

Correlation between the Family Function Based on Circumplex Model and Students' Internet Addiction in Shahid Beheshti University of Medical Sciences in 2015

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Abstract

Background and Purpose: University students deal with Internet with a variety of reasons. Internet great applications and attractions may cause increasing addiction to it; on the other hand the family function may affect the tendency to addiction. So, this study was conducted aimed to investigate the correlation between the family function based on Circumplex Model and students' Internet addiction in ShahidBeheshti University of Medical Sciences in 2015.

Methods: In this correlational study, 664 students were selected by stratified random sampling method. The study tools included: Demographic Information Questionnaire, Young Internet Addiction Test ($\alpha=0.90$) and Olson Family Adaptability and Cohesion Evaluation Scale (FACE III) ($\alpha=0.91$). Data were analyzed by SPSS software Version 22. The results were analyzed using descriptive statistics (mean, standard deviation, percentage and frequency) and analytical statistics (t-test, Mann-Whitney U, Spearman correlation coefficient) methods.

Findings: Findings showed, 79.2 percent of students did not have Internet addiction, 20.2 percent were at risk of addiction and 0.6 percent was addicted to the Internet. Female students were the most frequent users of the Internet among students (41.47% and $p<0.01$) with the purpose of recreation and entertainment (79.5 percent). A significant negative correlation was seen between Internet addiction and cohesion (a family function aspect) ($p<0.01$), also a positive and significant relationship was seen between average time of using Internet every time, average weekly hours of Internet use and Internet addiction ($p>0.01$).

Conclusion: With regard to the degree of students' dependence to internet and the correlation between the family cohesion and Internet addiction, there is a need to make policy in the field of cohesion balance in the family and preventive and educational measures.

Keywords: family function, Circumplex Model, cohesion, adaptability, addiction to the internet, university student

1. Introduction

The most challenging, attractive and important developments in recent decades have been in the field of computer and information services (Karamshayi et al., 2012). The Internet, as an important tool for social interaction, information and entertainment (Cao et al., 2011), an integrated part of modern life (Khosravi et al., 2011), is one of the most recent achievements of mankind (Rastgar et al., 2014) and its increasing growth is undeniable (Khosravi et al., 2011). Internet has caused the emergence of the phenomenon of Internet addiction (Nastizae, 2009) that is a major health problem in the world (Jung Koo et al., 2014). Internet addiction is the mandatory use of this tool that in the case of deprivation, a person becomes very irritable (Pirzadeh, 2012).

Internet addiction has many physical, psychological, social complications (Falahmaneh, 2007) and it can lead to

negative consequences in daily life (Lin et al., 2015). Pathological symptoms and different disorders (Wolfling et al., 2015), including spinal problems, poor vision (Falahmaneh, 2007), lack of physical energy, poor immune system (Cao et al., 2011), sleep disorders, depression, irritability, obsessive thinking (Mirzaeean et al., 2011), anxiety and restlessness (Xiaoli et al., 2009), hyperactivity disorders (Weinstein et al., 2010), social dysfunction (Chen et al., 2015), spending less time talking with the family and avoiding important life activities (Nastizae, 2009), have been reported due to Internet addiction.

Many factors play an important role in Internet addiction, such as lack of social support (Hsing Fang et al., 2009), families with one child and families' accommodation (Xiaoli et al., 2009), lack of parents' emotional support of children and individuals' low self-esteem (Zhang et al., 2015).

The family function is one of the most important predictors of Internet addiction (Khosravi et al., 2011), and depends on areas such as conflict resolution, cohesion between members, the family ability in coordination with changes and respect the border between members (Yosliani et al., 2012). The youth dependence on Internet affects their relationship with their family members; this emphasizes the necessity of investigating the family function in individuals dependent on Internet (Pashaii et al., 2008).

One approach to study the family function is Circumplex Model. This model explains how family members and their behavior are connected to each other through three aspects of cohesion (being together), adaptability (the ability to adapt to a change) and relationship (Hosseini et al., 2012). In order to measure adaptability and cohesion, Family Adaptability and Cohesion Evaluation Scale third edition (FACE III), has been developed. Through this scale, families are placed in Circumplex Model and this is done by measuring members' opinion about their family in the present state (perception) and desirable state (ideal) (Ghasemi, 2011).

