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Effects of Personality Traits on Compulsive Use of Social Media Apps and Mobile Games Among Young Smartphone Users *

Genç Akıllı Telefon Kullanıcılarının Kişilik Özelliklerinin Sosyal Medya Uygulamaları ve Mobil Oyunların Kompulsif Kullanımına Etkisi

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ÖZ

Geçmiş yıllarda yürütülen çalışmalar Beş Faktör Kişilik Özellikleri ile sosyal medya uygulamalarının ve mobil oyunların kompulsif kullanımı arasındaki ilişkiyi ortaya koymaktadır. Bu çalışmanın temel amacı Beş Büyük Kişilik Özelliklerinin yanı sıra kontrol odaklılık ve başarma ihtiyacı kişilik özelliklerinin genç akıllı telefon kullanıcılarının sosyal medya uygulamaları ve mobil oyunları kompulsif kullanımı üzerindeki etkilerinin belirlenmesidir. Yüz yüze anket yöntemiyle toplanan veriler SmartPLS kullanılarak analiz edilerek toplam 14 hipotez test edilmiştir. Analiz sonuçları dışadönüklük, sorumluluk ve duygusal dengesizlik değişkenlerinin sosyal medya uygulamalarını kompulsif kullanım üzerinde anlamlı bir etkiye sahip olduğunu göstermektedir. Araştırmanın sonuçları ayrıca uyumluluk ve sorumluluk değişkenlerinin mobil oyunların kompulsif kullanımı üzerinde anlamlı bir etkiye sahip olduğunu göstermektedir. Bu çalışma, genç akıllı telefon kullanıcılarının kişilik özelliklerinin hem sosyal medya uygulamaları hem de mobil oyunları kompulsif kullanımı üzerindeki etkisine ışık tutmasıdır. Çalışmanın sonuçları, özellikle akıllı telefonlarda çevrimiçi mağaza uygulamalarına sahip olan ve/veya kullanıcılara anlık bildirimler göndermek gibi sosyal medya pazarlama faaliyetleri yürüten markalar için bazı öneriler sunmaktadır.

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ABSTRACT

Previous studies have revealed a relationship between the Big Five Personality Traits and the excessive or compulsive use of mobile apps such as social platforms and mobile games. Thus, the main purpose of this paper is to investigate the effects of not only Big Five Personality Traits (extraversion, agreeableness, conscientiousness, neuroticism and openness to experience) but also the locus of control and need for achievement on compulsive use of social media apps and mobile games among young smartphone users. The data was collected based on the face-to-face survey method and analyzed using SmartPLS 3 to test 14 hypotheses in total. The results show that extraversion, conscientiousness, and neuroticism significantly affect the compulsive usage of social media apps. On the other hand, agreeableness and conscientiousness have a significant effect on the compulsive use of mobile games. The most important value of this paper is that it sheds light on the effect of personality traits on the compulsive use of social media apps and mobile games among young smartphone users. This paper offers some suggestions, especially for brands with online store apps for smartphones or social media marketing, such as timing and frequencies of push notifications to users.

1. Introduction

A recent global digital report reveals that the number of unique smartphone users is 5.32 billion, equivalent to 67.0% of the world population (Hootsuite, 2022). That means

* Survey forms were distributed to 920 students in 25 November 2019, and participants completed these self-administered questionnaires.

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nearly two out of every three people in the entire world population of 8 billion people engage with smart devices. It is also predicted that smartphone users will exceed 7.5 billion in 2026 (Statista, 2021a). These projections unveil that the importance of smart devices in our lives will increase significantly in the following decades. Compared with ordinary mobile phones, smartphones offer a greater variety of communication options thanks to the internet connection, data-processing capacity, and interactive and fun platforms, which drive people to engage excessively in their smartphones (Panda & Jain, 2018). Smartphone users download specific applications and social media apps in order to use their devices as a tool for gratification and interaction. A report by Statista (2021b) shows that the number of mobile apps available in the most popular app stores, like Google Play and Apple AppStore, exceeded 6.5 million. Similarly, Hootsuite (2022) issues that among global internet users aged between 16-64, 67.0% play mobile games; social media users constitute 58.7% of the world population and spend an average of 149 minutes per day on these platforms. Even if built-in or third-party apps on smart devices allow users to simplify their life, have fun, and form interact with others (Reid & Reid, 2007; Tillmann et al., 2012), excessive or inappropriate usage of such devices or apps can cause misusage (Ozguner et al., 2005; Yen et al., 2012). For instance, users may need help to perform their professional duties or complete daily routines such as paying the bills or spending time with family members. Oulasvirta et al. (2012) pointed out that participants glance at their phones 34 times a day, and this sort of habit elevates users' stress levels frequently.

