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Life satisfaction and family functions as-predictors of problematic Internet use in university students



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ABSTRACT

One goal of this research was to analyze problematic Internet use in university students according to such variables as gender, grade point average, satisfaction with one's department, mother's/father's education level, smoking, alcohol consumption, gambling behavior, relationship between parents, length of Internet use, amount of time spent on the Internet daily, and using the Internet for academic purposes. Another goal was to analyze family functioning and life satisfaction as predictors of problematic Internet use in university students. The study sample comprised 663 university students from Dokuz Eylül University, İzmir. The Problematic Internet Use Scale, Family Evaluation Scale, Life Satisfaction Scale, and a questionnaire requesting demographic information were administered. The results revealed that the family functioning dimensions of problem solving, roles, and behavioral control, as well as gender, age, gambling behavior, perception of the relationship between one's parents, number of years of Internet use, amount of time spent on the Internet daily, and using the Internet for academic purposes explained 48% of the total variance in Internet use. There was also a significant relationship between university students' life satisfaction and total Internet use, rate of Internet overuse, and the social benefits and negative consequences of Internet use.

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1. Introduction

There has been increasing use of the Internet in Turkey and globally. The Internet has a significant role in many areas of life and is used as a wide-ranging mass medium. Today, it is accepted as a very important and valuable way of accessing information (Lytras & Ordóñez de Pablos, 2011), which may be due to its accessibility and ease of use, relatively low cost, and ability to facilitate the flow of information across national borders. Of the 79,749,461 people in Turkey, approximately 45% (36,455,000 people) use the Internet (Europe Internet Usage, 2012). Healthy Internet use is defined as the use of the Internet in order to reach a goal in a specific time without any behavioral or intellectual discomfort (Davis, 2001). Problematic Internet use is defined as a multi-dimensional syndrome that may have negative consequences for an individual's social, psychological, and academic/professional life, and which has cognitive and behavioral indications (Caplan, 2005).

Internet use has some advantages, such as being able to access information easily, quickly, and cheaply. However, it also brings certain problems, such as a decline in academic performance and family relations. Indeed, a correlation between problematic

Internet use and family functioning has been demonstrated (Yen, Yen, Chen, Chen, & Ko, 2007). A study on Internet use and the family conducted in 2008 in Turkey, using a sample of 2000 families, found that 79% of families had access to the Internet at home and 11% had two or more computers at home (Kuzu, Odabaşı, Erişti, Kabakçı, & Kurt, 2008). Studies on the demographic variables related to problematic Internet use have also been conducted (Akin & İskender, 2011; Ceyhan, 2008; Toprakçı, 2007; Berber Çelik, & Odacı, 2012; Ceyhan, Ceyhan, & Kurtyılmaz, 2012). Young (1999) developed a questionnaire to identify individuals with Internet addiction and found that family was an environmental stressor that could lead to problematic Internet use.

Family functioning is known to be connected with risky behaviors in young people and has been a focus of many studies (Ceyhan, 2008; Esen & Siyez, 2011; Goldberg, 1996). Many studies have examined the effects of family functioning on individual behavior. Family functioning was first described by Epstein and Westley (Epstein & Westley 1959). Between 1960 and 1970, Epstein and colleagues (Epstein, Baldwin, & Bishop, 1983; Epstein, Bishop, & Levin, 1978) developed a model to analyze family functioning, focusing on six dimensions—problem-solving, roles, communication, showing one's emotions, showing necessary interest in family members, and behavioral control—which reflect the basic features

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of family (Epstein et al., 1983). Healthy family functioning improves the relationships and interactions between family members (Kocatürk, 2010). A healthy family is one with a flexible internal structure and functioning, where the members are in constant development, and with healthy communication and dialog between children and parents, unconditional love, cooperation, and solidarity. In addition, it is composed of individuals with internal control characteristics and the family works to solve interpersonal conflicts (Bulut, 1990; Dönmezer, 2000; Foley, 1986; Gordon, 1996; Çakmaklı, 1989). If these characteristics do not exist, it can lead to an unhealthy family. Experiences in the family are basic factors of a child's and young individual's social environment (De'Ath, 1983; Goleman, 1996). Living with and having positive relationships with one's family are protective factors against problematic behaviors (Berkovitz, 1993; Jessor, Van Den Bos, Vanderryn, Costa, & Turbin, 1995; McCarthy & Brack, 1996). Family processes are determinative in an individual's life (Garmiene, Zemaitine, & Zaborskis, 2006). Studies on problematic behaviors have examined the family model (Güvenir, 2005), disciplinary style in the family (Gilmour, 2005), and level of dependence in the family (Nelson, Mitchell, & Yang, 2008).

