



What are the relationship between problematic internet use and subjective well-being and self-esteem? Investigation of an adolescent sample¹

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Abstract. The aim of this research is to determine whether subjective well-being and self-esteem predict problematic internet use or not. Within the scope of the study, the differentiation of problematic internet use according to some demographic variables was assessed. The study group for the research comprised 385 high school students (203 females, 182 males) attending 6 high schools in Trabzon province. Data were collected using the Problematic Internet Use Scale-E, Subjective Well-Being Scale, Coopersmith Self-Esteem Inventory and a Demographic Information Form. The results showed there was a negative significant correlation between problematic internet use with subjective well-being and self-esteem. Additionally, it was concluded that subjective well-being and self-esteem significantly predicted problematic internet use. Problematic internet use differed according to gender, family income level, duration spent on the internet, purpose of internet use and maternal education level, while it did not differ according to class level or paternal education level.

Keywords: Problematic internet use, subjective well-being, self-esteem

Received: 13.02.2019

Accepted: 13.02.2020

Published: 15.06.2020

INTRODUCTION

The internet was first created as a network with the aim of providing communication between universities and currently has become the most important platform meeting all types of humanity's needs (Balkaya-Çetin & Ceyhan, 2014). The internet has taken a form encompassing many areas from health to transport and from news to communication. With this variety in purposes of use, there has been an increase in the number of users, the time used and the age interval of users. According to the Turkish Statistical Institute (TÜİK) data about use of information technologies per household in the last 5 years, in 2013 the internet was used by 48.9% of individuals, with this rate rising to 53.8% in 2014, 55.9% in 2015, 61.2% in 2016, 66.8% in 2017 and reaching 72.9% in 2018 (Türkiye İstatistik Kurumu [TÜİK], 2014, 2016, 2018). The internet, benefitting society and individuals in all areas of life like news, transport, information sharing, commerce, education, health and entertainment (Ekşi & Çiftçi, 2017), has in addition to these benefits led to an increase in the duration of time spent on the internet due to this broad area of use (Yılmaz, 2010). This increase in the duration of internet use has increased the risk of individuals developing addiction to the internet. Excessive internet use causes changes in the psychosocial behavior of individuals and has made it necessary to define healthy and pathologic internet use (Odacı & Çıkrıkçı, 2017).

Young (1996), in a study to differentiate healthy and pathologic internet use and to assist studies in this field, adapted the criteria for 'pathologic gambling' in the DSM IV to prepare an 8-item survey (diagnostic questionnaire). Participants stating yes in answer to 5 items or more on the questionnaire were classified as internet addicts. First described by Young in 1996, internet addiction was not described as a disease in editions before DSM V published by the American Psychiatry Association but was included among topics requiring more attention under the heading of 'internet gaming disorder' in DSM V. Over 12 months, the presence of 5 or more of the 9 criteria determined is sufficient for diagnosis (American Psychiatry Association [APA], 2013).

¹This study is produced from the master thesis completed by the first author. Presented as an oral presentation at the X. International Computer and Instructional Technologies Symposium (ICITS 2016) held at Rize Recep Tayyip Erdoğan University on May 16-18, 2016.

The increase in problems occurring in the working, social and private lives of individuals forming society due to excessive internet use make it necessary to debate problematic internet use within a broader background (Erden & Hatun, 2015). Research (Büyükaşahin-Çevik & Çelikkaleli, 2010; Gönül, 2002; Kayri & Gönüç, 2009; Özcan & Buzlu, 2005) has revealed that problematic internet use causes adolescents to delay responsibilities related to life and school and to experience physiologic, psychologic and social problems.

