

Mediator Role of Emotion Regulation between Personality Traits and Internet Addiction in Young People

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Abstract

Adolescents and young people with internet addiction often have problems with their school performance, work life, daily routines, mood, and family relationship. There can be several factors that predict internet addiction. Current study aims to figure out the relationship between personality traits, emotion regulation strategies as cognitive reappraisal and suppression and internet addiction behavior in young people. 193 people who are between 18-25 years old participated in the study. Hierarchical regression analyses were carried out to identify the predictors of internet addiction. 26% of the total variance in internet addiction was explained by predictor variables which are age, page of book read in weekly, personality traits and emotion regulation strategies. When cognitive reappraisal, conscientiousness and the number of book pages read increase, reporting internet addiction scores decreases. In addition, results pointed out that the effects of openness to experience, neuroticism and agreeableness as personality traits were mediated by cognitive reappraisal on internet addiction symptoms. When agreeableness and openness to experience personality traits increase, cognitive reappraisal also increase and it decreases internet addiction of young people. When neuroticism personality trait increases, cognitive reappraisal of participants decreases and it increases internet addiction. The study was concluded by emphasizing to implications in the area of emotion regulation especially programs that targeting the use of cognitive reappraisal strategy to young people to decrease internet addiction.

Keywords: Internet addiction; Personality; Emotion regulation; Mediation analysis

Introduction

Addiction can be defined as deficiency or problems to control the use of a substance or behavior [1]. The concept of addiction can also be used as dependency in international literature [2]. Individuals may be dependent on several things like smoking, alcohol, drugs and so on. Sometimes, addictions do not depend on only a physical substance. Behavior based addictions such as game addiction, sex addiction, computer addiction, television addiction, shopping addiction should also be taken into consideration [3]. Technology addiction that includes social media addiction, television addiction, mobile phone addiction, online game addiction, internet addiction is one of the behavior based addiction [4]. Especially today, as the importance of internet increases, the effects of internet have much more important than other communication technologies.

Internet has influenced people's life both positively and negatively from past to present. Several studies indicate that excessive internet usage may sometimes go towards internet addiction [5-7]. In recent times, the negative impacts of the internet on children and teenagers have mentioned widely. In this article, usage of internet is discussed in terms of internet addiction in young people.

In many studies the problematic use of the internet has been identified and it has been shown that there are permanent negative outcomes such as job loss, academic failure, divorce caused by excessive internet usage [8-10]. Adolescents with internet addiction often have problems with their school performance, daily routines,

mood, and family relationship [11]. Some researchers associate internet addiction with obsessive compulsive disorder (OCD) and impulse control disorders (ICD). Internet addiction is considered to be impulse control disorder more because it is thought that one cannot or rarely resist the urge to push a certain behavior despite important negative personal consequences [11]. When the issue comes to reasons of internet addiction, there is no one theory that can explain the reasons of it. It can be multifactorial. In this article, emotion regulation and personality took place as explanatory factors of internet addiction in a mediation model.

Predictors of internet addiction

There are a number of direct and indirect reasons why an individual is addicted to the internet. Many studies have been conducted on several psychological variables that correlate with internet addiction in order to better understand the underlying factors of it and able to plan the best treatment [12,13]. In current study, the correlations between emotion regulation and internet addiction will be examined to contribute the literature about underlying mechanisms of internet addiction.

There are also some studies that investigate the relationship between emotion regulation and internet addiction in young people [14,15]. According to some researchers, pathological internet use is commonly related to impulse control disorder and so, internet addiction can be linked with emotion control capacity [16,17]. Emotion regulation can be defined as people's ability to arrange their emotional states, experiences and expressions to function well and adaptively within the daily life, academic context or social life [18-20]. That is to say; it includes ability to think in a constructive manner about how to

overcome feelings [21]. It might include either increasing or decreasing the experience of specific feeling states relying on the context [22]. Emotion regulation involves initiation of a new emotional reaction or change of continuing emotional reactions [23].

In this article, two common emotion regulation strategies which are reappraisal and suppression and their relations with internet addiction are embraced. Emotion regulation strategies could be categorized in terms of their time wise positions throughout the emotion production process. Cognitive reappraisal which is an antecedent focus emotion regulation strategy means that when a condition is focused once in a certain direction, cognitive change occurs in which the meaning of this condition is turned on an idea [24]. To clarify, in order to reduce the emotional effect of something, it is to change the way that a person think about the situation. On the other hand, response-focused emotional regulation is the regulation of the various components of emotional reaction [25]. Suppression is response focused emotion regulation strategy. It means prevention of the outward manifestations of inner feelings. Findings studying experimental and individual differences show that reappraisal is more effective than suppression for better outcomes [24]. According to the results of a study of antecedent focused emotion regulation was positively associated with well-being of participants. In a study that investigated multi-model treatments for internet addiction, improving adolescents' emotion regulation capacity as a prevention and treatment method was given [26]. In another study, it was found that internet addicts tended to have problems in emotion regulation compared to other participants [27]. In this study, it is thought that cognitive reappraisal which is found as a healthy emotion regulation strategy in literature [28,29] will negatively associated with internet addiction while suppression which is found as unhealthy emotion regulation strategy in literature [30] will associated positively with internet addiction.

