Association Between Depression, Anxiety, Stress, Social Support, Resilience and Internet Addiction: A Structural Equation Modelling

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ABSTRACT

The objective of this study is to test whether depression, anxiety, stress, social support and resilience have a significant effect on predicting internet addiction in university students. For this purpose, the pattern of the associations between the variables was examined. The study was conducted on 349 students attending two different universities during the 2018-2019 Academic Year. In the study, Personal Information Form, Depression, Anxiety Stress Scale, Internet Addiction Scale, Perceived Social Support Scale and Resilience Scale were used to collect data. First of all, whether the data were normally distributed was tested. The data, which were found to be normally distributed, were analyzed with correlation and structural equation modelling and SPSS 25 and AMOS 25 programs were used to analyze data. Significant negative association was found between internet addiction and depression, anxiety and stress. Significant negative association was found between internet addiction and social support and resilience. Significant positive association was found between social support and resilience. Fit indices, regression coefficients and variance values of the model were found to be significant. The variables were found to explain 25% of the variance in internet addiction. It was found that the proposed theoretical model to explain internet addiction was confirmed and the results obtained were in parallel with the literature.

Keywords: *Internet addiction, depression, anxiety, stress, social support, resilience*

INTRODUCTION

Internet, which is one of the innovations brought along with technology, eases individuals' lives when used carefully and fit for the purpose and it presents a great number of opportunities to individuals. The increase in the number of needs internet meets also increases the time individuals spend with the internet. At this point, intense and dysfunctional use of the internet can make it problematic.

Widespread use of the internet and the fact that it is mobile every moment and everywhere causes internet addiction to become a potential problem among young people (Kuss, Rooji, Shorter, Griffiths and Mheen, 2013). The concept of internet addiction is used to express the excessive use of the internet and the problems brought along with this use (Ceyhan, 2011). Young, Pistner, O'mara and Buchanan (1999), who are known for their pioneering studies about internet addiction have stated that internet addiction has five sub-types as cybersex addiction, cyber relationship addiction, net compulsions (obsessive gambling, shopping, trading etc.), information overload (compulsive web surfing etc.) and computer games addiction.

It can be seen that internet addicts are more inclined to experience depression, anxiety and other emotional problems and that these people use the internet to meet their unmet psychological needs and to arouse their repressed desires and emotions (Young, 1997). When studies conducted in literature are examined, it can be seen that internet addiction is associated with depression, stress and anxiety (Ostovar et al, 2016). Ceyhan, Ceyhan and Kurtyılmaz (2012) found that internet addiction has a positive correlation with depression.

It has been stated that little social support, which is defined as the social and psychological support an individual gets from his/her environment (family, friends, significant other, teachers, colleagues, neighbours, ideological groups) (Yıldırım, 1997), accompanies pathological internet use (Davis, 2001). Since the concept of social support means social webs, social resources and social assets through which needs such as help, support, advice, approval, consolation, protection will be met (Vedder, Boekaerts ve Seegers, 2005), it can be stated that the lack of these will direct an individual to non-functional ways of coping. Although it can be said that there is an association between internet addiction and social support, there are limited number of studies examining the association between these two concepts. Tsai et al. (2009) found that weak social support was associated with internet addiction in university students. In a study conducted on university students, Naseri, Mohamadi, Sayehmiri and Azizpoor (2015) found a negative correlation between internet addiction and social support and other sub-dimensions.

The concept of resilience expresses an individual's being able to overcome the negative events encountered successfully and being able to adapt to new situations (Doğan, 2015; Öz, Bahadır Yılmaz, 2009). The concept of resilience has been the research subject of a great number of scientific fields such as psychology, psychiatry, sociology and neuroscience (Herrman et al, 2011). However, it can be said that studies predominantly centre around the field of psychology because the concept of resilience appears as a characteristic in general (Block and Kremen, 1996). This means that resilience is not a situational behaviour that appears transiently or once in a while, but it is a part of the individual's character.