The high internet use rate in the 16-24-year age group places this group at risk due to the equivalence of this age interval with adolescence and the young adult period (TÜİK, 2018). Anderson, Steen & Stavropoulos (2017) in a review of 29 studies about problematic internet use stated that there were strong correlations between the adolescent period and problematic internet use in all research. In the adolescent period, there are rapid developments in the individual's mental and physical development, personality is shaped and it appears to be a period when perspective is gained about life and the world. One of the most important characteristics of this period is that the individual's feelings are intense and inconsistent. In the adolescent period, unpleasant feelings like guilt, shame, anxiety and anger are experienced intensely. These fluctuations in the adolescent's moods may cause development of positive or negative perceptions about life. As a result, the subjective well-being concept, involving the individual's assessment about life in terms of positive and negative affect (Eryılmaz, 2009), is important in terms of the adolescent period. Subjective well-being, related to assessment of how and through which routes life can be assessed positively (Diener, 1984), represents the satisfaction a person gains from life, personal assessment of the level of experience of positive and negative feelings and positive mental health (Diener, 2000). Studies have revealed that individuals with high levels of subjective well-being enjoy social communication and allocate more time to social relationships, are more creative and productive, deal with stress better and have better conflict-resolution skills (Orak & Emirza, 2019). However, another important concept in the adolescent period is self-esteem. The compatibility between the perceived self and the ideal self is very important for adolescents searching for themselves. Self-esteem is the difference between an individual's perception of themselves and their idealized self (Pişkin, 2003). Self-esteem is also approval of the concept of self-reached by the person's assessments (Yörükoğlu, 2004). High self-esteem protects an individual from negative feelings and undertakes an important role in forming healthy interpersonal relationships. If self-esteem is low, it may cause the individual to be exposed to more negative feelings like depression, anxiety, shame, rage and inability to adapt (Leary, Tambor, Terdal & Downs, 1995).

It is important to define internet addiction as it becomes a universal problem in terms of outcomes and to determine what approach should be used in relation to it (Anlı, 2016). When the literature is investigated, it appears there are many separate studies performed with different sample groups about problematic internet use in relation to many variables like loneliness, depression, anxiety, shame, stress, boredom, life satisfaction and empathy (Ang, Chan & Lee, 2017; Blachnio, Przepiorka, Benvenuti, Mazzoni & Seidman, 2019; Costa, Patrao & Machado, 2018; Hebebcı & Shelly, 2018; Lachmann et al., 2018; Lachmann, Sariyska, Kannen, Cooper & Montag, 2016; Restrepo et al., 2019; Skues, Williams, Oldmadow & Wise, 2016; Tan, Chan, Lu & Li, 2016; Mamun et al., 2019). However, there is no study encountered which investigates subjective well-being encompassing variables like depression, loneliness, anxiety and anger control and self-esteem together, which are effective on the behavior, attitudes and mental state of adolescents. When the national literature is investigated, there is no study performed with high school students in terms of self-esteem and problematic internet use, while there are studies investigating problematic internet use with subjective well-being among high school students (Derin & Bilge, 2016; Kök & Akpınar, 2018; Odacı & Çıkrıkçı, 2014). Additionally, studies have found similar and different results in terms of problematic internet use in relation to variables like gender, class level, family income, maternal-paternal education level, duration of internet use and purpose of use (Akbaş, Atalan Ergin & Tatlı, 2019; Altıntaş & Öztapak, 2016; Ceyhan, 2011; Gönül & Aykut- Ceyhan, 2019; Ionnidis et al. 2018; Kılıç & Durat, 2017; Mazhari, 2012; Özgür-Yörük & Taylan, 2018; Say & Durak Batıgün, 2016; Wang et al., 2011). The importance of this study is revealed in terms of providing more in-depth research

into the causes of problematic internet use through research into the reasons for these differences between demographic variables and investigation of the subjective well-being and self-esteem variables together in a different sample. Additionally, the results of the study are considered to be important in terms of providing recommendations which will contribute to work to prevent internet addiction and protect against addiction. With the aim of contributing to the results of studies in the literature, to future studies and the development process for protective and preventive interventions, this study will attempt to determine what correlation exists between subjective well-being, self-esteem and problematic internet use among high school students and whether problematic internet use differs according to some demographic variables or not.