Several researchers have focused on the relationships between personality theories and internet or smart device usage in recent decades (Ehrenberg et al., 2008; Mueller et al., 2011; Svendsen et al., 2013; Barnett et al., 2015). These studies focus on personality traits and excessive or problematic usage of smart devices and compulsive usage of mobile applications (Andreassen, 2013; Lee et al., 2014; Hsiao et al., 2017; Panda & Jain, 2018; Klobas et al., 2018). Several studies have put forth that certain personality types are more disposed to excessive use of smartphones. For instance, Roberts et al. (2015) explored the link between Big Five Personality Traits and smartphone addiction. Hsiao et al. (2017) claimed that neuroticism triggered the compulsive use of smartphones. In contrast, Panda and Jain (2018) evidenced that neuroticism caused not have any effect on the compulsive use of smartphones. Andreassen et al. (2013) argued that extroverted people tended to use their smartphones excessively and Lee et al. (2014) also presented similar findings. In order to provide insights from various aspects to firms and brands in the process of reaching their customers, as well as to families and educational institutions about educating young people, and based on the research background, this study proposes two main research questions:

RQ1: Do personality traits affect the compulsive use of social media apps?

RQ2: Do personality traits affect the compulsive use of mobile games?

2. Literature Review and Hypotheses Development

2.1. Compulsive Behavior

Compulsion is performed repeat behaviors despite not attaining any artificial prize or joy at the end and emerges as a response against an uncontrollable passion. Compulsive behaviors are chronic and repetitive behaviors known as immediate reactions against negative moods (O'Guinn & Faber, 1989). In brief, they can be characterized as an impulse disorder and failure to control an impulse (Hanley & Wilhelm, 1992). Gambling, shopping, alcoholism, eating disorders and excessive use of smart devices is considered compulsive behaviors (Hirschmann, 1992; Hsiao et al., 2017; Liu et al., 2017). The internet and mobile apps are not only related to affirmative action, such as learning, having fun, and gaining information about the brand, but also too problematic user behaviors (Andreassen et al., 2013). As individuals use their internet-connected devices compulsively, they lose self-control, and despite facing adverse outcomes, they continue using their devices (Young, 1998; Widyanto & Griffiths, 2006). Indeed, Young (1998) claims that concerning its pathological signs, excessive internet use draws a massive parallel with gambling. Moss (2014) goes much further and argues that the usage of apps is even on top of an inherent addiction type, smoking. Previous studies show that the compulsive use of internet-connected smart devices may negatively affect almost all aspects of users' lives. For example, Kardefelt-Winther (2014) indicated that excessive internet use among adults is associated with social anxiety and loneliness. Domoff et al. (2019) found that mobile devices disrupt children's sleep quality, increase the risk of obesity, and trigger physical problems such as neck pain. Müller et. al (2021) supports empirical evidence that compulsive buying-shopping disorder (CBSD) and problematic social network use share many commonalities in both offline and online shopping channels. Last but not least, Mason et al. (2022) it has been empirically proven that smartphone usage addiction is associated with certain compulsive behaviors, such as purchasing, in the marketing context.

2.2. Social Media Apps

Social media presents a novel perspective supporting information socialization (Solis, 2010). More people can be accessed by creating a global effect from local sharing, and helpful information has the potential to spread over broader viewers online (Smith & Zook, 2011). As a result, communication becomes easier (Jones et al., 2017). Young people who are more open to using social media platforms stated that, in most cases, they choose to retrieve information from online networks like Meta rather than forming traditional face-to-face interactions (Panda & Jain, 2018). Furthermore, ss consumers, social media users also use social media platforms when seeking brand-related

information (Soroya et al., 2021). Another driver behind the use of social media apps relates to uses and gratification theory (Katz, 1974). In brief, no matter what the driver is behind the users' use of social media apps, they often may not balance their engagements with social media and use them addicted or inappropriate manner.

2.3. Mobile Games

Mobile games are separated from other platform games like console or PC games by their features such as mobility, accessibility, connectivity, and simplicity (Lei & Lee, 2020). Although mobile games are usually played for fun (Mulchany et al., 2015), they enable the creation of player communities and offer intangible prizes like virtual money (Radoff, 2011). Moreover, mobile games have developed new features that can facilitate users' social interaction (Fields and Cotton, 2012). From UGT perspective, mobile games' fundamental motivation for gratification is social interaction, fun, and achievement. In summary, although users play mobile games for purposes such as reaching a goal, having fun, or interacting with other players, they cannot control their gaming behaviors and exhibit problematic uses (Wu et al., 2010; Turel et al., 2010; Wei & Lu, 2014).

2.4. Extraversion

Extraversion is defined as being outgoing, sociable, energetic, active, adventurist, optimist, and outspoken (Barrick & Mount, 1991; McCrae & John, 1992; Goldberg, 1990; Somer et al., 2002). Extroverted people are characterized by making friends quickly, building good relationships, and displaying high self-confidence (Costa & McCrae, 1992). Several studies suggest that the social practice habits of extroverts turn into compulsive use over time; that is, those with a high level of extraversion are prone to compulsive behaviors (Hill et al., 2000; Hsiao et al., 2017). For instance, Andreassen et al. (2013) claimed that extroverts spent much more time on mobile applications and tended to use their smartphones excessively. Therefore, the following hypotheses are put forward:

H_1: Extraversion positively affects the compulsive use of social media apps.