Adaptability includes the power to change in leadership, role relationship and relationship rules (Olson et al., 2006), and has 4 rigid, structured, flexible, and chaotic levels (Ghasemi, 2011). The family at rigid adaptability level has autocratic leadership, rigid discipline, and a low role change, this level shows the lowest adaptability in the family. At the second level, leadership is divided in some cases, discipline is somewhat democratic, roles are stable and if necessary a change occurs in the family (Olson, 2000). At flexible level, leadership is democratic and individuals participate in decision-making equally (Mohammadi, 2015). At the last level of adaptability, there is no leadership, role changes are emotional, discipline is varied and finally there are a lot of changes in the family, structured and flexible levels of adaptability highlight better and effective function of the family system and rigid and chaotic levels indicate problematic function of the family system (Olson, 2000).

Cohesion is emotional bonding to family member to each other (Mohammadi, 2015) and has 4 disengaged, separated, connected and enmeshed levels. Disengaged level is the lowest level of cohesion. At this level, individuals' intimacy is low, their loyalty is low, and autonomy is high (Ghasemi, 2011). At the second level, members spend most of their time apart, but in times of decision-making and/or in need of support come together again (Giauque, 2005). At the third level of cohesion, individuals' loyalty to each other is high and a sense of belonging among members is more than a sense of independence (Olson, 2000), at the last level of cohesion, family members depend on each other, in this case, there is little relationship with people outside the family (Giauque, 2005). Separated and connected levels are balanced levels of cohesion and cause optimized function. At these levels, members are able to be balanced, depend on their family and maintain their independence. Unbalanced levels of cohesion are in upper and lower limits. Therefore, in Circumplex Model, too high and/ or low levels are problematic for individuals and their relationships' development over time (Olson, 1999).

The role of nurses who work with people who are addicted to the Internet is investigating a person and the family, a nurse through which can identify and resolve obstacles and challenges (Kiani et al., 2013). Because enhanced quality of life, healthy life, and reduced health disparities are nurses' goals (Hosseini et al., 2012).

Students of Universities of Medical Sciences as a subset of the main forces in the healthcare sector in future will be responsible for providing, maintaining and improving the level of public health (Ghaderi et al., 2002). As future healthcare personnel; they have a potential effect on public health and can play an important role in the field of health (Hosseini et al., 2015).

Entering the university has caused becoming more familiar with computer science (Lashgarara et al., 2012), and due to their profession in this group Internet access is more (Kiani et al., 2013), hence the chance of Internet dependence is increased (Lashgarara et al., 2012), and the incidence and prevalence of this phenomenon in this group is increased (Pirzadeh, 2012). On the other hand, Internet as a tool with a wide range of information and attraction can be one of the environmental tools in an effort to adapt a person with the family deficit function (Khosravi et al., 2011).

The results of studies show that when various habits take a form of addiction effect on different parts of the life

badly (Shepherd, 2005). In this regard, researches have shown that internet addiction has harmful effects on the most important responsibilities of students, namely education (Ranjbar et al., 2011). Due to growth of 25% of Internet users in Iran (Ahangarzadeh Rezaei, 2015) and its effects on the family, ignoring family and social relations decline (Solhi et al., 2013). Internet addiction was suggested to be included in the behavioral addiction spectrum because it shows the features of excessive use, despite adverse consequences that characterize many substance use disorders. On the other hand, the family relationship has been found to be one of the most influential factors on Internet addiction, and family dissatisfaction is also associated with Internet addiction. With regard to the fact that no study was found on investigating the relationship between Internet addiction among students and their families' function in cohesion and adaptability aspects, so the present study was conducted aimed to determine the correlation between the family function and Internet addiction of students in ShahidBeheshti University of Medical Sciences in 2015.

