

ORIGINAL RESEARCH

Relationship between Basic Psychological Needs and Problematic Internet Use of Adolescents: The Mediating Role of Life Satisfaction

Sinan Okur¹ , Mustafa Özekes² 

¹Department of Educational Sciences, National Defense University Air Force Academy, İstanbul, Turkey

²Division of Educational Sciences, Department of Psychological Counseling and Guidance, Ege University School of Education, İzmir, Turkey

ORCID iDs of the authors: S.O. 0000-0002-3439-5907; M.Ö. 0000-0002-2509-2277.

Main Points

- Basic psychological needs predict problematic internet use at a negative level.
- Basic psychological needs predict life satisfaction positively and significantly.
- Life satisfaction predicts problematic internet use in a negative way.
- Within the scope of Self-Determination Theory, life satisfaction has a partial mediating role in the relationship between basic psychological needs and problematic internet use among high school students. The hypothetical model established in this research has been confirmed.

Abstract

This study aimed to examine the mediating role of life satisfaction in the relationship between basic psychological needs of adolescents and problematic internet use. The model established on this mediating role was tested using the self-determination theory. The sample of the study included 1318 adolescents, of whom 796 were female and 522 were male students. The age range of the individuals participating in the study varied between 14 and 17 years, and the average age was 15.38 (Standard Deviation= 4.77). The study obtained data through the Problematic Internet Use Scale-Adolescent Form, Psychological Needs Scale-High School Form, Life Satisfaction Scale, and Personal Information Form. The data were analyzed using conditional process analysis. The results revealed that basic psychological needs significantly negatively predicted problematic internet use ($r^2=0.15$; $p \leq 0.01$) and positively predicted life satisfaction ($r^2=0.28$; $p \leq 0.01$); whereas life satisfaction significantly negatively predicted problematic internet use ($r^2=0.08$; $p \leq 0.01$). Using the Self-determination Theory, the study determined that life satisfaction has a partial mediating role in the relationship between basic psychological needs and problematic internet use among high school students ($c' = 0.06$; $p \leq 0.01$). The study findings confirmed the established model. The obtained results are discussed and interpreted against relevant literature. Some suggestions have been offered to families, school counselors, and researchers.

Keywords: Internet, life satisfaction, problematic internet use, psychological needs

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Corresponding author:
Sinan Okur
E-mail:
sokur@hho.edu.tr

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Introduction

Internet is a mass communication tool where individuals can readily access, store, and share information at will; spend a pleasant time; meet their loved ones at a moment's notice; and fulfill their needs quickly (Anderson, 2001; Candemir-Karaburç, 2017;

İşleyen, 2013). Because of the convenience and affordability that the internet provides, it has gained widespread use in every aspect (Ayas & Horzum, 2013; Bryant et al., 2006). According to the research by Worldometers (2019), the number of internet users in the world is approximately 4.1 billion. However, "We Are Social's" 2020 data indicate that the

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number of internet users around the world exceeds 4.5 billion and that the number is 62 million for Turkey, which corresponds to 74% of its population. Although the internet makes our life more convenient with its affordability and accessibility, it also causes a plethora of problems, including addiction, among all individuals, especially adolescents, which results from its excessive, uncontrolled, unconscious, and abusive use (Canoğulları & Güçray, 2017; Eagen, 2008).

According to Yeşilay's (2019) definition, addiction is an individual's loss of control against any object or behavior, which in turn gains the hold of an important place in one's life. When we refer to addiction, although it is substances that cause physical addiction, such as cigarettes, alcohol, and drugs, that come to mind first, there are also behavioral addictions such as internet addiction. Internet addiction is defined as the epidemic of the 21st century (Christakis, 2010). Although they are used interchangeably in the literature, the concepts of internet addiction and problematic internet use are both characterized by concurrent occurrence of adverse conditions, such as lack of concept of time owing to excessive internet use, failure to fulfill basic tasks, deterioration of social and professional order, the presence of irritated withdrawal symptoms, development of tolerance, and telling lies (Ceyhan, 2008; Karim & Chaudhri, 2012; Young, 2004). Because these concepts are used interchangeably in the literature, this study has also used these expressions in such a manner. Furthermore, the use of these concepts reveals the approach of some researchers.

