

Personality Traits, Gender, Frequency of Internet Use as Predictors of Turkish Teenagers' Internet Addiction

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Abstract

In the current study, the associations between personality traits including extroversion, neuroticism, conscientiousness, agreeableness, open to experience, gender, frequency of Internet use, and teenagers' Internet addiction were explored. Participants in the study were 409 teenage high school students (289 female, 120 male:13 to 18 years old) in Turkey. The participants completed the Demographics Questionnaire prepared by the authors, the Big Five Inventory and Young Internet Addiction Test – Short Form to collect the research data. It was found out that FIU, neuroticism, conscientiousness and agreeableness explained 29.8% of the variance in adolescent Internet Addiction. Neuroticism was the most significant variable linked with teenagers' Internet addiction. However, gender (male vs female), extroversion and openness to experience were not significant predictors of teenagers' Internet addiction. At the end of the paper, the limitations were stated and suggestions for future studies were made. The research findings emphasize the significance of teenage Internet addiction in terms of teenagers' personality traits.

Keywords. Teenagers, Big Five, personality, gender, frequency of Internet use, Internet addiction

INTRODUCTION

Internet addiction was defined by Young (2017) as preoccupation with Internet use, losing interest in other activities, ignoring its outcomes and troubles in withdrawal. Excessive Internet use can lead to various problems including academic and professional setbacks, loneliness, disruptions in daily life routines, depression, telling lies, lower level of life quality, anxiety, and other psychiatric syndromes (Bozoglan et al., 2013; Bulut-Serin, 2011; Kim & Davis, 2009; Ko et al., 2011; Young, 1998). Several research have explored predictors linked with addictive Internet use (Bozoglan, 2018; Bozoglan, 2018; Chung et al., 2019; Demir & Ozdemir, 2020; Demir & Kutlu, 2018; Demirel & Bozoglan, 2016; Gezgib et al., 2018; Kutlu et al., 2016; Wang et al., 2019). However, few of them have focused on the relationship between personality traits and addictive Internet use among teenagers (Przepiorka et al., 2021; Zhou et al., 2017).

High school is a critical time in teenagers' lives. In particular teenagers may tend to do problematic behaviors because of insufficient cognitive control and susceptibility (Casey et al., 2005; Karaca et al., 2021; Steinberg, 2005). Teenage is regarded as risky addictive Internet use which may lead to negative outcomes (Tahiroglu et al., 2010). Teenage groups have tendency to use the Internet more frequently than different age groups (Widyanto & McMurrin, 2004) because teenagers keep developing in terms of emotional, social, and cognitive skills (Yang and Tung, 2007), which are regarded to be risky in developing addictive Internet use.

Teenage addictive Internet use and Frequency of Internet Use

The related studies indicate a substantial relationship between frequency use of Internet and teenagers' addictive internet use (Johansson & Götestam, 2004; Samaha et al., 2018). Instead, few studies (Koyuncu et al., 2014; Önen et al., 2014) have concentrated on the association between frequent use of Internet and teenagers' Internet addiction in Turkish context. Koyuncu et al. (2014) suggest that FIU or duration and reason of Internet use were regarded to be connected with Internet addiction. Önen et al. (2014) discovered that high school students who used internet more frequently were under risk of Internet addiction. However, Johansson and Götestam (2004), in Norwegian teenage groups, revealed that the relationship between FIU and addictive Internet use was comparatively low, which is opposed to the perception that FIU would pose a risk for addictive internet use. Consequently, new research is needed to clarify the association between FIU and teenagers' addictive Internet use.

The suggested associations above seem acceptable when adolescents more frequently use the Internet, the greater possibility that adolescents would build an addiction to Internet, although some of the studies suggest that there was not a substantial association between FIU and addictive Internet use. It is, therefore, be remarkable to clarify the association between these two variables in the Turkish teenage population and not only with online gaming, but other type of Internet usage such as social interaction etc. Accordingly, it was hypothesized in this study that

frequent use of Internet will be significantly and positively connected to elevated levels of teenagers’ addictive Internet use (Hypothesis 1).