METHODS

Research Group

This research, performed as relational pattern and causative comparison type, used the easy sampling method (Gürbüz & Şahin, 2016) to allow the researcher to access data easily and appropriately. A total of 385 students (203 females, 182 males) attending high schools under the scope of Trabzon Provincial Directorate of National Education who voluntarily completed the surveys participated in the research. After receiving necessary permissions, school administrations were met, parental consent forms were collected and a timeline was created to apply the surveys. After parental consent forms were collected, at the planned times, surveys were applied to students by the first author with the assistance of school guidance counselors. Before beginning the applications, students were informed about the aim of the study. The surveys were applied within 1 lesson hour, with all applications completed within 2 weeks. Of the 500 surveys distributed to students, 447 were collected. Sixty-two incomplete surveys were excluded and research analyses were completed with 385 fully-completed surveys.

Detailed demographic characteristics of the research group comprising a total 385 students with 53% female (203) and 47% male (182) are presented in Table 1.

Table 1. Demographic characteristics of the research group

		n	Percentage %
Gender	Female	203	52.7
	Male	182	47.3
Class level	9th class	111	28.8
	10th class	103	26.8
	11th class	91	23.6
	12th class	80	20.8
Income Level	Low	182	47.3
	Moderate	164	42.6
	High	39	10.1
Mother's Education level	Illiterate	8	2.1
	Primary School	155	40.3
	Middle School	72	18.7
	High school	108	28.1
	University	38	9.9
	Postgraduate+	4	1

Table 1. Continued

Father's Education Level	Illiterate	2	0.5
	Primary School	69	17.9
	Middle School	72	18.7
	High school	148	38.4
	University	83	21.6
	Postgraduate+	11	2.9
Duration spent on Internet	Less than 1 hr per day	210	54.5
	1-3 hrs per day	138	35.8
	3-5 hrs per day	23	6
	More than 5 hrs per day	14	3.6
Purpose of Internet Use	Homework-lessons	173	44.9
	Playing games	53	13.8
	Sending email	17	4.4
	Following news	36	9.4
	Chat	104	27
	Shopping	2	0.5

Data Collection Tools

Problemlı İnternet Kullanımı-E

Developed by Ceyhan, Ceyhan & Gürcan (2007), the scale has internal consistency coefficient (α) of .94. The scale comprises 3 subdimensions with 33 items. Points that can be obtained from the scale vary from 33 to 165.

Subjective Well-Being Scale

Comprising a total of 46 items, the scale was developed by Tuzgöl-Dost (2005a). With the aim of identifying the reliability of the scale it was applied to a 209-person sample and the reliability coefficient was found to be .93. With the aim of finding the consistency coefficient using the test-repeat test method, the scale was applied to a 39-person sample group twice at a two-week interval and analyses found the correlation coefficient was .86.

Coopersmith Self-Esteem Inventory

Comprising a total of 58 items and developed by Coopersmith (1967), the inventory was adapted to Turkish by Pişkin (1996). The internal consistency reliability values for the inventory vary from .75 to .83 with validity values varying from .70 to .80 with the test-repeat test method. High points obtained from the inventory show high self-esteem.

Demographic Information Form

The form includes questions containing information about participants like gender, present class level, family income, maternal-paternal education level, duration of internet use and purpose of internet use.

Analysis of data

Analysis of data in the research used the SPSS 16.0 program. For investigation of the correlations between problematic internet use with subjective well-being and self-esteem, the 'Pearson moments multiplication correlation coefficient' (Seçer, 2017) analysis was used to reveal whether there was a correlation between two continuous variables or not. The role of subjective well-being and self-esteem in predicting problematic internet use was tested by statistical significance of the variance of the dependent variable explained by at least two or

more independent variables related to the dependent variable, while ‘multiple regression analysis’ (Büyüköztürk, 2009) allowed the possibility to interpret the direction of the correlation between the independent variables and dependent variable.

