



EXPLORING THE IMPACT OF INTERNET ADDICTION ON ACADEMIC ACHIEVEMENT

Orhan Iyitoğlu¹,

Nadir Çeliköz²

¹Instructor at Gebze Technical University, Department of Foreign Languages, Kocaeli, Turkey

²Associate Professor at Yildiz Technical University, College of Education, Curriculum and Instruction Department, Istanbul, Turkey

Abstract:

This study provides an account of the phenomenon of internet addiction from the perspective of academic achievement. In other words, this study aimed to explore the relation between academic performance of Turkish high school students in such different subject as Maths, English, History, GPA and their use of internet. Different school subjects were selected consciously as the predictor of success in different domains such as social sciences, language, mathematics and the mean of them (GPA). In this respect, employing convenience sampling method, 217 high school students (107 males, 110 females) were included in the study. The level of internet addiction among the participants was determined through administering one dimension of the adopted version of The Social Networking and Social Media Status Scale (Arslan & Kırık, 2013) ($\alpha = 0.88$). For academic performance, the students were asked to write down the grade points for the specified three subjects and GPA as in their recent school reports. Following the statistics and the procedures run for the reliability and validity of the scale using both SPSS 21 and Liesrel 6 for Windows; adequacy of the sampling; normality and homogeneity of the distribution, parametric tests (Independent Sample T tests & Pearson Product Moment Correlation) were run to analyze the data through SPSS 21 for Windows. The results suggested no gender impact on internet addiction. In terms of the academic performance, statistically positive relation was found between EFL performance and internet use while GPA scores were found to be negatively correlated with it. No correlation between performance in history or math and internet use was found.

Keywords: internet addiction, academic performance, gender, factor analysis

Introduction

With the invention of internet, a new channel for communication, information sharing and networking has emerged. This new channel has been so excessively used all over world that it has started to invade not only social but also academic aspects of student lives. In this respect, students, especially adolescents, are reported to spend a significant part of their days on the Internet for various purposes (Ito, Horst, Bittanti, Boyd, Herr-Stephenson, Lange, et al., 2008). Results of such use of the internet are generally two-folded.

First of all, as introduced by Akhter (2013), the research explored a number of benefits of the internet ranging from keeping in touch with friends, making vacation plans, managing finances to assisting with educational needs. More specifically, it may academically help students improve their skills for effective communication and application of successful strategies (Mishra, Draus, Goreva, Leone, Caputo, 2014). Similarly, some studies in the literature have shown the positive impacts of the Internet on students' academic life as an aid to complete homework more effectively and efficiently (Borzekowski & Robinson, 2005; Jackson, et al., 2006).

On the contrary, to the options, it has aroused to make students' academic life easier; the internet has also brought new dangers threatening their success. Tragically, Moisan (2012) attracts the attention to the increasing Internet use since the beginning of the century figuring that the number of people addicted to these problematic activities were making the 61% of the population in the most recent years. As a result, "*for over a decade, problematic Internet use has attracted unparalleled attention and has been widely researched*" (Serin, 2011, p. 54). This growing attempt to better understand the problematic use of internet yielded to a number of studies in the wide range of related literature indicating its negative impact on maintaining daily routines, school performance, and family relationships (Akhter, 2013; Chou and Hsiao, 2000; Eldeleklioğlu, 2008; Frangos, 2009; Kaltiala-Heino, Lintonen, Rimpela, 2004; Kim, LaRose & Peng, 2009; Moisan, 2012; Tahiroglu, Çelik, Uzel, Özcan & Avcı, 2008; Widyanto & Griffiths, 2007).

In spite of a wide range of research studies conducted on the relationship between problematic internet use and the academic achievement, most of those studies are driven by a general definition of addiction. It is generally defined as "*compulsive, uncontrollable dependence on a substance, habit, or practice to such a degree that cessation causes severe emotional, mental, or physiological reactions*" (Mosby, 1998, p.321) However, in this study, the researchers take a specific type of the addiction. By building a bridge between the general definition of the term "addiction", similar to Chao and Hsiao (2000), internet addiction is regarded in this study as "*an individual's inability to control*

his or her use of the internet, which eventually causes psychological, social, school, and/or work difficulties in a person's life" (Chao and Hsiao, 2000, p.) Despite the lack of a widely accepted definition of the term, the studies indicate similar results. Excessive use of Internet is reported by Akhter (2013) to "*adversely affects one's physical health, family life*" (p.1793). Moreover, some studies also indicated the psychological impact of internet addiction as a lack of social engagement and decreased productivity and physical impacts as back/neck muscular problems, Carpal Tunnel Syndrome and sleep disorder especially damaging to the brains of adolescents and young adults (Saisan, Smith, Robinson, & Segal, 2013). Excluding such adverse effects of the problematic use of the internet, this study, specifically, is conducted to explore the relationship between internet addiction among high school students and their academic performances. The study also seeks to detail this relationship by attempting to enlighten the impact of internet addiction on different school subjects. In addition, the impact of gender on the internet addiction is also questioned.