With the development and spread of the internet and the emergence of the internet addiction concept, studies have accelerated after 1990, and many scientists have presented their views (Alimoradi et al., 2019; Caplan, 2003; Griffiths, 1999; Suler, 1996), models (Anderson et al., 2017; Grohol, 1999; Mihajlov & Vejmelka, 2017), approaches (Beard & Wolf, 2001; Zajac et al., 2017) or diagnostic criteria (Goldberg, 1996; Young, 1996). A review of the relative literature shows that the concept of internet addiction or problematic internet use is examined with various variables. One such variable is the concept of psychological needs, which is one of the basic concepts of the self-determination theory. According to Ryan and Deci (2000), basic psychological needs are psychological nutrients that are inherent in all individuals and are necessary for the individuals to increase their potential and realize themselves. According to the theory, these needs are autonomy, competence, and relatedness. Autonomy is when the individual chooses their behavior freely and takes responsibility for their chosen behavior (Deci & Ryan, 1985). Competence, in contrast, is an individual's belief in their own ability to carry out a task and find the strength and skill to do such a task (Cihangir-Çankaya, 2005). Finally, relatedness is defined by the individual's ability to stay in touch with other people and having a feeling of belonging (Deci & Ryan, 2000). It has been stated that when one of these psychological needs of individuals cannot be met, they can get mentally sick; their life satisfaction may decrease; their restlessness, nervousness, and stress may increase; and they could resort to self-harming behaviors to get rid of this situation (Acun, 2018; Uysal et al., 2010).

In our age, the internet serves many needs of individuals, including psychological needs. It is thought that when adolescents' autonomy, competence, and relatedness needs are not adequately met, their internet usage becomes problematic (Balkaya-Çetin, 2014; Ryan & Brown, 2003). This is because such individuals

try to fulfill their unmet needs through the internet and tend to gravitate toward the internet environment in this process. Unless the basic psychological needs are met, adolescents who use the internet more often become addicted, thereby entering a vicious circle. It is seen that young individuals develop a sense of belonging with a group of individuals using the internet. They chat, establish relationships, and achieve success and competency as they level up in games and gain autonomy and freedom by reaching the virtual environment they want without restriction (Can, 2018; Partala, 2011). It has been reported that adolescents who do not consider themselves competent and who do not feel psychologically well use the internet excessively and uncontrollably (Uz-Baş et al., 2016). In another study conducted in Turkey, it was found that the basic psychological needs directly impact problematic internet use. Moreover, young individuals tend to use the internet more to meet their psychological needs such as autonomy, competence, and relatedness (Özteke-Kozan et al., 2019). Another study on this topic shows that adolescents try to fulfill their unmet psychological needs in their daily lives through the internet (Shen et al., 2013). In the domestic and international literature, studies conducted using these variables on different sample groups are available (Allen & Anderson, 2018; Casale & Fioravanti, 2015; Dursun & Eraslan-Çapan, 2018; Manuoğlu, 2016; Reyes et al., 2018).

Life satisfaction, another variable of the study, is expressed as the level of satisfaction received from life in the most general sense (Balkaya-Çetin, 2014). According to Diener (2000), life satisfaction is how individuals evaluate the quality of their lives. The psychological well-being of an individual has a connection with life satisfaction. Academic, social, and personal problems arise as the level of life satisfaction decreases in adolescents just like it does in all individuals (Balkaya-Çetin, 2014). In the literature, there are multiple studies showing a negative relationship between the adolescents' life satisfaction levels and internet addiction (Hyun-jung, 2018; Lachmann et al., 2017; Odacı & Berber-Çelik, 2017; Salarvand et al., 2018; Varol-Afo & Mortan-Sevi, 2019).