Research has examined the relationship between family processes and compliance problems with the opposite sex, as well as the relationship between depression and unhealthy family functioning (Türküm, Kızıltaş, Bıyık, & Yemenici, 2005). Previous studies have found that unhealthy family functioning is related to depression (Otlu, 2008). Indeed, one criterion for depression in the Diagnostic and Statistical Manual of Mental Disorders (4th ed.; American Psychiatric Association., 1994) is negativity in family life (Goldberg, 1996). Thus, family is both a risk factor and a protective factor for problematic behaviors in young people.

Another concept that is possibly related to problematic Internet use in young people is life satisfaction, which is closely related with individuals' subjective well-being. Life satisfaction varies between individuals and is generally considered as being content with one's life. It is defined as the positive emotional responses of individuals (Sung-Mook & Giannakopoulos, 1994). Life satisfaction has been demonstrated to be the cognitive component of subjective well-being (Dorahy et al., 2000). Having more positive experiences than negative experiences affects life satisfaction (Diener, Diener, & Tamir, 2004). Life satisfaction generally involves the entire life of an individual, and includes many dimensions of life rather than a specific situation. Factors that are considered to affect life satisfaction include being content with daily life, finding life meaningful, success in reaching goals, positive personal identity, feeling physically well, economic safety, and social relationships (Keser, 2005).

Positive experiences may lead to an increase in life satisfaction while negative experiences may lead to a decrease. Life satisfaction can also be considered as the dominance of positive feelings in daily relations over negative feelings (Deniz & Yılmaz, 2006; Diener et al., 2004; Veenhoven, 1996). As life satisfaction is multi-dimensional and comprises one's entire life, the relationships between individual characteristics and life satisfaction have been analyzed.

Life satisfaction has been linked to a sense of personal integrity (Çeçen, 2008), sense of family integrity, and self-esteem (Annak, 2005); parental attitudes (Gürsoy, 2009); attitudes toward receiving psychological support (Dilek, 2010); mental exhaustion (Telef, 2011); experience of violence (Kabasakal & Gırlı, 2012); and problem-solving abilities (Kabasakal & Uz-Baş, 2013). In this context, it can be expected that life satisfaction is connected with individual Internet use. Additional possible factors related to problematic Internet use in young people are other problem behaviors (Phillips, Ogeil, & Blaszczynski, 2012; Sung, Won-Le, Mi-Noh, Park, & Ju-Ahn, 2013), grade point average, (Frangos,

Frangos, & Kiohos, 2010; Mythily, Qiu, & Winslow, 2008) and amount of time spent on the Internet (Ko et al., 2007; Milani, Osualdella, & Di Blasio, 2009).

Therefore, there were two main goals of this study. One goal was to analyze problematic Internet use in university students in relation to gender, grade point average, satisfaction with their academic department, mother's/father's education level, smoking, alcohol consumption, gambling behavior, and length of Internet use, duration of Internet use per day, and relationship between parents. Another goal was to study family functioning and life satisfaction as the predictors of problematic Internet use in university students.

2. Method

2.1. Research design

This study was designed according to the relational screening model. The relational screening model aims to determine the existence and level of covariance among two or more variables and is a general screening model (Karasar, 2006). The participants were 663 university students (440 female and 223 male) who volunteered to participate in the study from the Buca Education Faculty, 2013–2014 cohort. The ages of the participants ranged between 17 and 23 years ($M = 20.33$ and $SD = 1.420$). The participants gave informed consent.

2.2. Questionnaires

2.2.1. Problematic Internet Use Scale

This Likert-type scale, composed of 33 items, distinguishes between healthy and unhealthy Internet use in university students. It is divided into three dimensions: overuse (6 items), which includes such items as “Because I spend too much time on the Internet my academic success level decreases”; social benefits/social ease (10 items), including such items as “Instead of spending money on social activities I would rather spend money on accessing the Internet”; and negative outcomes of Internet use (17 items), including such items as “When I am on the Internet I may forget to eat” (Ceyhan, Ceyhan, & Gürcan, 2007). The internal consistency coefficient of the scale was found to be .94, and the test–retest reliability coefficient to be .81 (Ceyhan et al., 2007). An internal consistency coefficient of .97 was obtained for the scale in this study.

2.2.2. Family Evaluation Scale

This scale was based on the McMaster Family Functions Model (Bulut, 1990). This scale can distinguish between the structural and organizational features of a family, and healthy and unhealthy interactions between family members (Bulut, 1990). There are seven subscales in this Likert-type scale, which consists of 60 items. The first six subscales of family functioning assess problem areas. These subscales are problem solving, communication, roles, emotional resilience ability, affective involvement, and behavior control. The seventh scale, which concerns general functioning, was added later to the Family Evaluation Scale. The total scores on the scale range from one to four, with scores close to 1 indicating healthy family functioning and a score of 4 indicating the most unhealthy family functioning. According to the developer of this scale, if the score of the Family Evaluation Scale is less than (or equal to) 2, the family functioning can be considered healthy; conversely, if the score is more than 2 (up to or equal to 4), the family functioning can be considered unhealthy (Bulut, 1990). Epstein and Bishop (1983) confirmed the validity of the scale. In another study, the internal consistency coefficient was found to range between

.72 and .92 for the six dimensions (Bulut, 1990). In that study, to investigate its reliability, the scale was administered twice to 45 people with a 15-day interval; the correlation coefficients (r) ranged between .66 and .76 (Bulut, 1990). In the present study, an internal consistency coefficient of .93 was obtained for the scale.