In this respect, the researchers hypothesize that gender plays a significant impact on problematic internet usage. Supporting this, several studies have reported gender differences in internet usage (Akhter, 2013). This hypothesis also relies on the fact that more males than females use the Internet across the world. Moreover, it relies on a cultural point put forward by Tsai et al. (2009). That is the fact that female college students are often supervised more frequently by their families than males especially in eastern cultures, which may result in males' abnormal use of the Internet.

The researchers also hypothesize that problematic internet use will exert negative impacts on highschool students' performances in different school subjects. This hypothesis stands for the significance of the study. As introduced by Esen and Siyaz (2011) most of the related literature is invaded by studies conducted with university students and the adults. However, internet is reported to be used among adolescent students more frequently (Öztürk, Odabaşoğlu, Eraslan, Genç ve Kalyoncu, 2007). Although these studies began to be carried out in only the last decade in the literature, the efforts in Turkey compared to the case around the world are not sufficient (Serin, 2011). In addition to a number of studies conducted to explore different aspects of the issue of internet addiction (Bayraktar, 2001; Ceyhan, 2008; Ersoy ve Yaşar, 2003; Günüç & Kayri, 2010; Kurtaran, 2008; Orhan ve Akkoyunlu, 2004; Tahiroğlu, Çelik, Uzel, Özcan & Avcı, 2008); this current study will serve for the purpose of better understanding the phenomenon of internet addiction from the perspective of academic achievement. Different from the previous studies, it will broaden this perspective by searching the impact of internet addiction on both GPAs and some specific subject areas as to let the researchers deepen their analysis. Therefore, this study promises valuable information to a wide range bodies from teachers, educational programmers to parents

that will foster awareness of the role of problematic internet addiction on students' performance in certain school subjects.

1. Methodology

1.1. Design

This *quantitative* research study was grounded in an *explanatory correlational design* to gain insights into the relationship between internet addiction and academic performance among high school students in Istanbul. Creswell (2012) defines explanatory correlational research design as a design "in which the researcher is interested in the extent to which two variables (or more) co-vary, that is, where changes in one variable are reflected in changes in the other" (p.340).

1.2. Research Questions

The aim of the present research to study the relationship between "internet addiction" and "academic achievement" among high school students is embodied in the following research questions:

1. Do male and female high school students differ significantly in terms of internet addiction?
2. Is there a significant relationship between "internet addiction" and "academic achievement" among high school students?

1.3. Participants

Convenience sampling method was employed to draw the sample of the study. Creswell (2012) indicates that the researcher uses this type of sampling since "participants are willing and available to be studied at" (p.145). As introduced by Creswell, such a sampling "can provide useful information for answering questions and hypotheses" (p.146). Moreover, due to such limitations as lack of time, fund and nature of the data collection instrument and study, the researchers employed this sampling and included 217 high school students (107 males, 110 females) in the study. 20 of these students (9,2 %) were ninth graders, 79 of them were (36,4 %) tenth graders, 80 of them (36,9 %) were eleventh graders while the remaining 38 of them (17,5 %) were twelfth graders. The mean age of the participants was 15,8.

1.4. Instrument

To attain the objective of the research study, it was a must to collect the data that indicates the level of internet addiction and academic achievement among high school students. Within this respect, *The Social Networking and Social Media Status Scale* (Arslan

& Kırık, 2013) was administered by the researchers to measure the level of internet addiction among the participants ($\alpha = 0.93$). This scale consisted of 38 items which are scored on a 5-point Likert-type scale ranging from "1 = not at all" to "5= always". Originally, as a result of exploratory factor analyses computed by the developers of the scale, the scale was found to have three dimensions as *addiction, ethic and convergence*. To make original survey more compatible with the context of the specific research problem in the current study, some reductions were carried out. Therefore, the items questioning the dimensions of ethic and convergence were omitted and 24 items focusing on the internet addiction were adopted. For academic achievement, on the other hand, the GPA of the participant students related to all school subjects and three different school subjects (Mathematics, English as a Foreign Language, History) each standing for one of three different branches such as social sciences, language, mathematics, was collected. There are also 3 demographic questions on the survey relating to age, gender and college level. In the end, the instrument used for data collection had 24 items on internet addiction in addition to 3 demographic and 3 questions related to GPA. In other words, students were asked to write down the mean scores of three specified subjects and GPA as in their recent school reports.

To produce sound, accurate, truthful and objective results on the hypotheses of the research, it is a must to administer a reliable and valid instrument that best fits into the purpose of the study. Before checking the reliability and validity of the instrument, as a prerequisite, first of all *KMO & Bartlett's Test of Sphericity* was computed to measure the adequacy of the sampling in the pilot testing. As a result, the measure of the sampling adequacy was found to be higher than Kaiser's (1974) recommendation of .5. This shows the sample size is adequate for the analysis to be conducted ($KMO = 0,90$; $p < .000$).

