Extended Abstract

Educational Intervention for Reducing Internet Addiction Tendencies[*]

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Abstract

The aim of this research is to determine the effect of a training program, developed to increase conscious Internet use, academic motivation, and effective use of time, on the Internet addiction tendencies of adolescents continuing their high school education. The participants were chosen from among students who had completed the measuring scale in secondary schools in Çayeli county of Rize province, and they are comprised of 30 volunteer students participating in the educational program. The chosen students were divided at random into experimental (*n* = 15) and control (*n* = 15) groups. The study used a 2x3 split-plot with pre-test, post-test, and follow-up measurements for the study and control groups. Internet-addiction tendencies were measured with the problematic Internet use scale. The study group attended a five-session educational program designed to increase conscious Internet use, academic motivation, and efficient use of time. The final test measurements were completed ten days after the end of the experimental procedure, with follow-up measurements completed six months after the procedure. Data analysis used two-way variance analysis for the split-plot. The results reveal that the educational program developed to increase conscious Internet use, academic motivation, and efficient use of time is effective at reducing adolescent's Internet addiction tendencies.

Keywords

Internet • Internet addiction • Academic motivation • Effective use of time • Adolescence

Regarding the technology age, a frequent topic of research is currently Internet addiction. Internet addiction, viewed as a technological and behavioral type of addiction, is characterized by continual and excessive use of the Internet in spite of imposed limitations, as well as psychological, physical, and social damage; anxiety; aggression; and excessive nervousness in situations of limited Internet access (Shapira et al., 2003). While Internet addiction is not classified as a disease according to the DSM-IV published by the American Psychiatric Association (APA, 2000), in DSM-V it has been classified under "Substance Abuse and Addiction Disorders" as a compulsive behavior with substance abuse lacking a substance addiction, in addition to being a compulsive behavior without any substance abuse (pathological gambling habits, sex addiction, Internet addiction, etc. [APA, 2000, 2013]).

There are an insufficient number of comprehensive studies on identifying the prevalence of Internet addiction in the general population. An epidemiological study in America identified a 0.7% prevalence of Internet addiction in the general population (Aboujaoude, Koran, Gamel, Large, & Serpe, 2006). The majority of research from other countries has focused on estimating the incidence in adolescents, who are considered as a high-risk age group for Internet addiction (Liu & Potenza, 2010). Studies of adolescent high school and university students found the incidence of Internet addiction was 10.8% in China (Lam, Peng, Mai, & Jing, 2009), 10.7% in South Korea (Park, Kim, & Cho, 2008), 1.7% in Finland (Kaltiala-Heino, Lintonen, & Rimpela, 2004), 8.2% in Greece (Siomos, Dafouli, Braimiotis, Mouzas, & Angelopoulos, 2008), 2% in Norway (Johansson & Gotestam, 2004), 7.5% in Taiwan (Ko, Yen, Yen, Lin, & Yang, 2007), and 1.2% in Turkey (Canbaz, Sunter, Pekşen, & Canbaz, 2009).

Adolescence is a developmental stage in which physical, emotional, and personality development is intensely experienced. Adolescents who have not reached psychological maturity are more affected by the harmful effects of addictive substances or behaviors compared to adults. In other words, adolescents appear to be a high-risk group for Internet addiction when they are developmentally defenseless against addictions (Liu & Potenza, 2010; Kaltiala-Heino et al., 2004). In research completed by Young (1996), adolescents without any emotional problem who spend hours in "chat rooms," or who unconsciously spend wasted time on pornography, online shopping, games of chance, or computer game sites or on a variety of hobby pages become addicted to Internet use over time and begin to experience emotional problems. As a result, Internet use forms a physical, psychological, and social threat to adolescents (Ceyhan & Ceyhan, 2008; Tsai & Lin, 2003).