Teenage Internet addiction and Gender

Gender difference regarding the pervasiveness of Internet addiction has been broadly established and gender has been found to be a significant factor to justify why teenagers use internet in an addicted way (Liang et al., 2016; Tang et al., 2017). Teenagers’ gender was meaningfully related to their Internet addiction (Ko et al., 2005). There is steady indication that male teenagers are more probable to reveal greater level of addictive Internet use (Demirer et al., 2013; Griffiths, 1999) when compared to the females. Male teenagers have tendency to make use of the Internet for fun and to experience a sense of accomplishment, while females use for social interaction and academic support (Su et al., 2020; Weiser, 2000). However, some other studies (Cheng & Li, 2014; Malik & Khan, 2015) show that Internet use is widespread equally amongst both males and females. Likewise, Khan et al. (2017) and Zhang (2005) found that the female and male average scores addictive Internet use were statistically like in a sample of late adolescent group. Even though the universally acknowledged gender discrepancy in Internet addiction in various age groups and settings, there is a shortage of research paper and controversial findings assessing the gender impact on teenagers’ Internet addiction in Turkish context in terms of personality traits. Exploring the gender distinction in the effect of Internet addiction can deliver crucial perceptions on how teenage girls and boys deal with Internet use problems in Turkey throughout the COVID-19 epidemic. Therefore, it was suggested that teenagers’ addictive Internet use level will be different by gender in Turkish context (Hypothesis 2).

Teenage addictive Internet use and Big Five Personality Traits

A handful of studies (Błachnio et al., 2017; Kayış et al., 2016; Kircaburun & Griffiths, 2018; Tian et al., 2021; Zhou ...& Wang, 2017; Zhou ...& Zhao, 2017) have indicated that Personality traits are intricately linked to Internet addiction. However, few studies (Kayış et al., 2016) have searched the effects of personality on teenagers’ addictive Internet use in Turkish context. Tian et al. (2021) established mutual relationships between the personality traits and addictive Internet use. A meta-analysis assessment at university context (Kayis et al., 2016) suggested that openness, conscientiousness, agreeableness, extraversion and were linked with addictive Internet use in a negative way, while neuroticism was linked with addictive Internet use in a positive way. These outcomes emphasize the crucial effect of Big Five on teenagers’ addictive Internet use.

This study is important in assessing the effect of Big Five personality traits on addictive Internet use regarding teenage context. Additionally, an extensive review of the pertinent literature (Kayis et al., 2016) disclosed the effects of Big Five personality traits on Internet addiction should be further studied as the research findings are contradictory; consequently, the current study aims to investigate these impacts. Overall, it was hypothesized that Big Five personality traits will have noteworthy impact on teenagers’ addictive Internet use (Hypothesis 3).

In brief, the current study attempts to broaden the related literature by means of focusing on teenagers. Additionally, this study seeks impacts of Big Five personality traits on teenagers’ addictive Internet use in Turkey where prior studies focused on other age groups (e.g., Kircaburun & Griffiths, 2018). Subsequently, the current study aims to explore the association between teenage addictive Internet use and FIU, gender, Big Five personality traits including openness to experience, extroversion, conscientiousness, neuroticism, and agreeableness in Turkey.

METHOD

Participants

The inclusion criteria for the current study were that participants should be high school students who attended high schools in their adolescence in Konya -Turkey. A total 441 high school students completed the online survey through an online research company. However, fourteen incomplete surveys and eighteen outliers, which were detected by converting the numeric variables to the standard z-score values, and Whisker plots (the ones smaller than -2.68 and larger than +2.68) were excluded from the study analysis. Thus, final research participants were 409 students (289 girls and 120 boys). Participants were average of 16.10 years old (Min. 13 and Max. 18; SD=1.10). Demographic data on adolescent gender and high school grades are presented in Table 1.

Table 1: *Demographic characteristics of adolescent participants, N=409.*

	Characteristics	n	%
<i>Gender</i>	Female	289	70.7
	Male	120	29.3
	Total	409	100
High School Grades	9	85	21.1

10	158	39.2
11	111	27.5
12	49	12.2
Total	403	100

Ethics Statement. The survey forms were assessed by ethic review board and ethical approval was taken from the Konya Food and Agriculture University before the data were collected (REC 2021/02-03). Then, the consents were taken from participants who studied at different high schools in proportion to the provisions of the Declaration of Helsinki. The participants were informed about the research purpose and explained the research data would be kept secret. The researchers gave feedback about the research process and outcomes to the school management.