2.2.3. Life Satisfaction Scale

The present study used the Life Satisfaction Scale, developed by Diener and Diener (1995), to evaluate life satisfaction. This scale has been translated into Turkish by Köker (1991), who also tested its reliability and validity. The test–retest reliability coefficient was .85, and item–test correlation coefficients were between .71 and .80. Cronbach's alpha of the original scale was found to be .86. In the present study, it was .86. The scale contains five items, with each item containing seven dimensions. The possible total score ranges from 5 to 35 (Köker, 1991).

2.2.4. Personal information form

This 10-item form was constructed by the researcher in accordance with the aim of the research. It contained questions about age, sex, grade point average, satisfaction with their department, parental education levels, alcohol consumption, smoking, gambling behaviors, Internet use, and the aims of Internet use.

2.3. Procedure

The study began with a review of the literature to determine appropriate scales for the purpose of this research and suitable demographic variables for inclusion on the personal information form. The data were collected using questionnaires. Each questionnaire took approximately 30–40 min to complete. Pearson's correlational analysis, a t -test, and an ANOVA were used to analyze the obtained data, and Tukey's test was used for post hoc analysis. Regression analysis was performed to determine the total predictive power of family functioning, life satisfaction, and sociodemographic variables on university students' Internet use. All statistical analyses were performed using SPSS 15.0 and a significance level of .05.

3. Results

The findings of the study are presented below (see Table 1).

There were significant gender differences in all dimensions of the Problematic Internet Use Scale. Male students scored higher than female students. However, the eta-squared values obtained were rather low, indicating that gender had a weak effect on overuse, and medium effects on social benefits and negative results (see Table 2).

Smokers generally scored higher than non-smokers on all dimensions of the Problematic Internet Use Scale. However, the eta-squared values obtained were rather low, indicating that smoking has a weak effect on Internet overuse and medium effects on social benefits and negative results of Internet use (see Table 3).

Participants who consume alcohol scored significantly higher than those who do not on all dimensions of the Problematic Internet Use Scale. However, the eta-squared values obtained were low, indicating that alcohol consumption had a weak effect on these dimensions (see Table 4).

Participants who gambled more often scored significantly higher than those who gambled less on all dimensions of the Problematic Internet Use Scale. However, the eta-squared values obtained were low, suggesting that gambling had a weak effect on these dimensions (see Table 5).

Scores on the dimension of negative results ($F_{662} = 2.525$, $p < .05$) significantly differed by grade point average. Post hoc analysis found that university students with grade point averages between 0 and 2 scored higher on this dimension (mean = 33.97) than those with grade point averages between 3 and 3.5 (mean = 28.10). This indicates that the negative results dimension of Internet use is related to poor academic performance. However, the eta-squared values obtained showed that grade point average has only a weak effect on negative results in Internet use (see Table 6).

There was a significant main effect of satisfaction with one's academic department on all dimensions of the Problematic Internet Use Scale. Post hoc analysis revealed that students who were very satisfied with their academic department scored significantly lower on overuse (mean = 16.13) compared to those who

Table 1
Internet use in university students by gender.

		<i>N</i>	Mean	Standard deviation	<i>t</i>	<i>df</i>	<i>p</i>	η^2
Overuse	Male	440	17.9	5.20310	−3.454	661	.001*	.018
	Female	223	16.41	5.35792				
Social benefits	Male	440	23.01	7.61703	−6.633	386.83	.000*	.069
	Female	223	18.35	8.99548				
Negative results	Male	440	36.65	13.09412	−6.924	364.549	.000*	.078
	Female	223	27.8	16.66848				

* $p < .001$.

Table 2
Internet use and smoking.

		<i>N</i>	Mean	Standard deviation	<i>t</i>	<i>df</i>	<i>p</i>	η^2
Overuse	Yes	175	18.09	5.43643	3.45	661	.001	.018
	No	488	16.49	5.18962				
Social benefits	Yes	175	23.48	9.40949	6.126	260.172	.000*	.065
	No	488	18.64	7.61361				
Negative results	Yes	175	37.28	17.07282	6.193	255.244	.000*	.068
	No	488	28.45	13.42565				

* $p < .001$.

Table 3
Internet use by alcohol consumption.