In addition to the negative emotional and social experiences of adolescents with Internet addiction tendencies, they also experience many problems in terms of

education. The Internet is a beneficial tool when used for educational purposes such as preparing homework, researching, and gaining knowledge. However, adolescents use the Internet for making friends, communicating, playing games, and using social networks more than for academic purposes (Gross, 2004). A study researching Internet habits found greater numbers using the Internet for gaming and entertainment than those using it for academic purposes (Tahiroğlu, Çelik, Bahalı, & Avcı, 2010). Using the Internet for more social and entertainment functions and unconsciously spending long hours on the Internet take adolescents' time away from completing homework, studying for exams, and getting enough sleep for the following day. Students' lack of Internet use control may lead to a lack of motivation towards classwork, low grades, failure, and even expulsion from school (Young, 1996). Research has shown that as adolescents have fewer responsibilities than adults, they have more free time; if this time is spent on the Internet without limitation, they may experience negative effects (Caplan, 2005; Mutz, Roberts, & van Vuuren, 1993). Research has shown that those who use the Internet excessively have low academic performance (Chang & Law, 2008; Chen & Peng, 2008; Huang et al., 2009; Kubey, Lavin, & Barrows, 2001; Mythily, Qui, & Winslow, 2008; Özçınar, 2011), while Internet addiction is shown to be correlated with decreased academic self-efficacy (Odacı, 2011), reduced focus of academic control (İskender & Akın, 2010), and increased academic procrastination (Odacı, 2011).

There are a range of models recommended for dealing with Internet addiction, which negatively affects youths psychologically, socially, physically, and academically. Davis (2001) recommended a 10-session program prepared for Internet addiction treatment in accordance with cognitive behavioral therapy. These sessions deal with both Internet use and impulsive thinking by, attempting to treat Internet addiction using a cognitive approach while providing behavioral techniques to reduce the time spent on the Internet, relaxation exercises, and gain new social skills. In an Internet treatment guide, Young (1999) attempted to treat Internet addiction with techniques such as using the Internet at inconvenient times, external inhibitors, determining goals, avoiding various functions of the Internet, support groups, and family therapy. Additionally, psychological counseling with groups based on reality therapy is known to be effective at dealing with Internet addiction (Kim, 2008; Odacı & Çelik, 2011). Models for reducing Internet addiction are limited, and no program is found in the related literature in terms of education. As youths in their adolescence are a risk group for addictive behavior, developing programs on this topic is important. Because the age at which Internet addiction can be observed is very young, these programs are important for preventing its negative academic effects on school-age children and youth. This study attempts to reduce Internet addiction tendencies in adolescents using a training program to ensure increased academic motivation and efficient use of time.

The basic aim of this research is to determine the effect of a training-program at developing conscious Internet use, academic motivation, and efficient use of time over Internet addiction tendencies in adolescents who are continuing their secondary education. In light of this basic aim, the research tested the following hypothesis:

Student participants in a training-program to develop conscious Internet use, academic motivation, and more efficient use of time will reduce their Internet addiction tendencies compared to control-group students; this reduction will continue in follow-up measurements six months after the end of training.

Method

Participants

This research used a 2x3 split-plot matrix for a quasi-experimental study. This matrix uses independent process groups as the first factor (study and control), while the other factor used repeated measurements of dependent variables under different conditions (pre-test, post-test, and follow-up scales). Participants were chosen from students in their secondary education who had completed the scale tool in Çayeli, Rize; they are comprised of a total of 30 volunteer students, 15 in the experimental group attending the training program and 15 in the control group.

Data Collection Instruments

The problematic Internet use scale was used to measure university students' Internet addiction tendencies.

Problematic Internet Use Scale (PIUS). Developed by Ceyhan, Ceyhan, and Gürcan (2007), the scale was used in order to determine university students' problematic Internet-use levels. This was developed as a self-evaluation dimensional scale based on the premise that the intensity of Internet use exhibits continuity over a wide spectrum, from normal to pathological. The PIUS consists of 33 items. Possible scores range from 33 to 165, with high scores indicating that individuals' Internet use is unhealthy, has a negative effect on their lives, and may help establish a tendency towards pathology such as Internet dependency. Internal consistency of the scale is found as $\alpha = .94$ (Ceyhan et al., 2007).

