

# Is problematic internet use an indicator of eating disorders among Turkish university students?

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## Abstract

**Aims** The aim of this study was to investigate the relationship between problematic internet use and eating attitudes in a group of university students.

**Methods** The study sample consisted of 314 students attending programs at the faculties of education, medicine and communications at the Karadeniz Technical University in Turkey. One hundred forty-seven (46.8 %) were male and 167 (53.2 %) female. The Problematic Internet Use Scale was used to measure problematic internet use levels among university students and the Eating Attitudes Test to determine anorexia nervosa symptoms. Additionally, a Personal Data Form was used to determine age, gender, faculty attended and computer ownership. Data were analyzed on SPSS 15.00. Pearson's product moments correlation coefficient, multiple linear regression analysis, the independent *t* test and one-way ANOVA were used for data analysis.

**Results** The research findings showed that 46.8 % of students were female and 53.2 % male. Mean age was 20.65 (SD 1.42). Analysis showed a significant positive correlation between problematic internet use and eating attitudes ( $r = 0.77$ ,  $p < 0.01$ ). Problematic internet use

was found to be a significant predictor of eating attitudes. The results also showed a significant difference in problematic internet use with regard to program variables [ $F_{(2,311)} = 102.79$ ]. There were no significant differences in problematic internet use in terms of gender or computer ownership.

**Conclusions** The results of this study indicate that problematic internet use is significantly correlated with eating disorders, that problematic internet use does not vary on the basis of gender or computer ownership and that variations arise in problematic internet use depending on the faculty attended.

**Keywords** Problematic internet use · Eating attitudes · University students · Gender

## Introduction

Although the internet is a new tool it has already been assumed an enormously important place in the world [1]. Personal computers being sold at reasonable prices and the availability of simple programs have led to a constant increase in the number of internet users [2–4]. The number of internet users worldwide has reached almost 2.5 billion [5]. Fast and easy access to the internet, its increasing availability and the broad opportunities it affords make it possible to obtain all kinds of information in a very short space of time and to establish very rapid communication with others. However, as well as making people's lives easier, the internet also gives rise to a number of problems [6–12].

In particular, unhealthy/problematic internet use has begun emerging as a distinct problem in contemporary society. Some people's unhealthy/problematic use of the

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internet causes problems in their daily lives [4, 13, 14]. These individuals may be permanently preoccupied with the internet, their success levels may decline and they may experience disruptions in their daily lives. The impact may be greater among people who make frequent use of the internet. The fact that the internet is becoming increasingly popular, especially with young people, and that levels of use are also increasing, again reveals the serious nature of the problem.

Excessive or inappropriate internet use has been referred to by different terminology in the literature, including internet dependence [15], pathological internet use [16, 17] and problematic internet use [7, 18–20]. In general terms, it is defined as an inability to prevent excessive internet use, time not spent online losing all importance, extreme irritability when deprived of the internet and increasing impairment of an individual's work, social and family life [21]. Researchers have reported that internet dependence leads to physical and professional problems and to difficulties in human relations [9] and to the internet occupying the individual's mind unnecessarily [22]. Researchers have also proved that problematic internet use may be accompanied by psychiatric problems such as alcohol abuse [23] and gambling addiction [24], and dysthymic disorders such as depression [25] and social anxiety [26]. In addition, internet dependence has been shown to be correlated with such variables as psychomotor impairments [27, 28], feelings of enmity [25], loss of control, decreased tolerance levels, withdrawal from social life, impaired functions, a reduction in decision-making capacities [8, 11, 12, 29], loneliness [7], low self-esteem and satisfaction with life [29], and parent–adolescent conflict [25].

Individuals exhibiting unhealthy/problematic internet use experience problems in their daily lives and in social relations [14, 28] and may also exhibit various adverse physiological symptoms [8, 9]. Sitting for long periods of time, spending lengthy periods online without moving, can lead to various physiological disorders, and this lack of movement can also result in weight problems in young people. Youth is also a time when habits that persist through life are acquired. An unhealthy eating attitude is one such risky form of behavior seen in this period [30, 31].

Young people's eating attitudes may be affected by several factors. The factors involved in individuals adopting healthy or unhealthy behavior in this area include opinions and perceptions regarding their own bodies, genetic factors, life style and other habits [32, 33]. Eating disorders are a condition with both physical and psychological dimensions that manifest themselves with irregularities in the individual's eating habits and ideas concerning eating, body weight and appearance [34]. Since eating disorders particularly emerge in adolescents and

young adults and are linked to other psychological and physical problems, they require early diagnosis and treatment [35, 36].

Due to university students' youth and likely psychosocial and economic problems [37], they constitute a risk group for both problematic internet use and eating disorders. It is therefore very important for educational and preventive measures to be taken in this area and for the requisite measures to be taken if disorders appear. In the light of the above, we hypothesized a correlation between problematic internet use and eating attitudes. Our scan of the literature revealed no previous such study either abroad or in Turkey. The study was planned to fill this gap and to contribute to the literature. Our aim was to determine the relation between problematic internet use and eating attitudes and to evaluate the former in the light of specific variables.

## Subjects and methods

### Participants

The study group consisted of 350 students attending different faculties (medical, education and communication) of the Karadeniz Technical University in Turkey. Questionnaires were administered to students in groups, in a class environment, by the authors. Before administration of the scales, students were briefed about the aim of the research and how the measurement scales should be completed. Participation was voluntary. Thirty-four students had to be excluded for not responding properly to all questionnaires, so the final sample consisted of 314 participants, 147 females and 167 males.

### Instruments

The Problematic Internet Use Scale (PIUS), the Eating Attitudes Test (EAT) and a Personal Data Form (PDF) were used for data collection.

#### *Problematic internet use scale*

PIUS was developed by Ceyhan et al. [38] to measure problematic internet use levels among university students. PIUS is a dimensional, quantitative scale based on individual self-assessment showing a spectrum of internet use from normal to pathological. It consists of 33 items. Possible scores range from 33 to 165, higher scores indicating that individuals' internet use is increasingly unhealthy, that it has a negative impact on their lives and may give rise to a tendency to pathology, such as internet dependence. Scale factor analysis results revealed the three sub-factors

comprising it as “negative consequences of the internet”, “social benefit/social comfort” and “excessive use”. Together, these three factors constitute 48.96 % of total variance. Scale internal consistency coefficient was ( $\alpha$ ) 0.94. The internal consistency coefficient of the scale regarding the data collected from our study group was ( $\alpha$ ) 0.93, while those of the three sub-factors constituting the scale were 0.93, 0.84 and 0.73, respectively.

*Eating attitudes test*

EAT was developed by Garner and Garfinkel [39] for the purpose of measuring anorexia nervosa symptoms. The scale was later adapted into Turkish by Savaşır and Erol [40]. EAT is a 6-point multiple choice Likert-type scale consisting of 40 items. A cut-off score of 30 has been determined. Higher scores indicate a negative and unhealthy development of attitudes to eating. Savaşır and Erol [40] determined a reliability coefficient of 0.70.

*Personal data form*

Drawn up by the authors, this form asked participants about factors such as gender, age, faculty attended and computer ownership.

*Procedure and data analysis*

We first investigated the relationship between students’ problematic internet use and eating attitudes. We then examined whether individuals’ problematic internet use varied according to the variables in the PDF. Data were analyzed using SPSS 15.00. Pearson’s product–moment correlation coefficient was used to examine the relationship between problematic internet use and eating disorders, multiple linear regression analysis to determine whether gender or computer possession predicts eating disorders, the independent *t* test to determine variation in problematic internet use depending on gender and computer possession and one-way ANOVA to reveal variation in problematic internet use on the basis of faculty attended. Significance was set at a minimum of 0.05, while other significance levels (0.01 and 0.001) are also shown where applicable.

**Results**

Descriptive data (gender, computer ownership, faculty attended and age) are shown in Table 1. A positive correlation ( $r = 0.77, p < 0.01$ ) was determined between problematic internet use and eating attitudes (Table 2). Problematic internet use, gender and computer ownership account for 59 % of total variance [ $F_{(3,310)} = 151.54,$

**Table 1** Research group demographic variables

	<i>N</i>	%	Mean	SD
Gender				
Female	147	46.8		
Male	167	53.2		
Computer ownership				
Yes	214	68.2		
No	100	31.8		
Faculty				
Medical	90	28.7		
Education	125	39.8		
Communication	99	31.5		
Problematic internet use				
Female	147		101.41	
Male	167		103.17	
Eating attitudes				
Female	147		38.44	
Male	167		43.75	
Age			20.65	1.42

**Table 2** Relations between problematic internet use and eating attitudes

	Problematic internet use	Eating attitudes	Mean	SD
Problematic internet use	1	0.77*	102.35	42.88
Eating attitudes	0.77*	1	41.26	29.95

\*  $p < 0.01$

**Table 3** Multiple linear regression analysis results for eating attitudes

Variables	<i>t</i>	<i>p</i>	<i>R</i>	<i>R</i> <sup>2</sup>	$\Delta R^2$	<i>F</i>
Fixed	−4.01	0.001	0.77	0.59	0.59	151.54
Gender	2.05	0.041				
Problematic internet use	21.17	0.001				
Computer ownership	0.50	0.618				

$p < 0.05$ ] (Table 3). Problematic internet use ( $\beta = 0.77, p < 0.05$ ) and gender ( $\beta = 0.07, p < 0.05$ ) make a significant contribution to the model, while the contribution of computer ownership was not significant ( $\beta = 0.02, p < 0.05$ ). Independent *t* test analysis showed that problematic internet use scores did not vary significantly according to gender ( $t = -0.36, p < 0.05$ ) or computer ownership ( $t = 0.99, p > 0.05$ ) (Table 4). At one-way ANOVA, university students’ problematic internet use varied according to the faculty attended [ $F_{(2,311)} = 102.79$ ]