Variables and measures

In the current research, gender, frequency of Internet use and personality traits were independent variables while addictive Internet use was dependent variable to achieve the first research aim. Gender, frequency of Internet use and personality traits were used as predictors of Internet addiction to achieve the second research aim.

Demographics Questionnaire: It was created by the research authors, and it had items like gender (female and male), school grades (9th, 10th, 11th. and 12th grades), age (13 and 18 years old) and hours spend daily online.

The Big Five Inventory (BIF): Benet-Martinez and John (1998) developed the inventory and Sumer and Sumer (2005) adapted to Turkish. BIF has 44 items, and it is a Likert-type scale with 5-point, which is score between 5 (strongly agree) and 1 (strongly disagree). BFI consists of five sub-categories of agreeableness (e.g., “I see myself as someone who is helpful and unselfish with others”), extraversion (e.g., “I see myself as someone who is talkative”), conscientiousness (e.g., “I see myself as someone who does a thorough job”), neuroticism (e.g., “I see myself as someone who is depresses, blue”), and openness to experience (e.g., “I see myself as someone who is original, comes up with new ideas”). The English version of BIF had quite satisfactory internal reliability of $\alpha = .83$. In the current research, Cronbach’s alpha value was computed as $\alpha = .70$.

Young Internet Addiction Test – Short Form (YIAT-SF): Young (1998) developed the test to assess the existence and seriousness of Internet and technology dependency among adolescents. Pawlikowski et al. (2013) converted the test into short form. Kutlu et al. (2016) adapted to the test Turkish. The 12-item test with no reverse item (e.g., “How often do you stay online longer than planned?”) is evaluated over 5 categories (Always = 5, Often = 4, Sometimes = 3, Rarely = 2, Never = 1). The minimum score is 12 and maximum score is 60 from the test a respondent can obtain, where higher scores show a high level of addictive Internet use. Pawlikowski et al. (2013) calculated Cronbach Alpha value as $\alpha = .70$. Kutlu et al. (2016) calculated Cronbach Alpha value as $\alpha = .93$. In the current research, Cronbach Alpha value was calculated as $\alpha = .87$.

Data Analysis

The research data was analyzed using SPSS 22 software (Statistical Package for the Social Science). Before the data was analyzed, the assumptions were examined. For the assumption of normality, the values of skewness and kurtosis were computed, and it was found that these values were adequate for a normal distribution. Besides, the residual distribution was fairly rectangular, and nearly all the scores were centered. Therefore, the homoscedasticity and assumptions of linearity were met in the present study. The data regarding high school students’ personality traits, coping approaches, trait anxiety and addictive Internet use was interpreted utilizing mean, correlation, and hierarchical analyses. Before regression analysis was conducted, gender was dummy coded. Males were coded as “1” and females were coded as “0” sequentially.

RESULTS

Prior to the analyses, the assumptions for the regression were checked. It was found out the main assumptions for the hierarchical regression were congregated. A linear association was found among predictor and outcome variables as a result of a visual examination of scatter plots. The residuals regarding the regression models exhibited were not skew as suggested by the normal P-P plots and histograms; thus, regression models were robust against violations of normality. Additionally, scatter plots of regression standardized residuals were evaluated visually, and homoscedasticity of variance was found. The correlation values among independent variables are expected to be lower than .90. The VIF value should be lower than 4, and tolerance values are expected to not to be lower than .20 (Tabachnick & Fidell, 2007). Thus, no multi-collinearity was found between predictors, where correlation among independent variables were between -0.36 and 0.37, tolerance values were between .77 and .99 and VIF values were between 1.05 and 1.30.