Once the sample was found to be suitable to conduct intended analyses, the researchers aimed to compute the reliability of the modified scale. In this respect, Cronbach's alpha (α) value using SPSS was computed. Cronbach's alpha is the most common measure of internal consistency especially with multiple Likert questions in a survey/questionnaire that form a scale and when the aim of the researchers is to determine if the scale is reliable (Bland & Altman, 1997; Cronbach, 1951). As a result of the analysis, it was explored that the scale was a reliable measure of internet addiction in the limits of the scope of the research ($\alpha = 0.88$). In other words, based on Salkind's view of reliability (1997), the instrument is able to yield to consistent data on the relevant variable that will remain stable over a period of time.

Following the reliability analyses of the adopted scale, the researchers set to test the validity of the modified scale. Validity is determined by Joppe (2000) as "*whether the research truly measures that which it was intended to measure or how truthful the research*

results are" (p.1). Based on this, validity of an instrument can be said to refer its ability to measure what it aims to measure. There are different types of validity suggested by different researchers such as face, content, construct, criterion-related, formative or sampling validity (Moskal & Leydens, 2000). However, Golafashani (2003) refers to the validity in quantitative research as "construct validity". The construct is used to indicate the concept, notion, or hypothesis in the center of the research, which is "internet addiction" in the current study. In this respect, the researchers administered both exploratory and confirmatory factor analyses to find out if the adopted one-dimension scale is a valid measure of the internet addiction construct. Exploratory factor analysis (EFA) is, actually, said to be used in the phase of developing a scale for the first time to explore the possible underlying factor structure of a set of observed variables without a preconceived structure on the outcome (Child, 1990). Yet, by performing EFA, the underlying factor structure is possible to be identified. As a result, to strengthen the comment on the validity of the scale, both types of the factor analyses were run. At first, since only one dimension of the original scale was adopted in the study, EFA was computed to see if the modified version had only one dimension or not. As a result of Principal Component Analysis, it was understood that the items gathered around one dimension and had the extraction values ranging from 0,303 to 0,717. Moreover, the items were found to explain the % 33,87 of the total variance in one dimension, which is within the accepted statistical range.

In addition to the EFA, confirmatory factor analysis (CFA) is a statistical technique run to verify the factor structure of a set of observed variables. In that, it allows the researcher to test if the already set hypothesis that a relationship between observed variables and their underlying latent constructs exists or not (Bryant & Yarnold, 1995; Harrington, 2008). Within this explained perspective, the researchers administered CFA and more specifically a full structural equation model (SEM) using LISREL 8.54 in order to explore and confirm if the model of the construct is explained in one dimension or not. However, it should not be forgotten that CFA is bound to a number of statistical tests to determine the adequacy of the model (Bryant & Yarnold, 1995). Therefore, at this level of the analysis, to test the model in which high school students' addiction to the internet in one factor, the researchers attempted to explore how much of the latent variable (internet addiction) was explained by 24 observed variables. Latent variable was shown in ellipse while 24 observed variables were shown in 24 rectangles. The factor loadings of observed variables [M1, M2, M3, M4, M5, M6, M7, M8, M9, M10, M11, M12, M13, M14, M15, M16, M17, M18, M19, M20, M21, M22, M23, M24] on latent variable (internet addiction) were indicated in Figure 1 and Figure 2.