The correlation between problematic internet use and gender was analyzed with the ‘independent t test’ (Seçer,2017) used to determine the significance of the difference between mean points received for a continuous variable in two unrelated samples. ‘ANOVA’ (Büyüköztürk, 2009) was used to analyze the significance of the difference between mean points in three or more unrelated samples to determine whether problematic internet use differed according to class level. For differences based on family income level, maternal and paternal education level, duration spent on the internet and purpose of internet use, nonparametric tests were used due to abnormal distribution, with one-factor ANOVA analysis used for nonparametric comparisons and the ‘Kruskal Wallis H test’ (Seçer, 2017) used to test the significance of differences between mean points of three or more unrelated sample groups. The ‘Mann Whitney U test’ was used to determine the source of the significance.

RESULTS

The Pearson moment multiplication correlation coefficient analysis technique was used to determine the correlations between problematic internet use with subjective well-being and self-esteem. The analysis results found a negative significant correlation between problematic internet use with subjective well-being ($r=-.29, p<.01$) and self-esteem ($r= -.24, p<.01$) and a positive significant correlation between subjective well-being and self-esteem ($r= .35, p<.01$) (see Table 2).

Table 2. Correlation between problematic internet use with subjective well-being and self-esteem

	Problematic Internet Use	Subjective Well-Being	Self-Esteem	Mean	Sd
Problematic Internet Use	1			58.44	23.07
Subjective Well-Being	-.29**	1		165.97	25.29
Self-esteem	-.24**	.35**	1	53.98	8.39

** $p<.01$

With the aim of determining the prediction of students’ problematic internet use by subjective well-being and self-esteem, the decision was made to apply multiple linear regression analysis. The analysis results found that subjective well-being ($\beta=-.23, p<.05$) and self-esteem ($\beta=-.16, p<.05$) had significant original contribution to the model and explained 10% of the total variance of the variables ($F[2.382]=22.42, p<.05$) (see Table 3).

Table 3. Multiple regression analysis results related to prediction of problematic internet use

Variables	B	Std. Error	β	t	R	R²	ΔR^2	F
Fixed	117.19	8,91	-	13.14	.32	.11	.10	22.39
Subjective Well-Being	-.21	.05	-.23	-4.53				
Self-Esteem	-.43	.14	-.16	-3.06				

The independent t test was performed with the aim of revealing differences in problematic internet use of students based on gender. The findings revealed differences in terms of the gender variable were in favor of males (male $X=64.57$; female $X=52.94$) ($t= - 5.04, p<.05$) (see Table 4).

Table 4. Differences in problematic internet use according to gender

	Gender	n	Mean	Sd.	t	P
Problematic Internet Use	Female	203	52.94	19.99	-5.04	.001*
	Male	182	64.57	24.73		

**p*<.05

One-way ANOVA was used to investigate whether the problematic internet use of students differed between class levels. There were no significant differences found between the groups (see Table 5).

Table 5. Difference in problematic internet use according to class level

	Source	KT	Sd	KO	F	p
Problematic Internet Use	Between-group	3480.44	3	1160.15	2.2	.088
	In-group	200924.26	381	527.36		
	Total	204404.69	384			

With the aim of identifying whether differences occurred according to family income level, maternal-paternal education level, duration and purpose of internet use, the nonparametric Kruskal Wallis H test was used as the sample did not have normal distribution. Investigation of the significances used the Mann-Whitney U test (see Table 6).