There are limited numbers of studies on the association between internet addiction and resilience in literature. In a study conducted by Robertson, Yan and Rapoza (2018), a negative correlation was found between internet addiction and resilience in literature and it was found that resilience explained internet addiction in a significantly negative direction. In another study which examined the association between social media addiction and resilience, (Bilgin and Taş, 2018) a negative association was found between resilience and social media addiction and resilience was found to be a predictor of social media addiction.

The fact that World Health Organization (WHO) recognized online gaming addiction as a mental health disorder ("Gaming addiction officially", 2018) both gives information about the presence and prevalence of the case and also can be assessed as a significant development about the recognition of other technological addictions. It can be seen that similar to gaming addiction, internet addiction is also associated with mental health problems (McNicol and Thorsteinsson, 2017). For this reason, it can be said that studies related with internet addiction and the concepts it is associated with are important. It can be seen that there are studies in literature addressing the association between internet addiction and scarcity of social support (Davis, 2001) and the association between social support and resilience (Herrman et al., 2011). However, no studies have been found in literature addressing the association between social support, resilience and internet addiction together. This study is important in terms of seeing the effects of social support and resilience on internet addiction, which is thought to become a bigger problem gradually. Theoretical association has been found in literature between internet addiction and depression, anxiety, stress, social support and resilience. For this reason, a model has been proposed to determine the pattern of association between internet addiction and depression, anxiety, stress, social support and resilience and to determine the association between resilience and social support.
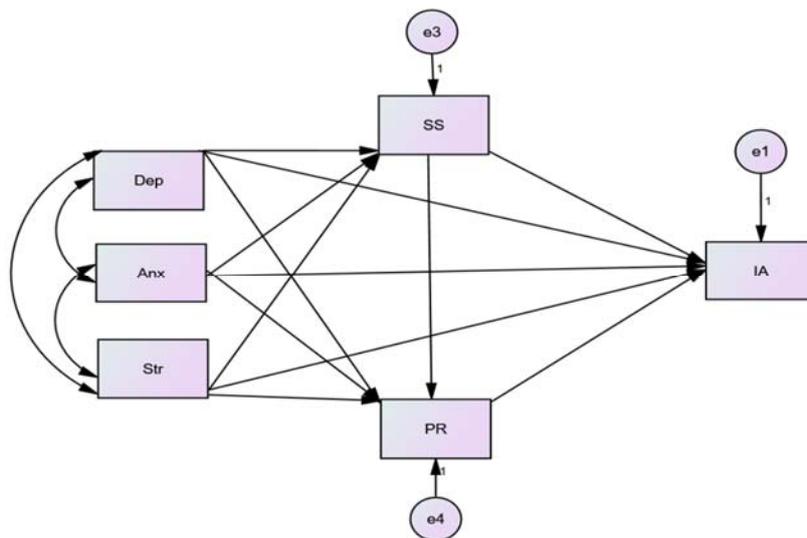
Dep: Depression; **Anx**: Anxiety; **Str**: Stress; **SS**: Social Support; **PR**: Resilience; **IA**: Internet Addiction

Figure 1. The proposed structural equation model

According to Figure 1, there is a bidirectional relationship between depression, anxiety and stress. It is assumed that there is a direct multidirectional relationship between internet addiction and depression, anxiety and stress; a direct multidirectional relationship between depression, stress and anxiety and resilience and social support; a direct multidirectional relationship between internet addiction and social support and resilience and a direct multidirectional relationship between social support and resilience.

RESEARCH METHOD

Research Model

Relational screening model was used in this study. A theoretical model was proposed to explain the relational pattern between and the proposed model was tested with Structural Equation Model (SEM). Structural Equation Model is defined as an analysis method which tests whether the data obtained by the researcher is suitable for the proposed model and explains the relations between variables (Hu and Bentler, 1998).

Participants

Research group consists of 347 students studying in a private university and a state university and chosen randomly from different departments during the 2018-2019 Academic Year. 195 (56.2%) of the students are female, while 152 (43.8%) are male. The ages of the participants are between 17 and 32 and average age is 20.77.

