time. Due to the lack of previous studies, it is difficult to identify if any consistency arises here. However, in interpreting this finding by approaching the statistical changes of Honesty-Humility and Enterprising, this result should not be surprising. The main reason for this is because Honesty-Humility and Enterprising are inversely related and this study expected change of one variable in this relation, as might cause a subsequent

change for the relation. However, both variables changed in different directions (increase vs decrease) and this could make this relation stable over time.

The Z-test shows that this relationship did not change over time. Notably, the bivariate correlation results also demonstrate that this Openness was positively related with Artistic activities at both time periods, with this being consistent with earlier studies (McKay & Tokar, 2012; Wille & de Fuyt, 2014). This is because students who score highly in relation to Openness tend to prefer Arts and Humanities career tendencies (Pozzebon *et al.*, 2014). These career environments comprise of creativity and aesthetic appreciation, areas that demonstrate consistency with Openness. In regards to the relationship change, although Openness increased over time, this relation remained stable. Statistically, this could be a small change but an earlier 15-year long-term study found that this relationship decreased over time but it was noted that this decrease was explained by same-direction changes (Wille & de Fuyt, 2014). However, this relation did not change.

It was sought to explore the relationship between Extraversion and Enterprising, with the observed findings identifying that Extraversion was positively related with Enterprising at both time points. Unsurprisingly, these findings are consistent with earlier studies to a considerable extent (e.g. Wille & de Fuyt, 2014) because, as is commonly accepted, extraverted people could have leadership tendencies which are the main form of Enterprising activities. The Z-test results show that this relationship did not change over time.

It was sought to examine the relationship between Conscientiousness and Investigative activities, with the results showing that a positive relation was found among these variables at both times periods. In line with these results, previous studies (e.g., McKay & Tokar, 2012) have produced consistent findings as having Investigative tendencies requires Conscientiousness. This is because the making of investigation in any case is a serious job and they are reinforced to be cautious. The Z- test results here also show that this relationship did not change over time.

It was also sought to examine the relationship between Emotionality and Realistic, whereby a negative correlation was found at both time periods. In being consistent with earlier studies (e.g., McKay & Tokar, 2012), individuals with Realistic tendencies are not good at human relations, whereupon the characterisation of a “little empathy for others” of

Emotionality explicitly corresponds to this. The obtaining of this result is therefore not surprising. Also, the Z-test identified that this relation did not change over time.

It was sought to examine the relationship between Agreeableness and Social, where a strong positive association was found at both times periods. Individuals with a high degree of Agreeableness tend to prefer environments that include interpersonal interactions. This has some features that share the common values of Social interests – including being “sociable”, “agreeable” and “responsible” (McKay & Tokar, 2012). Thus, consistency can be seen among this result and earlier studies. In regards to the Z-test results, no significant difference was found between Agreeableness and Social over time.

It was sought to explore the relationship between Machiavellianism and Enterprising, with the findings of the current study demonstrating that a positive relation was observed at both time points. As is consistent with earlier studies (e.g., Schneider *et al.*, 2015), individuals who score highly in relation to Machiavellianism tend to give importance to interpersonal relations in order to be socially dominant. In doing so, such individuals believe that they can lead others. Not surprisingly, the characteristics of being socially dominant and of leading others are Enterprising interests. Thus, it is reasonable to obtain these results. The Z-test results show whether this relation changed or not.

It was sought to examine the relationship between Narcissism and Enterprising, whereby a positive correlation was found at both time periods. Notably, earlier studies have provided similar findings (Jonason *et al.*, 2014). This finding is meaningful as individuals employ Narcissism behaviours to fulfil their desires for achievement and power. Moreover, acquiring these desires can be achieved easily through Enterprising activities as leadership positions especially are comprised of Enterprising environments that cover power and achievement. The Z-test results demonstrate that this relation did not change over time.

It was sought to examine the relationship between Psychopathy and Enterprising, with the results showing that Psychopathy was positively related with Enterprising at both time points. As is similar to the findings of previous studies (Babiak & Hare, 2006), Psychopathy refers to counterproductive behaviours within work environments. More specifically, individuals who score highly in relation to Psychopathy tend to be in high-status occupations due to their behaviour. Furthermore, such individuals

believe that they cannot be judged by anyone and desire the charm of a high-level status. The Z-test results have shown that this relationship did not change over time.

Consideration of the bright and dark sides of personality and vocational interests, low on Honesty-Humility and high on Dark Triad traits are consistently related with Enterprising across time. Additionally, low on Emotionality and high on Dark Triad personality types are consistently related with Realistic across time. Lastly, high on Extraversion and high on Dark Triad traits are consistently related with Enterprising over time. Regarding with those, low on Honesty-Humility and high on Dark Triad types with Enterprising, low on Emotionality and high on Dark Triad traits with Realistic, and high on Extraversion and high on Dark Triad types with Enterprising could be considered together because they might share common values when personality and vocational interests' longitudinal relations are examined.