Descriptive statistics like mean, range, standard deviation, and Pearson product moment correlations between gender (male), FIU, extraversion, neuroticism, conscientiousness, agreeableness, openness, and Internet addiction are presented in Table 2. Bivariate correlation analyses revealed that there were positive correlations between FIU ($r=.38$; $p<.01$) and neuroticism ($r=.35$; $p<.01$) and adolescent Internet Addiction, while there were negative correlations between conscientiousness ($r=-.36$; $p<.01$), extraversion ($r=-.22$; $p<.01$), openness ($r=-.16$; $p<.01$), agreeableness ($r=-.21$; $p<.01$) and adolescent Internet Addiction. Finally, adolescents (high school students) had average level of Internet addiction (Mean=31.17).

Table 2: Descriptives and correlations between variables of research measures

Study Measures	1	2	3	4	5	6	7	M	SD	Min.	Max.
1. FIU	-							6.27	3.07	1	16
2. Extraversion	-.05	-						3.20	0.79	1.25	5.00
3. Neuroticism	.14*	-.27*	-					3.37	0.88	1.00	5.00
4. Conscientiousness	-.16*	.31*	-.24*	-				3.40	0.74	1.44	5.00
5. Agreeableness	-.09	.22*	-.03	.36*	-			3.56	0.64	1.78	5.00
6. Openness	-.09*	.32*	-.09	.18*	.07	-		3.73	0.63	1.80	5.00
7. Internet Addiction	.38*	-.22*	.35*	-.36*	-.21*	-.16*	-	31.17	8.66	12.00	56.00

* $p<.01$

Table 3 introduces the outcomes of the hierarchical regression analysis. Three separate hierarchical regression analyses were performed to investigate whether gender (male), FIU and personality traits had significant impacts on teenagers' Internet addiction. Gender (male) ($\beta = -.08$, $p=0.133$) was added in the first block as the predictor, which did not significantly predict the variance in Internet Addiction ($R^2=.006$; $F_{1,406}=2.271$, $p>.05$). HSDO was entered in the second block as the predictor, after FIU was controlled. FIU ($\beta = .37$, $p<0.001$) predicted 13.5% of the Internet addiction ($\Delta R^2 = .141$, $F_{2,405} = 33.090$, $p<.001$).

Table 3: Hierarchical multiple regression analysis predicting Internet Addiction

Model		B	SE	β	t	p	ΔR^2	R^2	p
Block 1	Gender (Male vs Female)	-5.01	3.32	-.08	-1.51	.133	.006	.006	.133
Block 2	Gender	-2.85	3.11	-.04	-.92	.36	.135	.141	.000
	FIU	3.68	.46	.37	7.97	.000			
Block 3	Gender	1.94	2.94	.03	.66	.509	.157	.298	.000
	FIU	2.97	.43	.30	6.93	.000			
	Extraversion	-1.52	1.85	-.04	-.82	.413			
	Neuroticism	8.75	1.65	.25	5.32	.000			
	Conscientiousness	-8.32	1.99	-.20	-4.18	.000			
	Agreeableness	-4.49	2.22	-.09	-2.02	.044			
	Openness	-2.42	2.15	-.05	-1.12	.263			

FIU= Frequency of Internet Use, B=unstandardized regression coefficient; SE= standard error of the unstandardized regression coefficient; β =standardized regression coefficient; t= t-test value; ΔR^2 =change in coefficient of determination between steps; R^2 = Change in coefficient of determination.

Extraversion, neuroticism, conscientiousness, agreeableness, and openness were entered in the third block, after gender and FIU were controlled. These variables predicted 15.7% ($\Delta R^2 = .157$, $\Delta F_{7,400} = 24.108$, $p<.001$) of the variance. In the third model, FIU ($\beta = .30$, $p<.001$) and neuroticism ($\beta = .25$, $p<.001$) were significant positive contributors, while conscientiousness ($\beta = -.20$, $p<.001$) and agreeableness ($\beta = -.09$, $p<.05$) were a substantial negative contributor of the Internet addiction. FIU, neuroticism, conscientiousness and agreeableness together in the final model justified 29.8% of adolescent addictive Internet use ($R^2=0.298$).

