

The Model Explaining and Predicting Loneliness Level and the Problematic Internet Use of Turkish Computer Education and Instructional Technologies (CEIT) Students

By

Aylin Tutgun Ünal

Maltepe University, Faculty of Education
Computer Education and Instructional Technologies Department
Istanbul, Turkey

Abstract

The objective of present research is to develop a model explaining and predicting relationship between loneliness level and problematic internet use. The problematic internet use of Turkish Computer Education and Instructional Technologies (CEIT) students has been described with respect to the levels of problematic internet use and loneliness. The subjects were CEIT students from 3 different universities in Istanbul, Turkey. In data gathering, Personal Information Form, Generalized Problematic Internet Use Scale 2 (GPIUS2) and UCLA Loneliness Scale have been used. In the research, it has been found that problematic internet use of CEIT students is above medium level. It has been concluded that CEIT students' level of loneliness is medium and as their level of loneliness increase, their problematic internet use also rises in the same manner. As for the model, it has been found that loneliness level of the CEIT students is a significant predictor of problematic internet use, thus it explains and predicts 22 percent of the variance of problematic internet use of CEIT students.

Keywords: *Problematic Internet Use, Internet, Technology, Students, Loneliness*

1. Introduction

Parallel to the rapid rise in technology, the use of information and communication technologies has also become widespread hence computer and internet has become one of the indispensables of life. The use of computer and internet technologies in education has become a great necessity as the result of rapid developments in science and technology and this necessity has made it a must for the instructor and students to make use of computer and internet technologies. According to Deniz and Coşkun (2004), the internet as an educational tool provides the way to affordable, global, interactive and extensive computer communication and enables the student to raise his/her learning experience. By virtue of all the means computer and internet use provides, the necessity to learn and teach these technologies has also surfaced. As a requirement to fulfill this demand computer and internet technologies teaching departments have been established at universities. One of these departments is "Computer Education and Instructional Technologies Department" that constitutes the study group of present research.

Internet has been used for various purposes particularly by young population. As stated by Erikson (1998) the primary developmental task of university youth is to establish close relations with the same or opposite sex. Today, young population prefers to meet this need on the net social webs rather than face to face communication in real world. In relevant literature there are several researches supporting this deduction (Caplan, 2005; Ceyhan, Ceyhan and Gürcan, 2007; Deniz and Tutgun, 2010; Tutgun, Deniz and Moon, 2011; Tutgun, 2009). Through affordable and interactive applications provided by cell phones in particular, the students meet their social communication needs and they reserve more time to online social interaction than real life social experiences.

On the other hand, the teenagers who fail to develop their social skills in natural social environment are likely to face problems in their familial and work environments, particularly in family and work places, in

future and driven from this point it is observed that many of the studies related to problematic internet use are particularly directed to university students (Anderson, 2001; Caplan, 2010; Morahan-Martin and Schumacher, 2000; Lavin, Marvin et al., 1999; Tsai and Lin, 2001; Niemi, Griffiths et al., 2005; Young, 2006).

As put forth by Caplan (2005) Problematic internet usage is a multi-dimensional syndrome composed of cognitive and behavioral symptoms causing negative social, academic/professional outcomes. Kandell (1998) defined internet addiction as a psychological addiction which particularly affected teenagers and he emphasized that excessive usage of internet was likely to introduce problems related to health, social relations and time management. The researches covering young population, university students in particular, have manifested rather critical findings and revealed that university students formed the most risky group (Ceyhan, Ceyhan and Gürcan, 2007; Kandell, 1998; Lavin, Morahan-Martin and Schumacher, 2000; Tutgun and Deniz, 2010; Tutgun, Deniz and Moon, 2011; Young, 2006).

In diagnosing internet dependence, pathologic or problematic internet use, many researchers regarded the time spent on internet as the major criteria (Young and Rogers, 1998; Young, 1996a, 1996b). Time spent on the net is, though significant, not a sufficient factor on its own in diagnosing problematic internet use. At the universities, instructor/student communication, assignment/project researches, free internet labs are obviously facilitators of students' internet use.

Furthermore the students from technology related specific departments, compared to students from other departments, use the computer and internet more frequently. Internet is an environment open to all kinds of information and views. Internet may become a huge risk factor particularly for students who fail to limit their internet use in line with the needs. According to research findings amongst teenagers, specifically university students, the students are greatly inclined to problematic internet use and face hardship in setting control.