Although problematic internet use affects all age groups, it is seen as a huge risk factor in adolescents (Üneri & Tanıdır, 2011; Xu et al., 2014). In a study by Doğan (2013) in İzmir sample, it was found that internet addiction was 12.6% in adolescents between the ages of 12 and 18 years. This study is supported by the Turkey's statistical institute's data obtained in 2017, which indicate that young people in the age range of 16-24 years use the internet more. Adolescents are found to be the biggest risk group not only in the research conducted in Turkey but also in international studies. Similar studies conducted in England, Germany, Hong Kong, China, and Greece also found that adolescents are generally in the risk group or are using the internet excessively (Festl et al., 2013; Fu et al., 2010; Kormas et al., 2011; Kuss et al., 2013; Yu et al., 2015). Adolescents are evaluated in the risk group for internet addiction because they are still developing cognitively, emotionally, and psychologically (Can, 2018; Yang & Tung, 2007). Considering all the research results mentioned earlier, the study group was determined as adolescents for this study.

In the literature, there are no available studies investigating the mediating effect of life satisfaction in the relationship between basic psychological needs and problematic internet use, and our study is thought to be important because it can fill this gap. In

addition, it is believed that revealing the partial or full mediation of the life satisfaction variable is important for experimental studies and intervention programs that will be conducted in the future for problematic internet use.

The study aims to examine the effects of basic psychological needs and life satisfaction variables on problematic internet use in high school students. To achieve this goal, a model has been established regarding the mediating role of the life satisfaction variable in the relationship between basic psychological needs and problematic internet use within the framework of the self-determination theory. In this model, it is thought that the basic psychological needs directly affect high school students' problematic internet use, whereas life satisfaction affects it indirectly.

Hypotheses

Figure 1 demonstrates the model tested in this study. To test this model, the following hypotheses were determined:

H1: In high school students, there is a significant negative relationship between basic psychological needs and problematic internet use and a significant positive relationship between basic psychological needs and life satisfaction levels.

H2: The basic psychological needs variable is a negative predictor of the problematic internet use variable.

H3: The basic psychological needs variable is a positive significant predictor of the life satisfaction variable, whereas the life satisfaction variable is a negative significant predictor of the problematic internet use variable.

H4: The life satisfaction variable is the mediating variable in the effect of basic psychological needs variable on problematic internet use variable.

Theoretical Model Tested

It is believed that problematic internet use of adolescents can be explained according to the self-determination theory developed by Deci and Ryan (1985). Within the framework of this theory, it can be said that the basic psychological needs of adolescents are met via the internet. Studies indicate that adolescents whose psychological needs are not fulfilled tend to use the internet more and end up becoming problematic internet users. In the study conducted by Özteke-Kozan et al. (2019), it was determined that individuals whose psychological needs were eliminated used the internet less than other individuals. Suler (1999) stated that adolescents whose psychological needs are not met in real life are more oriented toward virtual environments. In another study, it was found that adolescents mostly meet their basic psychological needs, autonomy, competence, and relatedness through the internet environment (Balkaya-Çetin, 2014; Ryan et al., 2006). Adolescents who feel more autonomous and competent in the virtual environment use the internet more when they cannot meet their psychological needs and become problematic internet users (Partala, 2011). The need for autonomy, competence, and relatedness in this theory is seen as the motivation of problematic internet use in the established model (Wong et al., 2015). This means that adolescents use the internet excessively and problematically to meet these needs. For example, an adolescent who makes his own decisions and takes responsibility on the internet can satisfy his need for autonomy. In addition, adolescents who play on the

internet meet the competence requirement as they level up in a game. Finally, adolescents who form relationships through the internet meet their need for relatedness through that (Allen & Anderson, 2018). Meeting the basic psychological needs of adolescents using the internet may cause them to become more dependent on it. It is thought that satisfaction between the basic psychological needs and problematic internet use also has an impact on life satisfaction of high school students. In the literature, life satisfaction is expressed as the situation that occurs as a result of comparing what the individuals expect from their lives with what they have in hand (Özer & Karabulut, 2003). According to the literature, adolescents use the internet more in periods where their life satisfaction decreases (Esen & Siyez, 2011; Hyunjung, 2018; Lachmann et al., 2017), and we expect life satisfaction to be effective in line with the model established in this study.