2. Methods

This study was a descriptive survey of a correlational type. The statistical population of the present study was 664 students. This statistics was obtained from ShahidBeheshti University of Medical Sciences, in Tehran city. The number of students between February and March 2015 was 10293 students that 664 out of them were selected as the sample based on stratified random sampling method, of the Nursing School 100 students, of the Faculty of health 70 students, Medical School 236 students, Paramedical School 55 students, School of Nutritional sciences 50 students, Rehabilitation School 32 students, School of Pharmacy 35 students, Dental College 51 students and Faculty of Management 35 students sampled. So that after obtaining a list of Schools covered by ShahidBeheshti University of Medical Sciences, one of the researchers, after coordination with the presidents, obtained the list of classes and the number of students, then according to the number of students studying in Schools samples of different grades were randomly selected from each class. Data collection lasted for 8 weeks, a total of 9 Schools were sampled and on average 5 days in a week have been assigned to sampling that the maximum time of sampling was for Medical School and the minimum time was for Rehabilitation School. A researcher was present at 8 am- 3 pm for sampling in Schools. The study samples completed a written consent form to participate in the study and they were ensured that their information will remain confidential. Completing the study tools by students in classes was done at 2 classes intervals. The theoretical framework of the present research is based on Circumplex Model in the field of family function and Young theory in the field of Internet addiction. In this regard, data collection tools in this study included 3 following questionnaires:

- 1). Demographic Information Questionnaire: The questionnaire was researcher made that included 8 items on the age, gender, marital status, field and level of education, average hours of Internet use, minutes of Internet use in every time, the main cause of using Internet and validated by 10 PhD professors and students and senior nurses, which was completed by students.
- 2). Internet Addiction Test (IAT) that has been made by Young (1996) to measure Internet addiction and translated into Persian by Orang (2004). The test consists of 20 items are 5-point Likert and is scored from 1 to 5. Finally, individuals' scores are divided into two equal groups, lower than 49 and higher than 50, showing normal status and users' addiction, respectively. Yediento (2004) reported its reliability coefficient as 0.89. Yu et al. (2004) and Kim et al. (2006) obtained the tool Cronbach's alpha more than 0.9. Alavi et al. (2010) obtained two other validities (content and differential $r=0.5$) and 3 reliabilities (retest $r=0.79$), internal consistency ($\alpha=0.88$) and split-half ($r=0.8$). By investigating answers of 25 Internet addicts and 25 Internet non-addicts an average of 31.54 was obtained for addicts and 29.7 for non-addicts ($t=20/61$, $p=0.001$), showing the questionnaire is able to distinguish between addicts and non-addicts (HeidariSureshjani, 2012). In the present study, IAT reliability was determined using internal consistency method that Cronbach's alpha coefficient was $\alpha=0.90$.
- 3). Family Adaptability and Cohesion Evaluation Scale (FACE III): This scale is a 20-items scale that has been developed by Olson, Portner and Levy Bros. All items of this scale are answered as 5-point Likert scale and answer range is from 1 (almost never) to 5 (almost always). This scale has been made according to Circumplex Model of the family function that emphasized the presence of three central aspects of the family function namely cohesion, adaptability and relationship and this is done by measuring members' opinion about their family in their present state (perception) and desirable state (ideal). This scale has been translated into Persian by Mazaheri (2000). FACE III with $\alpha=0.68$ for the whole, $\alpha=0.77$ for "cohesion" of the family, and $\alpha=0.62$ for "adaptability" of the family, has relatively good internal consistency (Sanaee Zaker et al., 2009) and its internal consistency for cohesion was obtained $\alpha=0.68$ and for adaptability was obtained $\alpha=0.63$ (Lotfi Niya et al., 2010). In the present study, its reliability was determined using internal consistency that Cronbach's alpha coefficient was $\alpha=0.91$.

In the present study, data analysis was done as code entering software SPSS version 22 and finally data were

analyzed according to the purposes of the study. For descriptive purposes, statistical indices such as mean, standard deviation, percentage and frequency were used, for inferential statistics regarding the nature and type of variables, t-test, Mann-Whitney U and Spearman correlation coefficient were used.

