

## Association between mental flexibility and somatic symptom disorder mediated by smartphone addiction among university students

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### Abstract

**Background:** Smartphone addiction is categorized as a behavioral addiction that in adolescents and youths can affect many aspects of life, including education and physical health, and is accompanied by such problems as reduced interpersonal problems, anger, aggression, and emotion. This study designed to assess the association between mental flexibility and somatoform mediated by smartphone addiction among university students in 2020.

**Methods:** The study was a descriptive correlation performed employing path analysis. The study population included all students of the Islamic Azad University of Ahvaz in the academic year 2020-2021, 251 students were selected using simple random sampling. In the present research, we utilized the Somatic Symptoms Experiences Questionnaire (SSEQ), Smartphone Addiction Scale (SAS), and Cognitive Flexibility Inventory (CFI). The proposed model was assessed using path analysis with AMOS version 23.0 software.

**Results:** There was a negative and significant association between mental flexibility and smartphone addiction ( $\beta=-0.47$ ,  $P=0.001$ ). Moreover, there was a positive association between smartphone addiction and somatoform ( $\beta=0.41$ ,  $P=0.001$ ). There was no significant association between mental flexibility and somatoform ( $\beta=-0.10$ ,  $P=0.07$ ). The path analysis results showed the mediating role of smartphone addiction in the association between mental flexibility and somatoform in university students ( $\beta=-0.27$ ,  $P=0.001$ ).

**Conclusion:** Our model had a good fit, and, as a result, it could be helpful as an important step in identifying the aspects affecting the somatic symptom disorder of university students with smartphone addiction.

**Keywords:** Internet Addiction Disorder; Psychophysiologic Disorders; Somatoform Disorders; Students.

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## Introduction:

Mental pressures, along with unpleasant emotions, such as anxiety and depression, are inseparable parts of modern life. Despite miraculous welfare and comfort brought by rapid developments of the modern world, it has harmed the human mind. The contemporary human is faced with problems that cause unprecedented mental pressure and anxiety (1, 2). Psychometric disorders are physical problems triggered and exacerbated by psychological factors. Although psychological factors are not the only causes of such disorders, they act as accelerating or catalytic factors of these disorders. The previous diagnostic classes of somatization disorders have recently been replaced by psychosomatic symptoms in the “*Diagnostic and Statistical Manual of Mental Disorders*” (3, 4).

Smartphones are a growing phenomenon that has changed human life in the 20<sup>th</sup> century. Generally, they are now playing an important role in relationships worldwide. Since they have become popular, the question that has occupied the mind of researchers is whether their excessive use can lead to addiction. Smartphone addiction is defined by excessive use and mental preoccupation with it. In recent years, considerable growth has been observed in the literature on smartphone addiction (5). Smartphones are very popular devices with the ability to process more data than other phones. In addition to their communicational application, they have many other uses, such as playing games, gaining access to the Internet and social networks, sending and receiving messages, and watching movies (6).

Smartphone addiction is categorized as a behavioral addiction (7). This addiction among adolescents and youths can affect many aspects of life, including education and physical health, and is accompanied by such

problems as reduced interpersonal problems, anger, aggression, and emotion. Negative psychological effects and even physical outcomes, such as headache, earache, and psychometric diseases, are associated with smartphone addiction. Due to the vast harms from this type of addiction, it is today as serious as drug addiction and may, at least, be categorized as important social harm of the future. There are many problems associated with addiction to the Internet and smartphones, such as loss of appetite, insomnia, lack of time to do other things, and the emergence of new harms, such as NOMOPHOBIA or NO MOBILE PHONE PHOBIA (8). Demir and Sumer (9) showed that headaches and impaired sleep quality are correlated with the addictive use of smartphones. Moreover, Cao et al. (10) showed the presence of the symptoms of psychometric disorders among people with Internet addiction.

Mental flexibility is a protective factor against physical symptoms. Psychological flexibility considerably adjusts the effect of disease-caused somatization and anxiety on the quality of life and reduces anxiety and stress associated with psychometric diseases (11, 12). Mental flexibility is defined as having awareness of internal experiences, such as thoughts and feelings in the present, without a need for avoidance or escape from them and changing or continuing behavior in compliance with the situation consistent with one's values. Due to the control or elimination of unpleasant experiences, individuals with lower mental flexibility exhibit behaviors that harm their physical, emotional, or mental health (13, 14). Therefore, psychological flexibility helps people to release themselves from a cycle of experimental avoidance and cognitive fusion, which is only possible when they learn to respond to such mindful experiences without considering them as a barrier (15, 16).

Many studies have supported the role of psychological inflexibility in a vast area of psychological disorders, such as anxiety and depression, health status, and functional disorders (14, 17, 18). Flexibility is an element of high-level abilities or executive performance with a role in solving problems, pursuing objectives, and achieving. In fact, mental flexibility is defined as the ability to change thoughts and measures in response to demands created because of situations and problems (11). Based on the literature results, flexibility can negatively explain smartphone addiction, in that cognitive flexibility is an important factor to distinguish individuals with addiction to the Internet and smartphones from normal individuals (19).