		N	Mean	Standard deviation	t	df	p	η^2
Overuse	Yes	241	17.84	5.28205	3.431	661	.001*	.017
	No	422	16.38	5.24145				
Social benefits	Yes	241	21.87	9.18854	4.373	431.482	.000*	.031
	No	422	18.8	7.69882				
Negative results	Yes	241	34.37	16.01648	4.571	445.716	.000*	.033
	No	422	28.72	13.96409				

* $p < .001$.**Table 4**
Internet use by gambling behavior.

		N	Mean	Standard deviation	t	df	p	η^2
Overuse	Yes	241	17.84	5.28205	3.431	661	.001*	.017
	No	422	16.38	5.24145				
Social benefits	Yes	241	21.87	9.18854	4.373	431.482	.000*	.031
	No	422	18.8	7.69882				
Negative results	Yes	241	34.37	16.01648	4.571	445.716	.000*	.033
	No	422	28.72	13.96409				

* $p < .001$.**Table 5**
Internet use by grade point average.

		Sum of squares	df	Mean square	f	p	Mean difference	η^2
Negative results	Between groups	2245.950	4	561.48	2.525	.040*	0–2/3–3.5	.015
	Within groups	146306.774	658	222.35				
	Total	148552.724	662					

* $p < .05$.**Table 6**
Internet use and satisfaction with one's academic department.

		Sum of squares	df	Mean square	F	p	Mean difference	η^2
Overuse	Between groups	352.497	4	88.124	3.180	.013*	1–3	.019
	Within groups	18234.773	658	27.712				
	Total	18587.270	662					
Social benefits	Between groups	1435.582	4	358.896	5.222	.000**	5–1/2/3	.031
	Within groups	45220.339	658	68.724				
	Total	46655.922	662					
Negative results	Between groups	6524.219	4	1631.05	7.556	.000**	5–1/2/3	.044
	Within groups	142028.505	658	215.849				
	Total	148552.724	662					

* $p < .05$.** $p < .001$.

stated that they were “okay” with their academic department (mean = 17.99). For the social benefits dimension, students who stated that they did not like their academic department (mean = 25.25) scored significantly higher than those who were very satisfied with their academic department (mean = 19.03), those who were satisfied (mean = 19.22), and those who were “okay” (mean = 20.78). Regarding the negative results dimension, individuals who did not like their department scored significantly higher (mean = 42.41) than those who were very satisfied with their academic department (mean = 28.90), those who were satisfied (mean = 29.40), and those who were “okay” with their department (mean = 32.24). The eta-squared values obtained indicated that satisfaction with one's department had a weak effect on all three dimensions (see Table 7).

Scores on the dimensions of social benefits and negative results of Internet use significantly differed by maternal education level. Post hoc analysis showed that students whose mothers had below-primary education scored significantly lower in the social benefits dimension compared to those whose mothers had university or postgraduate/higher education. Social benefits dimension scores differed between primary education and university/postgraduate/higher education. The average score of students whose mother had below-primary education (mean = 19.13) was significantly lower than the average score of students whose mother had university (mean = 21.26) and postgraduate/higher education (mean = 23.75). Conversely, for the dimension of negative results, students whose mothers had postgraduate education scored significantly higher (mean = 39.37) than those whose mothers had

Table 7
Internet use and maternal education level.

	Source of the variance	Sum of squares	SD	Square mean	F	p	Significant difference	η^2
Social benefits	Groups	657.545	3	219.18				
	In-Group	45998.376	659	69.80	3.140	.025*	1–3/4	.014
	Total	46655.922	662					
Negative results	Groups	2125.162	3	708.38				
	In-Group	146427.562	659	222.19	3.188	.023*	4–1/2	.014
	Total	148552.724	662					

* $p < .05$.

below-primary education (mean = 29.49) or high school education (mean = 31.70). However, the eta-squared values obtained indicated that maternal education level had only a weak effect on the social benefits and negative results of Internet use dimensions (see Table 8).

There was a significant main effect of paternal education level on Internet overuse, social benefits of the Internet, and negative results of Internet use. Post hoc analysis revealed that students whose fathers had below-primary education (mean = 16.32) scored significantly lower on Internet overuse than those whose fathers had a university education (mean = 17.65). In contrast, for the dimensions of social benefits and negative results, students whose fathers had a postgraduate education scored significantly higher (mean = 25.45 and 39.45 respectively) than those whose fathers had below-primary (mean = 18.81, 28.82), high school (mean = 20.45, 31.72), and university education (mean = 20.25, 31.53). However, the eta-squared values obtained were low, indicating that paternal education level had only a weak effect on all three dimensions (see Table 9).

The relationship between one's parents had a significant main effect on all three dimensions. Post hoc analysis indicated that

students who perceived the relationship between their parents as “perfect” scored significantly lower (mean = 16.12) on overuse than those who perceived their parents to have a bad relationship (mean = 17.16). For the dimensions of social benefits and negative results of Internet use, students who perceived their parents to have a “very bad” relationship scored higher (mean = 33.50 and 57.66 respectively) than those who perceived their parents to have a “perfect” (mean = 18.57, 28.50), “very good” (mean = 19.58, 30.08), or “moderately good” relationship (mean = 22.97, 36.04). The eta-squared values obtained indicated that the relationship between one's parents had a medium effect on all three dimensions of Internet use (see Table 10).