Data Collection Tools

Internet Addiction Scale

Young Internet Scale, which was made into its short form by Pawlikowski et al. (2013) was adapted into Turkish by Savcı, Demir and Aysan (2016). The scale is a 5-Likert type measurement tool consisting of 12 items and one factor. As a result of the exploratory factor analysis, KMO (Kaiser-Meyer-Olkin) of the scale was found as .91, while Barlett Sphericity test χ^2 value was found as 2077.04 (p<0.001). Fit indices of the scale obtained as a result of exploratory factor analysis are as χ^2=144.93, sd=52, RMSEA=0.072, RMR=0.70, GFI=0.93, AGFI=0.90, CFI=0.95 and IFI=0.91. Cronbach Alpha internal consistency coefficient was found as .91. Cronbach Alpha internal consistency coefficient of the scale within the scope of the present study was found as .86.

Scale of Perceived Social Support

Multidimensional Scale of Perceived Social Support (MSPSS) was developed by Zimmet et al. (1988) and adapted into Turkish by Eker, Arkar and Yaldız (2001). The scale, which is 7-Likert type, consists of three sub-dimensions as social support from family, social support from friends and social support from significant other and 12 items. It was found that the scale had three factors and explained 75% of the total variance. Reliability analysis conducted showed Cronbach Alpha value to be .89. Internal consistency coefficient of the scale was found as .84 within the scope of this study.

Resilience Scale

Brief Resilience Scale (BRS) was developed by Smith et al. (2008) and adapted into Turkish by Doğan (2015). The 5-likert type scale consists of 6 items and one dimension. As a result of exploratory factor analysis (EFA), Kaiser-Meyer-Olkin (KMO) coefficient of the scale was found as .85, while Barlett Test χ^2 value was found as 594.955 (p<0.000). It was found that the scale showed a single factor structure explaining 54% of the total variance. Fit indices obtained as a result of exploratory factor analysis were found as χ^2/sd (12.86/7) = 1.83; NFI = 0.99; NNFI = 0.99; CFI = 0.99; IFI = 0.99; RFI =0.97; GFI = 0.99; AGFI = 0.96; RMSEA = 0.05; SRMR = 0.03. Internal consistency coefficient of the scale was found as .83. Internal consistency coefficient of the scale was found as .81 within the scope of this study.

Depression, anxiety and stress scale

The scale developed by Lovibond and Lovibond (1995) was adapted into Turkish by Yıldırım, Boysan and Kefeli (2018). As a result of the exploratory factor analysis, a structure with 21 items and 3 dimensions explaining 52.76% of the total variance was obtained. Confirmatory factor analysis shows that the scale has a good fit (χ^2=379.787, sd=186, RMSEA=0.058, SRMR=0.044, CFI=0.93 and TLI=0.92). Cronbach Alpha internal consistency coefficient of the scale was found as .89 for depression, as .87 for anxiety and as .90 for stress. As a result of the reliability analysis conducted within the scope of this study, internal consistency coefficient of the scale was found as .93

Data Collection

The data were applied face-to-face after the required permissions were taken. The study was conducted in accordance with ethical rules. The participants were told that the participation was on a voluntary basis; the data obtained would be kept confidential and used only for scientific purposes. They were also told that they could leave the study at any point when they liked. Ethics committee approval was obtained for the research (Istanbul Sabahattin Zaim University Ethics Committee Approval: Date: 19.02.2019, Number: 2019/2).

Data Analysis

Before starting the analysis in the study, normality distribution of the data was tested. It was found that the data were normally distributed and Kurtosis and Skewness values were found to differ between 1.129 and .063. Structural equation Modelling was used in data analysis. For this purpose, SPSS 25 and AMOS 25 programs were used in data analysis.

FINDINGS

First of all, the correlations between variables were checked first, and then the results of the proposed model were given.