Personality traits can also be related with the internet addiction in young people. Personality can be defined as a unique image of the factors that affect the way a person feels, thinks and behaves [31]. There are many theories that try to explain personality in psychology literature. "Feature approach" is one of the most popular and foreground approaches that gives emphasis on individual differences by looking observed behavior patterns [32]. This feature approach is based on the adjective words that people use to describe themselves and other people.

Since the first half of the twentieth century, factor analysis studies have been carried out in order to determine the dimensions of personality traits. In these analyses, it was observed that the factor numbers of personality models changed between three and seven [33]. Goldberg stated that five powerful factors emerge in his work based on adjectives in the lexicon, suggesting that many personality concepts can be theoretically organized within these five factors. Five factor personality models are defined by extraversion, neuroticism, openness to experience, agreeableness, and conscientiousness dimensions. Scale of five factor personality model was developed by Benet-Martinez and John in 1998 and consisted of 44 items [34].

According to the findings of some studies, individuals who score higher on the internet addiction scale are low in agreeableness personality characteristic and conscientiousness; and high in neurotic characteristics [35]. Some other findings have found that there is a positive relationship between internet addiction and the dimensions of extroversion [36], introversion [37], neuroticism [38] and openness to experience [39]. Findings of the studies can sometimes contradict with each other like in the example of extraversion personality trait. In some

studies there are supporting points that the extraversion personality trait is positively related to internet dependence [36]. However, in some studies introversion personality trait which is the opposite of extraversion is found positively correlated with internet addiction [37]. The explanation of this contradictory result can change the theory behind it and the researcher's point of view.

Aims of the Study

The excessive use of the internet and its relation with personality traits have been studied a lot depending on many different theories. This study aims to figure out the relationship between personality characteristics, emotion regulation strategies as cognitive reappraisal and suppression and internet addiction behavior in young people. This relationship is explored via the mediator role of adolescents' use of emotion regulation strategies. Underlying mechanism of internet addiction in young people will be understood better with this study. When underlying mechanisms of a negative psychological outcome are comprehended well, intervention studies or treatment plans can be modelled better. Although there are many studies that investigate relational aspects between personality [40,41] and internet addiction, there is a lack of literature about interactions of the predictors. The effect of personality on internet addiction can be different when the emotion regulation issue show up.

Method

Participants

193 young people who are between 18 and 25 years old participated to the current study. Because of the fact that the data was collected via the internet source, participants composed of different cities of Turkey. Participants were recruited randomly by sharing the inventories in different online platforms like Facebook and WhatsApp groups with convenient sampling method. The number of participants was determined as the convenience sample, which responded to the questions in time allowed by the ethics committee.

Measures

Demographic form: A demographic form that consists of questions, such as gender and age of the participant, education level of the mother and father, marital status of the parents, income level of the family, number of siblings and the questions related with internet using habits, number of book pages read a week were asked to people to fill out.

Internet addiction scale: An Internet addiction scales was developed by Günüç and Kayrı in 2010. It aimed to describe internet addiction profile of adolescents in Turkey. This measurement consists of 35 items and it is Likert type that has 5 points. Cronbach alpha internal consistency coefficient of this scale was found as 0.94 in the original study. According to result of exploratory factor analysis, this scale consisted of 4 different subscales which were described as Social Isolation, Withdrawal, Controlling Difficulty, disorder in Functionality [42]. In recent study, Cronbach alpha was found as 0.95. This task was found as highly reliable and valid for measuring internet addiction.

Turkish adaptation of emotion regulation questionnaire (ERQ): Gross and John developed Emotion Regulation Questionnaire (ERQ) in 2003. It includes 10 items that evaluate people's usage of emotion regulation strategies which are suppression and reappraisal. There are 6

reappraisal items while 4 suppression items in the questionnaire. It is Likert type that has seven points. Internal reliability coefficient of the ERQ changes for the reappraisal between 0.80 and 0.82 and for the suppression factor between 0.73 and 0.76. Turkish adaptation of ERQ is conducted by Eldeleklioğlu and Eroğlu [43-46]. The Emotion Regulation Questionnaire was examined and according to the findings, it was stated that the Turkish translation of the Emotion Regulation Questionnaire was equal to original one. There were two factors which are suppression and reappraisal according to results of confirmatory factor analysis of Turkish version of ERQ. The internal reliability coefficients were 0.78 for the reappraisal subscale while 0.73 for the suppression subscale. Test-retest reliability of this Turkish adaptation ERQ scale for reappraisal and suppression was found 0.74 and 0.72, respectively. Cronbach alpha value was found as 0.80 for cognitive reappraisal subscale and 0.74 for suppression in the current study.

Big five personality inventory: The five-factor personality scale was developed by Benet-Martinez and John [43] under the name of "The Big Five Inventory", and it consists of 44 items. This scale measures the dimensions of neuroticism, extroversion, openness to experience, agreeableness and conscientiousness among the personality traits that are prepared shortly in terms of effective and rapid evaluations of researchers. In the scale, there are 8 items for each neuroticism and extroversion, 9 items for each agreeableness and conscientiousness and 10 items for openness to experience. Big Five Personality Inventory is a self-report style, 5-point Likert type scale.

Turkish adaptation of the scale was done by Sümer and Sümer [44] within the framework of Turkey phase Schmitt et al. [45] on a study of personality characteristics of participants from 56 countries. Reliability coefficients have been reported for sub-dimensions ranged from 0.64 to 0.77.