There was a main effect of the length of Internet use (years) on the dimensions of Internet use. Post hoc analysis showed that students who had used the Internet for 10–11 years scored higher (mean = 19.48) on overuse compared to those who had used the Internet for 0–3 years (mean = 15.72), 4–5 years (mean = 16.88), and 6–7 years (mean = 16.41). For the dimensions of social benefits and negative results, students who had used the Internet for 10–11 years scored higher (mean = 22.54 and 35.80 respectively) than those who had used the Internet for 6–7 years (mean = 22.54,

Table 8
Internet use and paternal education level.

		Sum of squares	df	Mean square	F	p	Mean difference	η^2
Overuse	Between groups	238.526	3	79.50				
	Within groups	18348.744	659	27.84	2.856	.036*	1–3	.013
	Total	18587.270	662					
Social benefits	Between groups	1008.021	3	336				
	Within groups	45647.900	659	69.268	4.851	.002*	4–1/2/3	.022
	Total	46655.922	662					
Negative results	Between groups	2779.670	3	926.557				
	Within groups	145773.054	659	221.203	4.189	.006*	4–1/2/3	.019
	Total	148552.724	662					

* $p < .05$.

Table 9
Internet use and relationship between parents.

		Sum of squares	df	Mean square	F	p	Mean difference	η^2
Overuse	Between groups	273.945	4	68.486	2.461	.044*		
	Within groups	18313.325	658	27.832		1–2	.015	
	Total	18587.270	662					
Social benefits	Between groups	2546.944	4	636.736	9.499	.000**		
	Within groups	44108.978	658	67.035		5–1/2/3	.055	
	Total	46655.922	662					
Negative results	Between groups	8776.180	4	2194.04	10.328	.000**		
	Within groups	139776.544	658	212.426		5–1/2/3	.059	
	Total	148552.724	662					

* $p < .05$.

** $p < .001$.

Table 10
Internet use and length of Internet use (years).

		Sum of squares	df	Mean square	F	p	Mean difference	r ²
Overuse	Between Groups	550.301	5	110.060	4.009	.001*	5–1/2/3	.030
	Within groups	18036.96	657	27.45				
	Total	18587.27	662					
Social benefits	Between groups	869.749	5	173.950	2.496	.030*	5–3	.019
	Within groups	45786.17	657	69.69				
	Total	46655.92	662					
Negative results	Between groups	3203.7	5	640.74	2.896	.013*	5–3	.022
	Within groups	145349.0	657	221.231				
	Total	148552.7	662					

* $p < .05$.**Table 11**
Internet use and duration of Internet use per day.

		Sum of squares	df	Mean square	F	p	Mean difference	η^2
Overuse	Between groups	2573.857	3	857.952	35.307	.000*	1–2/3/4	.14
	Within groups	16013.413	659	24.300				
	Total	18587.270	662					
Social benefits	Between groups	7116.531	3	2372.177	39.537	.000*	1–2/3/4	.15
	Within groups	39539.390	659	59.999				
	Total	46655.922	662					
Negative results	Between groups	27010.313	3	9003.438	48.816	.000*	1–2/3/4	.18
	Within groups	121542.411	659	184.435				
	Total	148552.724	662					

* $p < .001$.

28.03). The eta-squared values obtained showed that these dimensions had a medium effect on all three dimension of Internet use (see Table 11).

The amount of time spent on the Internet per day differed significantly between the three dimensions. Post hoc analysis revealed that students who used the Internet 0–3 h per day scored lower on the overuse dimension (mean = 15.75, 18.28, 27.49) compared to students who used the Internet 4–7 h per day (mean = 19.70, 22.87, 36.87), 8–11 h per day (mean = 21.20, 28.87, 49.0), and more than 12 h per day (mean = 23.37, 38, 63.12). The eta-squared values obtained indicated that the amount of time spent on the Internet per day had a strong effect on all three dimensions of Internet use (see Table 12).

There was a significant main effect of Internet use for academic purposes on all three dimensions. Post hoc analysis revealed that students who used the Internet 0–3 h per day for academic purposes scored significantly lower (mean = 16.26, 18.68, 28.24) than students who used the Internet 4–7 h per day (mean = 20.32, 23.98, 39.50), 8–11 h per day (mean = 21.63, 32.47, 55.42), and more than (or equal to) 12 h per day (mean = 20.25, 32.18, 55.25) on all three dimensions. The eta-squared values obtained showed

that this variable had a medium effect on Internet overuse, and a strong effect on social benefits and negative results of Internet use (see Table 13).

There were significant negative correlations between life satisfaction and students' total Problematic Internet Use Scale score, as well as scores on each dimension. There were significant negative correlations between the family functioning total score and dimensions of family functioning. There were also significant positive correlations between the family functioning total score and dimensions of family functioning.

In addition, there were significant positive correlations between the overuse dimension and the family functioning total score and dimensions of family functioning.

There were significant positive correlations between the social benefits dimension and the family functioning total score and dimensions of family functioning.

Lastly, there were significant positive correlations between the negative results dimension and the family functioning total score and dimensions of family functioning (see Table 14).

Sex, age, gambling behavior, relationship between parents, years of Internet use, time spent on the Internet per day, and using

Table 12
Internet use and use of the Internet for academic purposes.

		Sum of squares	df	Mean square	F	p	Mean difference	η^2
Overuse	Between groups	1591.133	3	530.378	20.565	.000*	1–2/3/4	.09
	Within groups	16996.137	659	25.791				
	Total	18587.270	662					
Social benefits	Between groups	7341.311	3	2447.10	41.019	.000*	1–2/3/4 2–3/4	.16
	Within groups	39314.610	659	59.658				
	Total	46655.922	662					
Negative results	Between groups	29675.660	3	9891.88	54.836	.000*	1–2/3/4 2–3/4	.20
	Within groups	118877.064	659	180.390				
	Total	148552.724	662					

* $p < .001$.

Table 13
Relationship between Internet use, life satisfaction, and family functioning.

	1	2	3	4	5	6	7	8	9	10	11	12	13
1 Life satisfaction		-.152**	-.104**	-.146**	-.147**	-.290**	-.265**	-.251**	.276**	-.256**	-.061	-.173**	-.279**
2 Internet/Total		1	.729**	.927**	.971**	.517**	.270**	.446**	.492**	.456**	.215**	.388**	.483**
3 Overuse			1	.561**	.606**	.275**	.162**	.275**	.285**	.232**	.105**	.214**	.222**
4 Social benefits				1	.862**	.492**	.244**	.423**	.470**	.442**	.204**	.351**	.473**
5 Negative results of the Internet use					1	.531**	.278**	.446**	.497**	.468**	.225**	.406**	.501**
6 Family/Total						1	.781**	.891**	.892**	.858**	.343**	.662**	.942**
7 Problem solving							1	.719**	.671**	.590**	.003	.442**	.730**
8 Communication								1	.925**	.743**	.234**	.494**	.813**
9 Roles									1	.751**	.257**	.537**	.802**
10 Emotional resilience ability										1	.309**	.469**	.792**
11 Affective involvement											1	.170**	.240**
12 Behavioral control												1	.561**
13 General functioning													1

** $p < .001$.

Table 14
Results of regression analysis on Internet use, demographic variables, and family functioning.

	B	Standard error	Beta	T	p
Constant	15.458	9.157		1.688	.092
Sex	6.601	1.845	.119	3.578	.000**
Age	-1.407	.72	.076	-1.955	.051*
Gambling behavior	-5.767	2.123	.089	-2.716	.007*
Relationship between parents	-2.614	1.178	.077	-2.218	.027*
Years of Internet use	-1.426	.62	.076	-2.301	.022*
Length of daily Internet use	11.305	1.742	.261	6.49	.000**
Using the Internet for academic purposes	4.513	1.729	.106	2.611	.009**
Problem solving	-.962	.33	-.14	-2.914	.004**
Roles	1.659	.469	.289	3.536	.000**
Behavioral control	.785	.282	.102	2.787	.005**
General functioning	.834	.226	.236	3.695	.000**

$R = .694$.

$R^2 = .481$.

* $p < .05$.

** $p < .001$.

the Internet for academic purposes, along with the family functioning dimensions of problem solving, roles, behavioral control, and general functioning were significant predictors of Internet use and together explained 48% ($R = .256$, $R^2 = .066$, $p < .05$) of the total variance of Internet use.

4. Discussion

This study focused on university students, one of the groups in which Internet use is most intense. We found significant differences in the Problematic Internet Use Scale dimensions in terms of gender, with male students scoring higher than female students in all three dimensions. This finding supports previous studies that have found that male students are more susceptible to problematic Internet use (Carbonell et al., 2012; Esen & Siyez, 2011; Frangos et al., 2010; Grenberg, Jewis, & Dod, 1999; Lam, Peng, Mai, & Jing, 2009; Muñoz-Rivas, Fernández, & Gámez-Guadix, 2010; Niemi, Griffiths, & Banyard, 2005; Scherer, 1997; González, & Orgaz, 2014; Li, Shi, & Dang, 2014; Servidio, 2014).

When students' problematic Internet use was evaluated in terms of other problematic behaviors such as smoking, alcohol consumption, and gambling, significant differences were observed in all three Problematic Internet Use Scale dimensions. Individuals who smoked, drank alcohol, or engaged in gambling behavior scored significantly higher on these dimensions than individuals who abstained. Smoking, alcohol consumption, and gambling are significant indicators of problematic Internet use. This finding supports other studies in which problematic Internet use was

considered a risk factor for other addictions (Ko et al., 2008) and occurred in parallel with alcohol and substance abuse (Sung et al., 2013; Young, 1996a). Internet use may be a greater risk for gambling-related problems (Phillips et al., 2012).

We also found a significant difference in the dimension of negative results of Internet use in terms of academic performance; students with grade point averages between 0 and 2 scored higher on this dimension than those with grade point averages between 3 and 3.5. This finding indicates that the negative results of Internet use increase while academic performance decreases. This result, in conjunction with those of previous studies, indicates a connection between problematic Internet use and poor academic performance (Bayraktar, 2001; Chou, Condon, & Belland, 2005; Esen & Siyez, 2011; Frangos et al., 2010; Mythily et al., 2008; Welsh, 1999; Young, 1996a; Young, 1996b). There is also evidence that as the long-term use of Facebook increases, academic performance falls (Michikyan, Subrahmanyam, & Dennis, 2015). The results of the above-mentioned studies as well as of the present study reveal that Internet usage generally decreases one's academic success. However, other studies demonstrate the benefits of social media usage, particularly to one's learning processes (Lytras, Mathkour, Abdalla, Yanez-Marquez, & Ordóñez de Pablos, 2014).

Furthermore, scores on the three dimensions of Internet use differed according to satisfaction with one's department. Students who were very satisfied with their academic department scored lower on Internet overuse and the negative results of Internet use compared to those who were "okay" with their academic department and those who were satisfied with their academic

department. In addition, students who were “okay” with their academic department scored higher than those who were not satisfied with their department. This finding suggests that students who like their academic department are less susceptible to problematic Internet use. These results are in line with those of [Chen and Penq \(2008\)](#), who found that problematic Internet use decreased when learning satisfaction increased.

Internet use also differed according to parental education level. We found that students whose mothers had below-primary education scored significantly lower on the social benefits dimension than those whose mothers had university/post-graduate education or higher. With regard to the negative results dimension, students whose mothers had postgraduate education or higher scored significantly higher than those whose mother's had high school or below-primary education. Similarly, scores on all three Problematic Internet Use Scale dimensions differed according to paternal education level. These results suggest that students who have access to the Internet more easily and at an earlier age, together with high parental education level, are more susceptible to problematic Internet use.

In addition, Internet use differed in terms of the number of years that the students had used the Internet. Students who had used the Internet for 10–11 years scored significantly higher on overuse than those who had used the Internet for 0–3, 4–5, and 6–7 years. Regarding the social benefits and negative results of Internet use dimensions, students who had used the Internet for 10–11 years scored significantly higher than those who had used the Internet for 6–7 years. Effects analysis indicated that the number of years for which a person had used the Internet had a medium effect on all three Internet use dimensions.

Internet use also differed according to the amount of time spent on the Internet per day. Students who used the Internet 0–3 h per day scored lower than those who used the Internet 4–7, 8–11, and more than (or equal to) 12 h per day. The effect sizes obtained showed that the amount of time spent per day on the Internet had a strong effect on all three Internet use dimensions. These results are comparable with those of [Durak-Batgün and Hasta \(2010\)](#). The authors found that the amount of time spent on the Internet is a predictor of problematic Internet use. [Baron and Broughton \(2001\)](#) obtained similar results in their study. They found that young people spend more than 4–5 h in front of the TV, computer, Internet, radio, in the cinema, and playing video games, and sometimes could spend up to 8 h engaged in these activities.

We also found that students who used the Internet for 0–3 h per day for academic purposes scored significantly lower in all three Problematic Internet Use Scale dimensions than students who used the Internet 4–7, 8–11, and more than (or equal to) 12 h per day for academic purposes. On the other hand, for the social benefits and negative results dimensions, students who used the Internet for 4–7 h per day for academic purposes scored significantly lower than students who used the Internet 8–11 and more than (or equal to) 12 h per day for academic purposes. The obtained effect sizes revealed that the amount of time spent daily on the Internet for academic purposes had a medium effect on Internet overuse, and had a strong effect on the social benefits and negative results of Internet use dimensions. Taken together, the results suggest that the amount of time spent on the Internet, including using the Internet for academic purposes, can be considered a predictor of problematic Internet use. Similarly, [Milani et al. \(2009\)](#) found that adolescents aged 14–19 years who have problematic Internet use are typically using the Internet for longer hours. [Ko et al. \(2007\)](#) also investigated the amount of time spent on the Internet as a high risk factor for Internet addiction.