Table 1. The correlation between internet addiction, depression, anxiety, resilience and social support

|	X̄/Sd	K/S	IA	Dep	Anx	Str	R	SS
IA	27.84/8.10	.194/-.574	1	.420**	.424**	.385**	-.346**	-.234**
Dep	7.43/4.97	.558/-.245		1	.661**	.728**	-.489**	-.316**
Anx	5.26/4.37	1.143/1.079			1	.761**	-.418**	-.164**
Str	8.19/4.79	.380/-.221				1	-.451**	-.163**
R	19.42/4.43	-.340/.450					1	.227**
SS	64.47/13.38	-560/-.074						1

p<..01

IA: Internet addiction; **Dep:** Depression; **Anx:** Anxiety; **Str:** Stress; **R:** Resilience; **SS:** Social support; X̄: Mean, **Ss**: Standard Deviation, **K**: Kurtosis, **S**: Skewness

According to Table 1, there is a positive correlation between internet addiction and depression, anxiety and stress, while there is a negative correlation between internet addiction and resilience and social support.

Results of the current model

Regression arrows between anxiety and social support and resilience, stress and internet addiction and social support in the proposed model were removed from the model since the regression coefficients were not significant. Figure 2 shows the correlation (multidirectional arrows) and regression (unidirectional arrows) coefficients.
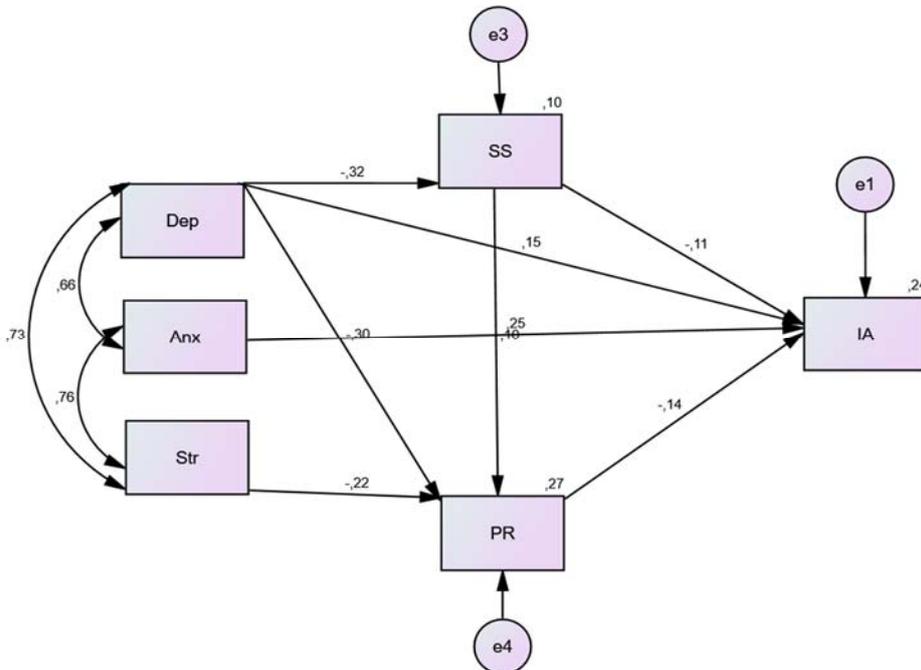
Dep: Depression; **Anx:** Anxiety; **Str:** Stress; **SS:** Social Support; **PR:** Resilience; **IA:** Internet Addiction

Figure 2. Current model

For the proposed model to be accepted as valid, chi-square value, fit indices, regression, correlation coefficients and variance values should be significant. On the other hand, insignificant parameters should

be removed from the model (Şimşek, 2007). In this direction, insignificant parameters were removed from the proposed model and a valid model was obtained.

It can be seen that the structural equation model (SEM) of the valid model shows a perfect fit. Chi-square values of the valid model (χ^2=5.457; *df=4, p=.244 χ^2/sd=* 1.364) and fit indices (RMSEA=.032; GFI=.995; AGFI=.973; CFI=.998; SRMR=.0197) show that the model is valid.

According to Figure 2, there is a moderate positive correlation between depression and anxiety (r=.66; p<.05), a high positive correlation between depression and stress (r=.73; p<.05) and a high positive correlation between anxiety and stress (r=.76; p<.05).

