



Effects of Psychoeducational Program for Reducing Psychological Symptoms on Internet Addiction among Adolescents *

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Abstract

This study aims to examine the effects of the psychoeducational program prepared by the researcher for reducing psychological symptoms on Internet addiction among adolescents. The research was conducted with 509 ninth-, tenth- and eleventh-grade students attending an Anatolian High School in Üsküdar district of İstanbul province in the academic year of 2014-2015. The Internet Addiction Scale (IAS) and Brief Symptom Inventory (BSI) were used to choose the study group. Lots were drawn among 33 students who scored above the average in both scales to form the 24-participant research group. The participants were randomly assigned to the research groups (experimental, n= 12; control, n= 12). While the psychoeducational program prepared by the researcher was performed to the experimental group, no program was applied the control group. 2x3 (experimental/control groups X pretest/posttest/follow-up test) split plot design was used in the study. Two-factor variance analysis technique was utilized for repeated measures on one factor to determine whether there was a difference between measures and groups in the data analysis. Bonferroni post-hoc test was used to find the source of intergroup difference. According to the research findings, it was seen that effect of intervention x time was significant for all dependent variables of psychological symptoms and Internet addiction ($p < .05$). Results of Bonferroni post-hoc test and variance analysis showed that the psychoeducational program was effective in reducing psychological symptoms and Internet addiction, and this effect was retentive at the end of 45-day follow-up. The findings were discussed in line with the literature, and recommendations were made for future research.

Keywords

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Psychological symptoms
Psychoeducational program
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Introduction

As a must for humankind, Internet has been increasingly securing its position day by day. Internet has been somewhat encircling humankind's life by making its presence felt in more areas (communication, social activity, entertainment, professional jobs, etc.) through opportunities that it offers.

Humans can be online almost everywhere via easily portable tablets and phones. While spending half of their time offline, they spend the other half online (Yao & Zhong, 2014). There are certain elements that attract people toward the online world. Internet is an attraction for young people with its safe and free environment where there are no boundaries and hierarchies (Güzel, 2006). Individual can sustain his/her existence freely, without the need for showing his/her identity and without the fear of being rejected, facing himself/herself or others and being judged in the online world (Young, 1997). Internet has become a crucial academic and entertaining tool among adolescents and adults with its convenience of accessing information and advantages in communication (Ko, Yen, Yen, Chen, & Chen, 2012). Also being an advanced social and communicational tool (Yellowlees & Marks, 2007) makes it more irreplaceable for adolescents. Furthermore, less restricting nature of online world as well as being confidential and providing a good environment for coping with shyness make online world attractive (Griffiths, 2001).

It is observed that Internet which found itself in the psychological literature for its impacts on individual (Durak Batgün & Kılıç, 2011) may lead to psychological problems and (Beranuy, Oberst, Carbonell, & Chamarro, 2009) and cause dysfunction in working and academic lives (Karaca, 2007) when misused. Internet's ability to be moved everywhere via mobile devices makes Internet addiction a potential threat especially among adolescents (Kuss, Rooij, Shorter, Griffiths, & Mheen, 2013). Addressed in a broad range from obsessive online gambling, cybersex addiction, cyber-relationship addiction, infoxication, obsessive online compulsive trading and online shopping addiction (Craparo, 2011), even though Internet addiction is regarded as a serious health problem around the world (Yao & Zhong, 2014) and there is agreement on the fact that there is a phenomenon as Internet addiction (Chou, Condrón, & Belland, 2005), there are no diagnostic process or standard criteria to clearly define Internet addiction (Tao et al., 2009). This makes it difficult for the studies determining the prevalence of Internet addiction and identifying its relationship with other variables (Shaw & Black, 2008). Internet addiction is not included in DSM V. However, the fact that Internet gaming addiction was included in the Section III of the Diagnostic and Statistical Manual of Mental Disorders (DSM V; American Psychiatric Association, 2013), that is, it will be accepted as diagnostics following the sufficient research (Griffiths, Kuss, & Pontes, 2016) might contribute to the elimination of diagnostic ambiguity of Internet addiction.

Internet addiction is increasing especially among youngsters (Johansson & Götestam, 2004). Kuss et al. (2013) determined that almost all the adolescents in the study (99.8%) enter Internet at home or school and 3.7% of them are Internet addicts. It has been found in previous studies that low emotional assertiveness predicts Internet addiction (Kuss et al., 2013) and Internet addiction is positively correlated to aggression (Ko, Yen, Liu, Huang, & Yen, 2009), depression and suicidal thoughts (Kim et al., 2006), neurosis, psychosis and lying scores, hyperactivity and emotional problems (Cao & Su, 2006), anger and hostility (Ko, Yen, Chen, Yeh, & Yen, 2009), depression (Luciana, 2010), smoking (Doğan, 2013; Tanrıverdi, 2012), Internet usage duration (Günüç, 2009; Özçınar, 2011), loneliness (Esen, 2010), computer gaming addiction and shyness (Ayas, 2012), identity experiments (pretending to be someone else) (Balkaya Çetin & Ceyhan, 2014), obsessive attachment, dismissive attachment, fearful attachment, and negative affection (Savcı & Aysan, 2016) and negatively correlated to time management (Cao & Su, 2006), ego development and self-development clarity (İsraellashvili, Kim, & Bukobza, 2012), harsh parental attitude (Leung & Lee, 2012), academic achievement (Esen, 2010), self-esteem, social self-esteem, and home-family self-esteem (Aydın & Sarı, 2011), and secure attachment and positive affection (Savcı & Aysan, 2016). It is seen in gender-associated studies that Internet addiction differs by gender and observed more frequently among males (Doğan, 2013; Esen, 2010; Günüç, 2009; Ko et al., 2009). In some studies (İsraellashvili et al., 2012; Kim et al., 2006), no relationship was found between Internet connection and gender.

Possibility of technology misuse causing psychological problems indicates the relationship between psychological symptoms and Internet addiction. There has been an increase in studies dealing with the relationship between internet addiction and psychological symptoms in recent years. However, it can be said that related studies fall insufficient when considering the relationship between the concepts and the importance of these concepts.

In a research conducted on the causes of disease burden in our country (Ministry of Health, 2011) it is seen that psychiatric disorders follow cardiovascular disorders in the second place at 19%. This is a higher rate than what the society cares about. It is stated in the study that 18% of the population in Turkey go through a mental disorder in their lives and rate of clinical problematic behavior among adolescents is 11%. Given the developmental attributes of adolescence, it can be said that adolescents are a very risky group in terms of psychological symptoms. In the literature, somatization which is a psychological symptom is observed during adolescence and obsessive-compulsive disorder during late adolescence in general (Butcher, Mineka, & Hooley, 2013), and paranoid thoughts begin during adolescence and early adulthood paranoid (Tatlıdil & Turan, 2007 as cited in Yılmaz, 2010, p. 30).