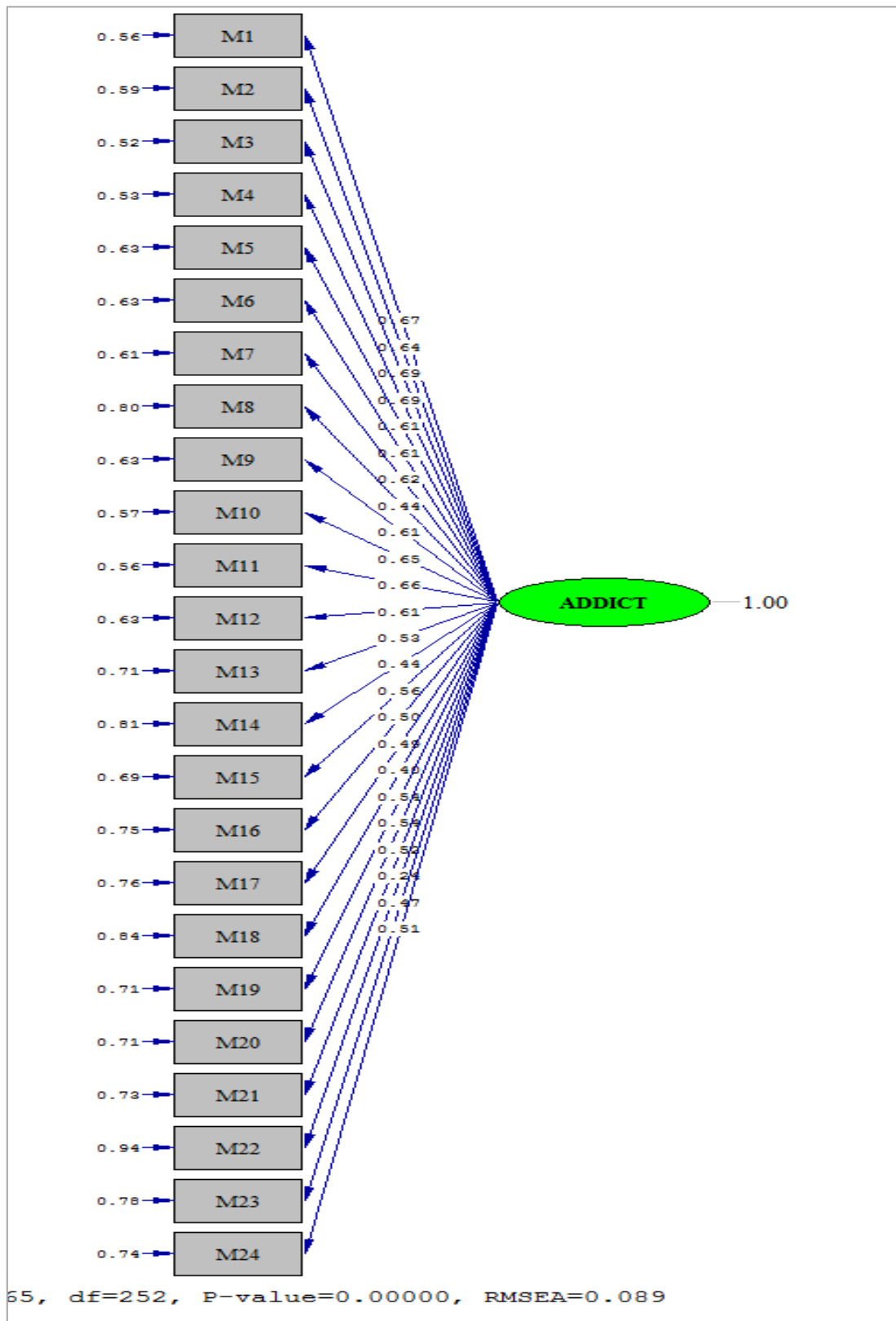


Figure 1: Model and Standardized Solutions for the Adopted Internet Addiction Scale

As shown in the figure; the standardized solution results indicate that the observed variables represent the latent variable ranging from 0.24 to 0.88. These values indicate that the variables represent the internet addiction variable in acceptable ranges since the power of explaining the latent variable for an observed variable increases as its value gets closer to 1.00 (Harrington, 2008). Moreover, on the left side of the 24 observed variables error covariance values are listed for each of them. As a result, when the error covariance values and factor loadings values are analyzed together, it is seen that all variables, except for 22nd observed variable with error covariance of 0,94, are in acceptable ranges.

However, the relationships between error covariance values and the released solution results indicate the fact that variance which could not be explained by the variables is also bound to the relations among the 24 observed variables themselves. In addition to correlations among the error covariance of the observed variables, there are some other reasons of adding these items together with their errors into the model. First one of them is the one-dimension construct of the adopted scale.

Moreover, the views of the consulted specialists that the items represent and explain the construct of internet addiction sufficiently make it difficult to extract those items. Last but not the least of them is indicated by the fact that these items worked without any problems in EFA. Based on these explained facts, all these 24 variables were kept and added into the model.