Table 6. Differences in problematic internet use according to demographic variables

		N	Rank mean	Sd	X ²	p	Source of significance
Income Level	1. Low	182	173.57	2	11.694	.003*	3-1, 2-1
	2. Moderate	164	206.29				
	3. High	39	227.76				
Mother's Education Level	1. Illiterate	2	157.75	5	12.727	.026*	4-2
	2. Primary School	69	166.49				
	3. Middle School	72	194.42				
	4. High school	148	197.47				
	5. University	83	204.99				
	6. Postgraduate+	11	205.77				
Father's Education Level	1. Illiterate	8	131	5	5.476	0.361	-
	2. Primary School	155	173.87				
	3. Middle School	72	200.12				
	4. High school	108	210.87				
	5. University	38	213.03				
	6. Postgraduate+	4	257.63				
Duration of Internet Use	1. Less than 1 hr per day	210	153.41	3	73.374	.000*	4-2,4-1
	2. 1-3 hrs per day	138	223.84				
	3. 3-5 hrs per day	23	296				
	4. More than 5 hrs per day	14	313.68				
Purpose of Internet Use	1. Homework-lessons	173	153.49	5	64.157	.000*	2-1, 5-1
	2. Playing games	53	263.75				
	3. Sending email	17	135.62				
	4. Following news	36	179.49				
	5. Chat	104	235.44				
	6. Shopping	2	260				

**p*<.05

As understood from Table 5, the problematic internet points for students were higher at significant levels for those with high ($X=66.15$) and moderate ($X=61.34$) family income

compared to those with low family income level ($X=54.16$); for those with mothers who were high school graduates ($X=146.84$) compared to those whose mothers graduated primary school ($X=121.66$); for those using the internet for more than 5 hours per day ($X=193.25$) compared to those using it for 1-3 hours per day ($X=108.83$) and for less than 1 hour per day ($X=107,12$); and for those using the internet to chat ($X=175.01$) compared to those using it for homework-lessons ($X=98.78$). The education level of fathers was not found to cause any significant difference.

DISCUSSION and CONCLUSIONS

This research attempted to reveal what type of relationship exists between the dependent variable of problematic internet use and the independent variables of subjective well-being and self-esteem and the effect of the independent variables on the dependent variable. Additionally, the differentiation of problematic internet use according to some demographic variables was investigated within the scope of this study.

As a result of the analyses, there were negative significant correlations between subjective well-being and self-esteem with problematic internet use and these variables were identified to affect problematic internet use at significant level. These findings show that individuals with low subjective well-being and low self-esteem have problematic use of the internet. In the literature there are studies supporting this result in terms of subjective well-being (Odacı & Çıkrıkçı, 2014) and self-esteem (Berber-Çelik & Odacı, 2011; Caplan, 2002; Kim & Davis, 2009; Mei, Yau, Chai, Guo & Potenza, 2016; Niemz, Griffiths & Banyard, 2005). Orak & Emirza in a 2019 article explaining subjective well-being of adolescents stated that situations with elements like control of negative feelings, preserving happiness, forming positive relationships, developing deep friendships, showing respect and love, forming romantic intimacy and developing intimacy with relations and friend increased subjective well-being of individuals. Additionally, having high subjective well-being is linked to having high positive affect compared to negative affect (Tuzgöl-Dost, 2005b). Negative affect appears to include elements like guilt, sadness, anger, shame, jealousy and depression (Diener, Suh, Lucas & Smith, 1999). Similarly, high self-esteem is related to being liked by society, being accepted, being able to display abilities, knowledge and skills, feeling sufficient and valued, being aware of successes, being able to form positive social relationships and being able to express yourself (Özkan, 1994). Studies revealing that variables that may occur in situations with low subjective well-being and self-esteem like loneliness, shame, flirt anxiety, efforts to show you are different that you are, forming social relationships with unknown people, and choosing virtual communication methods instead of face-to-face communication increase problematic internet use (Balkaya-Çetin & Ceyhan, 2015; Caplan, 2005; Ceyhan, 2010; Chak & Leung, 2004; Morahan-Martin & Schumacher, 2000; Odacı & Berber-Çelik, 2013; Odacı & Kalkan, 2010; Tsai & Lin, 2003; Ümmet & Eksi, 2016) prove this situation. Considering that having low subjective well-being and self-esteem increases negative affect, studies identifying that psychosocial health variables with intense negative affect like depression, anxiety, worry, stress, addiction, shame and boredom (Çağır & Gürkan, 2010; İkiz, Savcı, Asıcı & Yörük, 2015; Odacı & Çıkrıkçı, 2017; Savcı & Aysan, 2016; Siyez, 2014; Vries, Nakamae, Fukui, Denys & Narumoto, 2018; Yang & Tung, 2007) are effective on internet addiction support the cause of this result.