Reduced mental flexibility will lead to stress and anxiety. To suppress them, the person makes himself/herself busy with smart devices. In addition to their reinforcing pleasurable features, they can temporarily reduce this anxiety by distracting the thoughts which, in turn, reinforce this behavior and form dependency. Therefore, the main goal of this study was to assess the association between mental flexibility and somatoform mediated by smartphone addiction among university students.

## Methods

The study was a descriptive correlation accomplished by path analysis. The statistical population was all the students of the Islamic Azad University of Ahvaz in the academic year 2020-2021. The inclusion criteria were: undergraduate students of Islamic Azad University, Ahvaz Branch, having no severe mental disorders, and consent to participate in the study. The exclusion criteria also were unwillingness to continue the study and failure to complete the questionnaires. To assess the proposed model, a total of 300 individuals were initially selected, based on the number of variables, using convenience sampling. Due to the COVID-19 pandemics,

this process was done on the Internet. After explaining the research objectives, filling the online consent form, and ensuring the participants about the confidentiality of data, they completed the questionnaires. After removing incomplete questionnaires and bi- and multi-variate outliers, the remaining 254 questionnaires were analyzed.

## Research Instruments

**The Somatic Symptoms Experiences Questionnaire (SSEQ):** This questionnaire is composed of 13 items and 4 factors, namely health worries (five items), illness experience (two items), difficulties in interaction with doctors (three items), and disease outcomes (three items). The items are scored based on a 5-point Likert scale from 1 “never” to 5 “always.” Its developers suggested the mean Cronbach's alpha of 0.90 for its factors (3). The questionnaire was standardized in Iran by Amiri and Jamali (20). The factor analysis showed that the SSEQ has four factors. Its reliability assessment with Cronbach's alpha, retest, and split-half indicated its stability. The Cronbach's alpha of this 13-item questionnaire was 0.85, indicating its good internal consistency. Moreover, the criterion validity of the questionnaire in comparison with other questionnaires indicated its good discriminant validity and convergent validity. In this study, Cronbach's alpha coefficient reported as 0.84.

**The Smartphone Addiction Scale (SAS):** This 33-item scale is scored on a 6-point Likert scale from 1 “completely disagree” to 6 “completely agree.” This scale has six subscales of Daily-Life Disturbance, Positive Anticipation, Withdrawal, Cyberspace-Oriented Relationship, Overuse, and Tolerance. A higher score indicates a higher level of smartphone addiction. A score of 99 and higher is considered smartphone addiction. This scale was standardized in Iran by Yahyazadeh et al. (21) and then validated

using the content and face validity. The mean content validity and Cronbach's alpha of the items were 0.80 and 0.92, respectively. In the present study, reliability of the smartphone addiction scale was measured by Cronbach's alpha that was 0.81 for the questionnaire.

### **The Cognitive Flexibility Inventory (CFI):**

The Cognitive Flexibility Inventory (CFI) was developed by Dennis in 2010 as a short 20-item self-report tool to measure cognitive flexibility that is needed to overcome and replace inefficient thoughts with efficient ones. This inventory is scored based on a 7-point Likert scale from 1 to 7 to assess three aspects of (a) the perception of controllability, (b) the perception of multiple options, and (c) the perception of behavior justification. A higher score indicates a higher degree of cognitive flexibility and a lower score indicates a lower degree of cognitive flexibility. Developers of this inventory showed good factor structure, convergent validity, and convergent validity of it (22). Soltani et al. (23) reported that the retrieval validity coefficient of the total scale was 0.71 and that of perception of controllability, perception of multiple options, and perception of behavior justification were 0.57, 0.72, and 0.52, respectively. The Cronbach's alpha for the

whole scale, perception of controllability, perception of multiple options, and perception of behavior justification were 0.90, 0.87, 0.89, and 0.85, respectively. In the present study, Cronbach's alpha coefficient was 0.83 for the questionnaire.

### **Statistical analyses**

The path analysis was used to assess the proposed model. SPSS and AMOS version 23.0 were used for analyzing the data.

### **Results**

The mean and standard deviation (SD) of the participants' age were 20.06 and 1.80, respectively. Table 1 shows descriptive indices (mean, standard deviation, minimum score, and maximum score) and the Pearson correlation coefficient for the relationship between the predictive, mediating, and criterion variables. Accordingly, all research variables were significantly correlated. Before data analysis with the path analysis method, the presumptions of multivariate normality, linearity, multicollinearity, and independence of the errors were assessed and confirmed. Based on these assumptions, the fit power of the proposed model can be assessed based on the fit criteria. The proposed model is presented in Figure 1.