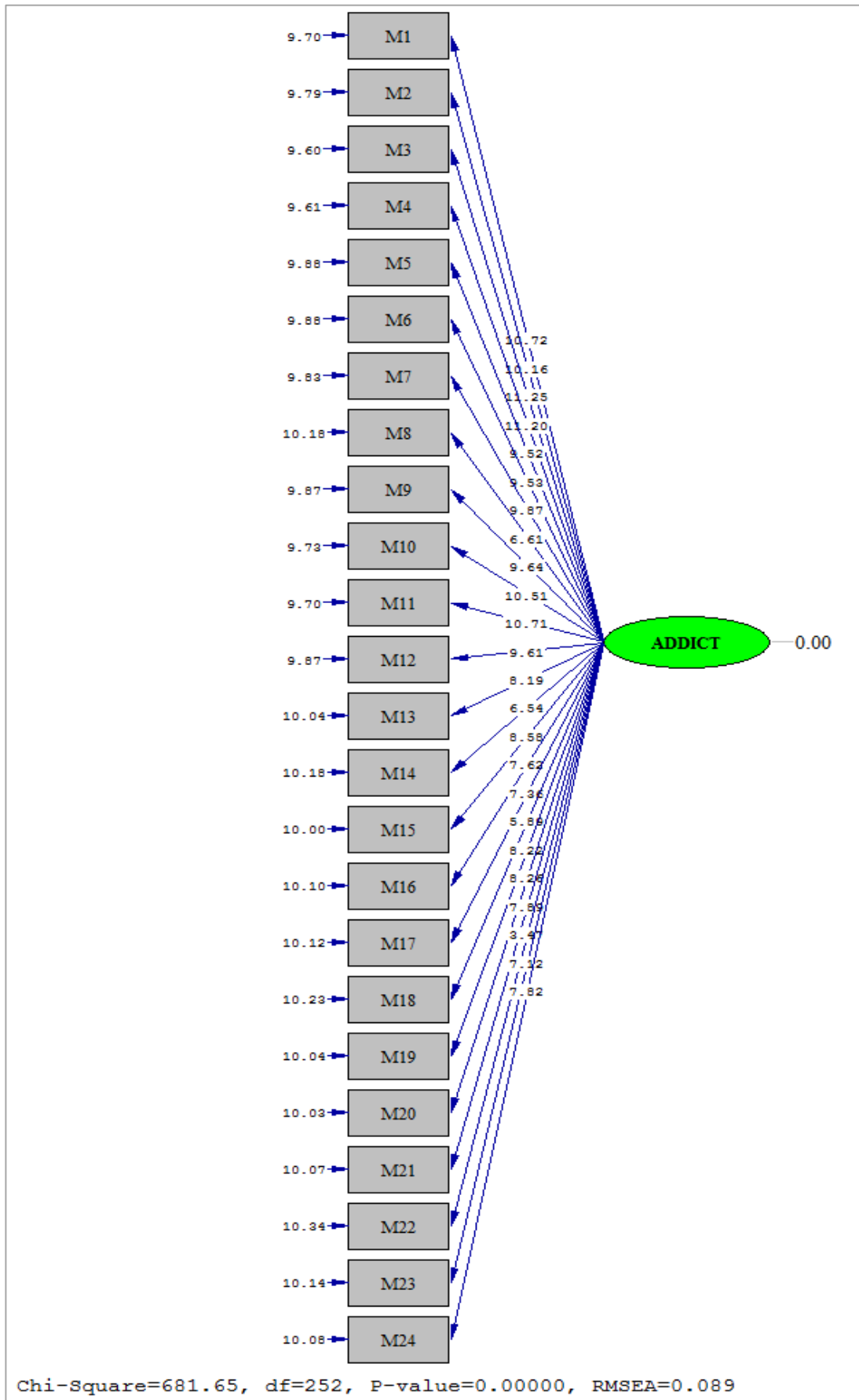


Figure 2: Not Standardized T-Values for the Adopted Internet Addiction Scale

T-values revealed in figure 2 are referring to another parameter exploring the relationships between the observed and the latent variables. The figure shows that the t-values range from 3.47 to 11.25. Statistically, when the significance level was adopted as 0.05, t-values at 2.58 and above signal a significant relationship. Since significance .05 is accepted as a criterion in social sciences, t-value must be 1.96 or above it, therefore, the variables having t-value less than 1.96 must be omitted from the scale. However, no variable, as seen in the figure, has a t-value below 1.96. As a result, the scale can be said to be a valid predictor of internet addiction among high school students. Yet, only standardized solution and not-standardized t-values are not enough to set the scale as a valid assessor of internet addiction in one dimension. Following table presents the necessary additional fit indices related to the path diagram of the scale.

Table 1: Fit Indices for the CFA Model

Model	χ^2	DF	AGFI	GFI	NFI	CFI	IFI	RMR	SRMR	RMSEA	% 90 CI RMSEA
One-Factor Model	681,65	252	0.75	0.79	0.90	0.94	0.94	0.012	0.071	0.089	0.81

Fit indices serve to explore if a CFA model fits with the data or the variables (Bryant & Yarnold, 1995). Out of these fit indices, the following values were analyzed in order to make a conclusive remark on the scale: Chi-square (χ^2), RMSEA (Root Mean Square Error of Approximation), SRMR (Standardized Root Mean Square), CFI (Comparative Fit Index), IFI (Incremental Fit Index), GFI (Goodness of Fit Index) and AGFI (Adjusted Goodness of Fit Index).

CFA results indicate $\chi^2=681.65$ (df = 252, $p>.05$) and $\chi^2 / df = 2.70$. Chi-square / Degree of Freedom must have a value below 2.00 and this is an indicator of a fairly good relationship while its being below 5,00 is accepted as an indicator of good relationship (Harrington, 2008). 2.70 value attained in this study indicates that one factor construct of the latent variable fits with the 24 observed variable of the study in an acceptable range. Limitations of the chi-square value make it necessary to refer to other indices. As seen in the table, the other values are listed as follows: RMSEA= .089, GFI= .79, AGFI= 0.75, RMR=.12 and SRMR= .071. Harrington (2008) set the acceptable ranges for some fit indices as in following way: RMSEA value between .00 and .08 is accepted as an indicator of good concordance while .06 is regarded as a cut point. GFI and AGFI values range from 0.00 to 1.00 and 0.00 stands for no concordance while 1.00 is seen as a sign of perfect concordance. Those values at or above .80, on the other hand, show a good concordance. RMR and SRMR values below .05 indicate a good concordance while values below .08 signal acceptable concordance. As a result of these acceptable ranges for the fit indices stated in the table, it can be understood that fit

indices attained in the current study are within or close to the acceptable ranges. Based on these fit indices in addition to standardized solution values and t-values, the researchers set the adopted scale of internet addiction including 24 items in one factor as a valid and reliable assessor of internet addiction among high school students.