In Tutgun (2009)'s research it has been found that compared to social sciences, science and mathematics departments and fine arts departments students, the ones in Computer Education and Instructional Technologies Department are more inclined to problematic internet use. As the other departments were analyzed within themselves, no difference was found. Based on this point, it should be analyzed that if computer and internet use related departments may be leading to problematic internet use. Therefore, the problematic internet use of technology related departments should be analyzed distinctively and the leading causes should be underlined; then more specific solutions can be generated and the source of problem can be detected more evidently. On accounts of all these reasons "problematic internet use at Department of CEIT" constitutes the problem of current research.

The objective of present research is to develop a model explaining and predicting relationship between loneliness level and problematic internet use. In line with this objective, the study is trying to find answer in following questions:

1. What is the level of problematic internet usage of CEIT students?
2. What is the relationship between problematic internet use and loneliness levels of CEIT students?
3. What is the model explaining and predicting relationship between loneliness level and problematic internet use of CEIT students?

2. Method

Structural equation modeling (SEM) is used in the study. SEM grows out of and serves purposes similar to multiple regression, but in a more powerful way it takes into account the modeling of interactions, nonlinearities, correlated independents, measurement error, correlated error terms, multiple latent

independents each measured by multiple indicators. SEM may be used as a more powerful alternative to multiple regression, path analysis, factor analysis and analysis of covariance (Byrne, 2001).

Participants

The participants were 162 Turkish CEIT students from three universities in Istanbul in Turkey (Marmara University, Maltepe University and Yıldız Technical University). 53,1 % (n=86) of the CEIT students are freshmen and 46,9% (n=76) are seniors. 38,9% (n=63) of the participants are female and 61,1% (n=99) are male students.

Measurement

Personal Information Form, Problematic Internet Use Scale and UCLA Loneliness Scale were used to collect data. 'Personal Information Form' has been prepared by the researcher for the purpose of discovering certain demographical features of prospective teachers. The data gathered from 'Personal Information Form' are; the registered university, class and gender.

'Generalized Problematic Internet Use Scale 2 (GPIUS2)' developed by Caplan (2010) was used to collect data about the problematic aspects of Internet use of prospective teachers. GPIUS2 has five sub scales, preference for online social interaction (POSI), mood regulation, cognitive preoccupation, compulsive internet use, negative outcomes. As Caplan indicates (2010, p.1093) GPIUS2 scale can be used in two different ways, as a set of separate sub-scales or as an overall composite index of GPIUS. In the present study the use of composite index of the scale was preferred. The scale's internal consistency reliability was found $\alpha = .91$ by Caplan. In the present study internal consistency reliability was found $\alpha = .89$ which is as high as the original value. First, GPIUS2 was translated into Turkish by the experts of language and the field who has studies in computer/internet attitudes. After the translation, the scales were applied to the bilingual (Turkish/English) university students for test re-tests in three weeks intervals. High correlations and no differences were found ($r: .75, p < .001$; [paired group] $t: .34, df: 25, p > 0.05$ for the Turkish sample). The results showed that the language equivalence and internal consistency reliability of the scale was approved for Turkish version of GPIUS2.

UCLA Loneliness Scale, which is developed by Russel, Peplau and Cutrona (1980) to measure individuals' general loneliness level, is a four-level Likert Scale consisting of 20 items; 10 items worded in a negative direction and 10 items worded in a positive direction. In each item of the scale, a situation which denotes a feeling or thought related to social relationships and the person is expected to tell how often he experiences that situation. Getting a high score from the scale indicates that the loneliness level is high. The scale was adapted to Turkish by Demir (1989). During the adaptation studies, cronbach α internal consistency coefficient of the scale was attained as .96. In this study, cronbach α internal consistency coefficient of the scale was attained as .87.

Procedures

Turkish versions of the scales were applied simultaneously in spring semester in 2010-2011 academic years. The scales were administered between 8th and 12nd weeks of the spring semester. The participants were given 10 minutes to answer the items in the scale. Before the application the attendants administering the scales were briefed about the application order and rules.

Data Analysis

For the first research question descriptive statistics, and for the second question correlation was used. For the third research question, to test the model explaining and predicting the relation between loneliness and PIU of CEIT student, SEM was used. Advantages of SEM compared to multiple regressions include more flexible assumptions and use of confirmatory factor analysis to reduce measurement error. Moreover, where regression is highly susceptible to error of interpretation by misspecification, SEM strategy of comparing alternative models to assess relative model fit makes it more powerful (Arbuckle, 2006; Byrne, 2001; Hoyle, 1995; Kline, 1998).