Procedures

Necessary permission was taken from Social Sciences and Humanities Ethic Committee of authors' university. Ethic committee

conducted a meeting on 31/03/2017 and recent study's approval number was determined as 2017-505. After taking the permission, the data (demographic form and surveys) was entered into an internet source which is Google Drive Survey part. Then, the link of this study was shared through some internet platforms like Facebook, WhatsApp in order to fill out by young participants between April and June 2017. Participants were informed about the age criteria to participate the study. First of all, informed consent forms were ticked as sign by the participants to start to fill out the surveys. It approximately took 15 minutes time. After they complete the questionnaires, they were thanked for their participation.

Analysis

All statistical analyses were carried out through Statistical Package for Social Sciences (SPSS v.20) in the recent study. First of all, descriptive statistics were obtained for demographic variables after cleaning the data. Data were normally distributed. In addition to correlation analyses and hierarchical regression, three mediation analyses were conducted so as to test hypothetical models. Mediation analysis was conducted by using indirect macro of Hayes with 5000 Bootstrapping.

Results

Descriptive statistics of study variables

After reverse coding for personality traits, emotion regulation strategies and internet addiction, sum of all scores was calculated to reach the overall agreeableness, extroversion, neuroticism, conscientiousness openness to experience, cognitive reappraisal, suppression and internet addiction scores. Means, standard deviations and minimum-maximum score ranges can be seen in Table 1.

	M	SD	Min-Max	1	2	3	4	5	6	7	8	9	10
Internet addiction	72.15	22.67	36-150	1									
Agreeableness	32.31	4.74	18-43	-0.020**	1								
Extraversion	26.37	5.77	8-40	-0.11	0.09	1							
Neuroticism	24.81	5.38	10-39	0.15*	-0.44**	-0.1	1						
Conscientiousness	32.41	5.52	20-44	-0.39**	0.21**	0.11	-0.20**	1					
Openness to exp.	32.04	5.58	13-43	-0.14	0.22**	0.25**	-0.20**	0.31	1				
Cognitive reappraisal	27.67	6.31	10-42	-0.26**	0.23**	0.09	-0.19**	0.14	0.24**	1			
Suppression	16.87	5.46	4-28	-0.1	0.12	0.40**	0.007	-0.06	-0.02	-0.07	1		
Age	20.87	1.88	18-25	-0.15*	0.05	0.003	-0.02	0.05	0.03	0.22**	0.08	1	
Book reading	96.77	155.46	0-1000	-0.28**	-0.01	0.2	0.34	0.26	0.34	0.18	0.06	-0.03	1

*p<0.05, **p<0.01

Table 1: Means, standard deviations, minimum-maximum scores and correlation matrix of the variables.

Correlations among variables: As it was shown in Table 1, correlations indicated that internet addiction was positively correlated with neuroticism ($r=0.15$, $p<0.05$) while it was negatively correlated with agreeableness ($r=-0.20$, $p<0.01$), conscientiousness ($r=-0.40$, $p<0.01$) and cognitive reappraisal strategy ($r=-0.26$, $p<0.01$). In addition, cognitive reappraisal emotion regulation strategy has a positive correlation with agreeableness ($r=0.23$, $p<0.01$) and openness to experience ($r=0.24$, $p<0.01$) personality traits while it has a negative relationship between neuroticism ($r=-0.19$, $p<0.05$). Furthermore,

neuroticism was negatively correlated with conscientiousness ($r=-0.20$, $p <0.01$), openness to experience ($r=-0.20$, $p<0.01$) and cognitive reappraisal ($r=-0.19$, $p<0.05$). Moreover, conscientiousness was positively correlated with openness to experience ($r=0.31$, $p<0.01$). Openness to experience had a positive relationship with cognitive reappraisal ($r=0.24$, $p<0.01$). Pearson correlations for the study variables indicated that 22 correlations were significant with correlation coefficients ranging from -0.44 to 0.40.

Predictors in set	β	Beta β	t	Model R ²	Adjusted R ²
1				0.11	0.1
Age	-1.96	-0.16	-2.35*		
Page of book numbers	-0.04	-0.29	-4.16***		
2				0.23	0.2
Age	-1.67	-0.14	-2.13*		
Page of book numbers	-0.03	-0.22	-3.06**		
Agreeableness	-4.18	-0.11	-1.48		
Extraversion	-1.4	-0.04	-0.63		
Neuroticism	1.52	0.04	0.55		
Conscientiousness	-11.82	-0.32	-4.55**		
Openness to experience	3.06	0.08	1.1		
3				0.26	0.22
Age	-1.12	-0.1	-1.44		
Page of book numbers	-0.03	-0.12	-2.72**		
Agreeableness	-2.65	-0.07	-0.93		
Extraversion	-0.03	0	-0.01		
Neuroticism	1.27	0.03	0.46		
Conscientiousness	-12.17	-0.33	-4.72**		
Openness to experience	3.48	0.09	1.24		
Cognitive reappraisal	-3.53	-0.16	-2.34*		
Suppression	-1.64	-0.1	-1.36		
* $p<0.05$, ** $p<0.01$, *** $p<0.001$					

Table 2: Predictors of internet addiction.