Methods

The study is a descriptive research that examines the mediating role of life satisfaction in the relationship between basic psychological needs of high school students and problematic internet use depending on a relational screening model. The relational screening model is a research model that aims to determine the degree of variation between 2 and more variables (Karasar, 2009). According to the model established in this study, the predictive variable X is the basic psychological needs, the predicted variable Y is problematic internet use, and the mediating variable M is life satisfaction.

Participants

The study sample of demographic information obtained from high school students included 1318 participants, of whom 796 (60.4%) were female and 522 (39.6%) were male students. The age range of the individuals participating in the study varied between 14 and 17 years, and the average age was 15.38 (Standard Deviation=4.77). At the time of the research, 367 (27.8%) of the participants were in the 9th grade, 347 (26.3%) in the 10th grade, 345 (26.2%) in the 11th grade, and 259 (19.7%) in the 12th grade. A total of 1283 (97.3%) participants stated that they use smartphones, and only 35 (2.7%) stated that they did not use smartphones. The internet use was less than 1 hour a day among 175 (13.3%) of the participants, between 2 and 3 hours among 583 (44.2%) participants, between 4 and 5 hours among 378 (28.7%) participants, and 6 hours or more for 182 (13.8%) participants.

Measuring Tools

Personal Information Form

To better describe the study sample, the form developed by researchers was used, which identified the participants' sex and grade levels.

Problematic Internet Use Scale-Adolescent Form

This scale was originally developed by Ceyhan et al. (2007) to determine the problematic internet use among university students. Later, it was adapted by Ceyhan and Ceyhan (2014) for adolescents to determine the problematic internet use levels among high school students. The adolescent form of the scale includes 27 items as a result of factor analysis conducted in validity and reliability studies. The scale is scored on a 5-point scale with the total score being 27, and the highest score being 135. In addi-

tion, the 7th and 10th items in the scale are reversed. High scores obtained from the scale indicated that there was an increase in problematic internet use of adolescents, the internet might negatively affect their lives, and there could be a tendency toward addiction. The internal consistency coefficient was calculated for the reliability analysis of the scale, and the Cronbach alpha value of the scale was found to be 0.93. Cronbach alpha values of the subscales were 0.93 for “negative consequences of the internet,” 0.76 for “overuse,” and 0.78 for “social benefit/social comfort.” Within the scope of this research, Cronbach alpha internal consistency coefficient was found to be 0.92. It was calculated as 0.91 for “negative consequences of the internet,” 0.76 for “overuse,” and 0.79 for “social benefit/social comfort.” When the obtained results were examined, it was seen that similar results were achieved with Ceyhan and Ceyhan (2014).

Psychological Needs Scale-High School Form

The psychological needs scale developed by Deci and Ryan in 1991 was adapted into Turkish for university students by Cihangir-Çankaya and Bacanlı (2003). In this study, because the sample included high school students, the validity and reliability study of the scale for high school students was carried out by the researchers with 260 high school students (Okur & Özekes, 2019). The scale is based on the self-determination theory and is used to measure the psychological needs. There are 21 items in the scale, and it measures the sub-dimensions of autonomy (6 items), competence (6 items), and relatedness (9 items), which are the 3 basic psychological needs of the individual. The participants gave their answers according to the 7-point grading scale, and the total score was obtained from this scale. The lowest score of the scale is 21, and the highest score is 147. High scores indicate that the individuals satisfy their needs, and low scores indicate that the individuals cannot meet their needs. In addition, there are inverse items in this scale, and scoring is performed and added to the total account later. To test the reliability of this scale, the Cronbach alpha internal consistency coefficient was found as 0.85. Cronbach alpha values of the sub-dimensions were 0.69 for autonomy, 0.68 for competence, and 0.76 for relatedness. It is striking that the values obtained are similar to those found by Cihangir-Çankaya and Bacanlı (2003). Therefore, the findings obtained in this study showed that the Psychological Needs Scale is a proven measurement tool for high school students (Okur & Özekes, 2019).