Regression coefficients of the model were found to be significant. Depression significantly predicts social support (R^2= -.32; p<.000), resilience (R^2= -.30; p<.000) and internet addiction (R^2=.15; p<.01). Anxiety significantly predicts internet addiction (R^2=.25; p<.000). Stress significantly predicts resilience (R^2= -.22; p<.01). Social support significantly predicts internet addiction (R^2= -.10; p<.05) and resilience (R^2=.10; p<.05). Resilience significantly predicts internet addiction (R^2= -.14; p<.01).

Variance values of the valid model were examined and it was found that the variance explained by dependent and mediator variables was significant. It can be seen that depression explains 10% of the change in social support; depression, stress and social support explain 27% of the change in resilience and depression, anxiety, social support and resilience explain 24% of the change in internet addiction.

DISCUSSION AND CONCLUSION

The purpose of this study is to explain the pattern of correlations between internet addiction and depression, anxiety, stress, social support and resilience. As a result of the analyses conducted, the presence of explanatory correlations between variables was confirmed. According to the model, depression has a direct influence on social support, resilience and internet addiction; anxiety has a direct influence on internet addiction; stress has a direct influence on social support and resilience and social support and resilience have a direct influence on internet addiction. In addition, social support also has a direct influence on resilience.

In the study, it was found that depression and anxiety positively significantly predicted internet addiction. When literature is reviewed, similar results can be found. In a study by Ostovar et al. (2016), depression, stress and anxiety were found to predict internet addiction significantly. Younes et al. (2016) found strong correlation between internet addiction and anxiety, depression and stress. Similarly, Nassehi, Arbabisarjou, Jafari, Ghasemi and Najafi (2016) found positive significant correlation between internet addiction and depression, stress and anxiety. According to the results of the study, it can be said that psychological problems individuals experience are effective in emergence of internet addiction. It can be said that in order to decrease or prevent internet addiction, first of all individuals' psychological problems such as depression and anxiety should be researched.

In the present study, resilience was found to predict internet addiction negatively significantly. Similar results were found in literature Robertson, Yan and Rapoza (2018) found that resilience predicted internet addiction negatively significantly. Zhou, Zhang, Liu and Wang (2017) found negative correlation between internet addiction and resilience. In a study conducted on secondary school students by Nam et al. (2018), negative correlation was found between internet addiction and resilience. This result can be interpreted as having low coping and adapting skills can be effective in developing internet addiction and thus in order to prevent the development of internet addiction, individuals' resilience levels should be increased.

In the study, it was found that social support predicted internet addiction negatively significantly. This result is in parallel with the results of studies in literature (Ceyhan, Ceyhan and Kurtyılmaz, 2012; Naseri, Mohamadi, Sayehmiri and Azizpoor, 2015; Taş and Öztosun, 2018; Tsai et al., 2009). Insufficient social and psychological approval and social support individuals receive can be directing these individuals to meet these needs from different sources, which can prepare a basis for the development of internet

addiction. Based on the results, it can be said that social and psychological support provided to individuals can decrease their internet addiction levels.

In the study, it was found that social support predicted resilience positively significantly. This result is in parallel with the results in literature (Terzi, 2016; Li, Theng and Foo, 2015). Thus, it can be said that social support provided to individuals will increase their resilience.

Finally, a negative significant correlation can be seen between depression and social support and resilience and stress and resilience in the study. This result is in parallel with the studies in literature (Li, Theng and Foo, 2015; Lu, Yuan, Lin, Zhou and Pan, 2017). It can be said that due to negative correlation between psychological problems and individuals' resilience and social support levels, increasing individuals' resilience and social support levels will decrease their anxiety and depression.

As a conclusion, it can be said that the model proposed has been confirmed. When the correlation between internet addiction and depression, anxiety, resilience and social support is taken into consideration, depression and anxiety in individuals can be effective in developing internet addiction. When the negative correlation between social support and resilience is taken into consideration, it can be said that increased social support can prevent internet addiction and also increase individuals' resilience. Increased resilience will be effective in decreasing internet addiction.

Suggestions

- This study has some limitations. The results obtained are limited to the sample group. The associations found between the variables discussed in this study can be tested with both the same sample and different samples.
- Clinicians working on internet addiction can include psycho-education programs to decrease individuals' depression and anxiety levels and to increase their resilience and social support levels.

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