Predictors of internet addiction: Hierarchical regression analysis

Hierarchical regression analysis was conducted to see the predictors of internet addiction in young adults. As seen in the Table 2, 26% of the total variance in internet addiction scores was explained by the predictor variables. Because of age differences and the page of book numbers read in weekly related to internet addiction, age and the page of book numbers read in weekly were entered in the first step using the enter method to the regression analysis, followed by the five personality traits and then emotion regulation strategies as cognitive reappraisal and suppression in the final step. Results from the

regression analysis indicated that when age and page of book numbers read in weekly were entered in the first step, they accounted for 11% (R^2) of the variance in internet addiction scores ($F(2,190)=11.09$, $p<0.001$). When personality characteristics were entered in the second step, they explained 23% (R^2) of the variance in internet addiction scores ($F(5,185)=5.91$, $p<0.001$). In the final step of the analysis, emotion regulation strategies as cognitive reappraisal and suppression were entered and they explained 26% (R^2) of the variance ($F(2,183)=3.32$, $p<0.05$).

In the second step of the regression, after controlling for the variance accounted for by age and reading book, results showed that high level of conscientiousness personality was related to lower level of internet addiction ($\beta=-0.32$, $t [192]=-4.55$, $p<0.01$). In the last step of the analysis, results revealed that when the level of cognitive reappraisal increased, the level of internet addiction decreased ($\beta=-0.16$, $t [192]=-2.34$, $p<0.05$).

Mediator role of emotion regulation as cognitive reappraisal between overall agreeableness, neuroticism and openness to experience personality traits and internet addiction of young people.

Mediation analysis was carried out to test the hypothesis that cognitive reappraisal as emotion regulation strategy would mediate the relationship between personality traits and internet addiction of young people. This analysis was conducted by using indirect macro of Hayes with 5000 Bootstrapping. Mediation analysis through Bootstrap sampling method was conducted and total effect of agreeableness personality trait on internet addiction of young people was found to be significant ($B=-7.52$, $t=2.74$, $p<0.01$). That is to say, people who have agreeable personality trait were less likely to become internet addict. Age of participants and page of book number read in weekly were also controlled because in correlation ad hierarchical regression analysis,

both of them were significantly related with internet addiction. Page of book numbers was included as covariate, total effect of page of book numbers on internet addiction was found to be significant ($B=-0.04$, $t=-3.69$, $p<0.01$) in agreeableness personality trait. Age of participants was included as covariate, total effect of page of book numbers on internet addiction was not found to be significant ($B=-1.37$, $t=-1.65$, $p>0.05$) in agreeableness personality trait. Overall agreeableness personality also had significant direct effect on cognitive reappraisal of young people ($B=0.42$, $t=0.13$, $p<0.01$). The people who were agreeable were more likely to take higher cognitive reappraisal scores. In addition, cognitive reappraisal had a significant direct effect on internet addiction ($B=-5.03$, $t=1.54$, $p<0.01$). The people who took higher scores in cognitive reappraisal were less likely to become internet addict. In order to understand whether mediator variable (cognitive reappraisal) mediated the relationships significantly or not, it is examined on the Bootstrap sample of 1000 and point estimates and confidence intervals for total and specific indirect effects on internet addiction of young people are shown in Table 3. As can be seen from Table 3, the total indirect effect of the mediator variable for agreeableness personality is significant (Point estimate=-2.10 and 95% CI [-4.18, -0.58]).

Variable	Multiplication of Coefficients		95% Confidence Interval		
	B	SE	p	Lower	Upper
Total	-2.1	-7.74	0.007	-4.18	-0.58
Cognitive Reappraisal	-5.03	1.54	0.001	-8.07	-1.99

Table 3: Point estimates and confidence intervals for agreeableness personality trait’s total and specific indirect effect on internet addiction of young people.

Total effect of neuroticism personality trait on internet addiction of young people was found to be significant, as well ($B=5.50$, $t=2.72$, $p<0.05$). That is to say, people who have neurotic personality trait were more likely to become internet addict. Overall neurotic personality also had significant direct effect on cognitive reappraisal scores of young people ($B=-0.33$, $t=0.13$, $p<0.05$). The people who were neurotic were less likely to take higher cognitive reappraisal scores. Page of book numbers was included as covariate, total effect of page of book numbers on internet addiction was found to be significant ($B=-0.04$, $t=-3.69$, $p<0.01$) in neuroticism personality trait. Age of participants

was included as covariate, total effect of page of book numbers on internet addiction was not found to be significant ($B=-1.47$, $t=-1.75$, $p>0.05$) in neuroticism personality trait. In addition, cognitive reappraisal as emotion regulation strategy had a significant direct effect on internet addiction ($B=-5.30$, $t=1.53$, $p<0.001$). Point estimates and confidence intervals for total and specific indirect effects on internet addiction of young people are shown in Table 4. As can be seen from Table 4, the total indirect effect of the mediator variable (cognitive reappraisal) for neuroticism personality is significant (Point estimate=1.72 and 95% CI [0.24, 3.79]).

Variable	Multiplication of coefficients		95% Confidence interval		
	B	SE	p	Lower	Upper
Total	5.5	2.72	0.04	0.15	10.86
Cognitive Reappraisal	-5.3	1.53	0	-8.31	-2.3

Table 4: Point estimates and confidence intervals for neuroticism personality trait’s total and specific indirect effect on internet addiction of young people.

