Mediating Role of Emotion Regulation Difficulties in the Relationship Between Social Anxiety and Problematic Internet Use[*]

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This study aimed to examine whether there is a mediating role of emotion regulation difficulties in the relationship between social anxiety and problematic Internet use (PIU). The sample consisted of 297 participants (147 [49%] males; aged from 18 to 24 years), who were university students studying sport sciences in four universities in Turkey. Data were obtained using the Liebowitz Social Anxiety Scale, Internet Addiction Scale, and Scale of Difficulties in Emotional Regulation. Structural Equation Modeling (SEM) was used to analyze the data. According to the results obtained, emotion regulation difficulty has a full mediating role in the relationship between social anxiety and PIU. As a result, social anxiety affects emotion regulation difficulties and this effect could increase PIU.

Key words: emotion regulation, PIU, social anxiety, sport

Highlights:

- Social anxiety is positively associated with PIU and difficulties in emotion regulation.
- Emotion regulation difficulties is positively associated with PIU.
- Emotion regulation difficulties mediates the relationship between social anxiety and PIU.

Social anxiety disorder (SAD) is a mental disorder characterized manily by an excessive fear or anxiety in different social situations (American Psychiatric Association [APA], 2013). These individuals have the fear of doing something embarrassing in the community, thoughts that they will be humiliated due to their inadequate behaviors, worries that they will become ridiculous, or that they will experience symptoms such as flushing, sweating, tremor, or difficulties with speaking. Due to SAD, the individual remains silent in social environments, draws him/herself, and/or even avoids social environments completely (Bandelow & Michaelis, 2015; Deniz, 2014; Masia-Warner, Fisher, Shrout, Rathor, & Klein, 2007). It was determined that this disorder frequently coincides with other psychiatric disorders, especially depression and substance use (e.g., Filho et al., 2010). For example, Carrigan & Randall (2003) stated that people with SAD use alcohol to reduce their social fear. These people could use the Internet excessively for the same purpose (Shepherd & Edelmann, 2005). The Internet provides more convenience for social communication to individuals who have difficulties communicating face-to-face or who are shy, thus the Internet serves to regulate social fears and reduce stress. However, in the long term, this comfortable aspect of the Internet possibly leads to excessive use and negative consequences (Caplan, 2002, 2003). For example, a study by Ko, Yen, Chen, Yeh, & Yen (2009) found that social anxiety predicted problematic Internet use (PIU).

There are some criteria for PIU. These are; excessive use of the Internet, some gains from the use of the Internet, and negative consequences for the individual's life (Ceyhan, Ceyhan, & Gürcan, 2007; Davis, 2001; Young, 1996). Excessive use can often be determined by hours spent online with a waste of time. Spending time online is an indication of excessive Internet use, but it is not enough to explain PIU alone. PIU also requires some positive gains and negative results regarding Internet use (Davis, 2001; Young, 1996). Positive gains include some benefits, such as avoiding problems or regulating mood. These benefits from the Internet become problems only when people earn from the Internet rather than earning them in real life relationships. It has been shown that most Internet addicts use the Internet as the main means of avoiding problems, relieving stress, feeling social support, and having a sense of belonging (Chou, 2011).

When looking at the negative results of PIU, it was that it causes mental and physical health problems and negatively affects social relationships (e.g., Taş, 2018; Weinstein & Lejoyeux, 2010; Yellowlees & Marks, 2007). People with PIU display challenging behaviors, low self-esteem and anxiety when Internet access is limited or they have no access to Internet (Ahmed & Santos, 2019). In addition, PIU causes difficulties in sleeping patterns, academic performance, work life, physical activities, muscle and skeletal system, and it is associated with other psychiatric disoders such as depression and anxiety (e.g., Dong, Lu, Zhou, & Zhao, 2011; Elhai, Dvorak, Levine, & Hall, 2017; Fayazi & Hasani, 2017; Ha et al., 2007; Selfhout, Branje, Delsing, ter Bogt, & Meeus, 2009;

Young, 2004; Kubey, Lavin & Barrows, 2001; Döner, 2018). Several studies revealed that emotion regulation difficulties are aslo related to PIU (e.g., Akın, 2014; Budak, 2017; Ercengiz & Şar, 2017; Yu, Kim, & Hay, 2013).