Life Satisfaction Scale

It was developed by Diener et al. (1985) to determine the life satisfaction levels of the participants and was adapted to Turkish by Köker (1991). The scale is designed to determine the life satisfaction levels of the participants according to their subjective perceptions about their lives. The one-dimensional scale includes 5 items and was prepared as a 7-point scale. There are no inverse items in the scale, and total points can be obtained. The lowest score of the scale is 5, and the highest score is 35. High scores indicated that the satisfaction of the participants was met, and they received high satisfaction from life. It has been seen through the analysis that the scale has sufficient fit indices. Scale reliability study was performed in Turkey using the test-retest method with 150 participants, and the reliability value was calculated as 0.85. In addition, Cronbach alpha internal consistency value of the scale was reported to be 0.76. Within the scope of this re-

search, Cronbach alpha internal consistency coefficient was calculated and found to be 0.82. It was observed that the obtained Cronbach alpha value and the value obtained by Köker (1991) were close to each other.

Procedure

The data of this research were collected from students studying at the Anatolian High School in İzmir during the spring semester of the academic year 2018-2019. Permissions were obtained from Ege University Scientific Research Ethics Committee (No: 12018877-604.01.02-E.252254), İzmir Provincial Directorate of National Education and İzmir Governorship to obtain the research data. After completion of the permit procedures, the school administrators and teachers working in the schools to be applied were informed about the data collection tools for research purposes, and the scales were applied for an average of 15 – 20 minutes during the lesson hours. Data were collected from volunteer adolescents after obtaining a verbal consent.

Statistical Analysis

The data analysis first determined the skewness and kurtosis coefficients for the normality and linearity assumptions. The skewness and kurtosis coefficients were found to be ± 1.96 , and the absence hypothesis was rejected ($Kolmogorov-Smirnov \geq 0.05$). On this basis, Pearson moment product correlation coefficients of adolescents' problematic internet use, basic psychological needs, and life satisfaction variables were calculated. For the hypotheses tested, the conditional process analysis was performed using the PROCESS plug-in developed by Hayes (2018). This analysis was expressed as a mediation model on the basis of regression with regulators in it (Hayes, 2018). Per the literature, this analysis was expressed as regression-based mediation analysis (Doğan & İlçin-Tosun, 2016), which is used to test theoretical models (Totan, 2013). The mediating effect explains the relationship between the independent and dependent variables (Gürbüz, 2019).

Results

Initially, the first hypothesis of the study, H1, was tested. Because the normal distribution assumption was provided, Pearson moment product correlation coefficients were analyzed, and the results are presented in Table 1.

The table shows that problematic internet use has a moderately significant negative relationship with basic psychological needs ($r^2=0.15$) and life satisfaction ($r^2=0.08$). In addition, it was determined that there was a moderately significant relationship ($r^2=0.28$) between basic psychological needs and life satisfaction ($p \leq 0.01$). The hypothesis tested in line with the findings obtained was accepted, and these findings were found to be consistent with the results in the literature.

The conditional process analysis was carried out according to Baron and Kenny's (1986) 3-staged assumption. When life satisfaction, which is the mediator variable at the end of these 3 stages, was included in the model, a significant decrease between basic psychological needs and problematic internet use indicated that life satisfaction was a partial mediator; however, the emergence of a meaningless relationship implied that life satisfaction was a full mediator. After this analysis, the significance of the mediator variable was evaluated with the bootstrap test. This

Table 1.