On the other hand, following the stages of running EFA and CFA to set the reliability and construct validity of the adopted scale, the researchers aimed to test its face and content validity. Face validity of a scale commonly refers to the extent that it appears to be assessing the intended construct under study while the latter signals if the measure covers the broad range of areas related to the concept of the research (Burns, 1996). It is suggested that they can be checked through asking the subject related professionals or specialists if the scale looks valid or not and if it covers the critical areas within the concept of the study through a form. Accordingly, one specialist in assessment and evaluation, three specialists in educational psychology were asked to comment on the face and content validity of the modified scale according to criteria provided by the researchers. As a result of the collection of their opinions through forms where they were asked to assign numbers to their opinions from 1 to 5 and making simple descriptive calculations on it, the scale looked like a valid measure of internet addiction covering most of the critical points related to it with the mean score of 4,2 out of 5. Moreover, their recommendations were still taken into account to revise the scale.

1.5. Data Collection

Based on the permission from Institutional Review of Board (IBR) with a notice of 02-806 issued on March 23, 2015, the data for this research study was collected from 217 (107 males, 110 females) high school students studying at a state Anatolian High School in Istanbul in the third and fourth weeks of March in 2014-2015 academic year. Through a consent form, all the participant students were ensured that all individual performance was confidential and that they were free not to participate in the study or use pseudonyms and then volunteer students were asked to complete the aforementioned instrument.

1.6. Data Analysis

The data collected as a result of the administration of the modified version of *The Social Networking and Social Media Status Scale* (Arslan & Kırık, 2013) was analyzed quantitatively using the SPSS, Version 21. First of all, reliability analyses and factor analyses were run to test the reliability of the adopted version of the data collection instrument. To answer the research questions of the study, T-tests were run to explore the possible differences between male and female students' levels of internet addiction.

Correlation analyses were also computed to find out the relation between internet addiction and GPA scores related to different subjects standing for different branches separately.

2. Limitations of the Study

The validity of the findings of this study is exposed to some limitations. First of all, the study was limited to students from the high school where the researchers collected data in Istanbul. A study with a larger amount of students from different cities might yield different results. Some other factors such as lack of time, fund and nature of the data collection instrument and study prevented the researchers from generalizing the results. In addition to the instruments used in the study, students were also limited in the time that they were given to provide answers to the survey questions. On the other hand, the study was also limited to the assumption that the students truthfully participated in the study by marking the best options in the surveys to reflect themselves and providing the researchers with genuine information about their GPAs.

3. Findings

In this part, the results of the statistics will be presented to stand for each of the research questions respectively in the following tables. However, there are two types of test data and consequently they require different types of analysis. To decide on the type of the data will indicate what type of tests to administer resulting in valid results to draw conclusions about the sample. Therefore, whether to employ parametric or non-parametric tests, the researchers checked the data in terms of the number of participants, measures of central tendency, normal distribution curve and normality test. Accordingly, first of all, the number of each of five variables of the study are 30, which is one of the indicators for the normality of the distribution ($n=217$). Moreover, the measures of central tendency related to the variables math points (mean=57,5; median=55,7; mode=50); English points (mean=70,6; median=70; mode=60); history points (mean=66,1; median=67; mode=65); GPA (mean=67,3; median=68; mode=62); internet addiction (mean=3,09; median=3,05; mode=3,2). This is another indicator for the normality of the distribution. On the other hand, as another indicator for the normality of the distribution of the data, the values of *skewness and kurtois* related to five variables respectively were found to be within acceptable range (1,96 / -1,96).

In addition to measures of central tendency, in the next step, normal distribution of the data related to five different variables were checked through normal distribution curve. As a result, all the data of all the variables were found to be distributed normally.

In the last step of fortifying the decision whether the data distributes normally or not in a certain statistical way, *Kolmogorov Smirnov tests* were run separately for five different variables of the study. As a result, as seen in the table, the data for the variables were found not to differ significantly from the normal distribution ($z=.80; .909; .861; .831; .884; p > .05$).

As the results of all these tests run, the data related to five different variables of the study were found to distribute normally and, therefore, parametric tests were determined to be employed in order to answer two research questions of the study.

Research Question 1: “Do male and female high school students differ significantly in terms of internet addiction?”

Independent Samples T-Test was run to find out the impact of gender on the mean scores of internet addiction. The results were shown in the following table.

Table 2: Independent Samples T-Tests for Gender & Internet Addiction

Factor	Gender	N	\bar{x}	SS	Sh $_{\bar{x}}$	t test		
						t	Df	p
Internet Addiction	Male	107	2,979	,732	,0707	-513	215	.608
	Female	110	3,035	,869	,0829			

As shown in table 2, Independent Samples T-Test was employed to find out the impact of gender on internet addiction scores. The results indicated that male and female students did not differ significantly in terms of their scores of internet addiction ($t = - 513; - 4.19; p > .05$). In other words, it was explored that the gender did not play a significant role in internet addiction among high school students.

Research Question 2: “Is there a significant relationship between “internet addiction” and “academic achievement” among high school students?”