Total effect of openness to experience personality trait on internet addiction was found to be significant ($B=-5.24$, $t=2.73$, $p \leq 0.05$). That is to say, people who have openness to experience personality trait were less likely to become internet addict. Overall openness to experience personality also had significant direct effect on cognitive reappraisal strategy. ($B=0.43$, $t=0.12$, $p<0.001$). The people who were

openness to experience were more likely to take higher cognitive reappraisal scores. Page of book numbers was included as covariate, total effect of page of book numbers on internet addiction was found to be significant ($B=-0.03$, $t=-3.13$, $p<0.01$) in agreeableness personality trait. Age of participants was included as covariate, total effect of page of book numbers on internet addiction was not found to be significant

($B=-1.47$, $t=-1.75$, $p>0.05$) in agreeableness personality trait. In addition, direct effect of cognitive reappraisal on internet addiction was also examined. Cognitive reappraisal had a significant direct effect on internet addiction ($B=-5.28$, $t=1.55$, $p<0.001$). Point estimates and confidence intervals for total and specific indirect effects on internet

addiction of young people are shown in Table 5. As can be seen from Table 5, the total indirect effect of the mediator variable (cognitive reappraisal) for openness to experience personality is significant (Point estimate=-2.28 and 95% CI [-4.60, -0.66]).

Variable	Multiplication of coefficients		95% Confidence interval		
	B	SE	p	Lower	Upper
Total	-5.24	0.07	0.05	-10.62	0.13
Cognitive Reappraisal	-5.28	1.55	0	-8.33	-2.23

Table 5: Point estimates and confidence intervals for openness to experience personality trait's total and specific indirect effect on internet addiction of young people.

Discussion and Conclusion

The first aim of this study is to examine the relationship between personality traits and internet addiction in young people. Consistent with the previous studies, neuroticism, agreeableness and conscientiousness personality traits and internet addiction were significantly associated [35,47]. While neurotic personality and internet addiction are positively correlated, two other personality traits have negative relationships with internet addiction. According to the results of Batıgün and Kılıç study [35], individuals with high scores on internet addiction scale have less agreeable, conscientious and higher neurotic characteristics together with psychological symptoms. In another study, it was found that internet addiction has a negative relationship between conscientiousness and agreeableness subscales of the Five Factor Personality Scale and positive relationship with the neuroticism subscale [48].

In another study using a five-factor personality model, the relationship between "openness to experience" and "neuroticism" characteristics and internet use was found. Openness to experience was associated with the use of the internet for entertainment and information production, whereas neuroticism was generally found to be negatively associated with internet use [39]. In the present study, openness to experience as a personality trait and internet addiction were not significantly related but the correlation between them was reported as negative. That is to say, there is no relationship between openness to experience and internet addiction, contrary to some findings. In fact, the relationship between openness to experience personality trait and internet addiction can be seen in both directions. It can be positive because individuals who are open to new experiences can use the internet with the aim of finding different entertainment ways like finding friends from online chat rooms and etc. Their internet addictions may increase by installing more of these new entertainment experiences. On the other hand, people who are open to experience may not have much time to spend time on the internet by dealing with new and different areas they can do face to face. Thus, these individuals may have lower internet addiction scores. The openness to experience may be found as not significant in the present study, since the relationship between openness to experience personality trait and internet addiction can be seen in both directions.

There was no significant relationship between extraversion personality and internet addiction in the current study. Studies have found three different ways of linking extraversion personality with internet addiction which are there is a positive, negative and no relationship between them. Therefore, there is no common result.

Some research report that extraverted people who have features such as being energetic, curious, chatty, and not like to be alone may be positively related to internet addiction because they spend time on the internet and then they want to establish social relationships via internet sources [36]. It supports Social Network Theory [49]. Some other research report that extraverted people do not spend much time on the internet and they do not tend to become internet addict because they like to communicate face-to-face relationship. It supports the social compensation hypothesis. The social compensation hypothesis suggests that the internet is beneficial to more introverted individuals [37]. Studies based on this hypothesis argue that introverted individuals increase self-disclosure in the online setting because they are anonymous on the internet and hiding someone's identity reduces the anxiety about rejection and mocking [40,51]. As a result, introverted individuals are likely to be addicted to the internet because they spend time online only for communication purposes. Since this relationship can be bi-directional, it is not possible to catch a definite trend. Some studies did not find a significant relationship between internet addiction and extraversion [35]. In the present study, it was not found a significant relationship between extraversion personality and internet addiction neither in correlation analysis, nor in regression and mediation analysis.

The main purpose of the study is to investigate the influence of mediator role of emotion regulation between personality and internet addiction. It was found that cognitive reappraisal strategy mediated the relationship between internet addiction and neuroticism, openness to experience and agreeableness. Specifically, higher scores in neuroticisms personality trait was related to internet addiction in young people and this relationship was mediated by lower levels of cognitive reappraisal. In addition, higher scores in openness to experience and agreeableness personality traits were related to lower internet addiction scores and these relationships were mediated by higher levels of cognitive reappraisal. Because of the use of neuroticism, agreeableness and openness to experience personality traits among the five factor personality traits, these three are the significant relationships between internet addiction and cognitive reappraisal in correlation analysis. Conscientiousness personality was not used as an independent variable in mediation analysis, although it was related to internet addiction both in correlation analysis and regression analysis. The reason of it is that it is not associated with our mediator variable which is cognitive reappraisal. However, the result of regression analysis that conscientiousness personality predicted internet addiction negatively is a consistent result with the literature. According to Kim et al. [3], individuals with low conscientiousness

tend to be more inclined to internet addiction. People who are low in conscientiousness have impulsivity problems and they experience problems in the area of substance abuse and behavior control. Therefore, the lack of conscientiousness is a powerful predictor of development of addictions [52-55].