When the correlation between the gender variable and problematic internet use is examined, males appear to have more problematic internet use compared to females. In the literature there are studies supporting this finding (Ançel, Açıkgöz & Yavaş-Ayhan, 2015; Durak-Batıgün & Kılıç, 2011; Frangos, Frangos & Kiohos, 2010; Günay, Öztürk, Ergun-Arslantaş & Sevinç, 2018; Işık & Ergün, 2018; İkiz et al. 2015; Leung & Lee, 2012; Morahan-Martin & Schumacher, 2000; Odacı, 2013; Yang & Tung, 2007; Yılmaz, Şahin, Haseski, & Erol, 2014). Additionally, there is research which found no difference (Altundağ, 2016; Balcı & Gülnar, 2009; Eroğlu & Bayraktar, 2017; Göldağ, 2017; Khazaal et al., 2008; Kim et al., 2006; Odacı & Berber-Çelik, 2013) and also research which found the difference in favor of girls (Doğan, Işıklar, & Eroğlu, 2008; Odacı, 2011). A study by Chou, Codron & Belland (2005) stated these differences

may be due to method and sample characteristics. The results of a meta-analysis study by Akbaş, Atalan, Ergin & Tatlı (2019) concluded that in Turkey males had more problematic internet use compared to females. They stated that this situation may be due to factors such as girls having greater tendency for face-to-face social relationships and spending less time on the internet, and males having greater tendency for behavior problems, spending more time on the internet and having more positive attitudes towards the internet.

In the research it was concluded that problematic internet use did not significantly differ based on class level. A study by Işık & Ergün (2018) supports this result. The reasons for this result may be that individuals forming the sample group for the research were in the adolescent period, and showed similarities in terms of development features and periodic problems. Additionally, another reason for this lack of difference may be that this research about 9th, 10th, 11th and 12th class levels coincides with the period when internet and social media use is highest (TÜİK, 2018) and that young people have the facility to be online at any time and any place due to mobile telephones.

According to the results of the research, the increase in income level is directly proportional to problematic internet use. According to the analysis results, students with high- and moderate-income levels were determined to have more problematic use of the internet compared to students with low-income levels. Studies by Babacan-Gümüş, Şıpkın, Tuna & Keskin (2015), Durak-Batıgün & Kılıç (2011), and Kayri & Gönüç (2016) support these findings. They identified that as income level increased, the problematic internet use points for individuals increased. Additionally, in the literature there are studies contrary to this research like the study by Leung & Lee (2012) which found adolescent internet addiction was identified in families with low income. The increase in income levels eases access to the internet. The quotas on internet access packets offered for smart phones or from internet providers for home internet access increase with price. The increase in income level provides higher quota or unlimited access to the internet and as a result, increases the duration of time spent on the internet, and appears to be the cause of this result.

When the correlation between problematic internet use and parental education levels is examined, it was documented that there was no difference according to father's educational level. However, it appears that as the mother's educational level increased, the problematic internet use by students increased. Though not many, there are studies in the literature supporting this result (Çevik & Çelikkaleli, 2010; Demirli & Arslan, 2018). In Turkey, mothers pay more attention to children's education and development. It is considered that with the increase in the education levels of mothers who spend more time with children, they have more information about computers and the internet. In this situation, the cause of this finding is assessed as mothers possibly being a role model for use and allowing access to contribute to the children's education. Additionally, this view is supported by the difference occurring only between mothers who had graduated high school and primary school, but not for those with university or postgraduate level education and the lack of difference in terms of paternal education level. In Turkey, fathers spend limited time with their children due to intense working life. Similarly, mothers who are university graduates have higher probability of being employed compared to high school graduates and spend more time outside the house, limiting the time spent with their children and lowering the probability of being role models.