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Analysis of Moment Structures (AMOS) implements the general approach to data analysis known as SEM. AMOS was originally designed as a tool for teaching this powerful and fundamentally simple method. AMOS integrates an easy-to-use graphical interface with an advanced computing engine for SEM. It also provides maximum likelihood, unweighted least squares, and generalized least squares (Arbuckle, 2006). For these reasons AMOS was used to test the model in the study.

Structural equation modeling (SEM) is used in the study and AMOS was used to test the model in the study. The estimated model in the study is given in Figure 1.

In Figure 1 the arrows account for the cause-effect relation. For instance, an arrow pointing negative outcomes from loneliness level means that PIU depends partly on loneliness level. The symbol 'e' stands for error difficult data (Arbuckle, 2006).

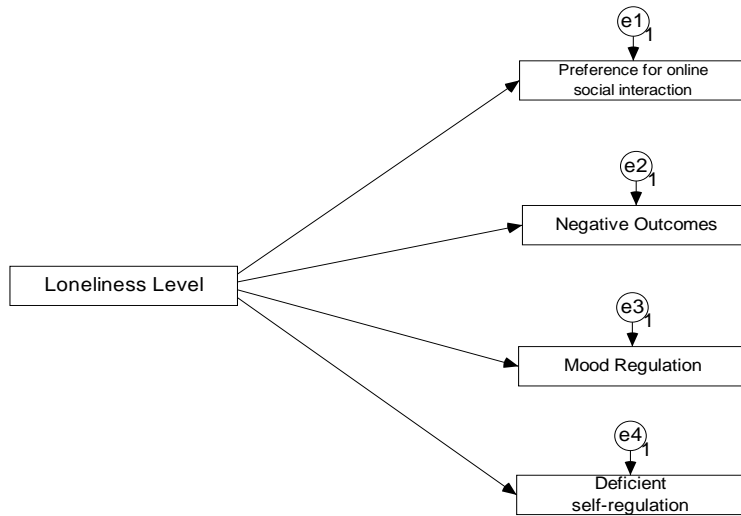


Figure 1. The Estimated Model

3. Results

First of all in this research the level of problematic internet usage of CEIT students has been analyzed. Means and standard deviations derived from GPIUS2 scale are given in Table 1 for CEIT students.

Table 1: Distributions of Scores Derived from GPIUS2 Scale by CEIT Students

GPIUS2 Scale	n	\bar{x}	sd
Problematic internet usage	162	60.11	11.20

Table 1 shows that problematic internet usage of participants is above medium level which means the internet medium is rather problematic

Second main research question is to investigate the relationship between problematic internet use and loneliness levels of CEIT students.

Table 2: Correlation between problematic internet use and loneliness levels of CEIT Students

Problematic Internet Use & loneliness	n	r	p
Turkish CEIT students	162	0.36	.00

Table 2 shows that there are positive and medium correlations ($p < 0.01$) between problematic Internet use and loneliness levels of CEIT students. As a result, we can say that problematic internet usage by CEIT students increases as loneliness level gets higher.

As for the third main research question, the model which was proposed above in the method part was tested. Having defined the model, the first step in model testing, chi-square analysis was done. The chi-square value is 59,76 ($p = .00$) and degree of freedom is 6. The chi-square/ degree of freedom value is 9,96. Since this value is higher than 3, chi-square test showed inadequate fit (Cesur and Fer, 2011).

As found in the estimated model, the chi-square/degree of freedom value is over desired value and therefore ‘Model 2’ was generated. The variable ‘deficient self-regulation’ was omitted from the estimated model. Then the model turned out to be the one in Figure 2. Then the model turned out to be the one in Figure 2.

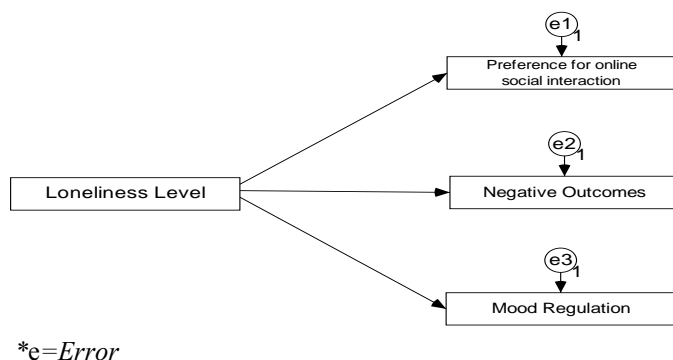


Figure 2. ‘Model 2’

Having defined the model 2, chi-square analysis was tested again. The chi-square value is 9,91 ($p = .01$) and degree of freedom is 3. The chi-square/ degree of freedom value is 3,3. Since this value is lower than 3,5, chi-square test showed good fit.