Bilateral relations between problematic internet use, basic psychological needs, and life satisfaction

	Problematic Internet Use	Basic Psychological Needs	Life Satisfaction
Problematic Internet Use			
Basic Psychological Needs	-0.39*		
Life Satisfaction	-0.29*	0.53*	

* $p \leq 0.01$

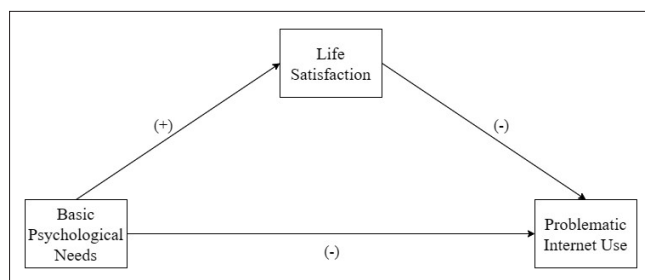


Figure 1. The proposed conceptual model for the mediating role of life satisfaction in the relationship between basic psychological needs and problematic internet use of high school students.

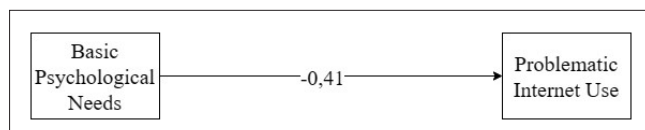


Figure 2. The model of the basic psychological needs variable to predict problematic internet use.

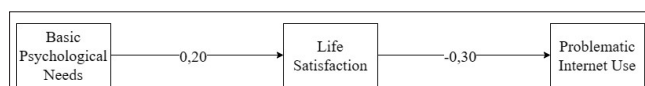


Figure 3. The model showing how the basic psychological needs variable predicts life satisfaction and how life satisfaction variable predicts problematic internet use.

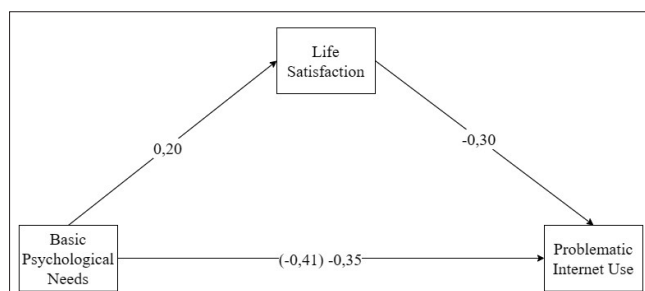


Figure 4. The mediating role of life satisfaction in the relationship between basic psychological needs and problematic internet use.

test determines the significance level of the indirect effect (a.b) prediction (MacKinnon et al., 2004). In this study, the bootstrap value (number of samples) was increased to 5000 to determine the significance of mediation.

First Stage in Mediation Analysis

To test the hypothetically established mediation model, in the first assumption, basic psychological needs should have a significant effect on problematic internet use. Accordingly, the second hypothesis of the research, H2, was tested. The findings obtained in the analysis made for this purpose are given in Figure 2.

According to the findings obtained, the basic psychological needs variable was a negative predictor of problematic internet use. According to this regression model, the basic psychological needs variable explains 15% of the total variance ($r^2=0.15$; $F_{(1,1316)}=237.48$; $p \leq 0.01$). The literature states that this level of explanation is a medium level explanation (Leech et al., 2008). With this finding, the first assumption in the mediation test was provided, and the second hypothesis of the study was accepted.

Second Stage in Mediation Analysis

In the second assumption, basic psychological needs should have a significant effect on life satisfaction. Accordingly, the third hypothesis of the study, H3, was tested. The results obtained from the analyses performed are mentioned in Figure 3.