The length of time spent on the internet is one of the most important factors for problematic internet use and internet addiction. Much research in the literature (Anderson, 2001; Babacan-Gümüş et al., 2015; Balcı & Gülnar, 2009; Demir & Arslan, 2018; Demir et al., 2015; Durak-Batıgün & Kılıç, 2011; Eroğlu, 2016; Frangos et al., 2010; Göldağ, 2017; Khazaal et al., 2008; Kubey, Lavin & Barrows, 2001; Morahan-Martin & Schumacher, 2000; Tahiroğlu et al., 2010; Tsai & Lin, 2003; Yang & Tung, 2007; Yılmaz et al., 2014) has confirmed this. According to the research results, adolescents spending more than 5 hours per day on the internet had higher problematic internet use points compared to those using it for 1-3 hours per day or for less than 1 hour per day. The results of the study by Odacı & Kalkan (2010) for undergraduate students overlap with these findings. Chou & Hsiao (2000) stated that addicts used the internet 3 times

more. A study by Günlü & Ceyhan (2017) stated that the increase in the duration spent on the internet caused problematic internet use.

Finally, one of the important variables affecting problematic internet use in the literature is the purpose of internet use and it was emphasized that use of the internet for entertainment and communication purposes increased problematic internet use (Ançel et al., 2015; Babacan-Gümüş et al., 2015; Ceyhan, 2010; Chak & Leung, 2004; Chou & Hsiao, 2000; Günlü & Ceyhan, 2017; Khazaal et al., 2008; Morahan-Martin & Schumacher, 2000; Morahan-Martin & Schumacher, 2003; Yang & Tung, 2007; Yen, Ko, Yen, Wu, & Yang, 2007). In this study, it was identified that students using the internet for gaming and chat purposes had more problematic use than those using the internet for homework-lessons. Similarly, Berber-Çelik & Odacı (2011) stated that those using the internet for entertainment and communication purposes had higher problematic internet points compared to those using it for educational purposes. In light of this research, it can be said that those with problematic internet use have greater tendency to use the internet for entertainment and communication purposes.

This research reveals some important results, but also has a range of limitations. Firstly, it was very difficult to find voluntary participants for the data collection process from among high school adolescent research participants and this led to a limited number of individuals in the study group. The points obtained for the variables in the research are limited by the qualities of the scales used in the study and the responses from the participants. Additionally, the study was completed in high schools located only in Trabzon province. As a result, the obtained results have limitations due to the scales being based on the person's own reports and can only be generalized to samples with similar characteristics. Within this framework, in order to better assess the research results and determine risk groups, similar studies may be performed with different age groups. Future studies can use quantitative and qualitative methods together and research the sources of similarities and differences in depth. Performing mediation model studies with the same variables will reveal the effects of variables on each other more clearly. A variety of intervention programs may be developed based on the interactions revealed in these studies. Training programs involving alternative activities to increase the subjective well-being and self-esteem of adolescents, directing them toward face-to-face social relationships instead of communication in the virtual environment, and providing information about harm caused by the internet can be organized to inform students. Participation in TÜBİTAK projects, science fairs and 'I made this' projects may be ensured to work with students and provide the opportunity to form healthy social relationships, feel good about themselves by producing something and to spend time productively. Students may be informed about STEM-coding in the context of information and technology lessons in schools and directed towards beneficial areas where they can be productive in relation to computers and the internet. Directing students toward sporting and social activities in line with their interests and abilities may reduce the duration spent on the internet. Programs like the 'intervention for technology addiction' developed within the scope of Turkish Addiction Intervention (TBM) organized by cooperation between the Ministry of National Education and the Green Crescent organization should be developed and popularized to inform parents in relation to the topic of harmful aspects and productive use of the internet.

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