Following chi-square test, the second step, good fit between data and the model was examined. In this stage, first GFI (>.90) and AGFI (>.90) analyzed. The results were .97 and .901 respectively.

The next index is NFI and CFI. The value for NFI is .63 while CFI value is .67.

Another good fit index RFI equals to .26. The last index RMSEA is .12 (<.09) which is a little over the desired limits. All the indices pointed to good fit between data and the model except RFI.

Then the third step analyzing independent variables regression weights follows. Table 4 gives the values for regression weights.

Table 4: Independent variables regression weights

			Estimates	Standard Error	Critical Ratio	p
POSI	<----	Lonelines Level	.392	.17	2.20	.02
Negative outcomes	<----	Lonelines Level	.438	.14	3.04	.00
Mood regulation	<----	Lonelines Level	.412	.23	1.78	.07

As seen in the Table 4 all the variables are significant except mood regulation . The variable ‘mood regulation’ is significant at .08 level.

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In Table 4 it can be seen that regression weights between Loneliness level and POSI ($p=.02$); Loneliness level and negative outcomes ($p=.00$); Loneliness level and Mood regulation ($p=.07$) are significant. The next step was to check covariances in ‘Model 2’, which would reveal the relation between dependent and independent variables.

The variances showing significance of independent variables in ‘Model 2’ are analyzed, too. In Table 5, variances for independent variables are presented.

Table 5: Variances in ‘Model 2’

	Estimates	Standard Error	Critical Ratio	p
Loneliness Level	1.15	.13	8.97	.00
POSI	.77	.09	8.97	.00
Negative outcomes	1.91	.21	8.97	.00
Mood regulation	.22	.02	8.97	.00

In Table 5, variance values are significant and positive. It is found that loneliness level estimate is 1.15 ($p<.01$); POSI estimate is .77 ($p<.01$); negative outcomes estimate is 1.91 ($p<.01$) and mood regulation estimate is .22 ($p<.01$).

As a result, fit indices examined for ‘Model 2’ supported the good fit for the model. In addition all values including regression weights and variances in the model are significant. For this reason, ‘Model 2’ proposed in this study is statistically proved to be a valid model. In other words, to explain relationship between loneliness level and problematic internet use. In Figure 3, the valid model, ‘Model 2’ is shown.

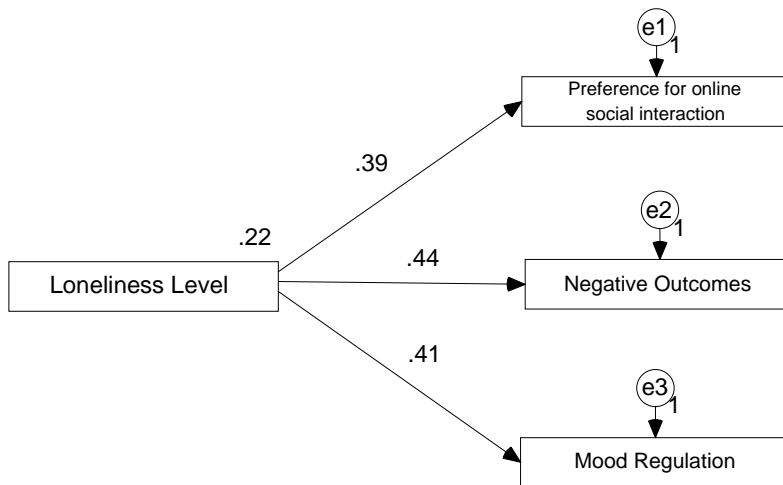


Figure 3. ‘Model 2’ (The valid model)

As can be seen in Figure 3, the arrows in one direction represent the regression weights. It was found that loneliness regression weight to explain POSI is .39 ($p<.01$); loneliness regression weight to explain Negative outcomes is .44 ($p<.01$) and loneliness regression weight to explain Mood regulation is .41 ($p<.01$).

In addition, variance value explaining the model is .22. This means that 'Model 2' explains 22 percent of the variance of problematic internet use of CEIT students. In other words, Loneliness level predicts about one fourth (1/4) of the variance explaining Turkish CEIT students' problematic internet use. Caplan (2010) also found significant correlations between POSI, Negative outcomes and mood regulation in the model.

4. Discussion

In the research, initially Turkish CEIT students' problematic internet use levels have been detected and the level has been found to be above medium. The value obtained in this group demonstrates that students are more inclined to problematic internet use similar to some research findings covering university students in general (Tutgun, 2009; Tutgun and Deniz, 2010; Tutgun, Deniz and Moon, 2011).

