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The mediating relationship between internet addiction with happiness and personality traits in students

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Abstract

Introduction: This study aimed to develop a mediating model of internet addiction disorder, the amount of happiness and personality characteristics.

Materials and Methods: This study is a correlational and the statistical population included all students of Ferdowsi University of Mashhad in the academic year of 2015-2016. 384 students were selected using stratified random sampling based on Krejcie and Morgan Table. They completed the Internet Addiction Test (IAT), the NEO personality questionnaires (NEO) and the Oxford Happiness Inventory (OHI) as well as a demographic information checklist. Data were analyzed using statistical methods, descriptive statistics and path analysis.

Results: Findings indicated that the first model was not sufficiently fitted, so the modified model showed a better fit with the data (CFI=0.99, AGFI=0.97, GFI =0.99, RSMEA= 0.02, $\chi 2/df$= 1.15). In this model, it was found that among NEO Five-Factor personality traits, neuroticism had a significant correlation with the Internet addiction (R=0.18). In addition, among personality traits, neuroticism had a significant correlation with the Internet addiction, and a significant negative relationship between conscientiousness and the internet addiction was obtained (R= -13, P<0.05).

Conclusion: According to the findings, a structural analysis of personality variables, and happiness showed a clearer picture of the relationship between psychological structures and addiction to the Internet.

Keywords: Internet addiction, Happiness, Personality traits

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Introduction

Despite the fact that more than four decades have passed since the invention of the Internet, it has had a significant growth. As far back as 2010, the number of Internet sites was higher than humans on the Earth (1). It has entered to Iran, the internet, since 1992 and then the number of users has been increased; as in the last decade, the use of the internet in the country has grown 29% and now Iran is ranked first among the Middle East in terms of internet users (2). There are different statistics on the

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prevalence of internet addiction in various societies. In a study to determine the prevalence of Internet addiction among university students, it is indicated that 23.8 and 1.8 percents of students had moderate and severe internet addiction, respectively (3). The growing literature on Internet addiction indicates that this is a social-psychological disorder (4).

The Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR) has introduced internet addiction in the impulse-control disorders category (5).

By growing internet addiction and its unhealthy side effects it becomes a hallmark of all behavioral addiction (6). In a systematic survey, it has been indicated that communication through the internet, while having positive effects, has had harmful effects such as distress and dysfunction in the daily schedule (7). Loneliness is one of the most striking effects of internet addiction among American University students (8). In the research conducted in Taiwan (9), China (10), Norway (11) and Iran (12), there were a significant relationship between internet addiction with loneliness and family conflict. The relationship between internet addiction with depression and self-esteem (13,14), coping strategies (6) and social anxiety (15) has been indicated in several studies. Studies have also emphasized on the addictive nature of the internet, especially among students. In this regard, Cao and Su showed that the daily life pressures, the level of resiliency, interpersonal relationships, the type of perceived social support are among the most important factors influencing university student's tendency to internet addiction (16).

But, on the other hand, the researcher believes that some personality characteristics also have an effective impact on internet addiction. Personality characteristics of internet users, along with the increasing spread of the internet, are among the factors that make individuals busy with internet (17). Personality is a general construct that consists of a set of personal characteristics, and refers to three components, including thoughts, emotions and behaviors, which interact with the environment (18). Today, the trait approach is a dominant theory in this field. This approach assumes that human has a wide range of readiness and responds to stimuli in a particular way (19). All traits approach's theorists, with a little difference in their research method and considering traits as a construct, believe that trait is the main aspect of human personality. McCrae and Costa believe that these traits affect various structures such as self-concept, self-efficacy beliefs and adaptive features like attitudes and personal goals, and then influence individual's choices and decisions (20). Researchers believe that introverts can compensate the difficulty of interactions in real world through virtual communication (13). Researchers also found that some factors such as extroversion and empiricism had a positive and significant relationship, and emotional stability had a negative relationship with the amount of internet use (21). Azizi et al. (22) also found that extroversion, openness to experience excitement, and flexibility were related to internet addiction, and the personality dimension of openness and encourage ability to experience was a good predictor of internet addiction (22).

But in terms of the relationship between personality traits and internet addiction, many variables can have an important mediating or moderating role. By reviewing the existing literature we can consider happiness as an important variable. Akın (23) believes that excessive internet use creates a subjective happiness, so that the person could not distinguish between happiness in the real world and happiness in cyberspace, and this premature situation leads to a decrease in confidence of the person; so that the person becomes a dependent rather than trying to solve his/her problems. Some studies also showed that people are happier when using the internet, so that the use of the telephone and the internet depends on the level of welfare, thus those who are at higher level have more access to this technology and feel happier (24). However, according to Brooks (25), life satisfaction such as high income levels, high interpersonal and social supports directly affect happiness. Individuals who have proper control over their life have a lower tendency to internet addiction and therefore their happiness will increase.