DISCUSSION

The present study explored whether high school students' gender, FIU, and personality traits predicted their Internet addiction. The initial hypothesis was validated by the findings of this study, specifically FIU was positively and significantly linked with higher levels of teenage Internet addiction, revealing that FIU predicted 14% of the addictive Internet use. In proportion to the findings of this research, Koyuncu et al. (2014) discovered that FIU was linked with Internet addiction, meaning that higher FIU would lead to addictive Internet use among teenagers. On the contrary, Johansson and Götestam (2004) indicated a low correlation between the usage of Internet and addictive Internet use, decreasing the possibility of high FIU. The outcomes of the current study reveal a contradictory association between frequency of internet use and teenagers' Internet addiction. Further research

with different methodology can be beneficial to elucidate the association between these two variables. The study results revealed there was not a noteworthy relationship between teenagers' gender and addictive Internet use in line with other studies (Cheng & Li, 2014; Khan et al. 2017; Malik & Khan, 2015; Zhang 2005), uncovering female and male adolescents had similar level of addictive Internet use. Concerning the effect of gender on addictive Internet use, numerous studies have created contradictory outcomes. For example, Shek et al. (2016) established those male teenagers were more addicted to the Internet compared to female teenagers. The diverse findings concerning gender disparities and addictive Internet use could be ascribed to various causes such as social and regional differences, availability to Internet, family context and individual lifestyles or habits.

Big Five personality traits besides control variables including FIU and gender (male) were entered as predictors of teenagers' addictive Internet use. It found out that personality traits explained 16% of the variance of teenagers' addictive Internet use in the hierarchical regression model. In terms of personality traits, the present data analyses indicated no significant relationship between extraversion and teenagers' addictive Internet use. In support of the findings of existing study, Przepiorka et al. (2020) and Zhou ... and Wang (2017) didn't yield a consistent association between Extraversion and addictive Internet use. However, some of the research have demonstrated that extraversion was positively linked to Internet addiction (Agbaria & Bdier, 2019; Andreassen et al., 2012; Zhou ... & Zhao, 2017). It was suggested that high level of extraversion often indicates high level of impulsivity, and lower self-control making these people vulnerable to addictive Internet use (Vollrath & Torgersen, 2002) and extroverts can utilize the Internet to meet the social needs as well expressing themselves (Bianchi & Phillips, 2005). Other studies, in contrast, have discovered that Extraversion was a negative predictor of addictive Internet use (Błachnio et al., 2017; Przepiorka et al. 2019). A study which was performed in Turkey, Poland, and Ukraine established that Extraversion was a negative significant predictive Internet addiction (Błachnio & Przepiorka 2016). The negative or low/no association between extrovert teenagers' behaviors and addictive Internet use can be justified by the reality that the extrovert teenagers do not need to socialize using the Internet or social media as they are already sociable or socially interactive.

A positive significant relationship between neuroticism and teenagers' addictive Internet use was established. This indicates that those teenagers who have higher level of neuroticism have tendency to use Internet more addictively. In line with the current findings, some studies (Bulut-Serin, 2011; Tian et al, 2021; Zhou ... & Zhao, 2017; Zhou ... & Wang, 2017) have shown neuroticism was positively linked with addictive Internet use. Zhou ... and Zhao (2017) suggested that neuroticism had significant positive impact on adolescents' Internet addiction. Additionally, Kuss et al. (2013) established that high neuroticism was meaningfully linked with addictive use. Neuroticism has a potential to be risky regarding teenagers' addictive Internet use because people with neuroticism traits may encounter more unsettled relationships and troubled conditions. Thus, they are more probable to involve in Internet to escape from the nasty life experiences. In addition, Internet use does not necessitate a face-to-face interaction and the neurotic people tend to use Internet more addictively as they are nervous, apprehensive and have immature self-perception (Costa & McCrae, 1992).