Second, the relation between CEIT students problematic internet use and their level of loneliness has been examined and significant correlation has been found between CEIT students problematic internet use and their level of loneliness ($r=0,358$; $p<0,01$). This finding puts forth that as the level of loneliness rises so does the inclination towards problematic internet use. In fact, this result supports several researches in relevant literature on the relationship between problematic internet use and loneliness (Kraut et. al, 2002; Kubey, Lavin and Barrows, 2001; Caplan, 2002, 2003; Deniz and Tutgun, 2010; Odacı and Kalkan, 2010).

The results of SEM analysis showed that Loneliness can explain Problematic Internet Use. It can predict 22 percent of the variance in PIU. This is nearly equal to 1/4 of the total variance explaining and predicting PIU. In other words, it was found that Loneliness is the variable explaining and predicting Problematic Internet Use in terms of variables; Preference for Online Social Interaction (POSI) , Mood Regulation and Negative Outcomes.

The reason for the model explaining only 22 percent of the variance in PIU can be other variables constituting Loneliness. There may be other variables in Loneliness. What is loneliness? How do people describe their loneliness? When do they feel loneliness? These questions haven't been answered in this study. Loneliness was accepted a variable describing loneliness. The factors creating loneliness can be the limitation of the study.

In 'Model 2' it was found that Loneliness is a significant predictor for the variable POSI. Students who feel lonely are to prefer online social interaction. It can also be said that they would feel more comfortable with online social interaction than face-to-face interaction. There are other researches with similar results in literature. According to Young (1996a), problematic internet users who allocate little time for real people prefer to spend their time alone using a computer. The reason is that, as Caplan (2005) mentioned in his research, people who have poor social interaction skills in real life prefer online social interaction to face-to-face communication and they tend to show themselves off getting into social interaction on the internet.

Another finding according to 'Model 2' was that Loneliness significantly predicts the variable Mood Regulation. Students who are lonely will probably use internet to talk with others when they are feeling isolated. In the same way, in a study by Kraut et al. (2002), isolation and loneliness lead individuals to prefer social interaction on the internet.

Still another finding according to 'Model 2' was that Loneliness significantly predicts the variable Negative Outcomes. Lonely students are most probably using internet and this habit makes their lives difficult. It is probable that they usually miss their social engagements and some planned activities. Sometimes they face with problems in their life because their internet use. Similarly, in a study conducted by Kubey, Lavin and Barrows (2001), a group of participant students were identified to be addicted to the internet and according to the results of the study, it was concluded that these students are academically

disadvantaged because of internet usage and they are “lonelier” compared to the other group. Students who are addicted to the internet and mention that they are academically disadvantaged prefer real time applications (MUDs and IRC/chat programs) on the internet. According to the researchers, these interactive applications form an important escape way for lonely people.

5. Conclusion

Internet addiction is a comprehensive term including various behavioral disorders as well as stimulus-control disorders. From this perspective, internet use may harass a person’s psychological wellness. It is also important to understand what factors trigger problematic internet use among CEIT students. In the present study, the ‘Model 2’ aiming to explain and predict PIU gives significant clues for this problem. In other words, the model developed shows that ‘Loneliness’ is the significant predictor and cause of PIU among CEIT students. It would not be surprising to express that loneliness level of students in general would cause PIU.

In addition, according to the present study it is obvious that the above-medium problematic internet use inclination of CEIT students heralds the potential problems in future. To sum up, attempts underlying the fact that immediate precautions must be taken for CEIT students and technology related departments should be started without delay. In this respect, certain suggestions have been given according to findings obtained from this research.

It is understood that, main reason to use internet problematically is loneliness. Therefore in order not to spend excessive time on the net by freshmen teachers and parents should help students make new friends and adapt easily to new social environments. For this, the instructors may organize group projects and employ cooperative working methods in class to support particularly 1st year students.

6. Recommendations

Some attempts should be regularly and frequently made to detect internet use levels of CEIT students and to control their uses. Besides, to analyze problematic internet use’s relation with personal and psychological traits, qualitative and in-depth analyses can be conducted particularly in technology-related departments.

It is also advisable for instructors organize activities and talks to inform the students about problematic internet use, achieving time control and computer/internet ethics. This would help them prevent the lack of control in CEIT students’ internet use. In order to detect if there is a difference amongst the problematic internet use of CEIT students from a variety of universities, more practices can be organized in a larger scope of universities and context of research can be extended.

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