Overall, the existing literature suggests that internet addiction has a high prevalence among societies and is one of the newest problems of the present era, which has a significant negative impact on all of the population, especially for students. Therefore, it is important to identify the effective factors as well as applying appropriate strategies to reduce its effects. Thus, the relationship between psychological

structures and internet addiction illustrates a clearer picture of the factors affecting internet addiction. So, personality characteristics and happiness are factors that can contribute to internet addiction, but despite the numerous researches in this field, there is no study to investigate the mediating role of happiness in the relationship between personality traits and internet addiction disorder among students who are at higher risk than others. Therefore, in the present study, in a more comprehensive manner, the relationship between addiction to the internet with personality traits and the mediating role of happiness were examined by the path analysis.

Materials and Methods

This is a descriptive study in a correlation and path analysis method. The statistical population of the study included all students of Ferdowsi University of Mashhad in the academic year of 2015-2016. According to the Morgan's table for sample size, the number of 384 students was selected by stratified sampling. First, the number of students in each faculty (class) was calculated according to major and grade, then the sampling was done based on the ratio in each class. The inclusion criteria were: informed and voluntary willingness to participate in research; aged 18-45 years; ability for proper completion of the questionnaires; and lack of acute mental problems.

Exclusion criteria were: lack of willingness to participate, lack of proper completion of the questionnaires. After sampling based on inclusion and exclusion criteria, the participants completed the questionnaires. Finally, 319 questionnaires were collected then they were analyzed by descriptive statistics and path analysis. In order to observe ethical issues, informed consent was obtained from the participants and they were assured that their information would be confidential and no threat for participating. Also, all of the participants' questions were answered during the completion of the tools and informed about report of the results.

Research instruments

A) Demographic questionnaire: This is a researcher-made questionnaire and includes some questions about age, gender, grade, internet usage hours per week, usage time, type of internet and the used tools including mobile phone, tablet, laptop or PC.

B) Internet Addiction Test: This well-validated 5-Likert scale (rarely=1; sometimes=2; often=3, more often=4; and always=5) was designed by Young for measuring dependency to the internet. The minimum and maximum scores are 20 and 100, respectively. The 6 subscales are: salience, excessive use, neglecting work, anticipation, lack of control, and neglecting social life that assess three levels, mild (20-39), moderate (40-69) and severe (70-100) internet addiction (26). This scale was translated and used in Farsi by Orang (27). The reliability and validity of this scale have shown in many studies. Henrich excluded five factors, including too much time on the internet, use of internet for inner peace, prominence, pathological use of chatroom and neglect of job and academic duties. In addition, two types of content and deferential reliability (r=0.5) and test-retest (r=0.74), internal consistency (a=0.88), diligent (r=0.82) were considered and the best clinical point is 44 (28). Alavi et al. reported 0.97 and 0.97 for Cronbach and split-half, respectively (29).

C) NEO-FFI: This scale was developed by McCrae and Costa that have been used for assessing personality, and also has a strong empirical support. This is a 60-item and 5-Likert (strongly agree=1; strongly disagree=5) and each big factor (extraversion, neuroticism, openness, conscientiousness, agreeableness) assessed by every 12 items. Its content validity has been reported 0.76 to 0.90 for five factors, by McCrae and Costa (30).

The alpha coefficients reported by McCrae and Costa in the S form (individual scale) in subscales were 0.56 to 0.81 and in the R form (the others' report about the person) were 0.66 to 0.92, and main factors including extraversion, openness and neuroticism have higher reliability coefficients such as 0.83 to 0.86. This questionnaire was administered by Grossi on 2000 students of the Iranian Universities with the aim of identifying more fixed factors and its alpha coefficients for agreeableness, openness, extraversion, neuroticism and conscientiousness were 56.68, 0.73, 0.86 and 0.87, respectively. By calculating the correlation between two forms of a personal report and an observer evaluation to assess the criterion validity among the main factors, the maximum correlation was calculated to be 0.66 in the extroversion factor and the minimum correlation to be 0.45 for the agreeableness factor. Among the secondary traits, the

maximum correlation was 0.70 in the trust and the minimum was for compassionate and flexibility in feelings. The internal consistency coefficient for main factors, including agreeableness, openness, extraversion, neuroticism and conscientiousness, were 0.86, 0.73, 0.56, 0.68 and 0.87, respectively (31).