Considering the studies on psychological symptoms among adolescents, total score and subdimensions of psychological symptoms are positively correlated to living in an orphanage (Çetin, 2004), being gifted (Coşar Ciğerci, 2006), risk-taking behaviors (Eryılmaz Gülcez, 2007), alexithymia (Atasayar, 2011), avoidant, anxious and obsessive attachment (Özer, 2011), Internet addiction (Ko et al., 2014; Tang et al., 2014), harm avoidance's temperament dimension (Karakaş, 2009), moral judgment skill (Özkara, 2010), academic procrastination (Yıldırım, 2011), discrimination (Cristini, Scacchi, Perkins, Santinello, & Vieno, 2011) and negatively correlated to self-esteem (Sarı, 2008), secure attachment (Özer, 2011), physical activity (Calfas & Taylor (1994), self-managements' character dimension (Karakaş, 2009), social comparison (Yılmaz, 2010), social support (Yıldırım, 2011), problem-solving skills (Birel, 2012), and intelligence level (Aydın & Konyalıoğlu, 2011). As for the evaluation of psychological symptoms by gender, it has been determined in the studies that girls exhibit significantly more psychological symptoms than boys (Birel, 2012; Coşar Ciğerci, 2006; Düzgün, 1995; Saföz Güven & Güçray, 2009; Sarı, 2008; Schraedley, Gotlib, & Hayward, 1999).

Recent studies attract attention to the relationship between Internet addiction and psychological symptoms among adolescents. Due to adolescents being the group with the highest risk of Internet addiction and serious relationships between psychological symptoms and Internet addiction, a study to be conducted with adolescents become even more important. In the light of all this information, it is thought that a psychoeducational program for reducing psychological symptoms among adolescents will be effective in Internet addiction. Although there are studies addressing the relationships between Internet addiction and psychological symptoms, lack of any psychoeducational program for reducing psychological symptoms to mitigate Internet addiction makes this study important. To that end, the following hypotheses were tested.

Hypothesis 1: Psychoeducational program for reducing psychological symptoms

- a) It is effective in reducing psychological symptoms.
- b) It will maintain its effectiveness in the follow-up study to be conducted 45 days later.

Hypothesis 2: Psychoeducational program for reducing psychological symptoms

- a) It is effective in reducing Internet addiction.
- b) It will maintain its effectiveness in the follow-up study to be conducted 45 days later.

Method

Research Design

This study used the true experimental design. Internal and external validity need to be achieved in experimental designs (Karasar, 2005). It was ensured in the study in an effort to achieve internal validity that the subjects in the experimental and control groups were not affected by variables other than the independent variable. This was done by randomly assigning the experimental and control groups. Moreover, it was paid attention to the fact that the time spared for the study was not too short or too long, maturity levels of the subject were close to each other, and standard assessment tools were used both for control and experimental groups to increase internal validity (Büyüköztürk, 2007). It was taken into account to achieve external validity that the school chosen as sample did not accept students only from that particular area. As the school accepts students through examination, students from any walk of life enroll there. This may increase the generalizability of results (Karasar, 2005). In addition, a pretest was not applied right before the study, so measure-independent variable interaction was taken under control to increase external validity (Böke, 2011). It was ensured that the chosen subjects represented the population by taking the biased choice-independent variable interaction under control (Karasar, 2005) in an effort. 2X3 mixed design with pretest, posttest and control group was used for determining the effect of the psychoeducational program prepared by the research for reducing psychological symptoms on Internet addiction among adolescents. Mixed designs are also called split-plot factorial design. There are at least two variables (factors) of which effect is examined on the dependent variable in mixed designs. The first factor (row factor) shows different experimental procedure conditions (experimental and control groups). The second factor (column factor) refers to the repeated measures (pretest, posttest, and follow-up test) performed to describe any time-dependent change (Büyüköztürk, 2014, pp. 80-81). Effectiveness of the intervention program was investigated in line with the data obtained in the study.

The repeated measures (pretest- posttest, follow-up test) obtained at different times were evaluated separately the mean scores of psychological symptoms and Internet addiction. The research design is presented in Table 1.

Table 1. Research Design

Groups	Measures			
	Pretest	Procedure	Posttest	Follow-up Test
Experimental Group	SSI	Psychoeducational program for reducing PS (10 sessions)	BSI	BSI
	IAS		IAS	IAS
Control Group	BSI	No Procedure	BSI	BSI
	IAS		IAS	IAS

Research Group

The research group of the study was composed of 506 ninth-, tenth-, and eleventh-grade students attending an Anatolian High School in Üsküdar, İstanbul in the academic year of 2014-2015. The Internet Addiction Scale (IAS) and the Brief Symptom Inventory (BSI) were used for choosing the participants in the experimental and control groups within the scope of the study. The students who scored above 1 standard deviation ($s=17.74$) of the mean ($\bar{X}=54.16$) in the Internet Addiction Scale and the students whose Global Severity Index was 1.5 and higher in the Brief Symptom Inventory. Global Severity Index is calculated by dividing the total score obtained in the subscales of BSI by the number of items. 97 students whose internet addiction scores were 71 and higher and 89 students whose psychological symptom total scores were 15 and higher were identified. Furthermore, 33 students

whose internet addiction scores were 71 and higher psychological symptom total scores were 1.5 and higher were identified. These 33 participants were included in the subject pool. Lots were drawn to randomly assign 12 students to the experimental group and other 12 students to the control group. The experimental group hosted 5 girls and 7 boys (12 students in total), and likewise, there were 7 girls and 5 boys (12 students in total) in the control group. While age average of experimental group students was found to be 15.13, the control group students were found to have age average of 14.50. 12 subjects in the beginning of the psychoeducational program were downed to 8 for reasons such as school transfer and foreign travel of students. Since the study was conducted in a single school, there was a decrease in the numbers of both experimental and control groups. No additional statistical techniques were needed since both experimental and control groups experienced loss of subjects. As the loss of subjects was as of 4th and 5th weeks of the program and it was a closed-group study, no other students were included in the group. The study was concluded with 16 students.

When creating the study group, necessary permits were received from the Provincial Directorate of National Education for the general application and the experimental study. It was considered following the applications that the students to be included in the study group were volunteered. Furthermore, consent of students' parents was taken for their children's participation in the study.

Data Collection Instruments

Internet Addiction Scale: Internet addiction of the students in the research was measured using the "Computer Addiction Scale for Adolescents" developed by Ayas, Çakır, and Horzum (2011). 5-Point Likert-type grading was used for opinions on the Internet addiction test. The grading varies between "Always (5) and Scarcely (1)". The scale consists of two factors and 54 items. First of these factors involve 28 items. The load values of these items in the factor vary between .512 and .795. Explaining 29.49% of scale's total variance, this factor was named "Internet usage addiction". The second factor of the scale is composed of 26 items. The load values of these items in the second factor vary between .424 and .788. This factor that explains 19.13% of scale's total variance was named "computer gaming addiction". Cronbach's Alpha internal consistency coefficient was calculated for reliability of the scale. Internal consistency coefficients were calculated to be .96 for Internet usage addiction and .95 for computer gaming addiction. 54-item internal consistency coefficient of the scale was found to be .95.