Procedure

In order to choose participants, the scale was applied to students in Çayeli, Rize, who were attending different secondary-level institutions. For choice of study and control groups, a subject pool of 306 students was created, and the scores obtained by students in this pool were noted. The experimental group was comprised of students with scores above the sample mean on the PIUS. A total of 30 volunteer students

participating in the study were randomly assigned to experimental and control groups. The students in the study group were then informed and participation was ensured in an orientation study one week later.

To test whether the experimental and control groups were equivalent, the independent group *t*-test was applied. Analysis results show no significant difference between the groups in terms of mean scores on the PIUS pre-test ($t = 1.03$, $p > .05$). According to this result, the tested variables in the experimental and control groups were equivalent prior to the application. The independent group *t*-Test results of the students' pre-test Internet addiction scores for the experimental and control groups are given in Table 1.

Table 1
Independent Group t-test for PIUS Pre-test Scores

	Group	N	$\bar{\chi}$	Sd	t	p
PIUS	Experimental	15	112.20	14.45	1.03	.631
	Control	15	107.27	11.69		

*p < .05.

In the research, the PIUS was applied to experimental and control groups as a pre-test. Ten days after the training program, the same scale was used as a post-test. Follow-up measurements were applied 6 months after the end of training. The training-program for the study group continued for 5 weeks. Sessions were held once a week and lasted from 90 to 120 minutes. Sessions were held at the students' schools after school hours. The control group did not attend any training-program.

The general aims of the program were to reduce the study group members' time spent on the Internet, to improve awareness by increasing their academic motivation levels and ensuring efficient use of time, and to help reduce Internet addiction tendencies through group experiences. In light of this aim, the training-program presented in Table 2 was applied to the study group.

Table 2

Training-Program Sessions to Increase Conscious Internet Use, Academic Motivation, and Efficient Use of Time

Sessions	Strategies
1st Session: *Conscious Use of the Internet*	Group introductions Inform members about the process Share expectations with the group Determine personal aims related to the process Determine rules for the group Become aware of the Internet as a choice Observe negative aspects of long-term Internet use Observe the correlation between excessive Internet use and academic success Use the Internet consciously Assessment and summary of session
2nd Session: *Effective Use of Time*	Learn strategies for efficient use of time Apply these strategies Determine functional aims Assessment and summary of session
3rd Session: *Academic Motivation*	Concept of the importance of attention in studying Gain skills to focus attention on the study topic Develop skills to increase motivation Assessment and summary of session
4th Session: *Productive Study*	Prepare an appropriate study environment Learn and apply study strategies Develop effective listening skills Comprehend repetition and recall methods Assessment and summary of session
5th Session: *Assessment*	Summary of sessions; reviewing experiences during the process Members share assessment of personal development and group development during the process Ensure positive emotions are felt at the end of the process Final activity and appropriate finish to the group

Data Analysis

To determine whether the dependent variable in the research (Internet addiction) has been affected by the independent variable (training program to increase conscious Internet use, academic motivation, and efficient use of time), the two-factor variance-analysis technique for split-plots was used. For all analyses in the research a 0.05 level of significance was taken.

Results

Before testing the hypothesis, the mean and standard deviations of PIUS scores obtained by participants in the experimental and control groups before the application, right after the application, and six months after the application were calculated. The values obtained are presented in Table 3.