Another goal of this study was to examine life satisfaction and family functioning as predictors of problematic Internet use in

university students. The average life satisfaction score of our participants was 21.88. A recent life satisfaction study by [Dorahy et al. \(2000\)](#), investigating the life satisfaction of university students in different countries, found that the average life satisfaction score was 23.83 in Australian students, 21.48 in Nigerian students, and 21.14 in Guinean students. [Gündoğar, Gül, Uskun, Demirci, and Keçeci \(2007\)](#) obtained an average of 21.7 in a sample of university students while [Joshonloo and Afshari \(2009\)](#) found an average of 22.20, [Uz-Baş \(2011\)](#) found an average of 22.34, and [Kabasakal and Uz-Baş \(2013\)](#) found an average of 22.44. Therefore, the level of life satisfaction determined in this study is similar to that of previous studies. We also found a positive significant relationship between life satisfaction and total score on the Problematic Internet Use Scale and each dimension. Life satisfaction decreased as problematic Internet use increased. This result is similar to that of previous studies ([Ko, Yen, Chen, Chen, & Yen, 2005](#); [Kraut et al., 1998](#); [Papacharissi & Rubin, 2000](#); [Deniz & Yılmaz, 2006](#); [Bevan, Gomez, & Sparks, 2014](#); [Lu & Yeo, 2015](#); [Satici & Uysal, 2015](#); [Wang, Chen, Lin, & Wang, 2008](#)). [Weiser \(2001\)](#) found that problematic Internet use increases with loneliness, introversion, and illness, which are factors acknowledged to decrease life satisfaction.

The present results showed that students who perceived the relationship between their parents as “perfect” scored significantly lower on the Problematic Internet Use Scale than students who perceived the relationship between their parents as “good.” For the dimensions of social benefits and negative results, students who perceived the relationship between their parents as “very bad” scored significantly higher than those who perceived their parents’ relationship as “perfect,” “good,” and “medium.”

Problematic Internet Use scores varied according to how students perceived the relationship between their parents. Students with high scores perceived their relationship with their family as bad. Conflicting family relationships are among the risk factors for Internet addiction in teenagers ([De Leo & Wulfert, 2013](#)). Previous studies have also related Internet use in youth with closeness in family relationships and communication, and our results support this finding ([Jackson et al., 2003](#); [Moreau, Laconi, Delfour, & Chabrol, 2015](#); [Turow, 2001](#)).

We also found a positive and significant relationship between Problematic Internet Use total score; the dimensions of overuse, social benefits, and negative results; and the family functioning total score, and family functioning dimensions of problem solving, communication, roles, emotional resilience ability, affective involvement, behavioral control, and general functioning. Scores on the dimensions of family functioning decreased as Problematic Internet Use scores increased. Previous studies have found a relationship between family functionality and various problems in children and young people ([Amodai & Scott, 2002](#); [Avci, 2006](#); [Gagne, Drapeau, Melancon, & Saint-Jacques, 2007](#); [Hemphill & Littlefield, 2006](#); [Stone, 2005](#); [Straus, Gelles, & Steinmetz, 2009](#); [Thawabieh & Al-Rofo, 2010](#)). Previous studies into family functioning and problematic behaviors in individuals support the results of the present study. Other studies have found that students who do not have healthy family functioning use harmful ways of dealing with this, such as taking pills or drugs and spending a lot of time on the Internet ([Türküm et al., 2005](#); [Li, Garland, & Howard, 2014](#)). Yet other studies have demonstrated marital conflict in parents as a risk factor for Internet addiction in children ([Werner, 1989](#); [Werner & Smith, 1992](#)). Furthermore, other research has investigated how social support from the family predicts Internet addiction in teenagers ([Esen & Siyez, 2011](#)); the relationship between family dysfunction, high marital conflict, and Internet addiction ([Ko et al., 2008](#)); the relationship between insufficient emotional support from the family and Internet addiction ([Xiuqin et al., 2010](#)); and the relationship between low family functioning and Internet addiction ([Ko et al., 2007](#)).

Some previous studies have also emphasized the importance of the family in protecting against Internet addiction and risky Internet use (Liau, Khoo, & Ang, 2005; Mindprison., 2007; Park, Kim, & Cho, 2008). Family functioning has been described as a preventive health measure for problematic Internet use in construction workers (Wartberg et al., 2014). The results of this study and previous studies indicate that healthy family functioning might prevent problematic Internet use.

Finally, we found that the family functioning dimensions of problem-solving, roles, behavioral control, and general functioning, as well as gender, age, gambling behavior, relationship between parents, the number of years of Internet use, time spent on the Internet per day, and using the Internet for academic purposes explained 48% of the total variance in Internet use and are important predictors of problematic Internet use in university students.

4.1. Suggestions

1. Providing education about the Internet, which is widely used by university students, can be valuable for preventing problematic Internet use.
2. As it was observed that problematic Internet use is related to other problems, future studies should simultaneously investigate smoking, alcohol consumption, and gambling behavior.
3. A close connection between family characteristics and problematic Internet use was found. Thus, it can be especially useful to conduct consultation studies about families in schools.
4. Using a larger sample will be helpful for determining problematic issues multi-dimensionally.

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