Brief Symptom Inventory: The Brief Symptom Inventory developed by Derogatis (1992) is a brief form of SCL-90 which is a 90-item scale (as cited in Hisli Şahin & Durak, 1994). The scale comprising of 53 items, 9 subscales, additional items and 3 global indexes was adapted into Turkish language by Hisli Şahin and Durak (1994). It is a Likert-type scale graded between 0 and 4 (None and Too much). The score range of the scale is 0-212. Subscales of the scale include somatization, obsessive-compulsive disorder, interpersonal sensitivity/negative self, depression, anxiety, hostility, phobic anxiety, paranoid thought, and psychosis. Global indexes are Global Severity Index, Positive Symptom Total, and Positive Symptom Distress Index, respectively. Higher scores in the scale mean increased mental symptoms of the individual. Reliability of the scale was examined with Cronbach's Alpha internal consistency coefficients, and they were calculated to be 0.96 and 0.95. Internal consistency coefficients of the subscales are 0.55 and 0.86. The criterion-related and content validity were investigated for scale's validity. For the criterion related validity, the scale was found to be related to Social Comparison Scale between -0.14 and -0.34, Submission Scale between 0.16 and 0.42, UCLA Loneliness Scale between 0.13 and 0.36, Offer Loneliness Scale between 0.34 and -0.57, and Beck Depression Scale between 0.34 and 0.70. The scores obtained in the Stress Audit (Vulnerability) were considered in scale's content validity, and it was found that the scale can discriminate these two extreme groups which are vulnerable and invulnerable to stress on a significant level in the analysis conducted over the total score of the scale (Savaşır & Hisli Şahin, 1997). The adaptation study of the scale was performed by Hisli Şahin, Durak Batıgün, and Uğurtaş (2002). In three separate studies, Cronbach's Alpha internal consistency coefficients obtained from total score of the scale vary between 0.96 and 0.95 and coefficients obtained for subscales between 0.55 and 0.86.

Development of Psychoeducational Program for Reducing Psychological Symptoms

Psychoeducational programs are rather leader-oriented educational programs that aim to present a subject effectively within a given period, bring skills to individuals and may take 6 to 20 sessions on average. Duration of psychoeducational programs vary between 45 and 60 minutes for adolescents (Güçray, Çekici, & Çolakkadıoğlu, 2009). Development of a psychoeducational program for reducing psychological symptoms and Internet addiction was started with the examination of adolescents' findings about Internet addiction and psychological symptoms. Internet addiction and psychological symptom levels among adolescents and the relationship between both concepts were identified in an effort through the scale and the inventory. To this end, the related literature was reviewed, and studies were examined. It was observed that psychoeducational programs for reducing Internet addiction and psychological symptoms (Berber Çelik, 2016; Huang, Li, & Tao, 2010; Liu et al., 2015; Melo-Carrillo, Oudenhove, & Lopez-Avila, 2012; Morokuma et al., 2013; Rummel-Kluge, Pitschel-Walz, & Kissling, 2009; Sönmez, 2009; Warman, Phalen, & Martin, 2015) were generally effective. Unlike in other studies, Internet addiction was mitigated through an indirect study in an effort in this study.

It was aimed with the prepared psychoeducational program to reduce psychological symptoms and Internet addiction among adolescents. The theoretical basis of the program is the cognitive behavioral approach. When first emerged, the cognitive behavioral approach was described as depression therapy (Leahy, 2004). It was defined this way because of its success in treating depression. The cognitive behavioral model has been tried to adapt to many psychological problems in the following years. Cognitive behavioral therapy has formed the cognitive profile of psychological disorders and it has expressed that these disorders can also be cured by intervention in cognition. It has been suggested that depression occurs because of prejudices that the individual has about himself/herself and about the world and the future. Furthermore, it has been argued that anxiety disorder occurs due to physical or psychological danger and panic disorder is caused by interpretation of somatic symptoms in a destructive manner. Moreover, it is claimed that paranoid state came to existence due to prejudice toward others and compulsions occur due to perceived danger prevention rituals. In addition, it has been set forth that obsessions occur due to repeated warnings about safety or doubts about safety and that the phobia has come into being due to perceived danger of certain avoidable situations. (Corsini & Wedding, 2012). The program is based on the theoretical basis of the cognitive behavioral approach by the reason of that the cognitive behavioral approach has a comprehensive and systematic approach to psychological problems and establishing a relationship between incompatible cognitions and internet addiction (Davis, 2001). There are several studies in the literature which address the positive relationship between Internet addiction and psychological symptoms (Ayas & Horzum, 2013; Dalbudak & Evren, 2014; Durak Batıgün & Kılıç, 2011; Luciana, 2010; Tang et al., 2014). It is also observed that there are studies which indicate that certain psychological symptoms (social phobia, depression, hostility, interpersonal sensitivity) predict Internet addiction (Dalbudak et al., 2013; Ko et al., 2012). The studies in the literature were handled in a holistic way to create the assumption of the study. Group applications were based on the assumption that decreased psychological symptoms of the adolescents would reduce their Internet addiction levels. It was also aimed the students would use coping skills in other challenging life events later. The psychoeducational program was conducted with ninth-, tenth-, and eleventh-grade students. The program was prepared as a 10-session psychoeducation with groups with each session taking 50 minutes on average. The program was submitted to the review of 5 associates from Department of Psychological Counseling and Guidance and Department of Educational Programs and Instruction and revised and finalized in accordance with their opinions. The procedure was as follows in the sessions:

Session I

In the first session, general group rules were set, and expectations and goals of the members were specified after instruction. Lastly, they were informed of psychological symptoms. It was ensured through this briefing in an effort that the members met each other, create the group rules, had information about the program, set individual goals and had a general understanding of psychological symptoms.

Session II

In the second session, it was ensured in an effort that the members comprehend and understand the psychological symptoms (depression and anxiety) and their nature, and they were informed of the "Five Domains Model", a model used in Cognitive Therapy. To this model, there are five different components of every question. These include environment, thoughts, moods, physical reactions, and behaviors. A change in any of these areas influence other areas. For instance, a change in behaviors affects the way we think and feel both physically and emotionally. A similar case applies to other areas (Greenberger & Padesky, 2013). It was ensured in an effort that they noticed the behavioral, emotional and intellectual outcomes of depression and anxiety.

Session III

Study for comprehending the nature of psychological symptoms (phobic anxiety, somatization, and obsessive compulsive disorder) continued in the third session. It was ensured in an effort that they noticed the behavioral and emotional outcomes of psychological symptoms addressed in the session and became aware of these symptoms.

Session IV

Study for comprehending the nature of psychological symptoms (paranoid thoughts, hostility and psychotism) continued in the fourth session. It was ensured in an effort that they noticed the behavioral and emotional outcomes of psychological symptoms addressed in the session and became aware of these symptoms.

Session V

The students were taught relaxation techniques and proper breathing techniques and it was ensured that they practiced them for daily life in the fifth session. They were informed of the techniques in the first place. Then, the techniques were taught practically during the session in an effort.

Session VI

Activities were performed in the session six to ensure that the clients would gain awareness of the case and its effects on thoughts, emotions and behaviors. It was ensured in an effort that the clients comprehended the thoughts affecting the life negatively and associated them with psychological symptoms. Descriptions of Cognitive-Behaviorist Therapy on depression were addressed for instance. Pessimistic and hopeless thoughts of individuals about themselves, external world and future were addressed. It was ensured in an effort that they understood the relationship between negative thoughts and psychological symptoms and Internet addiction.

Session VII

In the session seven, self-esteem and feeling worthy which are the concepts found to be associated with psychological symptoms and Internet addiction in the literature were addressed. It was ensured in the session that the clients could develop self-esteem, notice their positive attributes and feel worthy as a result of the social support and approval they received in an effort.

Session VIII

The clients were asked to set an achievable goal to save them from purposelessness and fight for a purpose. It was therefore ensured that they became hopeful about future, could associate with success stories, notice their potential and make plans for their goals in an effort.

Session IX

It was ensured in session ten that the clients became informed of physical disorders, social and mental problems caused by Internet addiction and of interaction between psychological symptoms and

Internet addiction, therefore gaining awareness of the subject. Hence, it was ensured that they became aware of the relationship between the two concepts in an effort.

Session X

It is the last session of the study. A general evaluation of the psychoeducational program was made. It was reviewed whether the clients comprehended the psychological symptoms, acquired insight about psychological symptoms and noticed behavioral, emotional and intellectual outcomes of psychological symptoms.

A general application was performed to designate the experimental and control groups in the first place. The study group was created through this application. Next, the intervention program was commenced. The posttest was applied following the 10-month intervention plan (2.5 months). The posttest was applied to the experimental and control groups at the same time. The experimental and control groups were subjected to the follow-up test 45 days after the posttest.

Data Analysis

Use of parametric test in data analysis depends on meeting certain assumptions. The first of these assumptions is that data are in compliance with normal distribution. The other one is that variances are homogenous. To this end, compliance of the data obtained in the measures of Internet addiction and psychological symptoms with the normal distribution curve. Shapiro-Wilk (Büyüköztürk, 2014, p. 42) test chosen in case of group size lower than 50 was used for testing the compliance with the normal distribution curve. Shapiro-Wilk test results of the research data are shown in Table 2.

Table 2. Shapiro-Wilk Normality Test Results Applied to the Pretest, Posttest and Follow-Up Test Scores of Experimental and Control Group Students

Scale	Group	Measure	W	Sd	p
IAS	Experimental	Pretest	.895	8	.260
		Posttest	.860	8	.119
		Follow-up test	.913	8	.378
	Control	Pretest	.867	8	.140
		Posttest	.929	8	.511
		Follow-up test	.908	8	.340
BSI	Experimental	Pretest	.954	8	.747
		Posttest	.881	8	.192
		Follow-up test	.842	8	.633
	Control	Pretest	.901	8	.292
		Posttest	.941	8	.078
		Follow-up test	.931	8	.521

According to Table 2, there is no statistical significant difference between the distribution observed in all measures of the dependent variables for all groups and the predicted distribution ($p > .05$). It can be implied from these data that the scores obtained by the experimental and control groups are normally distributed.

Whether the sphericity assumption was met for performing the variance analysis for the repeated measures in accordance with the purpose of the study was examined with the Mauchly Sphericity Test, and one-variable approach was preferred in the cases where the sphericity assumption could not be met and Greenhouse-Geisser correction was used to achieve variance analysis results. The Mauchly Sphericity Test results are given in Table 3.

Table 3. Mauchly Sphericity Test Results of the Pretest, Posttest and Follow-Up Test Scores of the Experimental and Control Group Students

Scale	Intragroup Effect	Mauchly W	X ²	Sd	P	Epsilon	
						Greenhouse-Geisser Correction	Huynh-Feldt Correction
IAS	Time	.364	13.150	2	.001	.611	.687
BSI	Time	.983	.224	2	.894	.983	1.000

According to the results of Mauchly Sphericity Test in Table 3, repeated measures obtained at separate times from BSI met the sphericity assumption (For BSI, $W_{(2)} = .894$, $p > .05$). On the other hand, repeated measures obtained at separate times from IAS could not meet the sphericity assumption (For IAS, $W_{(2)} = .364$, $p > .05$). When examining the intragroup effect regarding the measures obtained from this scale were subjected to Greenhouse-Geisser correction, and F rates automatically calculated by SPSS were used.

Levene Test was used for examining the variance homogeneity which is the other assumptions to be met for the use of parametric tests. Levene Test results of the research data are shown in Table 4.

Table 4. Variance Homogeneity (Levene) Test Results Applied to the Pretest, Posttest and Follow-Up Test Scores of Experimental and Control Group Students

Scale	Measure	n*	Sd1	Sd2	F	p
IAS	Pretest	16	1	14	1,724	.210
	Posttest	16	1	14	5,143	.040*
	Follow-up test	16	1	14	.001	.979
BSI	Pretest	16	1	14	2,456	.139
	Posttest	16	1	14	.927	.352
	Follow-up test	16	1	14	.670	.427

* $p < .05$

It can be said according to Table 4 that there is no significant difference between the variance of the groups by the values obtained from both scales before the procedure (For IAS, $F = 1.724$, $p > .05$; For BSI, $F = 2.456$, $p > .05$). It is understood from the values regarding the posttest measures that variance homogeneity could not be met in IAS ($F = 5.143$, $p < .05$) and could be met in BSI (For BSI, $F = .927$, $p > .05$). Follow-up test results of the groups show that variances between the groups are homogenous (For IAS, $F = .001$, $p > .05$ and for BSI, $F = .670$, $p > .05$). Considering the data as a whole, it was decided that variances of the experimental and control groups were homogenous for all variables.

Box's M test was used for testing the equation of covariance matrixes of the dependent variables in the study. According to the Box's M table, it was decided that multi-normality assumption was met for Internet addiction (Box's M = 10.416) and psychological symptoms (Box's M = 30.761).

Considering all examinations performed on the data as a whole, it was concluded that the necessary assumptions were made to perform a two-way variance analysis for the repeated measures. In accordance with the purposes of the study, two-factor variance analysis was applied to the factor for repeated measures to determine the dependent variables (Internet addiction and psychological symptoms) of the psychoeducational program. The margin of error was accepted as $p < .05$ in the statistical analyses of the data obtained in the research, and significance levels of $p < .01$ and $p < .001$ were also shown. SPSS 16 statistical software was utilized for the data analysis on computer.

Results

T-test results regarding the pretest scores of the experimental and control groups are presented first in this section. Results of the independent groups t-test which compared the IAS pretest scores are given in Table 5.

Table 5. T-Test Results Regarding The IAS Pretest Scores of the Experimental and Control Group Students

Group	N	\bar{x}	Sd	Df	t	p.
Experimental	8	88.76	17.03	14	-.874	.397
Control	8	82.84	8.79			

According to Table 5, there is no significant difference between Internet addiction pretest mean scores of the experimental ($\bar{X} = 88.76$, Sd= 17.03) and control ($\bar{X} = 82.84$, Sd= 8.79) groups (For IAS, $t_{(14)} = -.874$; $p > .05$). Accordingly, it can be said that pre-program IAS levels of the individuals in the experimental and control groups were equal.

Results of the independent groups t-test which compared the experimental and control groups' Brief Symptom Inventory pretest scores are shown in Table 6.

Table 6. T-Test Results Regarding The BSI Pretest Scores of the Experimental and Control Group Students

Group	N	\bar{x}	Sd	Df	t	p.
Experimental	8	95.45	8.46	14	1.12	.280
Control	8	103.74	19.08			

According to Table 6, there is no significant difference between Internet addiction pretest mean scores of the experimental ($\bar{X} = 95.45$, Sd= 8.46) and control ($\bar{X} = 103.74$, Sd= 19.08) groups (For BSI, $t_{(14)} = -1.12$; $p > .05$). Accordingly, it can be said that psychological symptom levels of the individuals in the experimental and control groups were equal before the psychoeducational program.

The data on the Internet addiction and psychological symptom pretest scores of the experimental and control groups indicate that Internet addiction and psychological symptom levels between the groups were equal.

Testing of the First Hypothesis

The first hypothesis of the study is "Psychoeducational program for reducing psychological symptoms;

a) is effective in reducing psychological symptoms.

b) will maintain its effectiveness in the follow-up study to be conducted 45 days later."

Before testing this hypothesis, the experimental and control group students' arithmetic means and standard deviations in the Brief Symptom Inventory (BSI) measuring the psychological symptoms before the program, after the program and 45 days after the program were calculated. The findings are presented in Table 7.

Table 7. Arithmetic Mean and Standard Deviation Values of The Experimental and Control Group Students' Psychological Symptoms Pretest, Posttest and Follow-Up Test Scores

Groups	PS pretest-posttest-follow-up test	N	\bar{x}	Sd
Experimental	Pretest	8	95,4502	8,46281
	Posttest	8	65,1250	22,99340
	Follow-up Test	8	66,3750	23,20676
Control	Pretest	8	103,7420	19,08815
	Posttest	8	100,8750	19,26090
	Follow-up Test	8	104,5000	18,63177

It is seen in Table 7 that BSI pretest means score of the experimental group students is $\bar{X} = 95.45$, posttest mean score is $\bar{X} = 65.12$ and follow-up test mean score is $\bar{X} = 66.37$. BSI pretest means score of the control group students is $\bar{X} = 103.74$, posttest mean score is $\bar{X} = 100.87$ and follow-up test mean score is $\bar{X} = 104.50$. Two-factor variance analysis for repeated measures was performed to determine whether the change between measures were statistically significant, and analysis results are shown in Table 8.

Table 8. Results of Two-Factor Variance Analysis Regarding The Experimental and Control Groups' Psychological Symptoms Pretest, Posttest and Follow-Up Test Scores

Source of Variance	Sums of Square	Df	Mean Square	F	P	n^2
Intergroup intervention (Experimental/Control)	20581.177	15				
Error	9001.848	1	9001.848	10.884	.005	.437
Intragroup	8739.417	32				
Time (pretest, posttest, follow-up test)	2569.802	2	1284.901	9.062	.001	.393
Intervention*Time	2199.482	2	1099.741	7.756	.002	.357
Error	3970.133	28	141.790			
Total	29320.594	47				

As seen in Table 8, it was found out in the variance analysis performed with the mean scores of the experimental and control group students in the psychological symptoms pretest, posttest and follow-up test measures that the intervention effect is significant, and eta square value has the great (Cohen, 1988 as cited in Özsoy & Özsoy, 2013) effect size ($F(1, 14) = 10.884; p < .01, n^2 = .437$). This finding indicates that there is a significant difference between the psychological symptoms mean scores regardless of the experimental and control groups' pretest, posttest and follow-up measures. Similarly, there is a significant difference between the measures performed at separate times; in other words, main effect of time is significant, and eta square value has great effect size ($F(2, 28) = 9.062; p < .01, n^2 = .393$). It can be understood from this findings that the difference between students' pretest, posttest and follow-up test scores is significant regardless of the groups. Moreover, mutual effect of intervention and time is significant ($F(2, 28) = 7.756; p < .01, n^2 = .357$). Based on this finding, it is seen that the first hypothesis of the study "The psychoeducational program for reducing the psychological symptoms is effective in reducing the psychological symptoms." is confirmed, and the significant decrease continued in the follow-up study conducted after the completion of the program.

Table 9. Variance Analysis Results by Wilk's Λ Statistics for the Repeated Measures of Psychological Symptoms

Effect	Wilk' λ	Sd	F	P	n^2
Time	.466	13.00	7.511	.007	.536
Time*Intervention	.505	13.00	6.372	.012	.495

According to the variance analysis in Table 9, the psychological symptoms (Wilks' $\lambda = .466$, $F(2,28) = 7.511$; $p < .01$) differed significantly over time. Similarly, time*intervention interaction effects are significant (Wilks' $\lambda = .505$, $F(2, 28) = 6.372$; $p < .05$). It is concluded from these results that the experimental group students' psychological symptom levels differed significantly at diverse rates before and after the procedure and the follow-up process compared to the control group.

The findings obtained in the variance analysis indicate a difference between the groups by time ($F(2, 28) = 7.756$; $p < .01$, $n^2 = .357$). Bonferroni post-hoc test was performed to identify the source of difference between the mean scores of experimental and control groups' pretest, posttest and follow-up test. The results are shown in Table 10.

Table 10. Results of Bonferroni Post-Hoc Test Regarding The Experimental and Control Groups' Psychological Symptoms Pretest, Posttest and Follow-Up Test Scores

		Experimental			Control		
		Pretest mean difference (I-J)	Posttest mean difference (I-J)	Follow-up mean difference (I-J)	Pretest mean difference (I-J)	Posttest mean difference (I-J)	Follow-up mean difference (I-J)
Experimental	Pretest	-	30.325*	29.075*	-8.292		
	Posttest	-30.325*	-	-1,250		-35.750*	
	Follow-up	-29.075*	1.250				-38.125*
Control	Pretest	8.292			-	2.867	-.758
	Posttest		35.750*		-2.867	-	-3.625
	Follow-up			38.125*	.758	3.625	-

* $p < .05$

According to the results of Bonferroni post-hoc test in Table 10, experimental group's mean score of psychological symptoms pretest ($\bar{X} = 95.45$) significantly differed from the posttest mean scores ($\bar{X} = 65.12$) (30.325^* ; $p < .05$). Similarly, experimental group's mean score of psychological symptoms pretest ($\bar{X} = 95.45$) significantly differed from the posttest mean scores ($\bar{X} = 66.37$) (29.075^* ; $p < .05$). It is seen that there is no significant difference between experimental group's posttest mean score ($\bar{X} = 65.12$) and follow-up mean score ($\bar{X} = 66.37$) ($-1,250$; $p > .05$). The findings indicate that the first hypothesis of the study which is "Psychoeducational program for reducing psychological symptoms a) is effective in reducing psychological symptoms; b) will maintain its effectiveness in the follow-up study to be conducted 45 days later." was confirmed.

As for the pretest ($\bar{X} = 103.74$), posttest ($\bar{X} = 100.87$) and follow-up test ($\bar{X} = 104.50$) mean scores of the control group, there is no significant differences between the pretest and posttest (2.867 ; $p > .05$), pretest and follow-up test ($-.758$; $p > .05$) and posttest and follow-up test (-3.625 ; $p > .05$) mean scores. These data indicate that there was no significant decrease in the psychological symptom levels of the control group students.

The findings obtained in the variance analysis and post-hoc test performed to test the first hypothesis of the study are also shown with an interaction graphic. The interaction graphic of the ANOVA test is given in Figure 1.

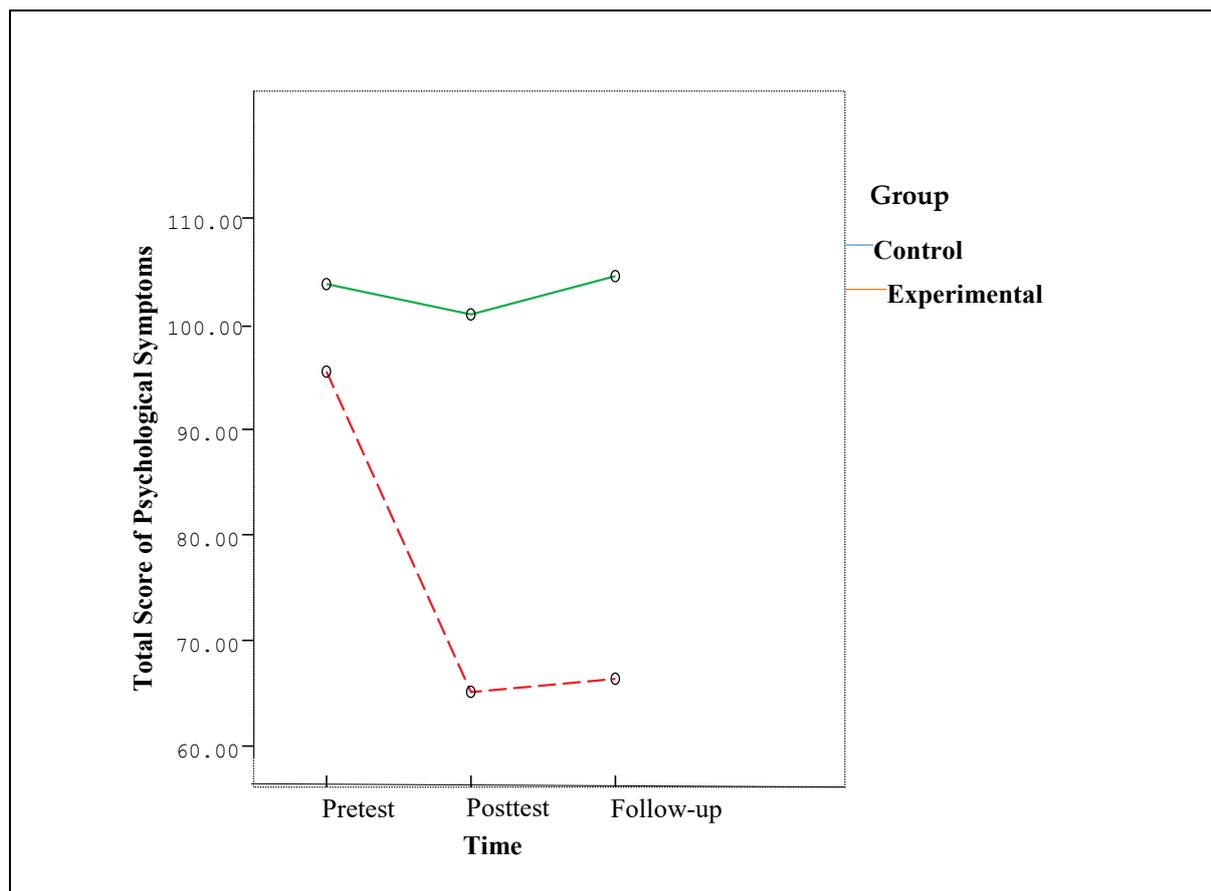


Figure 1. Graphic for the Psychological Symptoms Mean Scores of the Experimental and Control Groups in the Pretest, Posttest and Follow-Up Test

According to the interaction graphics, psychological symptom scores of both experimental and control group students decreased. However, psychological symptoms mean score of the experimental group students decreased much more and more sharply than the mean score of the control group students. This decrease in the psychological symptom levels of the experimental group remained 45 days after the completion of the procedure. This decrease in the psychological symptom levels of the experimental group remained 45 days after the completion of the experimental procedure. It is seen that the psychological symptom mean score of the control group increased. Consequently, values shown in Figure 1 are in line with the values obtained in the study.

Testing of the Second Hypothesis

The second hypothesis of the study is “Psychoeducational program for reducing psychological symptoms

- a) is effective in reducing Internet addiction.
- b) will maintain its effectiveness in the follow-up study to be conducted 45 days later.”

Before testing this hypothesis, the experimental and control group students’ arithmetic means and standard deviations in the Internet Addiction Scale (IAS) measuring the psychological symptoms before the program, after the program and 45 days after the program were calculated. The findings are presented in Table 11.

Table 11. Arithmetic Mean and Standard Deviation Values of the Experimental and Control Group Students' Internet Addiction Pretest, Posttest and Follow-Up Test Scores

Groups	IA pretest-posttest-follow-up test	N	\bar{x}	Sd
Experimental	Pretest	8	88.7689	17.03735
	Posttest	8	75.2500	10.85949
	Follow-up Test	8	64.7500	9.52815
Control	Pretest	8	82.8460	8.79035
	Posttest	8	84.0000	7.32900
	Follow-up Test	8	86.0000	9.03960

It is seen in Table 11 that IAS pretest means score of the experimental group students is $\bar{X} = 88.76$, posttest mean score is $\bar{X} = 75.25$ and follow-up test mean score is $\bar{X} = 64.75$. Pretest means score of the control group students is $\bar{X} = 82.84$, posttest mean score is $\bar{X} = 84.00$ and follow-up test mean score is $\bar{X} = 86.00$. Two-factor variance analysis for repeated measures was performed to determine whether the change between measures were statistically significant, and analysis results are shown in Table 12.

Table 12. Results of Two-Factor Variance Analysis Regarding the Experimental and Control Groups' Internet Addiction Pretest, Posttest and Follow-Up Test Scores

Source of Variance	Sums of Square	sd	Mean Square	F	P	n^2
Intergroup intervention (Experimental/Control)	3515.066	15				
	772.942	1	772.942	3.946	.067	.220
Error	2742.124	14	195.866			
Intragroup	4600.199	32				
Time (pretest, posttest, follow-up test)	880.651	2	440.326	5.505	.010	.282
Intervention*Time	1479.881	2	739.941	9.251	.001	.398
Error	2239.667	28	79.988			
Total	8115.265	47				

As seen in Table 12, it was found out in the variance analysis performed with the mean scores of the experimental and control group students in the Internet addiction pretest, posttest and follow-up test measures that the intervention effect is not significant, and eta square value has the small (Cohen, 1988 as cited in Özsoy & Özsoy, 2013) effect size ($F_{(1,14)} = 3.946$; $p > .05$, $n^2 = .220$). In other words, there is a no significant difference between the psychological symptoms mean scores in the IAS regardless of the experimental and control groups' pretest, posttest and follow-up measures. However, there is a significant difference between the measures performed at different times; in other words, main effect of time is significant, and eta square value has the medium (Cohen, 1988 as cited in Özsoy & Özsoy, 2013) effect size ($F_{(2, 28)} = 5.505$; $p < .05$, $n^2 = .282$). It can be understood from this findings that the difference between students' pretest, posttest and follow-up test scores is significant regardless of the groups. Furthermore, mutual effect of intervention and time is significant ($F_{(2, 28)} = 9.251$; $p < .01$, $n^2 = .398$). Based on this finding, it is seen that the second hypothesis of the study "The psychoeducational program for reducing the psychological symptoms is effective in reducing the Internet addiction." is confirmed, and the significant decrease continued in the follow-up study conducted after the completion of the program.

Table 13. Variance Analysis Results by Wilk's Λ Statistics for the Repeated Measures of Internet Addiction

Effect	Wilk' λ	Sd	F	P	n ²
Time	,609	13,000	4,179 ^b	.040	.391
Time*Intervention	,442	13.000	8,218 ^b	.005	.558

According to the variance analysis in Table 13, the Internet addiction levels (Wilks' $\lambda = .609$, $F(2, 28) = 4.179$; $p < .05$) differed significantly over time. Similarly, time*intervention interaction effects are significant (Wilks' $\lambda = .442$, $F(2, 28) = 8.218$; $p < .01$). It is concluded from these results that the experimental group students' Internet addiction levels differed significantly at diverse rates before and after the procedure and the follow-up process compared to the control group.

The findings obtained in the variance analysis indicate a difference between the groups by time ($F(2, 28) = 9.251$; $p < .01$, $n^2 = .398$). Bonferroni post-hoc test was performed to identify the source of difference between the mean scores of experimental and control groups' pretest, posttest and follow-up test. The results are given in Table 14.

Table 14. Results of Bonferroni Post-Hoc Test Regarding the Experimental and Control Groups' Internet Addiction Pretest, Posttest and Follow-Up Test Scores

	Experimental			Control		
	Pretest mean difference (I-J)	Posttest mean difference (I-J)	Follow-up mean difference (I-J)	Pretest mean difference (I-J)	Posttest mean difference (I-J)	Follow-up mean difference (I-J)
Experimental	Pretest	13,519*	24,019*	5.923		
	Posttest	-13,519*		10,500*	-8,750	
	Follow-up	-24,019*	-10,500*			-21,250*
Control	Pretest			-5.923	-1.154	-3.154
	Posttest	8,750		1.154		-2.000
	Follow-up		21,250*	3.154	2.000	

* $p < .05$

According to Table 14, experimental group's mean score of psychological symptoms pretest ($\bar{X} = 88.7689$) significantly differed from the posttest mean scores ($\bar{X} = 75.2500$) (13.519*; $p < .05$). Similarly, experimental group's mean score of psychological symptoms pretest ($\bar{X} = 88.7689$) significantly differed from the follow-up test mean scores ($\bar{X} = 64.75$) (24.019*; $p < .01$). It is also seen that there is a significant difference between experimental group's posttest mean score ($\bar{X} = 75.2500$) and follow-up mean score ($\bar{X} = 64.7500$) (10.500*; $p < .01$). In other words, there is a significant difference between the pretest, posttest and follow-up test mean scores of the experimental group. The findings indicate that the second hypothesis of the study which is "Psychoeducational program for reducing psychological symptoms a) is effective in reducing Internet addiction; b) will maintain its effectiveness in the follow-up study to be conducted 45 days later." was confirmed.

As for the pretest ($\bar{X} = 82.8460$), posttest ($\bar{X} = 84.0000$) and follow-up test ($\bar{X} = 86.0000$) mean scores of the control group, there is no significant differences between the pretest and posttest (-1.154; $p > .05$), pretest and follow-up test (-3.154; $p > .05$) and posttest and follow-up test (-2.000; $p > .05$) mean scores. It can be concluded from these data that there was a significant decrease in the Internet addiction levels of the control group students.

The findings obtained in the variance analysis and post-hoc test performed to test the second hypothesis of the study are also shown with an interaction graphic. The interaction graphic of the ANOVA test is given in Figure 2.

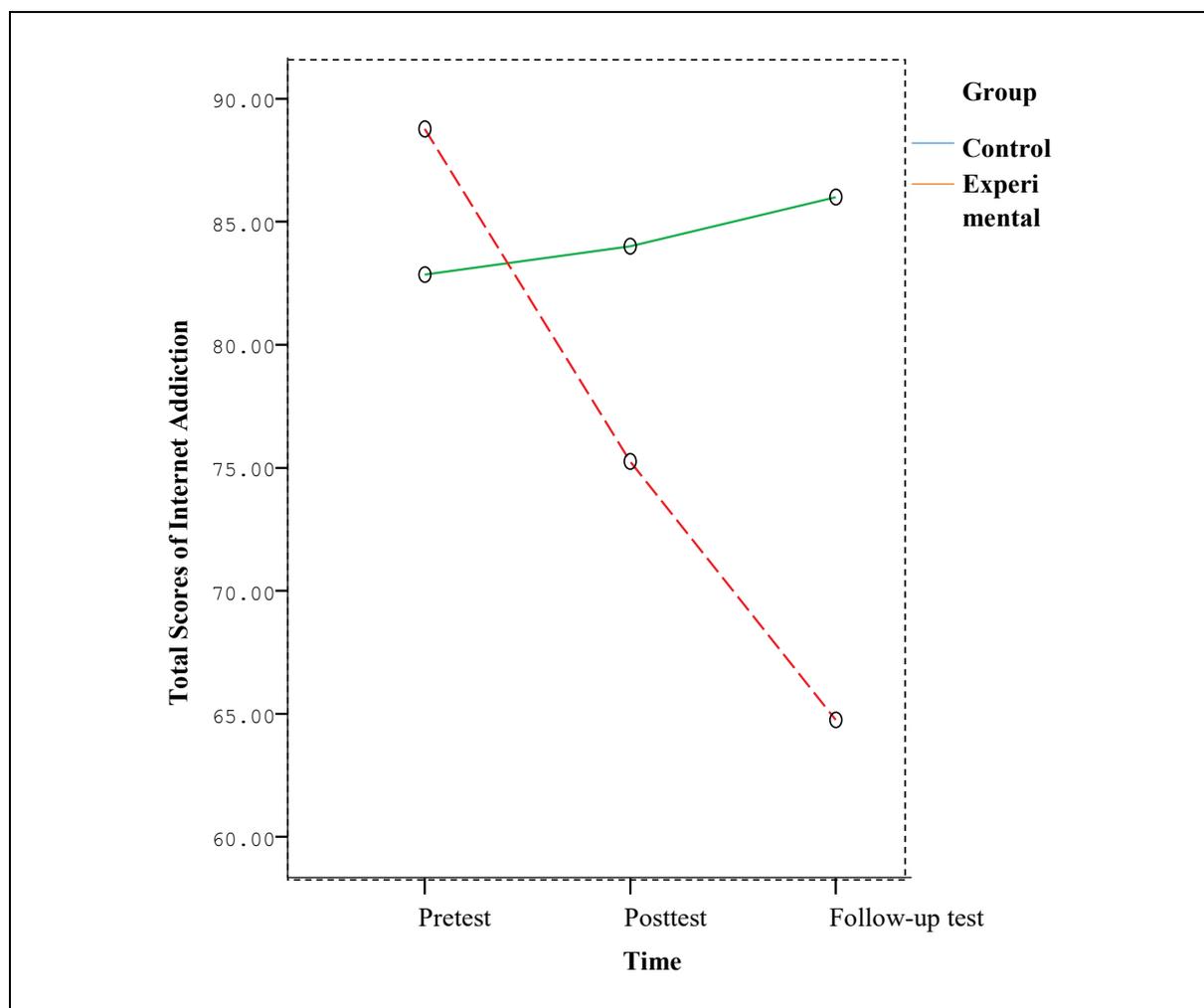


Figure 2. Graphic For The Internet Addiction Mean Scores of the Experimental and Control Groups in the Pretest, Posttest and Follow-Up Test

According to the graphic, Internet addiction scores of the experimental group students decreased while the scores of the control group increased. This decrease in the Internet addiction levels of the experimental group continued 45 days after the completion of the procedure. The control groups' Internet addiction scores continued to increase. The Internet addiction mean score also increased. Consequently, values shown in Figure 2 are in line with the values obtained in the study.

Discussion, Conclusion and Suggestions

The result achieved in the study shows that the psychoeducational program for reducing the psychological symptoms reduced the psychological symptoms and Internet addiction among adolescents.

The first hypothesis of the study was determined as follows: "Psychoeducational program for reducing psychological symptoms a) is effective in reducing psychological symptoms; b) will maintain its effectiveness in the follow-up study to be conducted 45 days later."

It was observed that the psychological symptoms scores of the individuals who participated in the psychoeducational program for reducing the psychological symptoms decreased significantly and this decrease continued in the follow-up test conducted 45 days after the procedure. In the literature, there is no study aiming to reducing all psychological symptoms stated in the Brief Symptom Inventory in a holistic approach. On the other hand, there are studies on individual psychological symptoms state stated in the subscales of the Brief Symptom Inventory. Studies show that results of psychoeducational studies are in line with the findings obtained in this study. Lincoln, Wilhelm, and Nestoriuc (2007) explored in their meta-analytical study with patients which have psychotic disorders that psychoeducational studies have remarkable benefits. Rummel-Kluge et al., (2009) determined that the psychoeducational program was useful in the individuals with anxiety disorder. It was also observed in the literature that psychoeducational programs were effective in reducing the depression symptoms (Melo-Carrillo et al., 2012) and major depression symptoms (Morokuma et al., 2013) increasing the functionality of schizophrenics (Sönmez, 2009), reducing the obsessive-compulsive disorder symptoms (Thompson-Hollands, Abramovitch, Tompson, & Barlow, 2015), and schizophrenic and obsessive-compulsive symptoms and violent thoughts (Warman et al., 2015). The results in the literature and achieved in this study indicate that psychoeducational programs are effective in reducing the psychological symptoms. Through psychoeducational programs, individuals can acquire awareness of their problems and gain skills of coping with those problems. While the psychoeducation process brings new strategies to individuals to cope with the problem in case it recurs later, it may help them cope with other problems, too.

The second hypothesis of the study was determined as follows: "Psychoeducational program for reducing psychological symptoms a) is effective in reducing Internet addiction; b) will maintain its effectiveness in the follow-up study to be conducted 45 days later." As for the findings achieved in the study, it was observed that the Internet addiction levels of the students who participated in the psychoeducational program for reducing the psychological symptoms decreased significantly through psychological symptoms compared to those who did not participate and this decrease continued in the follow-up test conducted 45 days after the procedure. No psychoeducational programs for reducing the Internet addiction through psychological symptoms was observed in the literature both domestic and foreign. Liu et al. (2015) conducted a group therapy aiming the Internet addiction directly. In the study, group therapy was performed with the Internet addicts and their parents, and a significant decrease in Internet addiction among adolescents was determined in the end. Berber Çelik (2016) determined that the educational intervention program was effective in reducing the Internet addiction. It is also observed that there are individual and group studies for preventing the Internet addiction through approaches such as cognitive-behaviorist therapy (Davis, 2001; Young, 1999), supportive group studies and parental therapies (Huang et al., 2010), reality therapy (Kim, 2008), and multiple psychotherapies (Huang et al., 2010). Given the results achieved in this study and the results in the literature as a whole, there is a distinct relationship between psychological symptoms and Internet addiction.

In consideration of studies in the literature and the results of this study together, the relationship between psychological symptoms and Internet addiction is observed more clearly. This study tried to reduce psychological symptoms to mitigate Internet addiction on the basis of the relationship between psychological symptoms and Internet addiction. The findings obtained in the analyses that were performed to see whether this objective was achieved; in other words, whether the psychoeducational program for reducing the psychological symptoms was effective in mitigating the Internet addiction indicate that the objective was achieved and the results coincide with the literature.

There are certain limitations to the study. As the participants in the research group were the ninth-, tenth-, and eleventh-grade students studying at an Anatolian High School in İstanbul, generalizability of the findings is limited to the high schools with similar conditions. Even though the study was conducted at a school which accepts students from all walks of life through examination, there are some limitations to the study about external study as it was conducted at a single school. The loss of the subject is a limitation of the internal validity of the study. The psychoeducational program

for reducing the psychological symptoms is limited to 10 sessions. The follow-up procedure was limited to the measures received 45 days after the posttest.

Some recommendations were made for future studies based on the study results. New versions of this psychoeducational program aiming to mitigate Internet addiction by reducing the psychological symptoms can be developed to also cover the parental and teacher education. A comparison was not made with an alternative approach when examining the effect of the psychoeducational program for reducing the psychological symptoms on the Internet addiction. A future program can be compared with an alternative and its effectiveness can be examined. This study is one of the studies that investigate how a psychoeducational program for reducing the psychological symptoms affects Internet addiction among adolescents in Turkey. Hence, it can be recommended that this program is used in future research, and its effectiveness is questioned and the findings are tested for validity. It was seen in the study that there was no difference between the experimental and control groups' Internet addiction posttest scores, but they differed significantly in the follow-up test. In studies that measure indirectly, it can be investigated whether the variables can be studied for longer periods. The program can be enriched with a variable of which indirect effect is investigated. The program prepared in this study and of which effectiveness was tested is in the psychoeducational format. It is seen that this program reduced the Internet addiction levels and psychological symptoms. In future research studies, the program can be tested with the formats of psychological counseling with groups and individual counseling.

Some recommendations were also made for experts working in the field. The findings obtained in the study indicate that reducing the psychological symptoms is effective in mitigating the Internet addiction. Therefore, it can be used for planning and implementing the studies to be conducted with adolescents who exhibit psychological symptoms and go through Internet addiction. Psychological counselors working in schools can utilize the psychoeducational program for reducing the psychological symptoms that was prepared within the scope of this study. The program can also be used for preventive counseling in a study to be performed with adolescents. Psychological counselors can use adapt this psychoeducational program for other addiction problems.

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