In the present study, only cognitive reappraisal is found to be related to internet addiction among two emotional regulation strategies which are cognitive reappraisal and suppression. Since suppression was not significant in correlation and hierarchical regression, it was not used as a mediator variable. As the use of cognitive reappraisal strategy in young people increases, internet addiction decreases in the recent study. The fact that achievements in emotion regulation strategies plays a preventive role in the development of addictions have been confirmed by research [56-58]. Thus, the result of the study that the functional emotional regulation dimension (cognitive reappraisal) is negatively related to internet addiction supports the literature. According to the research conducted, weak emotional regulation skills have been found to increase impulsive symptoms in individuals [58,59]. Impulsiveness is considered as an important factor in the emergence of addiction [60].

In addition, age and number of books read weekly are negatively related to internet addiction. Based on these correlations; demographic variables, personality, and emotional regulation variables that predict internet addiction were tried to be defined by hierarchical regression analysis. Age and number of books read, conscientiousness personality trait, and cognitive reappraisal emotional regulation strategy were among the variables that predicted internet addiction. All of these variables predicted internet addiction negatively. In hierarchical regression, we can see that the age of participants and the number of books they read weekly significantly predicted internet addiction in the first stage, conscientiousness personality trait in the second stage, and cognitive reappraisal in the third stage. When we look at the characteristics of the personality, internet addiction is predicted by conscientiousness is concordant with the literature [35,52]. There are no other studies to date, as far as we know that using the number of age and number of books read as demographic data in the first stage and analysis of the third stage as emotion regulation are predictive variables of internet addiction together with the personality. From this point of view, this study fills the gap in the literature in terms of predicting variables of internet addiction in a hierarchical order.

There are some studies that show that internet addiction varies with age, while there are some other studies showing that internet addiction does not change with age [47,61,62]. In the present study among young people, internet addiction is decreasing as age increases. Young people in the age of 12 to 20 constitute a large risk group in internet addiction [63,64]. As the present study is consist of individuals between 18 and 25 years of age, the increase in the age leads to decrease in internet addiction is an expected result. In addition, the reduction in internet addiction may be again an expected outcome, as the individual's age increases, the rate of entry into the work life increases and it brings many responsibilities to those people's lives. Studies involving a larger age range can be made to examine the relationship between internet addiction and age.

The significant relationship between the number of books per week and internet addiction and the predictive impact of book reading on internet addiction are consistent with the literature [62]. As the number of books read in the current study increases, the internet addiction decreases. The study titled "Internet Addiction and Its Affecting Factors in High School Students" conducted by Mersin

University Faculty of Medicine and Department of Psychiatry has been found to increase the risk of internet addiction among those who do not read books and have internet related hobbies [62]. Their report has pointed out that internet addiction is decreasing in case of increasing the habit of reading books. The rate of internet addiction in students who read at least one book per week or month was 10.4 percent and 11.8 percent, respectively, while it was 16.9 percent in book readers who read few books and 32.8 percent in those who have never read books.

When the limitations of the study are considered, making surveys over the internet can cause some problems in terms of data quality. The quality of the data includes the reliability of the answers to the items of the questionnaire and the complete the answers of the questions. However, it can be said that internet surveys increase data quality because it prevents missing questions or sections [65]. When surveys are distributed by hand, participants can skip some questions or chapters. In this sense, data collection from the internet is not a limitation but a strong side. However, there may be a situation where the sample cannot be fully represented. These web surveys only have access to a specific population that can access the internet.

Age range of the participants can be another limitation of the study. Although individuals aged between 18 and 25 years represent young population, there may be a difference between at the age of 18 and at the age of 25 in using the internet. Therefore, it would be more appropriate for participants to be selected from a narrower age range in order to increase generalizability. Because a young person who is 18 years old may be mostly a student, a 25-year-old young person may have started his/her career. When this issue is considered, it would be more appropriate to work with a more specific age group. To conclude, one of the important strength of recent study is that it focuses on relationship between personality and internet addiction in Turkish young people through the mediator role of emotion regulation. It was seen that cognitive reappraisal mediated the relationship between internet addiction and agreeableness, neuroticism and openness to experience personality traits. The most important contribution of this study is to show that the cognitive reappraisal strategy should be emphasized in future intervention studies to be carried out since the cognitive reappraisal which is sub-dimension of emotion regulation has a mediating role between personality and internet addiction. Finally, studies should be carried out on the importance of reading books throughout the country since it has a preventive role on internet addiction.

References

1. Egger O, Rauterberg M (1996) Internet behavior and addiction. *Work & Organisational Psychology Unit (IFAP), Swiss Federal Institute of Technology (ETH), Zurich.*
2. Tvedt H (2007) Internet use and related factors among fifth-graders. *Department of Psychology, Umeå University.*
3. Kim S, Kim R (2002) A study of internet addiction: Status, causes, and remedies- Focusing on the alienation factor. *Int J Hum Ecol* 3: 1-19.
4. Griffiths MD (1999) Internet addiction: Fact or fiction?. *The psychologist* 12: 246-250.
5. Dreier M (2012) Qualitative component of research on internet addictive behaviours among European adolescents. In: Tsitsika A editor. *Research on internet addictive behaviours among European adolescents.*
6. Durkee T (2012) Prevalence of pathological internet use among adolescents in Europe: Demographic and social factors. *Addiction* 107: 2210-2222.