H_2: Extraversion positively affects the compulsive use of mobile games.

2.5. Agreeableness

Agreeableness stands for being reliable, gentle, sympathetic, tolerant, generous, altruistic, amicable, cooperative, and friendly (Barrick & Mount, 1991; Costa & McCrae, 1992; Goldberg, 1990). High scores from this personality trait belong to reliable, modest, and cooperative individuals; low scores indicate selfish, distrustful, aggressive, and non-flexible people (Costa & McCrae, 1992). Earlier studies evidenced that agreeableness is associated with problematic internet use, addiction, or compulsive behaviors (Mowen & Spears, 1999; Glass et al., 2014). Andreassen et al. (2013) and Kuss (2013) claimed that agreeableness and smart device use maintain a negative relationship. Tang et al. (2016) also proved that the relationship between Facebook addiction and agreeableness is negative. Thus, the proposed hypotheses below:

H_3: Agreeableness negatively affects the compulsive use of social media apps.

H_4: Agreeableness negatively affects the compulsive use of mobile games.

2.6. Conscientiousness

Conscientious people are defined as those who are disciplined, reliable, orderly, cautious, patient, planned, meticulous, punctual, success-oriented, and loyal to authority (Verplanken & Herabadi, 2001; Barrick & Mount, 1991; Costa & McCrae, 1992; Somer et al., 2002; Goldberg, 1990; Tupes & Christal, 1961). Conscientious people are hardworking, fulfill their duties without delay, are eager to complete tasks (Agrawal et al., 2014), and are fair and goal-oriented (Nikolaou et al., 2008). It has been identified that excessive time on Facebook, playing mobile games and compulsive use of social networks maintain a negative relationship (De Cock et al., 2014; Tang et al., 2016; Hsiao et al., 2017). Therefore, the proposed hypotheses are follows:

H_5: Conscientiousness negatively affects the compulsive use of social media apps.

H_6: Conscientiousness negatively affects the compulsive use of mobile games.

2.7. Neuroticism

Neuroticism means the state of emotional disconnection from one's environment (Costa & McCrae, 1992). Neuroticism, which refers to the neurotic symptoms demonstrated by a person, is defined as being disagreeable, sluggish, resentful, stressed, feeling insecure, developing constant negative feelings, and labeling the surrounding environment as a threat (Costa & McCrae, 2017; Kammeyer-Mueller et al., 2016; Tupes & Christal, 1961; Somer et al., 2002). Neurotic people make their decisions under the pressure of emotions (Wilt & Revelle, 2015), and that is a condition that pushes them to make faulty and inappropriate decisions. For instance, though Bianchi and Phillips (2005) evidence the link between neuroticism and excessive behaviors and addiction, Andreassen et al. (2013) argue that emotional instability is among the determinants of internet addiction, and in the same vein, Hsiao (2017) reveals that emotional instability has a positive effect on the compulsive use of social media apps. Hence, the proposed hypotheses are as follows:

H_7: Neuroticism positively affects the compulsive use of social media apps.

H_8: Neuroticism positively affects the compulsive use of

mobile games.

2.8. Openness to experience

Openness to experience is defined as an individual's intellectual curiosity, analytic-mindedness, easy perception, a broad scope of interests, aesthetic talent, and imaginative solid power (McCrae & John, 1992; Tupes & Christal, 1961; Barrick & Mount, 1991). Last decades, studies have been conducted on the compulsive use of the internet (van der Aa et al., 2009) or social media apps (De Cock et al., 2014) among people open to new experiences. For instance, Tang et al. (2016) found no relationship between openness and the use of social networks. In contrast, Andreassen et al. (2013) concluded that openness to experience retains people from compulsive use of Facebook and smart devices. Thus, the proposed hypotheses are below:

H_9: Openness to experience positively affects the compulsive use of social media apps.

H_{10}: Openness to experience positively affects the compulsive use of mobile games.

2.9. Locus of control

Locus of control is one's level of control over their personal life and actions. In other words, locus of control indicates to what extent people believe in having control over the events affecting their life (Rotter, 1966). Locus of control is categorized as internal locus of control and external locus of control (Rotter, 1966; Spector, 1982; Hansemark, 1998). Internal locus of control means self-confidence to have autonomy over the events affecting our life and actions; external locus of control means one's conception that his/her life and actions are interlinked with change and other environmental factors (Rotter, 1966; Mutlu & Ozer, 2021). Researchers argue that this passive disposition of external people molds certain behaviors like drugs (Haynes & Ayliffe, 1991) and internet addiction (Chak & Leung, 2004). For instance, Lee et al. (2014) revealed the effect of locus of control on the compulsive use of social media apps and mobile games. Therefore, the proposed hypotheses are as follows:

H_{11}: Locus of control positively affects the compulsive use of social media apps.