Emotion regulation is the process of monitoring, evaluating, and changing the emotional responses of the person while achieving the goals set (Gross, 2002; Koole, 2009; Thompson, 1994). In other words, it is an ability of individuals to block their impulsive behaviors in socially acceptable ways in order to achieve their goals, along with recognizing, understanding, controlling, and adjusting their emotions (Gratz & Roemer, 2004). In this sense, the relative absence of any or all of these abilities indicates the presence of emotion regulation difficulties (Gratz & Roemer, 2004). Incompatible emotion regulation abilities play an important role in the development and maintenance of psychopathology, including addictive behaviors (e.g., Taylor, Bagby, & Parker, 1997). Individuals who have difficulties in emotion regulation are more likely to engage in addictive behaviors in an effort to escape from negative moods or get rid of emotional distress (e.g., Schreiber, Grant & Odlaug, 2012). Due to the difficulty of controlling and regulating negative emotions, people turn to addictive behaviors in order to be able to self-regulate emotionally or to help reduce the intensity of their emotions (McDougall, 2001).

There are studies supporting the onset of addictive behaviors due to poor emotional regulation (e.g., Wills, Pokhrel, Morehouse, & Fenster, 2001). Young (1996) suggests that people who use the Internet intensively use it to increase their positive affect and reduce their unpleasant emotions (Young & Rogers, 1998). The *compensatory Internet use* model supports this view by claiming that negative life situations can cause the Internet to alleviate negative emotions and that individuals use the Internet to facilitate their negative life situations (Kardefelt-Winther, 2013). Yu, Kim, and Hay (2013) found a significant correlation between emotion regulation difficulties and PIU in a study with high school students in Seoul, Korea.

It has been found that individuals with SAD have higher levels of emotion regulation difficulties (Helbig-Land, Rusch, & Lincoln, 2015) and there is a positive and significant relationship between emotion regulation and social anxiety symptoms (Besharat & Masoudi, 2014; Dixon et al., 2020; Sackl-Pammer et al., 2019). In other words, there is emotion dysregulation in SAD (Jazaieri, Morrison, Goldin, & Gross, 2015; Abasi, Dolatshahi, Farazmand, Pourshahbaz, & Tamanaeefar, 2018; Juretic, 2018). Emotion dysregulation adds significant predictive value to social anxiety (Dua, 2019). It has been observed that individuals with high SAD symptoms experience difficulties in organizing emotions, accepting emotions, choosing appropriate strategies to regulate emotions, and controlling their emotional impulses (Eldoğan, 2012), making a lot of effort to manage their emotions during social interactions (Farmer & Kashdan, 2012). Due to the possible involvement of emotion regulation difficulties in PIU and social anxiety, the aim of this sudy was to evaluate whether emotion regulation difficulties had an intermediary role in the relationship between symptomts of SAD and PIU.

Method

Participants and Procedure

The sample consisted of sport science students from four universities in Turkey, namely the Ahi Evran University, Kocaeli University, Nişantaşı University, and Sakarya University of Applied Sciences (i.e., convenient sampling). Students were invited to participate in the study during their courses and the participation was on a voluntary basis. During the collection of data, students were asked to give informed consent. Data were collected via online surveying. A total of 297 students (147 [49.5%] males) aged 18–36 years (*Mean* = 20.88; *SD* = 1.82) responded.

Instruments

Chinese Internet Addiction Scale (CIAS). The CIAS was developed by Chen, Weng, Su, Wu, & Yang (2003) to measure PIU with 26 items on a four-Likert-type format (1-does not fit me at all, 4-fits me completely). The CIAS has five sub-scales (i.e., compulsive use, withdrawal, tolerance, time management problems, interpersonal, and health problems). The total score is a sum of all answered items and it ranges between 26–104. The higher the score, the more likely that PIU is present. The CIAS was adapted into Turkish by Ceyhan, Boysan, & Kadak (2018) and its Cronbach's α of the total CIAS and its five sub-scales ranged between .76 and .94, while its test-retest reliability between .96 and .98. As a result of the analyzes carried out within the scope of this study, it was found that the Cronbach alpha internal consistency coefficient of the CIAS sub-scales ranged between .77 and .88, while the coefficient was .94 for the total.