Table 3

Mean & Standard Deviations of Experimental and Control Groups' Pre-test, Post-test, and Follow-up PIUS Scores

Variables	Groups	n	Pre-test		Post-test		Follow-up Test	
			$\bar{\chi}$	Sd	$\bar{\chi}$	Sd	$\bar{\chi}$	Sd
PIUS	Experimental	15	114.56	16.85	89.06	17.49	90.31	17.48
	Control	15	109.93	15.54	107.25	12.80	107.31	13.33
	Total	30	109.73	13.15	96.03	16.11	96.67	15.92

From this table, the study-group participants' mean post-test ($\bar{\chi} = 89.06$) and six month follow-up test ($\bar{\chi} = 90.31$) PIUS scores appear to be lower than their mean pre-test scores ($\bar{\chi} = 114.56$).

To test the hypothesis, two-factor variance analysis was used for the split-plots to determine whether the difference in mean scores for the pre-, post-, and follow-up tests were significant. The results are given in Table 4.

Table 4

Variance Analysis of Mean Pre-, Post-, and Follow-up PIUS Test Scores of The Experimental and Control Groups

	Source of Variance	KT	Sd	KO	F	p
PIUS	Between Groups	16244.46	29			
	Group(Experimental /Control)	2656.90	1	2656.90	5.48	.027
	Error	13587.56	28	485.27		
	Within Groups	7243.34	30			
	Measure (pre/post/follow-up)	3588.29	1	1794.14	119.53	.000
	Group x Measure	2814.47	1	1407.23	93.75	.000
	Error	840.58	28	15.01		
	Total	23487.60	59			

*$p < .05$.

As observed in Table 4, the variance-analysis results of scores obtained from PIUS found a significant difference in group effects ($F_{(1.28)} = 5.48$, $p < .05$). In other words, without differentiating among the pre-, post-, and follow-up test measures of the study and control groups, a significant level of difference is seen between the PIUS mean scores. Without differentiating between the groups, the basic effect of mean scores obtained at different times from the pre-, post-, and follow-up tests appears to be significant (Wilks'$\lambda = .164$, $F_{(1.28)} = 119.53$, $p < .05$). Additionally, when investigating whether variations in the experimental and control groups' mean scores for problematic Internet use were significant for the pre-, post-, and follow-up tests, the common effect of the *group* x *measure* as found to be significant (Wilks'$\lambda = 0.198$, $F_{(1.28)} = 93.75$, $p < .05$). The significance of the common effect shows that the study-group participants' training was effective at reducing Internet addiction tendencies. The variation in mean academic procrastination scores for the pre-test, post-test, and follow-up test in the groups is shown in Figure 1. Participants in the experimental group had a reduction in post-test results for Internet addiction compared to their pre-

test measurements, and this reduction lasted for the follow-up measurements six months later.
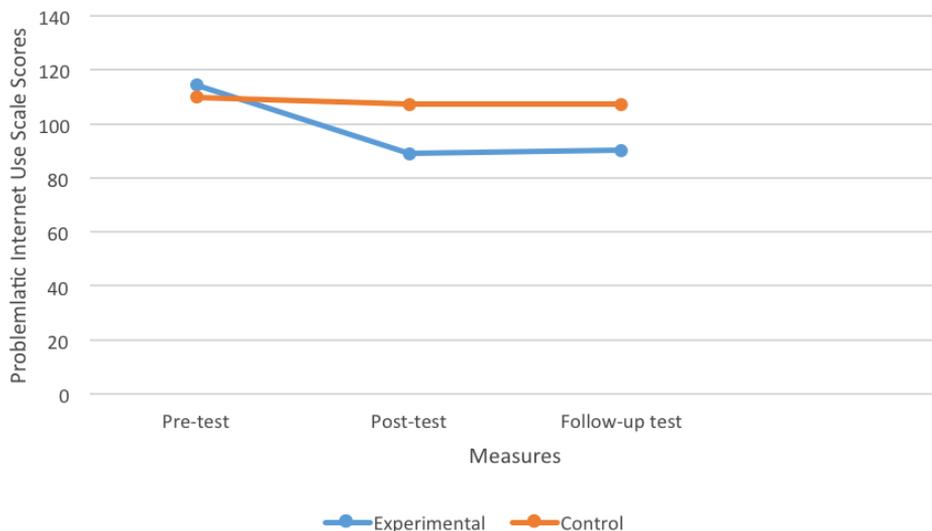

Figure 1. Variation in experimental and control groups' mean pre-test, post-test, and follow-up test PIUS scores.