3. Findings

Mean and standard deviation of students' age were 21.68 ± 4.02 years. 70.6% of samples was female and 83.9% were married. On average, they spent 27.55 hours per week and 99.23 minutes at every time using Internet (Table 1).

Table 1. Quantitative demographic characteristics of students

Variables	\bar{x}	σ	Max	Min
Age	21.68	4.02	40	18
hours per week using Internet	27.55	38.03	560	1
minutes at every time using Internet	99.23	104.17	600	10

Of the total, 60.4% of Internet access was by mobile. Most of students were studying at Medical School and least was studying at Rehabilitation School. The majority of students enrolled in bachelor's degree. The maximum percentage of using Internet (79.5%) was belonged to entertainment. Also, findings related to demographic characteristics of students are given in Table 2.

Table 2. Qualitative demographic characteristics of students

Variables	Number	Percent
Gender	Boy	195
	Girl	469
Marital status	Married	557
	Single	107
University	Faculty of health	70
	Nursing School	100
	Medical School	236
	Paramedical School	55
	School of Nutritional sciences	50
	Rehabilitation School	32
	School of Pharmacy	35
	Dental College	51
	Faculty of Management	35
Grade	BS	281
	MS	47
	General practitioner	14
	PHD	322
Reason of use the Internet	Entertainment	528
	Science and research	342
	Banking	89
	Job-related	84
	(It is possible that students choose several options)	
Devices to access the Internet	Mobile	401
	Computer (PC)	222
	Tablet	40

Findings related to the state of Internet addiction showed that 79.2% of students had no Internet addiction and 20.2 percent were at risk of addiction and also 0.6% was addicted to the Internet.

In the current state of cohesion aspect, 27.7% of students believed that their families were connected and 20.3% were enmeshed. In ideal state of cohesion aspect, 42.1% of families were enmeshed and 18.2 percent were separated. In other words, 35.9% of families in the current state are in desirable state and in ideal state 38.4% tend to have desirable conditions (Table 3).

Table 3. Distribution of subjects according to current and ideal family cohesion

Cohesion	Desirable state		Ideal state	
	Percent	Number	Percent	Number
Disengaged	25.9	172	19.5	129
Separated	26.2	174	18.2	121
Connected	27.7	184	20.2	135
Enmeshed	20.3	134	42.1	279
Total	100	664	100	664

Also in current adaptability aspect of families it was observed 1.4% of families were rigid, 66.1% were chaotic and 32.5% had desirable state. While in ideal adaptability aspect of families it was observed 2.7% of families were rigid and 86.3% were chaotic and in ideal state only 11% of them demanded desirable state (Table 4).

Table 4. Distribution of subjects according to current and ideal adaptability family

Adaptability	Desirable state		Ideal state	
	Percent	Number	Percent	Number
Rigid	1.4	9	2.7	18
Structured	9.0	60	3.8	25
Flexible	23.5	157	7.2	48
Chaotic	66.1	438	86.3	573
Total	100	664	100	664

In relation with the correlation between family function and Internet addiction, findings showed that the family current and ideal cohesion and Internet addiction were negatively and significantly correlated ($p < 0.01$), but the family current and ideal adaptability and Internet addiction were not correlated. Also, age, average minutes at every time and hours per week use of Internet were statistically correlated ($p < 0.01$) and also it was statistically correlated with the family current cohesion ($p < 0.05$). Average hours of Internet use was correlated with average time of Internet use, Internet addiction, and current situation and ideal states of cohesion ($p < 0.01$). Average time of the use of Internet was positively correlated with Internet addiction ($p < 0.01$). Current and ideal cohesion were positively correlated with current and ideal adaptability ($p < 0.01$). The family current adaptability was correlated only with its ideal adaptability ($p < 0.01$) (Table 5).