H_{12}: Locus of control positively affects the compulsive use of mobile games.

2.10. Need for achievement

Need for achievement means an individual's aspiration to excel in skills and attain tough challenges (Kerr et al., 2017) and exhibit a behavioral norm identical to perfectionist traits (McClelland, 1961). Individuals with a high need for achievement choose to be personally responsible for solving problems, setting targets, and attaining preset targets through their own efforts (McClelland, 1961; Yan, 2010). From this point of view, Burkhardt (2010) revealed that one of the motivations behind using social media apps is to taste a sense of gratification and success by gaining followers. Mawdsley (2015) found that students use of social media apps is closely related to the need for achievement. The need for achievement can also be considered a motivation in mobile games, according to which the need to achieve lies behind the goals of gaining power, collecting performance points, and beating other players (Hartmann & Klimmt, 2006). Thus, the proposed hypotheses are as follows:

H_{13}: Need for achievement positively affects the compulsive use of social media apps.

H_{14}: Need for achievement positively affects the compulsive use of mobile games.

In recent studies on technology, the importance of psychographic determinants of compulsive consumption has been accentuated, and the use of smart devices has been treated similarly to an addiction-like behavior and been investigated for personality traits (Bianchi & Phillips, 2005; Takao et al., 2009; Mueller et al., 2011; Lee et al., 2014). Thus, three main points of view come to the scene in previous studies aiming to designate and establish the characteristics of problematic internet use: (1) Cognitive-behavioral theory framed by Davis (2001), (2) Social-skills theory suggested by Caplan (2002) and (3) The theory conceptualized by Hirschman (1992). In a nutshell, Hirschman (1992) proposes a general theory of compulsive consumption that suggests individuals exhibiting some compulsive behaviors have similar characteristics; common personality traits direct these behaviors and follow nearly the same evaluation patterns. However, the theory framed by Hirschman (1992) is considered the main viewpoint since this paper focused on the relationship between personality traits and compulsive behaviors. Even though there are varied approaches to personality traits, Big Five Personality Traits are viewed as the most comprehensive and acknowledged theory and are valued as the leading approach (Tang et al., 2016; Costa & McCrae, 2017). Big Five Personality Traits are categorized into five main dimensions that encompass nearly all of the distinct variations in human character (Robbins & Judge, 2013): extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience (Goldberg, 1990; McCrae & Costa, 1987). In this research, we attempt to investigate more traits. Locus of control (Rotter, 1966) and need for achievement (Lowell, 1952) are included in these five essential personality traits; the effects of these personality traits on the compulsive use of social media and mobile games were examined using the model framed by Hsiao (2017). Figure 1 shows the proposed hypotheses and research model.

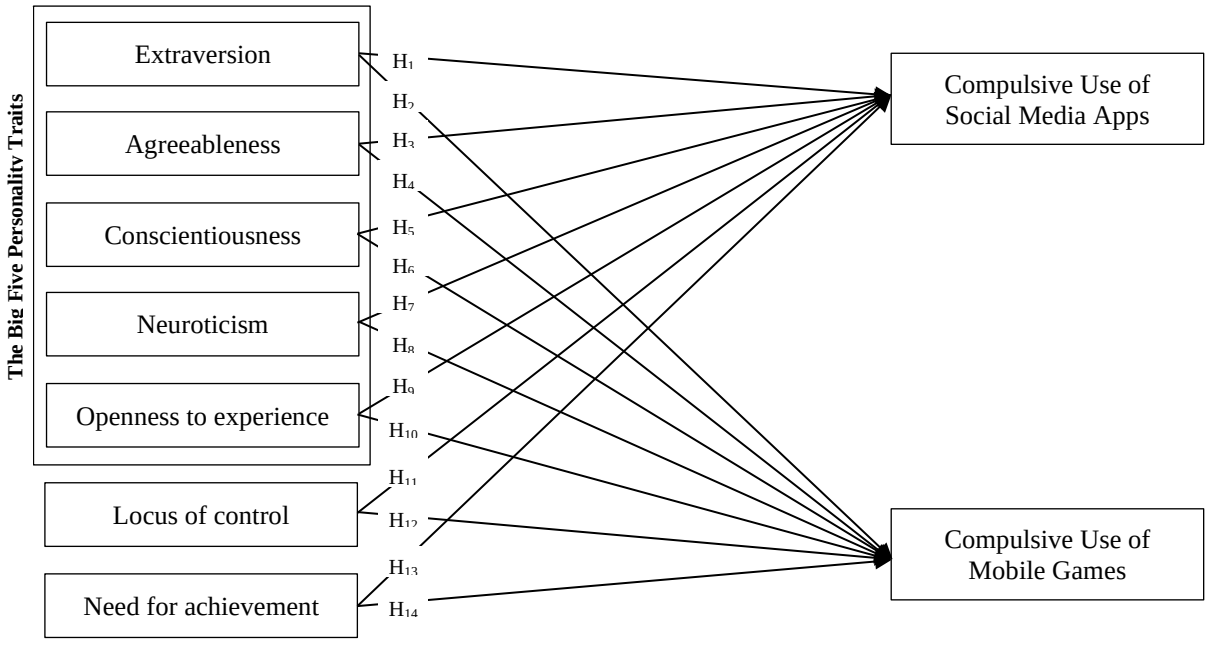

Figure 1. Research Model

3. Method

3.1. Sampling and Data Collection

This paper's target population comprises high school students in Balikesir, Turkey. ***Survey forms were distributed to 920 students in 25 November 2019, and participants completed these self-administered questionnaires***. The main motive behind choosing self-administered questionnaires is to minimize the potential risk of researcher or interviewer interventions (Oppenheim, 1992). At the end of this process, 603 students completed questionnaire forms (65.5% response rate), 498 of which were found to be valid. G*Power, based on the power analysis rule of thumb proposed by Cohen (1988) for empirical studies in behavioral sciences, proposes 153 for seven predictors with a medium (f^2=0.15) effect size of the model. The sample size of this study, with 498 participants, is well above the acceptable number.

3.2. Measurement

The survey form is divided into two sections: the demography of participants and items testing the construct of research. The scales, based on English, were adapted into Turkish using the back-translation method. The 5-point Likert scale was used in all of these scales. The Big Five Personality Traits scale was adapted from Benet-Martinez, and John (1998), the scales used to measure the need for achievement and locus of control were adapted from Iscan and Kaygin's (2011) studies, and scales related to the relationship between compulsive use of social media apps and compulsive use of mobile game were adapted from Hsiao (2017).

3.3. Data Analysis

In order to test the proposed hypotheses and theoretical model, researchers employed Partial Least Squares Structural Equation Modeling (PLS-SEM) (Hair et al., 2016). Since this paper aims to determine the compulsive use of social media apps and compulsive use of mobile games among young smartphone users, as it is recognized as the most advanced variance-based system having bootstrapping procedures and non-parametric approach, PLS-SEM, and as the measurement integrated concepts which could not be directly measured but instead could be inferred from notifications; it demonstrated relatively better performance. Hence, in this paper SmartPLS3 v.3.3.5 two-step approach has been embraced (Hair et al., 2013; Ringle et al., 2015).

4. Results

4.1. Descriptive Statistics

Table 1 displays data on participants' demographic information and smartphone usage statistics.

Table 1. Participants Profile

Measure	Items	F	%
Gender	Female	270	54.2
	Male	228	45.8
Age	15	145	29.1
	16	203	40.8
	17	84	16.9
	18	66	13.3
Operating system of mobile device	iOS	143	28.7
	Android	251	50.4

	HarmonyOS.	91	18.3
	Other	13	2.6
The most used social media application	Instagram	384	77.1
	Facebook	18	3.6
	Twitter	27	5.4
	Snapchat	4	0.8
	Youtube	34	6.8
	Whatsapp	11	2.2
	Reddit	3	0.6
	Twitch	2	0.4
	Others	15	3.0
Duration	>60 minutes	95	19.1
	61-120	167	33.5
	121-180	138	27.7
	>180 minutes	98	19.7

The data show that compulsive uses of both social media and mobile games are relatively low. On the other hand, participants are more external control oriented and agreeable. The average values of the model variables and standard deviations are listed in Table 2.

Table 2. Descriptive Statistics

Construct (n: 498)	Means	SD
Extraversion (EXT)	3.520	0.705
Agreeableness (AGR)	3.660	0.635
Conscientiousness (CON)	3.380	0.624
Neuroticism (NEU)	3.065	0.764
Openness to experience (OPE)	3.620	0.596
Locus of control (LOC)	3.916	0.562
Need for achievement (ACH)	3.585	0.718
Compulsive use of social	2.972	0.934
Compulsive use of mobile	2.099	0.904

4.2. Measurement Model

The measurement model was evaluated for reliability, convergent, and discriminant validity (Ringle et al., 2015). In an attempt to test the research model (Figure 1), PLS-SEM was utilized. SmartPLS3 was employed for the analyses. Firstly, reliability analyses were conducted. Reliability is an analysis showing to what extent the tools used in the model can provide identical results in consecutive trials (Carmines & Zeller, 1982). In this context, Cronbach's α coefficient for reliability analyses was calculated. As exhibited in Table 3, α coefficients of the variables varied between 0.506 to 0.750, and all in all, it can be detected that all variables have acceptable reliability levels (George & Mallery, 2003; Gondoli & Jacob, 1993). Another analysis regarding the model's validity is the observation of the convergent validity results shown in Table 3 (Hair et al., 2011). According to relevant studies, the factor loads of the items need to be above 0.5 (Anderson & Gerbing, 1988; Hair et al., 2009). In addition, composite reliability (CR) should be above 0.6 (Bagozzi & Yi, 1988); average variance above (AVE) 0.5 (Fornell & Larcker, 1981). Also, if AVE is below 0.5, but CR is above 0.6, it can be stated that the convergent validity of the construct is sufficient (Fornell & Larcker, 1981). That being said, 32 items -since they lacked sufficient factor loading- were retained from this model, which was formed with 64 items in total. All in all, it was determined that each item in the model met convergent validity requirements.

Table 3. Analysis of Convergent Validity

Construct	Loadings	Cronbach's α	AVE	Composite reliability
Extraversion		0.700	0.830	0.622
EXT1	0.859			
EXT2	0.714			
EXT3	0.786			
Agreeableness		0.506	0.670	0.801
AGR1	0.796			
AGR2	0.839			
Conscientiousness		0.702	0.436	0.754
CON1	0.708			
CON2	0.585			
CON3	0.698			
CON4	0.705			
CON5	0.669			
Neuroticism		0.685	0.443	0.800
NEU1	0.638			
NEU2	0.735			
NEU3	0.620			
NEU4	0.678			
NEU5	0.652			
Openness to experience		0.698	0.614	0.826
OPE1	0.730			
OPE2	0.873			
OPE3	0.739			
Locus of Control		0.579	0.436	0.754
LOC1	0.733			
LOC2	0.679			
LOC3	0.579			
LOC4	0.637			
Achievement		0.543	0.630	0.758
ACH1	0.552			
ACH2	0.979			
Compulsive Use of Social Media Apps		0.721	0.544	0.826
CUSM1	0.811			
CUSM2	0.829			
CUSM3	0.705			
CUSM4	0.628			
Compulsive Use of Mobil Games		0.750	0.568	0.840
CUMG1	0.804			
CUMG2	0.725			
CUMG3	0.755			
CUMG4	0.660			

Table 4 shows that AVE's square roots are above off-diagonal correlation coefficients on the corresponding rows and columns. Besides, it is observed that all of the correlations between constructs are lower than 0.45. It can thus reasonably be claimed that each one of the construct

criteria provides adequate discriminant validity.

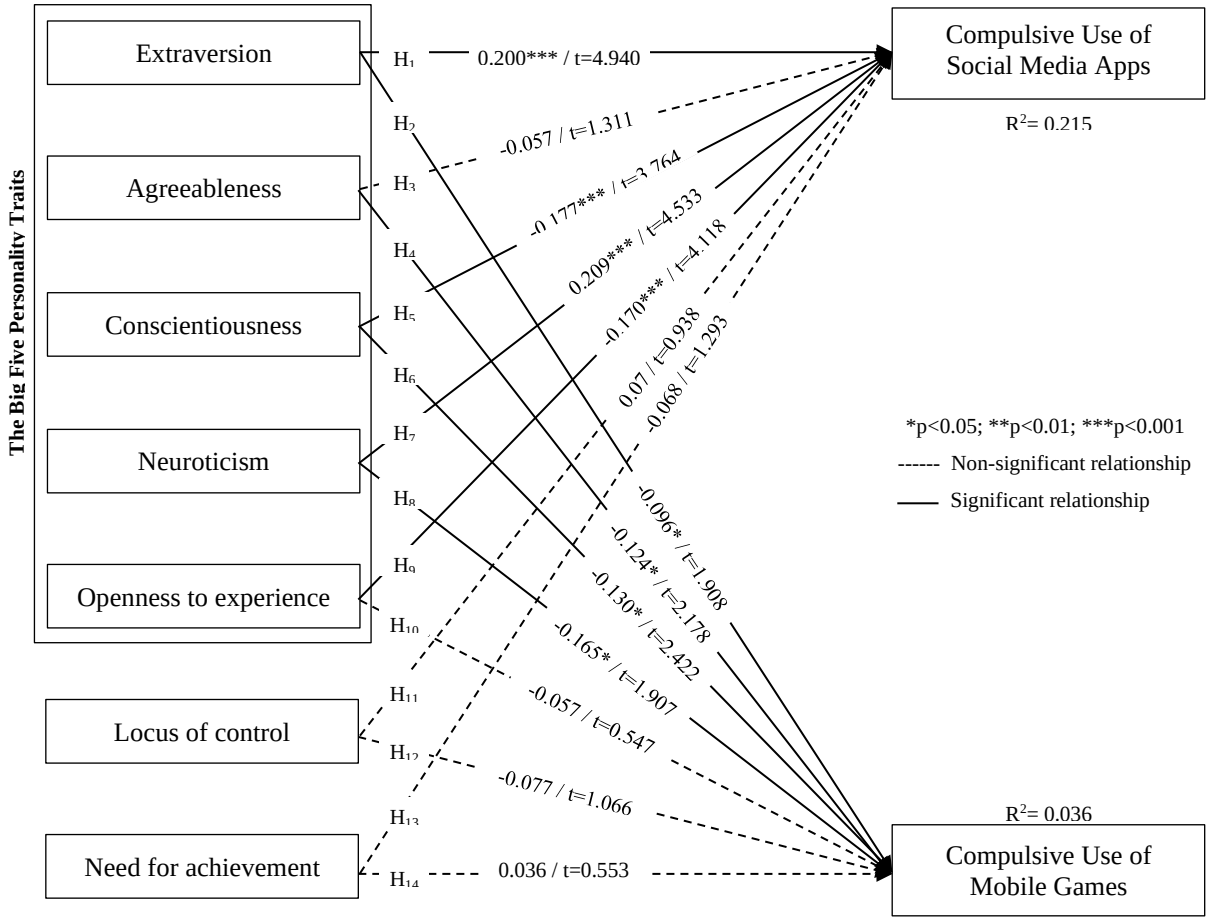

Figure 2. Hypotheses Test Results

Table 4. Analysis of Discriminant Validity

Construct	ACH	AGR	CUMG	CUSM	CON	LOC	EXT	NEU	OPE
ACH	0.792								
AGR	0.028	0.818							
CUMG	-0.020	-0.085	0.754						
CUSM	-0.131	-0.222	0.251	0.737					
CON	0.190	0.283	-0.105	-0.324	0.675				
LOC	0.375	-0.013	-0.071	-0.092	0.145	0.660			
EXT	0.035	-0.224	-0.051	0.208	-0.118	0.065	0.788		
NEU	0.027	-0.314	-0.094	0.306	-0.272	-0.036	-0.007	0.666	
OPE	0.230	0.017	0.018	-0.245	0.217	0.254	0.117	-0.200	0.784

4.3. Testing Model

Path analysis was employed to test the research model. In the test results, path coefficients and R^2 values were examined. Path coefficients are standardized regression coefficients, and they are used to explain the direction of inter-variable relationships. R^2 value represents the variance ratio in endogenous variables, and it is acknowledged as the symbol of the construct model's explanatory power (Henseler et al., 2009; Wong, 2013). A bootstrapping algorithm was administered to test t-statistics, standard errors, and hypotheses. The number of subsamples in bootstrapping was chosen as 500. Further, the SRMR value of the model was also measured as 0.08, which was deemed a sufficient value (Henseler et al., 2009). The obtained results (t-statistics, R^2, and p-value) are shown in Figure 2.

Table 5 summarizes the hypotheses test results. Extraversion (β=0.200, p<0.001), conscientiousness (β=-0.177, p<0.001), neuroticism (β=0.209, p<0.001) and openness to experience (β=-0.170, p<0.001) have significant effects on compulsive use of social media app; extraversion (β=-0.096, p<0.05), agreeableness (β=-0.124, p<0.05), conscientiousness (β=-0.130, p<0.05) and neuroticism (β=-0.165, p<0.05) have significant effects on compulsive mobile game use.

Table 5. Hypotheses Results

Hypothesis	Status	Conclusion
H_1: EXT → CUSM	Significant	Supported
H_2: EXT → CUMG	Significant	Not supported
H_3: AGR → CUSM	Non-significant	Not supported
H_4: AGR → CUMG	Significant	Supported
H_5: CON → CUSM	Significant	Supported
H_6: CON → CUMG	Significant	Supported
H_7: NEU → CUSM	Significant	Supported
H_8: NEU → CUMG	Significant	Not supported
H_9: OPE → CUSM	Significant	Not supported
H_{10}: OPE → CUMG	Non-significant	Not supported
H_{11}: LOC → CUSM	Non-significant	Not supported
H_{12}: LOC → CUMG	Non-significant	Not supported
H_{13}: ACH → CUSM	Non-significant	Not supported
H_{14}: ACH → CUMG	Non-significant	Not supported

Based on these results; H_1, H_4, H_5, H_6 and H_7 hypotheses were supported. To illustrate clearly, extroversion and neuroticism personality traits have positive effects on compulsive social media use, whereas conscientiousness personality trait has a negative effect; agreeableness and conscientiousness personality traits affect compulsive mobile game use in a negative direction. Lastly, the results indicate that 21,5% of the variance related to compulsive social media use (R^2=0.215) and 3,6% of the variance related to compulsive mobile game use (R^2=0.036) can be explained via the research model.

5. Conclusion And Discussion

The main purpose of this paper was to solve the two central problems following those fourteen hypotheses that tested if or not personality traits affected compulsive use of social media and mobile games are proposed. At first, proposed hypotheses on compulsive social media use have been analyzed; H_1, H_5, and H_7 are supported, whereas H_3, H_9, H_{11}, and H_{13} are not. At the end of all analyses, 5 of those hypotheses are supported, while nine are not supported (see Table 5). Based on these results, extraversion has a positive effect on compulsive use of social media; in other words, higher extraversion levels among young individuals indicate that compared to introverted people, they use social media apps more compulsively, and this finding is consistent with certain previous studies (Andreassen et al., 2013; Hsiao, 2017). Results also show that conscientiousness affects compulsive use of social media app, but negatively. Knowing that individuals with high conscientiousness levels are more disciplined and planned, supporting the negative-way, hypothesis on the relationship between these two variables draws a parallel with extant literature (Batigun & Kilic, 2011; Tang et al., 2016). On the other hand, similar to the shreds of evidence presented in earlier studies (Bianchi & Phillips, 2005; Ebstrup et al., 2011; Kuss et al., 2013), it has been concluded that as the neuroticism level of individuals escalates, they tend to use social media much more compulsively. Secondly, the results of the hypotheses related to compulsive mobile game use indicate that H_4 and H_6 hypotheses are supported, while H_2, H_8, H_{10}, H_{12}, and H_{14} hypotheses are not supported. Past studies examined whether or not agreeableness affected compulsive mobile game use (Phillips et al., 2006; Hsiao, 2017) and these studies also unveiled that agreeableness negatively affected mobile games' compulsive use. Last but not least, it became apparent that the conscientiousness level of individuals also affects the compulsive use of mobile games. In conclusion, this paper exhibits if a relationship in varying degrees and norms existed between different personality traits, compulsive use of social media apps and mobile games. This finding has been echoed in other studies, too (Apaolaza et al., 2019; Clements & Boyle, 2018; Domoff et al., 2019; Lee et al., 2014; Hooper & Zhou, 2007; Hsiao, 2017; Park & Lee, 2011).

This study will guide young people to observe their social media and mobile game usage behaviors in terms of their personality traits and help raise awareness to avoid the adverse effects of such behaviors. The contributions of this study are not limited to the personal level but also include dimensions for firms and/or brands. Due to the concern of not being able to immediately consume the information that will reach the consumers and be helpful, they feel the compulsion to check their smartphones constantly, and when there is an uncertainty in the frequency of the information coming from the brand, and the variance of each piece of information is high, the consumers' anxiety is higher (Iyer & Zhong, 2022). Thus, the results of the current study suggest that brands may send push notifications more frequently to consumers who compulsively use them. Moreover, consistent with the results of the research conducted by Sindermann et al. (2022) that has a strong relationship between the extraversion levels of individuals and addiction to the social networking platform Facebook (Meta), the results of the current study suggest the brands which personality traits of young consumers in terms of explaining their compulsive use of social media applications. Thus, this paper provides insight into issues such as choosing an online marketing channel. Although the research results reveal various opportunities for brands to reach compulsive mobile application users more efficiently, this article can also serve as a guide for educational institutions and families who realize that there is a relationship between personality traits and compulsive use of digital devices. In order to protect young people from coercive use, educational institutions can organize training and awareness workshops by highlighting their personality traits, and families can change their communication with their children to minimize these harmful effects. In addition, government agencies and non-governmental organizations can organize various activities according to personality traits to alleviate, prevent and regulate compulsive use among individuals. Apart from this general information, an example based on the analysis results shows a significant negative relationship between conscientious personality traits, compulsive social media use, and compulsive mobile game use. Accordingly, special studies can be conducted to

increase the conscientious personality traits of individuals.

The present research has certain limitations. This research was set in only a specific geographical region of Turkey, and data were collected by distributing questionnaires to only those students studying in selected high schools. For instance, although it matched the statistics of the larger population, female students were numerically higher among all participants. Thus, qualitative analyses should be conducted in prospective studies using data collection methods such as focus group discussions or face-to-face interviews instead of quantitative analysis via a questionnaire. In addition, new analyses should be conducted among varied age categories to test the robustness of research findings, detections could be attained in countries or regions with different development levels, and even intercultural comparisons could be made. In the present paper, personality traits were taken as the basis to detect underlying causes behind the compulsive use of social media and mobile games so prospective researchers could identify different variables as the determinants of compulsive behaviors in their studies. Moreover, in the studies related to the effects of personality traits on technology or smart device use, in general, Big Five Personality Traits were treated. In contrast, in this paper, "locus of control" and "need for achievement" variables were also included. Future researchers focusing on these studies should integrate different personality-trait classifications, such as entrepreneur personality traits, as variables. As is the case in many social science research studies, the employed scales in this research were adapted from specific studies. In future studies, different scales from different researchers could be harnessed. Finally, since this paper is built upon collected data in a single time frame, only future studies could be established upon different or longer time frames.

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