Discussion

The hypothesis of this experimental study shows that students who participate in a training program to develop academic motivation and increase efficient use of time had a reduction in Internet addiction tendencies compared to the students in the control group; this reduction was observed to last for the follow-up measurements six months after training. Results show the mean PIUS obtained by the study group for the post and follow-up tests were significantly lower than their mean pre-test scores. The mean post and follow-up test scores in the study group were significantly lower than those for the control group. The research findings reveal no significant difference between the post- and follow-up tests' results for the study group. These findings support the hypothesis of the research that there would be a reduction in Internet addiction tendencies after the training program to increase academic motivation and efficient use of time. Because this level stayed relatively the same, the program can be interpreted as effective.

When investigating experimental research on dealing with Internet addiction, cognitive behavioral therapy models are mainly chosen and emphasized as being effective (Arısoy, 2009; Davis, 2001; Ögel, 2012; Roij, Zinn, Schoenmakersn, & Mheen, 2012; Şenormancı, Konkan, & Sungur, 2010; Young, 1999). For example, a study of 114 Internet addicts applied 12 sessions of cognitive-behavioral therapy.

Changing impulsive thoughts using therapy, in addition to behavioral techniques such as increasing motivation, managing time efficiently, developing social relations, and increasing efficacy outside of the Internet, was used. At the end of the application, cognitive-behavioral therapy appeared to be effective at dealing with Internet addiction (Young, 2007). Additionally, Reality Therapy is known to be effective at dealing with Internet addiction. Applications based on Reality Therapy are about questioning the concepts of choice and responsibility in order to prepare realistic plans related to Internet use and apply these plans in daily life (Kim, 2008; Odacı & Çelik, 2011). Approaches like support group studies, family therapy, and multiple psychotherapies (Huang, Li, & Tao, 2010; Liu et al., 2015; Shek, Tang, & Lo, 2009; Yang & Hao, 2005) have been used to prevent Internet addiction in individual and group studies.

Apart from these therapy models, this study applied an educational coping program. When investigating the literature, no educational intervention program has been found to cope with Internet addiction. However, the age when Internet addiction tendencies are observed is getting lower, and as it appears to be a problem affecting children and adolescents particularly in school, it needs to be dealt with. Working from this perspective, participation in training-program sessions that aim to teach efficient time-use strategies, as well as attention, motivation, and productive study techniques, is considered effective and beneficial.

Among reasons for the effectiveness of the experimental study's training program is that it includes problems experienced by adolescents in academic life. Efficient use of time is one of these. Those with Internet addiction tendencies are known to not manage time efficiently and to spend most of their time on the Internet. In research comparing 64 Internet addicted and 64 non-addicted adolescents, the Internet addicts were less successful at managing time (Cao & Su, 2007). Intervention programs with proven efficacy include activities related to time management, such as regulating time spent on the Internet and planning daily activities (Kim, 2008; Odacı & Çelik, 2011; Young, 2007). The prepared educational program includes similar time-use activities, which is a common point among other intervention programs that have been shown to be effective. One of the problems experienced by adolescents with Internet addiction tendencies is academic motivation. When the mind is busy with Internet functions, it causes students to lack motivation toward academic responsibilities. The prepared training program includes concepts like attention, motivation, and productive studying to increase students' academic motivation and prevent them from focusing on the Internet.

With Internet addiction being observed in adolescents and, increasingly in younger children, interventions and prevention programs have become more important. At this point, one needs to develop and disseminate intervention programs with a psychological basis and an educational content for developing a healthy body and

mind. Close cooperation with families carries great importance for prevention studies. Necessary information and warnings about Internet addiction are required to raise awareness among both families and children.

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