In order to answer the second research question of the study and accordingly to explore the relation between scores of different school subjects, (*Maths, EFL, History*) each standing for a different academic branch, GPA and internet addiction scores, four separate *Pearson product moment correlations* were computed. The results were shown in the same table as follows:

Table 3: Pearson Product Moment Correlations for Internet Addiction & Academic Performance

	Maths points	English points	History points	GPA	
Internet Addiction	<i>Pearson Cor.</i>	,021	,177**	-,010	-,168*
	<i>P</i>	,763	,009	,886	,013
	<i>N</i>	217	217	217	216

As a result, as revealed in table 5, participant students' scores of the internet addiction was found to have a positive significant correlation with their EFL scores ($r=.177$; $p < .01$). On the other hand, a negative significant relationship was found between the students' internet addiction scores and their GPA, which indicates their total performance of all school subjects ($r= -.168$; $p < .05$). However, no significant correlation was found between participant students' scores of internet addiction and their math or history performance.

To strengthen results related to the last and most important research question of the study, mean scores of the internet addiction were classified into two folds as: "addicted to internet" and "not addicted to internet". In this respect, it was aimed to turn scores of internet addiction into a nominal variable so that independent sample t tests could be run. Based on the number of gap and options, those having mean scores between 1.00 and 2.60 were labeled as "not addicted to the internet". However, those having mean scores ranging from 3,41 to 5,00 were labeled as "addicted to the internet". Those having mean scores between 2,61 and 3,40 were labeled as neither addicted nor not addicted and therefore were excluded from this analysis. The gap digit and options used as a criterion are shown as in the following:

- 1.00-1.80 Not at all
- 1.81-2.60 Rarely
- 2,61-3.40 Occasionally
- 3.41-4.20 Often
- 4.21-5.00 Always

As a result of this classification, the same question was answered by running following Independent Samples T-Tests.

Table 4: Independent Samples T-Tests for Internet Addiction & Academic Performance

Factor	Internet Addiction	N	\bar{x}	SS	Sh _x	t test			
						t	Df	p	d
Maths points	Not Addicted	65	54,88	17,80	2,208	-,447	129	,656	----
	Addicted	66	56,29	18,43	2,268				
English points	Not Addicted	65	67,28	15,54	1,927	-3,17	129	,002	0,28
	Addicted	66	75,56	14,22	1,751				
History points	Not Addicted	65	66,36	15,59	1,934	-,080	129	,936	----
	Addicted	66	66,60	17,75	2,185				
GPA	Not Addicted	65	69,49	10,98	1,363	3,03	129	,003	0,26
	Addicted	66	63,12	12,95	1,595				

As seen in the table, through four separate Independent Sample T-Tests, it was aimed to find out the impact of the type of internet addiction on academic performance

related to three different school subjects and GPA. The results indicated that students addicted to the internet were found to be significantly more successful in EFL than those who are not addicted ($t = -3.17$; $p < .01$). When looked at the d value (degree of impact), it can be seen that this impact of addiction on EFL performance is at a medium level ($d = 0,28$). Moreover, the participant students who were not addicted to the internet had significantly higher GPA scores than those who are addicted to the internet ($t = 3.03$; $p < .01$). The degree of impact value ($d = 0,26$) indicates medium-sized significance of proper internet use on GPA scores of high school students. On the other hand, type of internet addiction was found to exert no significant impact on participant students' mean scores of math or history ($t = -.447$; $-.80$; $p > .05$).

5. Results and Discussion

This current study was conducted by the researchers to explore the impact of internet addiction on high school students' performance in three different school subjects each of which stands for a different branch such as social sciences, language, mathematics in addition to their GPA scores. Moreover, the researchers also aimed to shed light on the impact of gender on internet addiction scores of high school students. To attain these objectives, the researchers primarily ran normality and homogeneity of the distribution to decide on the tests to be administered. In addition to the results of those tests, the type of the scale used to collect data drove the researchers to refer to parametric tests. In the end, the researchers ran both *Pearson Product Moment Correlations* and *Independent Sample T Tests* after classifying the participants into two nominal groups based on their scores of internet addiction. In this way, the researchers attempted to explore both the relation between the variables (internet addiction and academic performance) and the impact of one (internet addiction) on the other (academic performance). Based on the results of these tests run, in this part of the study, the findings are discussed in detail in the sequence of the research questions posed by the researchers.

First of all, the current study indicated that the gender did not play a significant role in internet addiction among high school students. In other words, male and female high school students did not differ significantly in terms of internet addiction. The related literature seems to include two-way results about the impact of gender on internet addiction. In this respect, this result of the present study seems to be consistent with the relevant literature (Ceyhan 2007; Kim, Namkoong, Taeyun & Kim, 2008; Mishra, Draus, Goreva, Leone, Caputo, 2014; Oğuz, Zayim, Özel & Saka, 2008; Rouhani and Tari, 2012). On the other hand, it came out to be contradictory with some other studies which explored that male gender as a significant predictor of internet addiction among students (Akhter, 2013; Balta & Horzum, 2008; Çam & İşbulan, 2012; Frangos,

2009; Griffiths, 2000; Leung, L., & Lee, P. S., 2012; Li & Chung, 2006; Scherer, 1997; Şahin & Kırşehir, 2011; Tahiroğlu, Çelik, Uzel, Özcan, & Avcı, 2008; Tsitsika, et. al., 2014; Weiser, 2000). "*The observed gender differences may be attributed to the effect of the differential frequency of Internet utilization between genders*" (Tsitsika, et. al., 2014 p. 532). This result of the present study can mean that internet pervades the lives of Turkish high school male and female students at the same level. In reaction to the supporting points of the hypothesis about the impact of gender on the problematic internet usage, it can be stated that Turkish families limit the internet usage of their daughters or sons at the same level as not to yield to any significant results.