7. Block JJ (2008) Issues for DSM-V: Internet addiction. *Am J Psychiatry* 165: 306-307.
8. Widyanto L, Griffiths MD (2006) Internet addiction: A critical review. *Int J Ment Health Addict* 4: 31-51.
9. Byun S, Ruffini C, Mills JE, Douglas AC, Niang M, et al. (2009). Internet addiction: metasynthesis of 1996-2006 quantitative research. *Cyberpsychol Behav* 12: 203-207.
10. Lortie CL, Guitton MJ (2013) Internet addiction assessment tools: Dimensional structure and methodological status. *Addiction* 108: 1207-1216.
11. Sanghvi H, Rai U (2015) Internet addiction and its relationship with emotional intelligence and perceived stress experienced by young adults. *Int J Indian Psychol* 3: 64-76.
12. Kim HK, Davis KE (2009) Toward a comprehensive theory of problematic Internet use: evaluating the role of self-esteem, anxiety, flow, and the self-rated importance of Internet activities. *Computers in Human Behavior* 25: 490-500.
13. Leung L (2004) Net-generation attributes and seductive properties of the Internet as predictors of online activities and Internet addiction. *Cyberpsychol Behav* 7: 333-348.
14. Oktan V (2011) The predictive relationship between emotion management skills and Internet addiction. *Soc Behav Personal* 39: 1425-1430.
15. Beard KW, Wolf EM (2001) Modification in the proposed diagnostic criteria for Internet addiction. *Cyberpsychol Behav* 4: 377-383.
16. Shapira NA, Goldsmith TD, Keck PE, Khosla UM, McElroy SL (2000) Psychiatric features of individuals with problematic internet use. *J Affect Disord* 57: 267-72.
17. Young KS (2009) Internet addiction: The emergence of a new clinical disorder. *CyberPsychol Behav* 1: 237-244.
18. Lenna LO, Ross A, Thompson D (2008) Attachment, parent-child discourse and theory-of-mind development. *Social Development* 17: 47-60.
19. Izard C, Fine S, Schultz D, Mostow A, Ackerman B, et al. (2001) Emotion knowledge as a predictor of social behavior and academic competence in children at risk. *Psychol Sci* 12: 18-23.
20. Shields A, Cicchetti D (1998) Emotion regulation among school-age children: The development and validation of a new criterion Q-sort scale. *Dev Psychol* 33: 906-916.
21. Dunsmore JC, Booker JA, Ollendick TH (2013) Parental emotion coaching and child emotion regulation as protective factors for children with oppositional defiant disorder. *Social Development* 22: 444-466.
22. Gross JJ (2002) Emotion regulation: Affective, cognitive, and social consequences. *Psychophysiology* 39: 281-291.
23. Ochsner KN, Gross JJ (2005) The cognitive control of emotion. *Trends Cogn Sci* 9: 242-249.
24. Gross JJ, John OP (2003) Individual differences in two emotion regulation processes: Implications for affect, relationships and well-being. *J Pers Soc Psychol* 85: 348-362.
25. Gross JJ, Thompson R (2006) Emotion regulation: Conceptual foundations. In Gross JJ (Ed), *Handbook of emotion regulation*. New York: Guilford. Pp. 3-24.
26. Cash H, Cosette DR, Steel AH, Winkler A (2012) Internet addiction: A brief summary of research and practice. *Curr Psychiatry Rev* 8: 292-298.
27. Kun B, Demetrovics Z (2010) Emotional intelligence and addictions: A systematic review. *Subst Use Misuse* 45: 1131-1160.
28. Gross JJ, Levenson RW (1997) Hiding feelings: The acute effects of inhibiting positive and negative emotions. *J Abnorm Psychol* 106: 95-103.
29. Stepper S, Strack F (1993) Proprioceptive determinants of emotional and non-emotional feelings. *J Pers Soc Psychol* 64: 211-220.
30. Butler EA, Egloff B, Wilhelm FH, Smith NC, Erickson EA, et al. (2003) The social consequences of expressive suppression. *Emotion* 3: 48-67.
31. Yelboğa A (2006) Analysis of relationship between personality and job performance. *J Ind Relat Human Resources* 8: 197-211.
32. McCrae RR, Jang KL, Angleitner A, Riemann R, Livesley WJ (2001) Sources of structure: Genetic, environmental and artifactual influences on the covariation of personality traits. *J Pers* 69: 511-535.
33. Salgado JE, Viswesvaran C, Ones DS (2001) Predictors used for personnel selection: An overview of construct, methods and techniques. In Anderson N, Ones DS, Sinangil HK, Viswesvaran HC editors. *Handbook of industrial, work and organizational psychology*. London: Sage. Pp: 165-199.
34. Somer O, Goldberg LR (1999) The structure of turkish trait descriptive adjectives. *J Pers Soc Psychol* 76: 431-450.
35. Batugün AD, Kılıç N (2011) İnternet Bağımlılığı ile Kişilik Özellikleri, Sosyal Destek, Psikolojik Belirtiler ve Bazı Sosyo-Demografik Değişkenler Arasındaki İlişkiler. *Türk Psikoloji Dergisi* 26: 1-10.
36. Kraut S, Kiesler B, Boneva J, Cummings J, Helgeson V, et al. (2000) An internet paradox revisited. *J Social Issues* 58: 49-74.
37. McKenna K, Bargh J (2000) Plan 9 from cyberspace: The implications of the internet for personality and social psychology. *Pers Soc Psychol Rev* 4: 57-75.
38. Hamburger YA, Ben-Artzi E (2000) The relationship between extraversion and neuroticism and the different uses of the internet. *Comput Hum Behav* 16: 441-449.
39. Tuten TL, Bosnjak M (2001) Understanding differences in Web usage: The role of need for cognition and five factor model of personality. *Soc Behav Personal* 29: 391-398.
40. Dong G, Wang J, Yang X, Zhou H (2012) Risk personality traits of Internet addiction: a longitudinal study of internet-addicted Chinese University students. *Asia Pac Psychiatry* 5: 316-321.
41. Adalier A, Balkan E (2012) The relationship between internet addiction and psychological symptoms. *Int J Glob Educ* 1: 42-49.
42. Günüş S, Kayrı M (2010) Internet addiction profile in Turkey and development of internet addiction scale: Validity-reliability study. *Hacettepe University J Edu* 39: 220-232.
43. Benet-Martinez V, John OP (1998) Los cinco grandes across cultures and ethnic groups: Multitrait multimethod analysis of the big five in Spanish and English. *J Pers Soc Psychol* 75: 729-750.
44. Sümer N, Sümer HC (2005) Five factor personality inventory. *Pers Individ Dif* 27: 307-325.
45. Schmitt DP, Allik J, McCrae RR, Benet-Martinez V (2007) The geographic distribution of big five personality traits: Patterns and profiles of human self-description across 56 nations. *J Cross Cult Psychol* 38: 173-212.
46. Eldeleklioğlu J, Eroğlu Y (2015) A Turkish adaptation of the Emotion Regulation Questionnaire. *Int J Hum Sci* 12: 1157-1168.
47. Eroğlu A, Bayraktar S (2017) İnternet bağımlılığı ile ilişkili değişkenlerin incelenmesi. *Int J Social Sci Edu Res* 3: 184-199.
48. Köse D, Çınar N, Akduran F (2012) Personality characteristics of internet addiction in nursing students and their relationship with time management. *Sakarya University Journal of Science* 16: 227-233.
49. Hojat M (1982) Loneliness as a function of selected personality variables. *J Clin Psychol* 38: 137-141.
50. Derlega VL, Meets S, Petronio S, Marquis ST (1993) *Self-disclosure*. London: Sage.
51. Pennebaker JW (1989) Confession, inhibition and disease. In: Berkowitz L (editor). *Advances in experimental social psychology*. New-York: Academic Press. Pp: 221-244.
52. Gottfredson MR, Hirschi T (1990) *A general theory of crime*. Stanford, CA: Stanford University Press.
53. Kim EJ, Namkoong K, Ku T, Kim SJ (2008) The relationship between online game addiction and aggression, self-control and narcissistic personality traits. *Eur Psychiatry* 23: 212-218.
54. Niemz K, Griffiths M, Banyard P (2005) Prevalence of pathological internet use among university students and correlations with self-esteem, the general health questionnaire (GHQ), and disinhibition. *CyberPsychol Behav* 8: 562-569.