12. CONCLUSION

In vocational and counselling psychology, personality and vocational interests have emerged as cornerstones in late-adolescence and adult lives. Meanwhile, the deficiency of studies as to the development of personality and vocational interests represents an important oversight in different cultures. The current study has addressed this development through examining both personality (HEXACO, Dark Triad traits) and vocational interests (RIASEC) and their respective changes over a 15-month period among Turkish undergraduate students. Emerging improvements as to the changes and stability of personality and vocational interests have been applied in several longitudinal studies to understand whether such shifts statically affect the changes of the relations among these variables in general. While most of the dimensions of the personality traits showed a change over time, except for Enterprising interests, all of the vocational interests dimensions remained significantly stable. It could thus be summarised that vocational interests are stable while personality traits are changeable individual difference constructs among Turkish undergraduate students. Furthermore, it could be seen that the statistical changes of one variable did not enhance or reduce the specific relation over time. Therefore, the relationship between personality traits and vocational interests did not change in different time points in early-adulthood. Also, taking into consideration the bright and dark sides of personality types together, lower Honesty-Humility and higher dark triad types were significantly related with

Enterprising interests. Additionally, lower Emotionality and higher dark triad traits were found to be significantly related with Realistic interests. Finally, higher Extraversion and higher dark triad traits were related with Enterprising and it was found that those relations were consistent over time.

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Table 1: Paired Sample T-test of personality traits and vocational interests over time

Group Statistics							
Time		N	Mean	SD	<i>t</i>	<i>df</i>	<i>p</i>
Extraversion	T1	977	16.90	4.25	-0.53	976	.60
	T2	977	17.01	4.53			
Agreeableness	T1	977	23.21	3.75	3.58	976	.00*
	T2	977	22.58	3.90			
Conscientiousness	T1	977	18.61	3.21	1.64	976	.10
	T2	977	18.36	3.58			
Emotionality	T1	977	15.00	4.00	-4.57	976	.00*
	T2	977	15.80	3.89			
Openness	T1	977	19.07	2.84	-19.90	976	.00*
	T2	977	22.10	3.84			
Honesty-Humility	T1	977	17.20	5.43	2.89	976	.00*
	T2	977	16.50	5.39			
Realistic	T1	977	28.66	8.29	-0.69	976	.49
	T2	977	28.92	8.17			
Investigative	T1	977	33.75	8.11	1.66	976	.10
	T2	977	33.15	8.06			
Artistic	T1	977	32.72	8.27	0.40	976	.69
	T2	977	32.57	8.11			
Social	T1	977	37.40	6.43	1.67	976	.10
	T2	977	36.88	7.19			
Enterprising	T1	977	27.47	7.34	-11.41	976	.00*
	T2	977	31.29	8.00			
Conventional	T1	977	28.47	9.00	1.57	976	.12
	T2	977	27.81	9.10			
Machiavellianism	T1	977	31.14	6.38	-0.29	976	.77
	T2	977	31.23	6.41			
Narcissism	T1	977	25.15	5.67	-2.12	976	.03*
	T2	977	25.69	5.50			
Psychopathy	T1	977	22.01	6.12	-4.38	976	.00*
	T2	977	23.27	6.27			

Table 2: Time 1 and Time 2 correlations and the scores of Z-test of significance of the difference between the correlations of personality traits and vocational interests for all participants (N = 977)

	Realistic				Investigative				Artistic				Social				Enterprising				Conventional			
	<i>r</i>		Z-score	<i>p</i> value	<i>r</i>		Z-score	<i>p</i> value	<i>r</i>		Z-score	<i>p</i> value	<i>r</i>		Z-score	<i>p</i> value	<i>r</i>		Z-score	<i>p</i> value	<i>r</i>		Z-score	<i>p</i> value
	T1	T2			T1	T2			T1	T2			T1	T2			T1	T2			T1	T2		
HEXACO																								
Extraversion	.04	.02	0.42	.67	.13**	.09**	1.05	.29	.20**	.17**	0.76	.45	.23**	.05	3.93	.00	.14**	.15**	-0.16	.87	.04	.04	-0.04	.96
Agreeableness	.05	-.02	1.59	.11	.16**	.10**	1.33	.19	.13**	.14**	-0.07	.95	.37**	.36**	0.26	.80	-.06	-.05	-0.13	.89	-.05	-.09**	0.91	.36
Conscientiousness	.09**	.15**	-1.46	.15	.12**	.07*	1.03	.31	.08**	.02	1.51	.13	.10**	.00	2.26	.02	.12**	.13**	-0.29	.77	.11**	.11**	-0.11	.91
Emotionality	-.17**	-.15**	-0.61	.54	-.01	-.06	1.08	.28	.09**	.08*	0.16	.88	-.01	.06	-1.37	.17	-.04	-.10**	1.44	.15	-.11**	-.13**	0.34	.74
Openness	.03	.08**	-1.24	.22	.07*	.16**	-1.93	.05	.15**	.21**	-1.28	.20	.07*	.12**	-1.05	.29	.06	.09**	-0.76	.45	.05	.03	0.44	.66
Honesty Humility	-.07*	-.05	-0.38	.71	-.10**	-.09**	-0.31	.76	-.16**	-.06	-2.26	.02	-.01	.11**	-2.68	.01	-.25**	-.27**	0.52	.60	-.09**	-.11**	0.47	.64
Dark Triad																								
Machiavellianism	.08*	.18**	-2.41	.02	.10**	.17**	-1.66	.10	.09**	.09**	0.11	.91	.01	.01	0.02	.98	.26**	.25**	0.07	.94	.16**	.23**	-1.61	.11
Narcissism	.08*	.15**	-1.54	.12	.16**	.16**	0.18	.86	.16**	.13**	0.68	.50	.04	-.03	1.52	.13	.29**	.27**	0.31	.76	.17**	.18**	-0.32	.75
Psychopathy	.11**	.14**	-0.78	.43	.04	.03	0.16	.88	.11**	.00	2.42	.02	-.03	-.16**	3.01	.00	.19**	.21**	-0.39	.70	.10**	.14**	-0.87	.38

Note. **. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed)