

## **The Effect of Body Image Satisfaction on Problematic Internet Use through Social Support, Problem Solving Skills and Depression**

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### **Abstract**

This study investigates whether social support, problem solving skills and depression mediate the relationship between body image satisfaction and problematic Internet use. The research was carried out with the participation of 492 Turkish university students. The findings indicate that the individuals more dissatisfied with their body image have insufficient social support and consider their problem solving skills to be inadequate. This consequently makes them more depressed, and depression causes them to misuse the Internet more. According to these findings, body image satisfaction has significantly and directly affects social support, problem solving skills and depression. Furthermore, body image satisfaction has an indirect effect on depression through the partial mediation of social support and problem solving skills. Results also show that social support, problem solving skills and depression act as mediators between body image satisfaction and problematic Internet use. Moreover, social support and problem solving skills have also indirect effects on problematic Internet use through the partial mediation of depression.

**Keywords:** problematic internet use, problematic internet use, body image satisfaction, social support, problem solving, depression.

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The Internet has become an important communication tool and its use continues to expand. Internet has led to important advances and considerable developments. Despite its advantages, the Internet is also conducive to serious abuse and can become addictive. As a result of unhealthy Internet use, the Internet can increase individuals' vulnerability to various difficulties in their social, academic, and professional lives (Ceyhan, 2008). In sum, the Internet may adversely affect a person's physical and mental health.

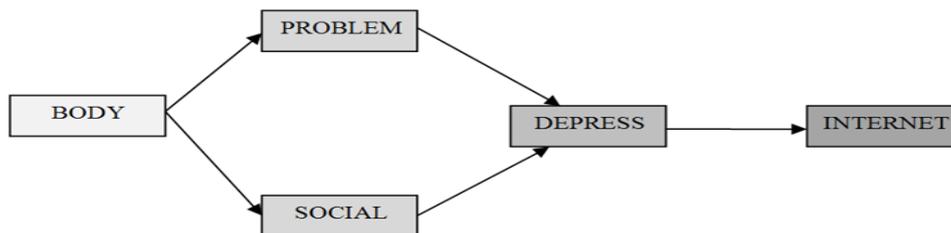
Since pathological or problematic Internet use is a major issue because of its negative effects on social and emotional functioning of Internet users, various studies of pathological Internet use, or psychological dependency on the Internet, have been conducted. Young indicates that Internet addicts display some behaviors similar to the characteristics of pathological gamblers (Young, 1998). Therefore, if individuals use the Internet in a way that disturbs their personal, social and professional lives, abuse may follow and eventually cause impairment of the addict's mental health.

Scientific interest in the Internet's influence on psychological well-being has been increasing (Niemz, Griffiths & Banyard, 2005). Researchers currently debate whether the Internet affects individuals' psychology negatively or improves their well-being (Whitty & McLaughlin, 2007). As the Internet pervades daily life, it is imperative that we acquire a greater understanding of its social impact (Kraut, Patterson, Lundmark, Kiesler, Mukopadhyay, & Scherlis, 1998). Some investigations are related to the Internet's debilitating effects on communication, while some demonstrate that the Internet positively affects communication (Moody, 2001). Other studies find that Internet use increases in direct proportion to problematic behaviors (Shapira, Lessig & Goldsmith, 2003). As we improve our understanding of Internet-human interaction gradually, the dynamics of how people abuse the Internet become clearer (Ceyhan & Ceyhan, 2008).

Research findings indicate that excessive/problematic/pathological Internet use/Internet dependency is related to depression, loneliness, shyness, low self-esteem, locus of control and antisocial tendencies. Furthermore, the findings indicate that preference for online social interaction is a mediating variable on the association between social anxiety and negative outcomes related to the Internet (Caplan, 2007). Consequently, it can be stated that various psychosocial problems or difficulties have been closely related with problematic Internet use (Ceyhan & Ceyhan, 2008). Personality differences can be a significant contributor to Internet addiction (Amichai-Hamburger & Ben-Artzi, 2003). Thus, it is necessary to investigate the relationships between Internet abuse and some personal characteristics and behavior.

Considering the fact that university students can use the Internet for all purposes profoundly because of ease of access and comfort, they have a greater chance to experience the Internet's negative effects. Moreover, the primary developmental task of establishing close relationships with other people during university years is likely to increase the risk of developing problematic/unhealthy computing habits considerably. Therefore, psychological and environmental factors during college years could lead them to experience Internet dependency (Kandell, 1998; Hall & Parsons, 2001). Hence, it can be stated that despite its advantages,, Internet use is an important potential risk factor for university students because of the negative outcomes related to addiction and pathological use.

The present study investigates the indirect effects of the body image satisfaction on problematic Internet use through the mediation of social support, problem solving skills and depression with the expectation that the relationship between body image satisfaction and problematic Internet use occurs due to the other mediator variables such as social support, problem solving skills and depression. For this purpose, we analyze a hypothetical model comprising the relationships among these five variables. The suggested hypothetical model is shown in the Figure1.



*Figure 1.* The hypothetical model suggested in the current study. In figure, BODY, PROBLEM, SOCIAL, DEPRESS, and INTERNET refer to body image satisfaction, problem solving skill, social support, depression, and problematic internet use, respectively.

As can be seen in Figure 1, the hypothetical model includes five paths that indicate the direct and indirect relationships among body image satisfaction, social support, problem solving skills, depression and problematic Internet use. Thus, this study proposes the following hypotheses to explore the relationship between body image satisfaction and problematic Internet use and to investigate whether the mediator variables contributed to this relationship:

1. Body image satisfaction has effects on social support and problem solving skills because body image satisfaction leads to the increase in social support from

environment and the individuals with high body image satisfaction display more effective problem solving skills.

2. Subsequently, body image satisfaction affects depression through problem solving skills and social support because a lack of social support and ineffective problem solving skills cause depression.

3. In the present situation, finally, all these relationships lead to problematic Internet use.

The present study seeks answers to these hypotheses in the hypothetical model and attempts to explore the best model that explains the relationships among these variables.

## Methods

### Participants

The participants in the study were 492 university students enrolled at Anadolu University. Of these students, 356 (72.40%) were female and 134 (27.60%) were male. The ages of the students ranged between 17 and 29 with a mean of 20.98. The participants' matriculation shows that 132 participants were freshman (26.80%), 117 sophomores (23.80%), 121 juniors (24.60%) and 122 seniors (24.80%).

### Instruments

*Pleasure of the Body Organs Scale*: The scale developed by Çetinkaya (2004) assesses the individual's satisfaction attained through body organs. The seven-point Likert-type scale consists of 17 items. The lowest and the highest scores to be obtained from the scale are 17 and 119, respectively. Higher points in the scale mean higher satisfaction with the body (Çetinkaya, 2004). In the present study, internal consistency coefficient of the scale was found as .85.

*Multidimensional Scale of Perceived Social Support (MSPSS)*: MSPSS is a scale that estimates the adequacy of subjectively perceived social support from family, friends and special persons. The MSPSS was developed by Zimet et al. (1988 as cited in Eker & Arkar, 1995) in the USA and adapted to Turkey (Eker & Arkar, 1995; Eker, Arkar & Yıldız, 2001). It consists of 12 items. There are four items for each social support source as family, friends and special persons. Higher scores obtained from MSPSS mean higher social support (Eker, Arkar & Yıldız, 2001). In the present study the internal consistency coefficients of the scale, and that of the three subscales, were computed as .83, .73, .90, and .94, respectively.

*Problem Solving Inventory, Form A (PSI-A)*: This problem solving inventory was developed by Heppner and Petersen in 1982 to determine individuals' self-confidence in

problem solving, their feelings of personal control, and their personal approaches to a problem. PSI-A, which is a self-report instrument, identifies individuals' self-perceptions about their problem solving skills. PSI-A comprises 35 items and the total scores change between 32 and 192. As the scores obtained from this scale rise, the respondents' problem solving skill levels decrease. This study employs PSI-A, which was adapted for the Turkish population by Şahin, Şahin and Heppner in 1993. Adaptation studies revealed that the original and Turkish versions of PSI-A were significantly similar to each other (Savaşır & Şahin, 1997). In the present study, the internal consistency coefficient of the scale was found as .84.

*Beck Depression Inventory (BDI)*: BDI was developed by Beck et al. to determine the levels of depressive symptoms by measuring emotional, somatic, cognitive and motivational symptoms of depression. BDI is composed of 21 items with four alternative statements for each. The points obtained from the scale range from zero to 63. The higher the points obtained, the higher the level and the severity of depression (Savaşır & Şahin, 1997). The present study computes the scale's internal consistency coefficient as .84.

*Problematic Internet Usage Scale (PIUS)*: The PIUS was developed by Ceyhan, Ceyhan & Gürcan (2007) with the assumption that the severity of Internet use shows continuity from normal to pathological use. The PIUS consists of 33 items rated on a five-point scale. The high scores on the scale indicate that an individual's Internet usage is too unhealthy in that it may affect his or her life negatively and it may increase the tendency to addiction. According to the validity and reliability studies, the PIUS is a valid and reliable instrument which can be used to measure university students' problematic computing behavior (Ceyhan, Ceyhan & Gürcan, 2007). In the present study, the internal consistency coefficient of the scale was computed as .95.

### **Procedure and Data Analysis**

The instruments were applied to the students attending various undergraduate programs at Anadolu University. All voluntary respondents taking part in the study were considered as participants. Therefore, the data analysis considers 492 participants' scores. The data were analyzed via path analysis with observed variable. The significance level was taken as .05.

### **Results**

In the study, for the normality assumptions, the distributions of all the variables in the model were examined, and the extreme scores were not included in data analysis. Skewness/curtosis values of the body image satisfaction, social support, problem solving

skills, depression and problematic Internet use variables were found as  $-.25/-.50$ ,  $-.50/-.58$ ,  $.11/-.53$ ,  $.51/-.11$  and  $.87/.08$ , respectively. Means, standard deviations and correlations of these variables are presented in Table 1.

Table 1: Means, standard deviations and correlations of body image satisfaction, social support, problem solving skills, depression and problematic Internet use of university students (n=492).

Variables	Mean	Df	Pearson correlation coefficients (r)				
			1.	2.	3.	4.	5.
1. Body image satisfaction	91.73	13.67	-	.20*	-.27*	-.38*	-.12*
2. Social support	67.68	11.32	-	-	-.13*	-.22*	-.16*
3. Problem solving skills	89.93	17.71	-	-	-	.30*	.14*
4. Depression	11.31	6.46	-	-	-	-	.25*
5. Problematic Internet use	57.53	17.57	-	-	-	-	-

\* $p < .01$

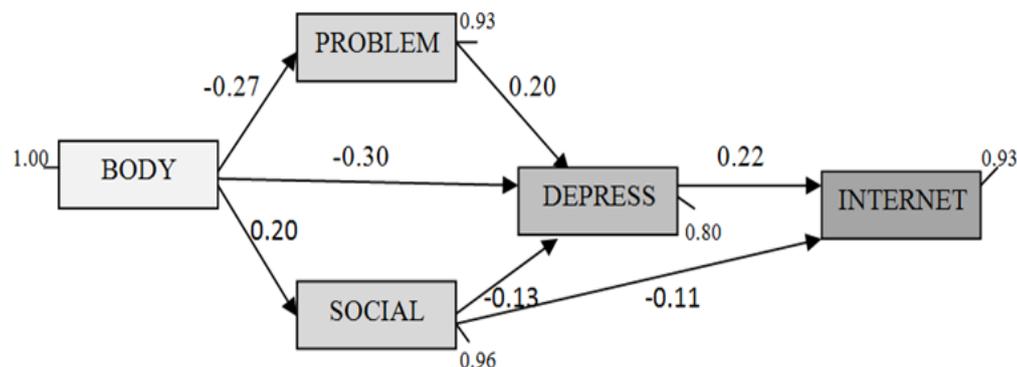
Depending on these statistics, the model suggested in Figure 1 was tested using covariance matrix through path analysis. The results of the analysis demonstrated that all the relationships shown in Figure 1 were statistically significant (t values range from 4.28 to 6.54, significant at the level of  $p = .05$ ). Although all the relationships were found statistically significant, the goodness of fit statistics related to the model was not within the acceptable limits ( $\chi^2 = 55.78$ ,  $p = .00$  for  $N = 492$  and  $df = 5$ ; RMSEA = 0.14 with confidence interval 0.11-0.18, GFI = 0.96, AGFI = 0.87, NNFI = 0.59, CFI = 0.80).

The model's goodness of fit statistics must fall within the acceptable limits for the model to be accepted as a whole. For this reason we examined the software's suggestion for modifications of the model. Consequently, it was seen that the addition of a path into the model from body image satisfaction towards depression would contribute most to the fit of the model (a decrease of 44.4 in the value of  $\chi^2$ ). As a result of the addition of this relationship to the model, the model was tested again and all the relationships were statistically significant (t values range from 3.18 to 6.93, significant at the level of  $p = .05$ ). The model was now seen to reach the acceptable values of the goodness of fit statistics. Most of the goodness of fit values of the model were found to be within the acceptable limits and to have high values ( $\chi^2 = 11.28$ ,  $p = .02$  for  $N = 492$  and  $df = 4$ ; RMSEA = 0.06 with confidence interval 0.02-0.10, GFI = 0.99, AGFI = 0.97, NNFI = 0.93, CFI = 0.97). Moreover, the decrease in the chi-square value resulting from the modification was found to be statistically significant ( $\chi^2$  difference test = 44.50,  $p = 0.0$ ).

Based on the relationships in Figure 2, the new paths were inserted to and removed from the model to investigate the mediator effects of the variables (social support, problem solving skills and depression) on problematic Internet use. In this framework, we first investigated the model including the relationships between problematic Internet use and problem solving skills. Data assessment reveals that both problem solving skills and social

support were related with problematic Internet use (t values change between 2.76 and 3.18,  $p < .05$ , respectively). Then, when depression was inserted as a mediator variable to the relationships stated above in the model, it was observed that the relationship between problem solving skill and problematic Internet use become insignificant (t value=1.46,  $p > .05$ ). On the other hand, the relationship between social support and Internet abuse was found still significant (t value=2.35,  $p < .05$ ).

When body image satisfaction was inserted into the model as an exogenous variable and the paths from this variable to all the other variables were added, the direct relationship between body satisfaction and problematic Internet use was not found significant (t value=0.01,  $p > .05$ ). Therefore, the model was run again by inserting the direct relationship between social support and problematic Internet use. As a result of the analysis, the previous coefficient between depression and Internet abuse was .25, and this relationship coefficient decreased to .22 when the direct relationship between social support and problematic Internet use was inserted into the model. In addition, with the addition of this direct relationship, the decrease in the chi-square value was found significant ( $\chi^2$  difference test=6.39,  $p = 0.01$ ). As a result of the investigation of the mediator effects in model, it is necessary to add the path from social support to problematic Internet use. The new model is as shown in Figure 2.



*Figure 2.* The last model emerging with adding the path to problematic internet use from social support. The figure shows the standardized coefficients. The t values range from 2.45 to 6.93, all of which are significant at the level of .05.

As a result of the analysis, all the relationships shown in Figure 2 were statistically significant (t values range from 2.45 to 6.93, significant at the level of  $p = .05$ ). Furthermore, the addition of path from social support to Internet abuse leads to a considerable decrease in goodness of fit indices. The final model in Figure 2 was found to reach acceptable values of the goodness of fit statistics. The model's goodness of fit values were found to be very good and to have higher values ( $\chi^2 = 4.89$ ,  $p = .18$  for  $N = 492$  and  $df = 3$ ; RMSEA=0.03 with

confidence interval 0.00-0.09, GFI=1.00, AGFI=0.98, NNFI=0.97, CFI=0.99). As a result, the model demonstrated in Figure 2 is the best one that shows the relationships among variables.

### **Discussion**

The present research findings give great support the hypothetical model in Figure 1. According to these results, the first research hypothesis that body image satisfaction is likely to have direct effects on social support and problem solving skills—was sustained. Moreover, body image satisfaction also directly correlates to depression. Likewise sustained is the second hypothesis that asserts the relationships among body image satisfaction, social support and problem solving also lead to depression. Thus, the findings indicate that social support and problem solving skills together have direct effects on depression, and these variables are mediator variables for the relationship between body image satisfaction and depression. Body image satisfaction also has an indirect effect on depression through the partial mediating effects of social support and problem solving skills. Finally, the third hypothesis, proposing that relationships among body image satisfaction, social support, problem solving skills and depression lead to problematic Internet use, was also confirmed. This finding also revealed that depression has a direct effect on problematic Internet use and that it is also a mediator variable; that is, body image satisfaction, social support and problem solving skills have indirect effects on problematic Internet use through the partial mediating effect of depression. In addition, social support has a direct effect on Internet abuse, and it also acts as a partial mediating variable for the relationship between body image satisfaction and depression. The findings indicate that the individuals who are more dissatisfied with body image can suffer from insufficient social support and inadequate problem solving skills. Therefore, they can experience more depression symptoms and, as a result, they can exhibit more problematic Internet use behaviors.

Careful consideration of the results reveals that body image satisfaction has significant medium direct effects on problem solving skills, social support and depression (-.27, .20 and .30,  $p < .05$ ), respectively. In addition, problem solving skills has a medium direct effect on depression (.20,  $p < .05$ ), and social support has a low direct effect on depression (-.13,  $p < .05$ ). Individuals who are more satisfied with their body image have better problem solving skills, get more social support from their environment and are less depressed. On the other hand, individuals who are dissatisfied with their body image can experience more depression symptoms, and this relationship also emerges through mediating effects of both insufficient

problem solving skills and social support. Moreover, poor problem solving skills and lack of social support conduct to more depressive symptoms. These findings are consistent with the results of other published studies, including those that highlight the relationships between depression and body dissatisfaction (Ceyhan, Ceyhan & Kurtyılmaz, 2009; Joiner, Wonderlich, Metalsky, & Schmidt, 1995; Noles, Cash, Winstead, 1985; Marsella, Shizuru, Brennan, Kameoka, 1981; Oates-Johnson & DeCourville, 1999). Similarly, depression was found to be negatively related with social support (Ceyhan, Ceyhan & Kurtyılmaz, 2005; Eldeleklioğlu, 2006; Yıldırım, 2007) and problem solving skills (Ceyhan et al., 2005; Haaga, Fine, Terrill, Stewart & Beck, 1995; Nezu & Ronan, 1988). In addition, pleasure experienced through the body organs was related to self-esteem and life satisfaction (Çetinkaya, 2004). The relationship between body image satisfaction and depression symptoms disappeared when the effect of self-esteem was controlled (Yanarca Uras, 2004).

In the present study, the findings also indicate that body image satisfaction, problem solving skills and social support are important factors influencing Internet abuse. Individuals who experience body dissatisfaction, have insufficient problem solving skills and perceive inadequate social support are likely to experience depression and become addicted to the Internet as well. The present research findings support the cognitive-behavioral model of problematic Internet use (Davis, 2001). In this respect, the current findings are congruent with the findings of other studies, including the relationships between the excessive/problematic /pathological Internet use/Internet dependency and depression (Caplan, 2002, Ceyhan & Ceyhan, 2008; Kim, Ryu, & Chon 2006, Kraut et al., 1998, Young & Rogers, 1998, Whang, Lee, & Chang, 2003, Yen, Ko, Yen, Wu, & Yang, 2007). Consequently, all these results point out that individuals' negative self-perceptions, psychosocial inadequacies and personality characteristics tend to precede the appearance of problematic Internet use symptoms.

The present findings also reveal that depression is a significant factor for problematic Internet use or Internet addiction. Depression has a medium direct effect on Internet abuse (.22,  $p < .05$ ) and that it is also a main partial mediating variable for the relationships between problematic Internet use and the other variables. These findings are also consistent with the findings that problem solving skills play a role in decreasing the risk of depression (Nezu & Ronan, 1988). Results also indicate that problem solving skill is an important predictor of depression (Ceyhan et al., 2005).

The present study has several limitations that prevent us from generalizing the findings. An important limitation is that the variables taken into account were only measured by means of some self-report scales. Therefore, the model cannot be suggested as a definitive

model of problematic Internet use because there are a large number of possibilities surrounding the issue. Another limitation of the study is that the participants include only young adults attending a university. For this reason it is necessary to carry out the study again with different groups of respondents. The findings and interpretations should be evaluated considering the study's limitations. Even when factoring in these limitations, we can state that our discoveries have produced information about the pattern of problematic Internet use and give clues about the direct and indirect relationships between some personal variables and Internet abuse.

### **Conclusion**

Some personal characteristics, insufficiencies and psychological problems such as insufficient problem solving skills, lack of social support, and depression are determinant risk factors for pathological/problematic Internet use or Internet addiction. The findings of the study support the above explanation with the values of goodness of fit. Consequently, we can affirm that individuals without problem solving skills or adequate social support from their environment experience depression symptoms and are likely to become problematic Internet users or addicts. Thus, the current results make important contributions to effective psychological services aimed at correcting problematic Internet use behaviors.

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