D) Oxford Happiness Inventory: Argyl et al. reversed the Beck Depression Inventory and developed a 21-item scale (32). This is a 29-item with 4-Likert (1-4), so that the score for each subject varies between 29 and 116; therefore, the higher the score, the higher happiness, and vice versa.

Argyle and Lu reported 90% for the alpha coefficient (33). Alipour and Noorbala reported 0.94 and 0.90 of the coefficients of internal consistency for men and women, respectively, in an Iranian sample. Also, Alipour and Agah Heris reported 91% for the Cronbach alpha coefficient (34).

Results

319 students have participated (213 females (66.8%) and 106 males (33.2%)). The highest and lowest participation was related to engineering (77 students) and mathematics (7 students) faculties, respectively; Also, the highest and lowest participation in terms of grade were respectively related to undergraduate (245 students) and Ph.D (14 students); Also 60 subjects were from Master grade. Table 1 indicates descriptive statistics of the subjects for variables of study. The conscientiousness, among other personality traits, has the highest mean score (36.62). The mean scores of happiness and addiction to internet of the students is 41.21 and 40.33, respectively. The correlation matrix of the variables is presented in table 1. The relationship between, neuroticism and happiness; neuroticism and internet addiction; happiness and internet addiction are significant.

Table 1. Descriptive statistics and correlation matrix

Variable	Mean	SD	Correlation	
			Happiness	Internet addiction
Neuroticism	3.29	6.03	-0.13*	0.17***
Extraversion	38.25	6.12	0.10	-0.04
Openness	37.52	6.70	0.02	-0.02
Agreeableness	37.41	6.42	0.02	0.09
Conscientiousness	38.62	5.69	0.06	-0.09
Happiness	41.21	12.52	1	-0.15**
Internet addiction	40.33	15.27	-0.15**	1

*P<0.05, **P<0.01, ***P<0.001

Since the main purpose of this study was to examine the direct and indirect effects of personality traits and happiness on internet addiction, the causal relationship between these variables were developed and were examined by the path analysis method. The fitness of the proposed model was examined based on the Comparative Fit Index (CFI), Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), and Root Mean Square Error of Approximation. It is essential that the mentioned indices have the required standards, in order to fit the pattern. If X^2 is less than 3, the RSMEA is less than 0.1 and is closer to zero, and also GFI, AGFI, CFI is closer to 1, and it suggests that the proposed pattern is confirmed. According to this, general indices for examining the proposed pattern indicated no general fitness of the pattern; the unfitted pattern is presented in Table 2. In order to fit the initial unfitted pattern, some corrections, based on theoretical and empirical foundations, were considered and finally the pattern was confirmed. The general indices of this new pattern are presented in Table 2. According to the following table, general indices of this new pattern have required standards and the values indicate the general fitness of the pattern (X^2/df=1.15; RSMEA=0.02; GFI=0.99, AGFI=0.97; CFI=0.99).

Table 2. General indices of the corrected model

χ^2	Df	χ^2/df	RMSEA	GFI	AGFI	CFI
8.08	7	1.15	0.02	0.99	0.97	0.99

However, the indicators of path analysis are not limited to the general fitting indices of the

model. But also the path coefficient parameter and their corresponding t values for each of the causative paths are considered, from the external to the mediator and internal variables, and mediators to internals. Based on the information presented, the pathway coefficient, -0.14, for neuroticism to happiness is a negative and weak path, which is significant based on t-test (t= -2.45; $P<0.05$). The pathway coefficient, 0.19, for neuroticism to internet addiction is a positive and weak path, which is significant based on t-test (t=3.37; $P<0.05$). The pathway coefficient, 0.13, for conscientiousness to internet addiction is a positive and weak path, which is significant based on t-test (t=2.33; $P<0.05$). The pathway coefficient, -0.12, for happiness to internet addiction is a negative and weak one, which is significant (t=-2.16; $P<0.05$). In other word, the path coefficients are significant from the external variable (neuroticism) to the mediator (happiness) and finally internal variable (internet addiction). Also, it is significant from the external variable (conscientiousness) to internal variable (Internet addiction) as well as from the mediator (happiness) to internal variable (internet addiction) ($P<0.05$).

In Table 3, the direct and indirect of coefficients and all variables are presented. As shown in this table, external variables (neuroticism and conscientiousness) and mediator (happiness) have a direct effect on Internet addiction, which among them neuroticism has a positive effect, and conscientiousness and happiness have a negative effect on addiction. Also, neuroticism has a direct and negative effect on happiness. Also the results presented in the above table show that 0.06% of variance in students' internet addiction scores is explained through neuroticism, conscientiousness and happiness; also, 0.01% of the happiness' variance is explained by neuroticism.