Hierarchical data analyses disclosed that teenagers who had higher scores of conscientiousness tended to be less addicted to Internet. Similarly, some of the other research (Agbaria & Bdier, 2019; Przepiorka et al., 2021; Tian et al., 2021; Zhou ... & Zhao, 2017) established that addictive Internet use was negatively linked with Conscientiousness. Conscientiousness tended decrease teenagers' Internet addiction since it was regarded to be a protective issue against the development of addictive Internet use in various age groups (Przepiorka et al. 2019) regardless of culture (Błachnio & Przepiorka, 2016). Teenagers who have high scores regarding conscientiousness frequently put high importance on educational and learning objectives, and they have improved organization and self-discipline abilities, and high-level awareness of the results concerning frequent usage of Internet (Zhou ... & Zhao, 2017). Consequently, these teenagers are less tendency to involve in Internet use and suffer from addictive Internet use. In other words, it can be inferred those teenagers with lower conscientiousness use the Internet more addictively compared to those with higher conscientiousness level, recalling that this personality trait could be a protective factor regarding Internet addiction. On contrary, Chwaszcz et al. (2018) observed that conscientiousness was positively linked with the addictive Internet use.

The outcomes of regression analysis signified that agreeableness was negatively and significantly correlated to teenagers' addictive Internet use. For the findings of this study, other papers (Przepiorka et al., 2021; Tian et al., 2021; Zhou & Zhao, 2017) confirmed that agreeableness as a protective factor had a negative relationship with addictive Internet use. In addition, Błachnio et al. (2017) noted agreeableness had a significant association with addictive Internet use, which has potential to decrease teenagers' addictive Internet use. However, Zamani et al. (2011) discovered that agreeableness was not linked with Internet addiction. In contrast, Agbaria and Bdier (2019) revealed that agreeableness as personality trait was positively and significantly associated to Internet addiction,

which suggest that people who convey high level of agreeableness may have an augmented wish to pursue social acceptance, and this can be achievable by means of Internet.

Regarding the relationship between openness and teenagers' addictive Internet use, the research showed no significant association in line with Zamani et al. (2011), which can be described by the dual characteristics of openness. Teenagers with high level of openness frequently possess a broad variety of interests and leisure activities, which may reduce their probability of Internet addiction. The current studies do not generate a constant portrait of associations between Openness and addictive Internet use (Przepiorka et al., 2020; Zhou ... & Wang, 2017). Some studies (Servidio, 2014; Zhou ... & Zhao, 2017) have demonstrated Openness to Experience was positively related to Internet addiction. Kuss et al. (2013) stated that Openness to Experience improved the probability of Internet addiction. This can be because teenagers with high openness to experience scores may have an enhanced need to try to find new connections and to investigate different ideas, leading to reinforce addictive Internet use. Other studies, in contrast, have shown that Openness was a negative predictors of addictive Internet use (Durak & Senol-Durak, 2014; Pilarska, 2018; Przepiorka et al. 2019; Tian et al., 2021).

These results indicate a number of implications for professionals working with teenagers. It is crucial to know strategies to help teenagers with various personality traits to cope with addictive Internet use and other negative influences of social media. The model of Big Five personality traits is the leading personality theoretic context involving five personality aspects: extraversion, neuroticism, conscientiousness, agreeableness, and openness to experience (Carver & Connor-Smith, 2010). Research has yielded varying contradictory result, thus there are inconsistencies regarding whether and how these traits are associated to teenagers' addictive Internet use (Zhou et al., 2017). Consequently, further new studies are required in order to clarify the relationships between these traits and teenagers' addictive Internet use.

The current research includes a few limitations to clarify. Personality traits and teenagers' addictive Internet use were evaluated centered on self-report. In self-report surveys, it was counted on respondents' correct assessment and comprehension as well as on their perception and their own emotions. Future studies can include social attractiveness variables to establish to what degree a respondent alters their ratings to represent themselves in a satisfactory light. Secondly, this research has a cross-sectional design which makes causal conclusions hard. Therefore, it may be speculated that FIU, gender, and personality traits may cause higher levels of Teenage Internet Addiction. In brief, the variables might be outcomes or predictor and longitudinal studies are necessary to explore causation. Another limitation of the study is that it was conducted in one city in Turkey. Obtaining samples from various parts of Turkey may be beneficial to ensure generalizability of the research outcomes. Finally, most of the respondents were female in the research.

In conclusion, the research findings revealed that frequency of Internet use, personality traits including neuroticism, conscientiousness, and agreeableness had significant relationship with the teenagers' Internet addiction. In contrast, extraversion and openness had negatively association with teenagers' addictive Internet use and they did not significantly predict addictive Internet use.

Ethical considerations

There are no conflicts of interest between authors.

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