According to the result of the analysis, the basic psychological needs variable is a positive predictor of life satisfaction and explains 28% of the total variance ($r^2=0.28$; $F_{(1,1316)}=518.97$; $p \leq 0.01$). This value is described as a high-level size in the literature (Leech et al., 2008). Another result of the analysis is that the life satisfaction variable is a negative predictor of problematic internet use, and 8% of problematic internet use is explained by life satisfaction ($r^2=0.08$; $F_{(1,1316)}=117.63$; $p \leq 0.01$). This disclosure rate was stated to be low by Leech et al. (2008). With these results, the second hypothesis of the study was accepted, and the second assumption in the mediation test was provided.

Third Stage in Mediation Analysis

In the third and last assumption, when the mediator satisfaction (M) was added to the model, it was expected that the effect of basic psychological needs on problematic internet use would decrease significantly, or a meaningless relationship would emerge. Accordingly, the last hypothesis of the research, H4, was tested. While testing the model developed for the mediating role of life satisfaction in the relationship between basic psychological needs and problematic internet use, the relationships between all variables were also tested, and the results are shown in Figure 4.

In the study, the coefficient of the relationship between basic psychological needs and problematic internet use was initially found to be -0.41. When the life satisfaction mediator variable was added to the model, the coefficient of relationship was calculated as -0.35. The coefficient decreased by 0.06, and a statistically significant relationship was determined, indicating that the life satisfaction variable had a partial mediating role in this relationship ($c' = 0.06$; $p \leq 0.01$). This finding showed that the intermediary model developed to explain problematic internet use was statistically verified, and the final hypothesis of the research was accepted. It was found that the value obtained in the bootstrap test to determine the significance of the partial mediation role in the relationship between life satisfaction, basic psychological needs, and problematic internet use. Considering the results obtained, it was determined that there was no zero value between the upper and lower limits in the confidence interval and that life

satisfaction played a significant partial mediator role (95% CI [-0.48, -0.12]).

Discussion

This study aimed to examine the mediating role of life satisfaction in the relationship between basic psychological needs and problematic internet use on the basis of the self-determination theory. To achieve this, a hypothetical model that seemed likely to explain problematic internet use was developed and analyzed. As a result, it was determined that life satisfaction had a partial mediating role in the relationship between basic psychological needs and problematic internet use. In the literature, there is no study investigating the mediating role of life satisfaction in the relationship between basic psychological needs and problematic internet use. In a study by Balkaya-Çetin (2014) and Stepanikova et al. (2010), the relationship between the variables of basic psychological needs, life satisfaction, and problematic internet use was mentioned. The findings obtained in these studies were consistent with the findings in this study.

In this study, it was found that basic psychological needs negatively predict problematic internet use. In the related literature, there are studies that generally show consistency with this finding (Ceng, 2011; Liu et al., 2016; Shen et al., 2013; Wang, 2014; Zhao et al., 2011). There are a few studies showing that there is no significant relationship between these variables (Canoğulları & Güçray, 2017; Candemir-Karaburç, 2017). As seen in the literature, meeting basic psychological needs plays an important role in reducing problematic internet use. It is noteworthy that the findings obtained in this study are largely consistent with the literature.

Another finding of the study is that there is a negative relationship between the adolescents' life satisfaction levels and problematic internet use. Accordingly, when the relevant literature in Turkey and abroad was examined, the findings in the studies conducted by Aktepe et al. (2013) and Xu et al. (2011) supported the findings of this study. Similar findings were observed in other studies conducted in Turkey and abroad (Bernal-Ruiz et al., 2017; Çetin-Dağlı & Gündüz, 2017; Gaetan et al., 2012; Kabasakal, 2015; Mei et al., 2016). There are also studies in the literature whose findings are inconsistent with the findings of this study (Chen & Persson, 2002; Derin & Bilge, 2016; Esen, 2010; Jackson et al., 2004; Şahin, 2019). It was seen that the results obtained were generally similar to the literature, and life satisfaction affected problematic internet use.