Table 5. The relationship between variables

Variable	Age	Average hours of Internet use	Minutes of Internet use	Addiction	Cohesion 1	Adaptability 1	Cohesion 2	Adaptability 2
Age	1.000							
Average hours of Internet use	.013	1.000						
Minutes of Internet use	.120**	.558**	1.000					
Addiction	-.063	.409**	.351**	1.000				
Cohesion1	-.085*	-.117**	-.054	-.294**	1.000			
Adaptability1	-.058	.004	.021	-.055	.312**	1.000		
Cohesion2	-.045	-.119**	-.070	-.182**	.422**	.058	1.000	
Adaptability2	-.022	-.028	.009	-.048	.174**	.375**	.572**	1.000

*Significant at the 0.05 level, ** Significant at the 0.01 level;

Cohesion 1 and Adaptability 1: Desirable state;

Cohesion 2 and Adaptability 2: Ideal state.

4. Discussion

The results of the current research showed that with enhancement of unhealthy family function, Internet addiction increases. Also, the results of the present study showed that with enhancement of unhealthy family function, internet addiction increases among students. Results in the present study showed, a significant negative correlation was found between the family current cohesion and Internet addiction; this means that less family function in cohesion aspect, Internet addiction will be more. In a study it was reported that people with Internet addiction have not satisfaction from their family function (Habibi et al., 2015). In the study of Khosravi (2011), a significant positive relationship was found between subscales of the family non-cohesion including disengagement, high conflict and autocratic family style and Internet addiction. This means that by disturbing the family cohesion, Internet addiction is increased. This result is consistent with the finding of the present study. The significant negative correlation of Internet addiction and family cohesion in present study shows that with more Internet addiction, intimacy and loyalty of the family members will be less to each other. So, family members are affected by the family function affecting Internet addiction. It seems when the family function and its subset are in efficient (cohesion between members, the ability of self-expression, the conflict, organizing things among members, and etc.), person compatibility becomes unbalanced and causes an undesirable state, the person is trying to use internal and external forces to resolve and balance the state again.

The present study showed that, 27.7% of families were connected in the current state of cohesion aspect, which is the third level of cohesion in the family. At this level, individuals' intimacy and loyalty to each other is high and finally a sense of dependence between members is more than independency sense (Olson, 2000). Families in balanced range of cohesion namely at 2 separated and connected levels in terms of cohesion, use different solutions in dealing with mental stress and manage stressful states better (Giaque, 2005) that according to the findings of current study, it seems about a quarter of studied families had the feature. The present study showed families of 20.2% of students were enmeshed (the fourth and last levels of cohesion in the family) in which intimacy is very high, loyalty is very high and finally a sense of dependence is high in individuals (Olson, 2000). At enmeshed level of cohesion, family members are interdependent. In this case, there is little relationship with people outside the family (Giaque, 2005). Also, most students (42.1%) under ideal conditions were interested in the state. Too high or too low levels of adaptability and cohesion in the family lead to the family poor function and a poor prognosis in personal evolution of its members that in the present study by investigating the current state, 20.2% of families were in the lowest level of cohesion. But most of students in ideal state had the tendency to be at this level that can show the risk. In this regard, families in two middle levels of cohesion have a good and desirable function. These families avoid much more intimacy of enmeshed families and/or lack of integration in disengaged families (Ghasemi, 2011).

In the present study, a negative correlation was seen between students' family adaptability and Internet addiction that was statistically insignificant. In current study, 66.1% of families were in the lowest level of adaptability (chaotic). These families have characteristics such as lack of leadership, emotional role changes and varied discipline. Rules in the families are not clear and there is no functional and comparative model in the families. These families act according to a state and event, also power structure is not stable in the families and there is no mutual and reliable support between members. Lack of rules in these families causes much confusion. In these families because of chaotic parents, children have no guide for their function (Olson, 2000). Maybe in the present study, lack of proper leadership in the family or roles' change lead to Internet abuse by students, so the family inefficient function causes unbalancing a person compatibility that leads to an undesirable state in the person, the person relies on a technological tool with interactive feature to resolve the state. In this regard, parents' supervision with empathy can keep children safe from many damages (Haj Khodadadi, 2014).

Also the present study results showed that in investigating ideal state, 86.3% of students had the tendency to be in chaotic state. Cultural changes may be the factor of tendency to such state in students due to exposure to technology and rapid industrial changes in Iran. The present study showed that only 1.4% of families were rigid, autocratic leadership features, rigid discipline, low role changes and finally very little changes in the family. In these families, each person maintains own roles and are rarely delegates to another person, power structure in these families are non- flexible.