Liebowitz Social Anxiety Scale (LSAS). The LSAS was developed by Liebowitz, Gorman, Fyer, & Klein (1987) to evaluate the severity of social anxiety and avoidance in relation to social situations. The LSAS has two sub-scales, fear or anxiety and avoidance, consisting in total of 24 items. The total score is a sum of all answered items and it ranges 48-192. A higher score indicates that the level of social anxiety and avoidance behavior are higher. The LSAS was adapted into Turkish by Soykan, Özgüven, and Gençöz (2003), and similar psychometric properties were found as for the original (Heimberg et al., 1999). In this study, Cronbach's alpha coefficient of the sub-scales of LSAS is .94 and .95, with .96 for the total.

Difficulties in Emotional Regulation Scale (DERS). Gratz and Roemer (2004) developed the DERS in order to assess emotional (dys) regulation. It has 36 items with a five-point response format. The instrument has six sub-scales (i.e., awareness, clarity, nonacceptance, strategies, impulse, goals). The high scores obtained from the scale indicate the difficulty of emotion regulation. The adaptation study to Turkish was done by Rugancı and Gençöz (2010). Cronbach's α was found to be .94, its sub-scales ranged between .75 and .90, while its test-retest reliability was .83. As a result of the analysis carried out in this study, it was found that the sub-scales of the DERS Cronbach's alpha coefficient ranged between .72 and .87, with .94 for the total.

Statistical Analysis

Descriptive statistics and correlation analysis were performed first. Afterwards, structural equation modeling (SEM) was conducted. SEM is a multivariate statistical method based on the definition of observable and unobservable variables in a causal and relational model based on a specific theory (Byrne, 2010). In this study, SEM was conducted in two stages according to the recommendations of Kline (2015) and Anderson and Gerbing (1988). The confirmatory measurement model was first tested, followed by testing the hypothetical structural model. The relationships between observed variables and the structure or structures

that were assumed to be measured by these observed variables were tested in the measurement model (Wetson & Gore, 2006). In the second stage of SEM, the structural model formed in line with theoretical inferences was tested. In the structural model, paths established from latent variables to observed variables imply a causal relationship between the two variables and the significance of the paths and the goodness of fit of the model are examined (Schumacher & Lomax, 2004). In this study, goodness of fit values, χ^2/df, Comperative Fit Index (CFI), Normed Fit Index (NFI), Goodness of Fit Index (GFI), Tucker-Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR) were used. Acceptable goodness of fit indices of the values in question were ≤ 5 for χ^2/df; $\geq .90$ for CFI, NFI, TLI, and IFI, $\geq .85$ for GFI and $\leq .08$ for RMSEA and SRMR (Hu & Bentler, 1999; Marcoulides & Schumacher, 2001; Schermelleh-Engel & Moosbrugger, 2003; Schumacher & Lomax, 2004).

The method of Baron and Kenny (1986) has been taken as a basis for testing both hypotheses and determining whether emotion regulation difficulties has a mediating role. According to Baron and Kenny (1986), some conditions must be met in order to determine the mediation effect. First, social anxiety must predict PIU. The second condition should be the impact of social anxiety on difficulties in emotion regulation. Another condition was that the difficulty of emotion regulation should predict PIU. Finally, when the difficulties in emotion regulation score was included in the equation, it was considered to be a complete mediation state if the relationship between social anxiety and PIU is not statistically significant. Bootstrapping was also performed to provide additional evidence of whether mediation is meaningful. In the analysis, 5000 simulated samples were created through bootstrapping. In the boostrapping based test of mediation, the null hypothesis (that there is no mediation) can be rejected when the 95% confidence interval obtained as a result of the analysis does not include zero (Preacher & Hayes, 2008). For the data analysis, SPSS 21 and Amos 22.00 statistical packages were used.

Results

Descriptive Statistics and Correlation

Before the descriptive statistics were calculated, whether the data obtained from the scales was normally distributed was examined by calculating skewness and kurtosis. The values obtained show that there is no significant deviation of the scale scores from the normal distribution (George & Mallery, 2010; Finney and DiStefano, 2006; Huck, 2012; Kim, 2013). Correlation between scale scores with descriptive statistics are shown in Table 1.

Table 1
Descriptive Statistics and Correlations between scale scores

	Correlation			Descriptive Statistics		
	1	2	3	*Mean (SD)*	*Skewness*	*Kurtosis*
1. LSAS	-			111.21 (28.60)	-.16	-.42
2. CIAS	.34**	-		57.82 (16.84)	-.05	-.79
3. DERS	.39**	.57**	-	100.14 (20.29)	-.30	.55

Note. **$p < .01$.

There was a positive and significant correlation between all three scores.

Structural Equation Modeling

Measurement Model. The measurement model expressed the relevant indicators of latent variables or their relationship with the measured variables. Following the recommendations of Anderson & Gerbing (1988) the measurement model was tested before testing the structural model three latent variables were used in the structural equation model testing: social anxiety (measured by the LSAS), PIU (measured by the CIAS) and emotion regulation difficulties (measured by the DERS). The latent variable is defined as the variable that affects more than one observed variable and tries to explain the relationship between these variables, while the observed variables represent the scores obtained from the sub-scales of the scales. (Byrne, 2001; Brown, 2006). The variables of fear or anxiety and avoidance, which are the sub-scales of LSAS, constitute the social anxiety latent variable. Compulsive use, withdrawal, tolerance, time management problems, interpersonal, and health problems, which are the sub-scales of CIAS, create the PIU latent variable. The variables of clarity, non acceptance, strategies, impulse and goals, which are the sub-scales of the DERS, constitute the emotion regulation difficulties latent variable. The awareness sub-scale of emotion regulation difficulties scale was excluded from the analysis due to its non-significance. It was determined that all the path coefficients were significant and factor loadings ranged between .58 and .90. The measurement model appeared to fit the data well; ($\chi^2(50) = 130.41$, $\chi^2/df = 2.60$, $p < .05$; GFI = .93; CFI = .96; NFI = .94; TLI = .95; SRMR = .048; RMSEA = .074, 90 % CI for RMSEA = .058–.089).

Structural Model. In order to test the postulated network of relationships between social anxiety, PIU and emotion regulation difficulties, it was tested whether social anxiety has a significant effect on PIU. Fit index values of this model were: $\chi^2(12) = 26.41$, $\chi^2/df = 2.20$, $p < .05$; GFI = .97; CFI = .98; NFI = .98; TLI = .98; SRMR = .019; RMSEA = .064, 90 % CI for RMSEA = .030–.097. The results supported the path postulating a positive effect of social anxiety on PIU ($\beta = .40$; $p < .05$).

In the other model postulated thatsocial anxiety has a significant effect on emotion regulation difficulties, emotion regulation difficulties affect PIU positively, and that there is a mediating effect of emotion regulation difficulties on the relation between social anxiety and PIU. In order to test these hypotheses, a separate model has been established in which emotional regulation difficulties is a mediator variable. The results supported the hypothesis postulated by the model that social anxiety positively affected emotion regulation difficulties ($\beta = .53$; $p < .05$) and emotion regulation difficulties in PIU ($\beta = .66$; $p < .05$). However, the inclusion of the emotional regulation difficulties, which was an intermediate variable, was found to be meaningless as the path coefficient from the social anxiety variable to PIU ($\beta = .09$; $p > .05$). Considering the goodness-of-fit indices of the model, in which the emotional regulation difficulties is the full mediation, all values were found to be acceptable ($\chi^2(51) = 132.36$, $\chi^2/sd = 2.59$, $p < .05$; GFI = .92; CFI = .96; NFI = .94; TLI = .95; SRMR = .049; RMSEA = .073, 90 % CI for RMSEA = .058–.089).

In Figure 1, the structural model, in which emotional regulation difficulties is the full mediation between social anxiety and PIU, is presented.
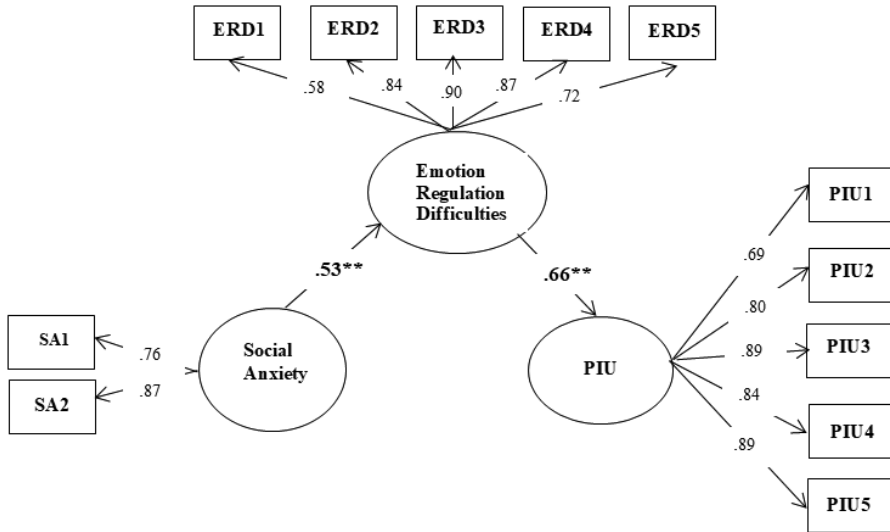

Figure 1. Fully Mediated Model.

Note. *p < .01; Social Anxiety PIU non-significant; SA1 = fear or anxiety; SA2 = avoidance; ERD1 = clarity; EDR2 = nonacceptance; ERD3 = strategies; ERD4 = impulse; ERD5 = goals; PIU1 = compulsive use; PIU2 = withdrawal; PIU3 = tolerance; PIU4 = time management problems; PIU5 = interpersonal, and health problems.

Bootstrapping Process. The indirect effect was found to be significant according to the bootstrapping procedure performed in order to provide additional evidence whether the indirect effect of social anxiety predicting PIU through emotional regulation difficulties was significant ($\beta = 0.35$, 95%CI = .24–.44). Boostrapping lower, and upper confidence interval values obtained by percentage method do not include zero. According to all these results obtained, it can be said that the emotional regulation difficulties in the relationship between social anxiety and PIU was a full mediation.

Discussion

In this study, emotion regulation difficulties were found to fullly mediate the relationship between levels of social anxiety and PIU. The results supported the hypothesis that social anxiety affects PIU positively. This result is similar to previously reported results of earlier studies. For example, Zorbaz and Dost (2014) showed that social anxiety has an important effect on PIU in their studies on high school students. Similar findings were obtained and a correlation between social anxiety and Internet use was shown in a study by Yen et al. (2012)

investigating social anxiety in online and real-life communications. Farahani et al. (2018) found that levels of anxiety increase PIU more then two times. There are many studies that suggest a positive relationship between PIU and social anxiety (Bernal-Ruiz, Rosa-Alcázar, González-Calatayud, & Rosa-Alcázar, 2017; Cerniglia et al., 2017; Farahani et al., 2018; Kim et al., 2016; Marino, Gini, Vieno, & Spada, 2018; Restrepo et al., 2019; Seyrek, Cop, Sinir, Ugurlu, & Şenel, 2017; Younes et al., 2016). In many other studies, it was found that the social anxiety of those with high PIU was high (Caplan, 2006; Canoğulları & Güçray, 2014; Çuhadar, 2012; Karaca et al., 2016; Ko et al., 2014; Weidman et al., 2012). These people prefer virtual environments more than real environments to socialize (Çimen, 2018; Okur & Özkul, 2015). Research has shown that individuals with social anxiety use the Internet more for non-social interaction (McKenna & Bargh, 2000; Papacharissi & Rubin, 2000; Peter, Valkenburg, & Schouten, 2006). These individuals use the Internet as a way of dealing with social fears (Shepherd & Edelmann, 2005) and meeting social needs (Mckenna & Bargh, 2000). In other words, these individuals perceive the Internet as a "safe" environment for building social relationships (Mckenna & Bargh, 2000).

Another result obtained from our study was that social anxiety positively affects emotion regulation difficulties. Tull, Stipelman, Salters-Pedneault, and Gratz (2009) and Salovey, Stroud, Woolery, & Epel (2002) stated that there was a relationship between anxiety and emotion regulation difficulties, what was found in our study too. Anxiety and avoidance behaviors are higher in those who have difficulty regulating emotions (Aydın, 2018). Individuals use avoidance as an emotion regulation strategy by causing their anxiety to intensify and not be controlled (Mineka & Zinbarg, 2006). Emotion regulation difficulties cause difficulties in maintaining existing relationships and communicating with new people (Gross & Munoz 1995). Emotional suppression reduces cognitive performance and restricts communication with other people (Gross & Levenson, 1997).

In addition, emotion regulation difficulties predected PIU positively. Although PIU can relax the person in the short term and help regulate the emotional state, it has negative effects on the person in long terms (Akın, 2014). Öztabak (2018) concluded that adolescents with PIU experienced many different emotions during Internet use and had difficulties in expressing these emotions as a result of the content analysis carried out within the scope of the study in which the adolescents with PIU were examined and their opinions and opinions about Internet use were examined. Yu, Kim, and Hay (2013) revealed in their study with high school students that there was a significant relationship between emotion regulation difficulties and PIU. In her research, Akın (2014) conducted studies with university students and stated that emotion regulation difficulty is the predictor of PIU. In Budak's (2017) study with adults, a positive significant relationship was found between PIU and emotion regulation difficulties.

The final finding from our study was that emotion regulation difficulties mediate the relationship between social anxiety and PIU. Individuals with SAD have more difficulties in emotion regulation (Eldoğan, 2017). It has been determined that these individuals have difficulty in expressing their

feelings, do not concentrate on their feelings and cannot define their feelings (Cisler, Olatunji, Feldner, & Forsyth, 2010; Dalrymple & Herbert, 2007; Turk, Heimberg, Luterek, Mennin, & Fresco, 2005). Individuals who have difficulties in emotion regulation can turn to behavioral addictions in order to get away from their negative situation (Schreiber et al., 2012). People can use the Internet to reduce their negative emotions or increase their positive emotions (Young & Rogers, 1998). In line with these results, we showed that individuals with higher social anxiety have difficulties in organizing emotions and turn to PIU in order to avoid emotional distress.

The study has some limitations. First, only students studying sport sciences were selected and in terms of generalizability of the findings, it is necessary to repeat the study on samples of students studying other sciences and with professional groups other than students. Second, it was not considered whether individuals included in the sample had any psychological problems.

Conclusions

Emotion regulation difficulties fullly mediated the relationship between levels of social anxiety and PIU among individuals studying at the sports sciences faculty. In other words, social anxiety predicts PIU both directly and through emotion regulation difficulties. It has been shown that social anxiety is a variable that can help to reduce the emotion regulation difficulties and PIU levels of sports science students. In this sense, psychological support on social anxiety can have a preventive effect on the development and progression of emotion regulation difficulties and PIU.

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Poteškoće u regulaciji emocija kao medijator odnosa između socijalne anksioznosti i problematične upotrebe Interneta

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Cilj ove studije je bio da ispita da li su poteškoće u regulaciji emocija medijator odnosa između socijalne anksioznosti i problematične upotrebe interneta (PUI). Uzorak je činilo 297 učesnika – studenata sporta sa četiri univerziteta u Turskoj (147 [49%] muškaraca; uzrasta od 18 do 24 godine). Za prikupljanje podataka je korišćena Libovic skala socijalne anksioznosti (eng. Liebowitz Social Anxiety Scale), Skala zavisnosti od interneta (eng. Internet Addiction Scale) i Skala poteškoća u regulaciji emocija (eng. Scale of Difficulties in Emotional Regulation). Za analizu podataka korišćeno je strukturalno modelovanje (SEM). Rezultati ukazuju da poteškoće u regulaciji emocija imaju ulogu potpunog medijatora u odnosu između socijalne anksioznosti i PUI. Naime, socijalna anksioznost ostvaruje efekat na teškoće emocionalne regulacije, koje sa svoje strane mogu da pojačaju PUI.

Ključne reči: regulacija emocija, PUI, socijalna anksioznost, sport