**Table 4** Problematic internet use variations by gender and computer ownership

	<i>N</i>	Mean	SD	<i>t</i>	<i>p</i>
Gender					
Female	147	101.41	46.85	−0.36	0.721
Male	167	103.17	39.17		
Computer ownership					
Yes	214	104.09	41.03	0.99	0.320
No	97	98.60	46.78		

**Table 5** Problematic internet use variations by faculty attended

Problematic internet use	Sum of squares	<i>df</i>	Mean squares	<i>F</i>	<i>p</i>
Intergroup	228,996.8	2	114,498.4	102.79	0.001
Intragroup	346,422.4	311	1,113.9		
Total	575,419.2	313			

(Table 5). LSD test results, obtained with the aim of determining between which groups the differences lay, revealed that education faculty students' problematic internet use scores (113.28) were significantly higher than those of medical faculty students (60.64) and that communications faculty students' problematic internet use scores (126.45) were significantly higher than those of education and medical faculty students.

## Discussion

The study showed a positive correlation between problematic internet use and eating attitudes and that problematic internet use predicted these attitudes. High PIUS scores were positively correlated with high scores on EAT. Our scan of the literature revealed no previous studies supporting the research findings. In addition, studies in the literature have emphasized that people exhibiting excessive internet use may also have behavioral problems concerning alcohol, gambling, eating or gender [24, 41, 42]. In a study of psychiatric diseases accompanying excessive internet use, Black et al. [43] reported that some 50 % of such users had received a psychiatric diagnosis. The most common diagnoses were substance use disorder (38 %), emotional state disorder (33 %), anxiety disorder (19 %) and psychotic disorder (14 %), while major depressive disorder was present in 25 %. Since people exhibiting problematic internet use are constantly occupied with the internet they may be unaware of how much they eat when online. Individuals who exhibit problematic internet use are often constantly preoccupied and generally unaware of what they

are doing, meaning that regular meeting of primary needs may cease to seem important. While online they may inadvertently skip meals or experience weight problems due to consuming unhealthy snack foods. They may then contract such serious conditions as eating disorders, including vomiting what they have eaten or only eating very little. These attitudes, initially exhibited without the subject being aware of them, may subsequently lead to eating problems and damaged health. Unconscious or undesired weight gain very probably plays a role in the individual experiencing psychological and social problems.

No association was observed between problematic internet use and gender. Some previous studies support this finding [8, 44, 45]. Other studies, however, have reported greater problematic internet use behavior among male students compared to females [6, 7, 45–47]. Internet use among university students is currently increasing among both genders. Easy access to computers and the internet, due to increasing technological progress, and the meeting of everyday needs by means of the internet in various spheres, such as education, entertainment, communications and shopping, have made the computer an indispensable tool for both male and female students [8, 48–50].

Our findings show that problematic internet use does not vary on the basis of computer ownership. No similar finding has been reported in the literature. Previous studies have been more concerned with length of computer use [51]. Students can access the university from cyber cafes, university computer laboratories or friends' computers, whether or not they own one of their own. This indicates that young people have no problem in terms of access to computers or to the internet. Young people seeking to find their own identity in this period and their preoccupations with group membership, acceptance and approval may cause them to turn to various tools. The advantages bestowed by the internet are thought to make such use particularly attractive.

The study showed that problematic internet use varied according to faculty attended, and that communication and education faculty students had higher levels of problematic use than medical faculty students. In their study of internet dependence, Özcan and Buzlu [1] determined a higher level of problematic internet use among social sciences students. Faculties of education and communication, closely associated with the social sciences, have less intensive academic programs compared to medical faculties. Excessive free time, lack of awareness of how the internet should be used and the possibility of performing numerous tasks online (communicating, shopping, information collection, etc.) may lead to excessive internet use.

There are some limitations to this study. First, the research group was made up of students attending the faculties of medicine, education and communications at Karadeniz Technical University in Turkey. Our results can

therefore only be compared with students at the same faculties. Second, we performed the study in Turkey, a developing country. This should be borne in mind when comparing our results with those from developed countries. Finally, the fact that the study was conducted among students at faculties in a public university may also be regarded as a limitation. In evaluating the results of this study it should be borne in mind that results for students at private universities may be different. Another limitation is that since the study is cross-sectional, variables were not assessed in the context of cause and effect. First and foremost, it needs to be established whether problematic internet use is a cause or an effect. It is still a matter of debate whether excessive internet use causes other pathological behavior such as substance or other dependence, or else whether excessive internet use is an indicator of existing psychological problems. Variables were therefore considered in terms of relations rather than cause and effect in this study.

## Conclusion

In conclusion, the results of this study indicate that problematic internet use is a significant predictor of the development of eating disorders, and that variations arise in problematic internet use depending on the faculty attended. Problematic internet use may lead not only to eating disorders but also to many other psychological and physiological problems. In that context, research should be conducted on the problems deriving from problematic internet use. Wider-ranging studies with students from different faculties could also be performed. This will make it possible to identify those faculties with problems regarding problematic internet use, and preventive and problem-solving counseling and psychological support can then be provided for those faculties.

**Conflict of interest** The authors declare that they have no conflict of interest.

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