Finally, another finding obtained from bilateral relations in the research was that meeting the basic psychological needs of adolescents increases their satisfaction with life. It can be said that there is a positive meaningful relationship between these 2 variables. There are similar results in the relevant literature regarding this finding (Cihangir-Çankaya, 2009; DeHaan et al., 2016; Kermen & Sarı, 2014; Molix & Nichols, 2013; Ryan & Deci, 2000). Studies conducted with these two variables in Turkey and abroad found no results that were different from the findings of this study. Considering the findings obtained from this study and the results of other studies in the field, meeting the basic psychological needs is one of the important factors in increasing the life satisfaction of adolescents.

There may be several reasons why the study results differ from those in the literature. One reason could be owing to the scales used or the method of the research. The fact that each measurement tool has different sub-dimensions and measures different features may cause the results of the study to differ. The differences in the sample group, both cultural and sociodemographic, could also affect the study results.

Limitations

This study had some limitations. First, collecting the data with pen and paper and not conducting interviews was a limitation. It should also be noted that the results were limited to the features measured by the scales used. The study was conducted in official Anatolian high schools in Izmir, which could also be considered a limitation. The fact that different expressions, such as problematic internet use, internet addiction, compulsive internet use, excessive internet use, were included in the literature and there was a lack of clear diagnostic criteria could have also led to different results. In addition, whether there are other pathological disorders accompanying problematic internet use in the study group is unknown. The fact that the sample could not be controlled was also a limitation. Finally, the lack of information on what the adolescents who make up the sample do most often on the internet could be considered as a limitation.

Directions/Suggestions for Future Research

On the basis of the findings obtained within the scope of the study, it is necessary for families to provide an environment where adolescents have responsibility in the family, make their own decisions, and have a right to express an opinion (Cihangir-Çankaya, 2005; Ryan & Lynch, 1989). To meet the competency needs of adolescents, they should be given tasks that they are able to achieve in the family, and they should be motivated and given constructive feedback (Stepanikova et al., 2010; Yarkin, 2013). To satisfy the need for relatedness, adolescents should experience love, respect, and interest in the family and feel intimacy (Balkaya-Çetin, 2014; Demirci, 2018). Finally, the adolescents must be encouraged to have physical, cognitive, and social activities in real life to increase their life satisfaction. It is believed that directing the adolescents to any sport, artistic, or social activity will bring richness to their lives.

The study findings recommend that psychological counselors in schools should create new psychoeducational programs for adolescents within the scope of personal/social guidance and organize seminars for high school students, their families, and teachers. In addition, it is thought that brochures with information about these topics should be given to the students and their families. In all these studies, it is believed that the awareness of families will be raised by talking about the effects of basic psychological needs and life satisfaction on problematic internet use. Moreover, within the framework of the self-determination theory, the basic psychological needs of high school students should be realized, and individual or group activities should be organized by the school psychological counselors to meet such needs. Accordingly, it is recommended to create environments where children and adolescents feel autonomous and qualified and can establish relationships.

For future studies, researchers can retest the model proposed in this study or add different variables. The sub-dimensions of the

Psychological Needs Scale-High School, autonomy, competence, and relatedness can be examined separately and tested in the model. In addition, considering the model in this study, new experimental studies can be conducted, and intervention programs for adolescents can be created by considering the results of such studies. Because the biggest risk group for problematic internet use is adolescents, studies are generally conducted for adolescents. Moreover, it is believed that studies should be conducted for both younger and older age groups because only few studies on problematic internet use in adults are available in the literature.

Ethics Committee Approval: Ethics committee approval was received for this study from the Scientific Research Ethics Committee Ege University (REF=E.252254).

Informed Consent: Informed consent was obtained from the participants.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept - S.O.; Design - S.O.; Supervision - M.Ö.; Resources - S.O.; Materials - S.O.; Data Collection and/or Processing - S.O.; Analysis and/or Interpretation - S.O., M.Ö.; Literature Search - S.O.; Writing Manuscript - S.O.; Critical Review - M.Ö.

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