In the present study results, a positive and significant relationship was observed between average time of using Internet at every time and average weekly hours of Internet use and Internet addiction. This means that more time of using Internet, more addiction to the Internet was seen. The significant relationship was seen in the results of Vizshefer study (2005) too.

The present study findings showed, 20.2% of samples were at risk of addiction and also 0.6% was addicted to Internet. There are many studies that in terms of the prevalence of Internet addiction are consistent with the results of the present study. For example Vizshefer study (2005) showed addiction to Internet in users of Internet cafes in Lar was 2.2% that 17.5% were at risk of Internet addiction. Also the results of Hosseini et al. (2015) study indicated, 15% of subjects had average addiction and 4.2% had severe addiction. Based on the results of Whang et al. (2003) study in Korea, the prevalence of Internet addiction was 3.5% and those at risk of Internet addiction were 18.4%, all are consistent with the current study result, and little difference seen in the results may be due to a difference in studies' population and different access to Internet in communities.

Morahan-Martin (1999) and Morgan (2003) found that students use the internet for various reasons. In the present study, the reasons for the use of Internet by students were varied so that 79.2% of students used Internet for entertainment, 51.5% for science and research works, and 13.4% for banking and 12.7% were associated with the job. Li et al. (2014) reported youth with Internet addiction used the Internet more for escape and entertainment-related reasons and less for information searching than youth without Internet addiction. Youth with Internet addiction were more likely to visit Cyber Cafes, use the Internet to relieve loneliness, and to visit Internet sex, gambling, and gaming sites than youth without Internet addiction. The difference between the results related to the age of the subjects and the division of research community. The current study population consisted of students who were older and more mature than the young people. In the current study, the research community is not divided into groups: addicted and non-addicted to the Internet.

Also, 60.4% of students used their mobile phone to access Internet. Since mobile phone provides Internet access anywhere in the city (Wahabi et al., 2015) Internet addiction can be facilitated thereby.

The present study findings showed that Internet addiction in male and female students had a significant difference; the result was consistent with the studies of Hasanzadeh et al. (2009) and Hosseini et al. (2015). Also Internet addiction rate was higher among girls (41.47% and $p < 0.01$), the result was consistent with the findings of Jafari Nodoushan et al. (2012), Hosseini Beheshtian (2011) and Vizshefer (2005). The reason of greater use of Internet in girls can be attributed to their less social relationship and lack of proper entertainment in girls.

5. Conclusion

The study findings indicated a negative correlation between the family cohesion and Internet addiction in students. In addition, there was some degree of students' dependence on Internet in ShahidBeheshti University of Medical Sciences that can be an alarm for the university authorities and families. There is a need for preventive and educational measures. So regarding families as a related factor to Internet addiction by nurses, public health and other policy makers seem as essential measures. Also holding training workshops by nursing professors in relation with proper solutions for better and targeted use of Internet, informing of advantages and disadvantages of its use, risks of Internet addiction and ways of prevention for students and families are suggested. Thus,

family environment must be considered in designing therapeutic programs. At the end, it is stated that special approaches must be provided for students with severe internet addiction and guide them to leave the addiction and correct use.

Limitations and Suggestions

Limitations of the study include being cross-sectional and it is necessary to conduct more precise longitudinal studies in this field, on the other hand assigning the study population only to university students in ShahidBeheshti University of Medical Sciences and lack of other groups' sampling due to researchers' lack of access to needed facilities for high-volume sampling, lack of accuracy in answering questions by students, lack of access to families and investigating the family function from the perspective of parents were limitations of the study. It is suggested to conduct further studies in the field of Internet addiction, the family function, adaptability and cohesion by researchers. According to the study results, it seems Internet addiction is a phenomenon spreading in students' population, so it is suggested to hold training classes and provide culture of proper use of Internet.

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Conflict of Interest

The authors declare that there is no conflict of interests regarding the publication of this paper.

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