In general, happiness can play a mediating role in the relationship between neuroticism and internet addiction.

Table 3. The direct, indirect and general coefficients of the confirmed model

Variables	Direct effects	Indirect effects	General effect	Explained variance
On internet addiction from:				0.06
Neuroticism	0.19	0.01	0.02	
Conscientiousness	-0.13	-	-0.13	
Happiness	-0.12	-	-012	
On happiness from:				0.01
Internet addiction	-0.14	-	-0.14	

Discussion

Interesting to the psychological aspects of using internet and its pathology has grown dramatically in recent years. Therefore, the present study aimed to investigate the mediating role of happiness in the relationship between personality traits and internet addiction among students and developing a model based on previous research. The findings showed that neuroticism and conscientiousness have a significant positive and negative effect on Internet addiction, respectively. These findings are consistent with a large number of previous studies which showed there was a significant positive relationship between neuroticism and conscientiousness (16,35-41). In explaining the relationship, it can be said that individuals with neurotic personality have irrational and maladaptive thoughts that increase the likelihood of their tendency to the internet. In fact, cognitive distortions about self are characteristics of the neurotic people. These thoughts are guided by the cognitive-thinking style of the person, and someone who thinks much about the internet will have a more intense and prolonged addiction (17). In addition, neuroticism is characterized by some traits such as fear, sadness, confusion, anger, guilt and disgust. These factors are referred to as "emotional stability", which lack of such emotional stability, in neurotic people, leads to experience negative events, including internet addiction (21).

Also, in explaining the relationship between conscientiousness and internet addiction, we can consider the subcomponents of conscientiousness (orderliness, industriousness, reliability, decisiveness, and impulse control). In his research, Mousavi concluded that conscientiousness individuals have higher

levels of academic achievement and less tendency toward addiction due to orderliness, industriousness and impulse control (41). Theoretically, conscientiousness is the ability to control impulses, tendencies and the application of the plans to behavior in order to achieve the goals. Therefore, conscientiousness can neutralize the pathological effects of the tendency to addiction on students' academic performance by playing a protective role (16).

Another finding of the study showed that neuroticism has a direct negative effect on happiness, which is consistent with previous studies (38,42,43). It can be pointed out that neurotic individuals have no emotional stability and once they experience stress they feel anxiety and lower level of self-esteem, and consequently more unpleasant. They tend to appraise life events more negative than others, making them less happy (41). Given the fact that anxiety and depression are neurotic traits, the results are acceptable. Nevertheless the path analysis shows that neuroticism only explains 1% of the happiness's variance. It seems that other variables such as life satisfaction that includes high income level, individual's socialization so that person has a high level interpersonal relationship and high social support, affects happiness directly (25).

The latest finding of the study indicated that happiness has a significant mediating role in the relationship between neuroticism and internet addiction. That is, although neuroticism has a significant positive relationship with the internet addiction, but due to the mediator role of happiness, neuroticism had a significant negative relationship with the internet. In fact, happiness changes the relationship between neuroticism and internet addiction. This finding is consistent with Bandani et al. (44) and Kavetsos et al. (24) findings. These results show, although approaching to internet can create initial subjective happiness, but after a while, and excessive use of the internet lead to the internet addiction, with unpleasantness and decreasing of mental health (45) because then the person does not have the ability to distinguish between happiness in real world and cyberspace, and this unclear and precarious state leads to a decrease in self-confidence of the person as he/she becomes a dependent instead of problem solving. But on the other hand, according to the results of the present study as well as other studies, happiness has a negative relationship with some personality traits such as neuroticism (42) and given that neuroticism has a positive relationship with internet addiction (39), reducing internet addiction through the mediating role of happiness have important educational implications.

The present findings can provide important information for university administrators and therapists to develop and design programs for educating, preventing and treating internet addiction. In addition, in practice, it can helps authorities of the Ministry of Science, Research and Technology, which mainly involves with adults who have characteristics such as the emotion-seeking, need for entertainment and happiness, and diversity in life and, on the other hand, identified as vulnerable, emotionality and impulsive, to monitor and provide specialized consultants for students who identified as vulnerable for the Mental Health Survey. Replicating findings from similar studies can examine the current findings and increase the generalization of the findings. Caution should be considered in generalizing to general and clinical population, due to student and non-clinical population as well as the self-report questionnaire.

Conclusion

In summary, the results of the present study suggest that although personality traits, neuroticism and conscientiousness, are effective on internet addiction through the mediating role of happiness, but only explained 6% of the internet addiction's variance.

This means that the personality traits have a little contribution to this disorder and we should investigate other effective variables.

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