55. Trimmel M, Kopke E (2000) Motivations to control drinking behavior in abstainers, moderate and heavy drinkers. *Pharmacol Biochem Behav* 66: 169-174.
56. Heckman BW, Ditte JW, ve Brandon TH (2012) The restorative effects of smoking upon self-control resources: A negative reinforcement pathway. *J Abnorm Psychol* 121: 244-249.
57. Thompson RA, Goodman M (2010) Development of emotion regulation: More than meets the eye. In Kring AM, Sloan DM editors. *Emotion regulation and psychopathology: A transdiagnostic approach to etiology and treatment*. Guilford Press, USA. Pp: 38-58.
58. Schreiber LRN, Grant JE, Odlaug BL (2012) Emotion regulation and impulsivity in young adults. *J Psychiatr Res* 46: 651-658.
59. Cao F, Su L, Liu T, Gao X (2007) The relationship between impulsivity and internet addiction in a sample of chinese adolescents. *Eur Psychiatry* 22: 466-471.
60. Vitaro F, Ferland F, Jacques C, Ladouceur R (1998) Gambling, substance use and impulsivity during adolescence. *Psychol Addict Behav* 12: 185-194.
61. Şahin M (2018) Investigation of the levels of perceived social support and internet and game addiction in gifted students. *Life Skills J Psychol* 2: 281-296.
62. Şaşmaz T, Öner S, Kurt AÖ, Yapıcı G, Yazıcı AE, et al. (2014) Prevalence and risk factors of internet addiction in high school students. *Eur J Public Health* 24: 15-20.
63. Greenfield DN (1999) Psychological characteristics of compulsive internet use: A preliminary analysis. *Cyberpsychol Behav* 2: 403-412.
64. Bölükbaş K (2003) İnternet cafeler ve internet bağımlılığı üzerine sosyolojik bir araştırma: Diyarbakır örneği. Yayımlanmamış yüksek lisans tezi, Dicle Üniversitesi, Sosyal Bilimler Enstitüsü.
65. Avcıoğlu GŞ (2014) Internet survey applications in social sciences: Response rate, data quality, sample problems and solutions. *Int J Hum Sci* 11: 89-113.