Secondly, the researchers hypothesized the impact of internet addiction on the academic performance of adolescent high school students. More specifically, as indicated in the introduction part of the study in detail, most of the related literature has explored that students who are addicted to the internet tend to have low academic performance. The current study has sought to explore how internet addiction impacts success in three different school subjects (Maths, EFL and History) each symbolizing such domains as mathematical, linguistic and social abilities and GPA, which stands for the overall academic performance of high school students.

As a result of both correlation analyses and independent sample t tests, students' academic performance in history and Maths were found not to be correlated with internet addiction scores. On the other hand, students' performance in EFL was found to be significantly related to the degree of internet addiction. In other words, students who were found to be problematic internet user were more successful in EFL. To the researchers' scope of search, no study has attempted to explore the relation between internet addiction and different subject areas. They generally indicated its impact on overall academic performance. Therefore, such aforementioned results of the current study as indicating the impact of internet addiction in three different areas could not be compared to the findings of other studies in the literature. However, this distinct impact of the time spent on the internet on three different school subjects can be explained with the role of English as the language of the new world. In other words, seeing English as "*one of the most important means for acquiring access to the world's intellectual and technical resources*" (Talebinezhad & Aliakbari, 2001, p.2) will make it easier to see why those students in close contact with the internet are better at EFL. On the other hand, the current study has explored, as hypothesized, negative significant correlation between internet addiction and GPA. This means that the more the students are addicted to the internet or the more time they spend on the internet the lower their GPAs are. These findings of the study are strongly supported by the findings of a number of other studies in the literature (Akhter, 2013; Griffiths, 2000; Kubey, Lavin, & Barrows, 2001; Leung and Lee, 2012; Mishra, Draus, Goreva, Leone, Caputo, 2014; Panayides & Walker,

2012; Rouhani and Tari, 2012; Scherer, 1997). This negative correlation between internet addiction and academic achievement, as done by Griffith (2000), can be simply explained by the fact that students with addicted to the internet tend to spend much time on the computer and internet as a result of which they have less time to study. On the other hand, Mishra et al. (2014) details the reason behind this correlation as "*internet addiction include missing classes, being late for classes, increased risk of being placed on academic probation, and a general decline in study habits*" (p. 346). Akhter (2013) explains this correlation with the fact that internet distract students from their study based on the related literature. In other words, students tend to lose their capacity to concentrate (Frangos, 2009).

To sum up, in accordance with the literature, the researchers in this study explored that problematic internet usage, which was used with internet addiction interchangeably throughout the paper, had a negative impact on GPAs in addition to academic performance in such subjects as history and maths. However, it was found to exert a positive impact on students' EFL performance. Finally, as partly supported and refuted by the related literature, no impact of gender on internet addiction among high school students in turkey was revealed.

6. Implications of The Study

The findings of the present study shed lights on the diverse role of the internet in education and as a result serve to contribute to the related literature. In today's world of education, the relation between academic achievement and internet use has long captured the attention of many researchers (Leung and Lee, 2012). However, "*there is little research available which can establish a relationship between academic success and level of Internet addiction in students*" (Mishra et al., 2014, p. 350). In this respect, this study served to add to this existing limited knowledge base. Although it refers to an area not yet fully explored, it suggests significant implications for college and university instructors. More specifically, this study provided college teachers, university instructors and curriculum designers with valuable information that will foster awareness of the differing role of the internet in different branches and overall academic performance. This awareness donates the college and university instructors with new roles in educating and supporting students with Internet addiction. These new roles may necessitate them to not only help their students regulate their daily schedule like a counselor or but also help them learn how to use the internet much more efficiently in a way to increase their performance like an academic advisor. Last but not the least, bearing the positive impact of the internet use on EFL, teachers may

seek for the effective ways to integrate their instruction with the internet as much as possible.

7. Areas for Further Research

It is important to consider that the results of the current and the other studies stated in literature review can only be generalized to the specific academic context in which they were conducted. Therefore, replications of this kind of studies following the similar research design may indicate some results different than those found in this study. Furthermore, those probable differences in the results may help us draw general conclusions on the relation among the gender, internet addiction and academic performance. To better understand the issue in detail, further researchers are also recommended to attempt to explore the antecedents of internet addiction with their impacts on academic performance through triangulation method including survey, interview, observation and expand the issue by enlightening its relationship with some other cognitive and affective variables.

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