Table 1. Mean, standard deviation (SD), and Pearson correlation coefficients of the study variables

Variables	M	SD	Min.	Max.	1	2	3
1. Mental flexibility	93.02	19.21	65	130	1		
2. Smartphone addiction	73.16	26.83	45	125	-0.27*	1	
3. Somatoform	42.14	12.30	28	60	-0.46*	0.41*	1

\* =  $p < 0.01$

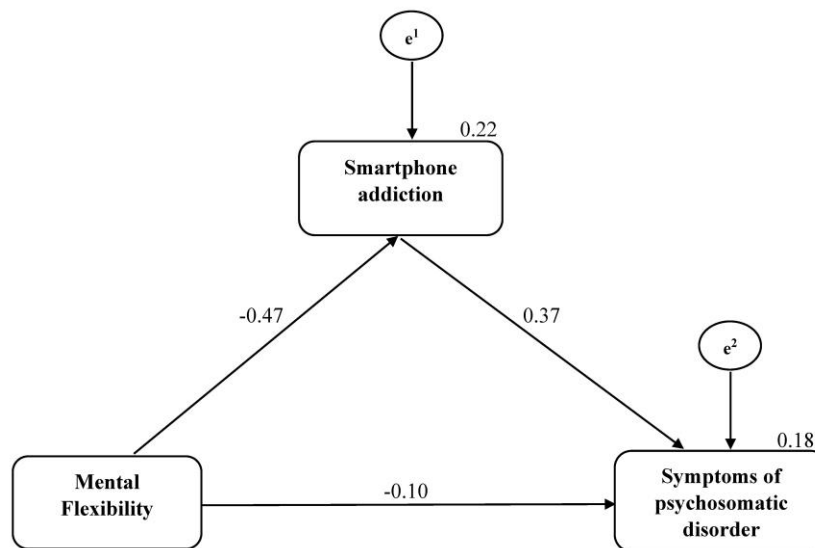


Figure 1- Initial model pertaining to the mediating role of smartphone addiction in the association between mental flexibility and somatoform.

The structural model, paths, and their coefficients in the proposed model are presented in Table 2. Based on the coefficients of the standard parameter and corresponding significance level in Table 3, the direct of mental flexibility to psychometric disorder’s symptoms was not significant in the proposed model and thus it was removed from it. Accordingly, the modification and fit model of the final model were assessed based on the fit criteria. Table 3 shows a good fit of the final model based on the fit indices.

The structural model, paths, and their standard coefficients in the final model after the removal of Mental flexibility to somatoform are presented in Table 4. According to Table 4, all of the remaining paths in the final model were significant. In other words, there was a significant direct negative correlation between flexibility and smartphone addiction ( $\beta= -0.47, P= 0.001$ ). The association between smartphone addiction and symptoms of psychometric disorder was positive and significant ( $\beta= 0.41, P= 0.001$ ). The final model is presented in Figure 2.

Table 2. Path coefficients of direct effects between study variables in the initial model.

Path	The initial model		
	Path type	$\beta$	P
Mental flexibility to smartphone addiction	Direct	-0.47	0.001
Mental flexibility to somatoform	Direct	-0.10	0.07
Smartphone addiction to somatoform	Direct	0.37	0.001

Table 3. Final model fit indicators

Fit indicators	$\chi^2$	df	( $\chi^2/df$ )	IFI	GFI	TLI	CFI	NFI	RMSEA
Final model	3.17	1	3.17	0.98	0.98	0.97	0.98	0.96	0.06

Table 4. Path coefficients of direct effects between study variables in the final modified model.

Path	The final modified model		
	Path type	$\beta$	P
Mental flexibility to smartphone addiction	Direct	-0.47	0.001
Smartphone addiction to somatoform	Direct	0.41	0.001

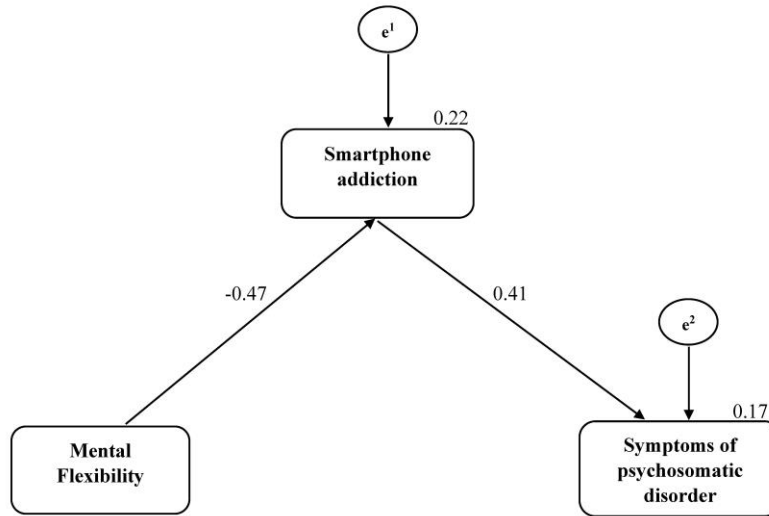


Figure 1- The modified final model pertaining to the mediating role of smartphone addiction in the association between mental flexibility and somatoform.

The Bootstrap test was used to determine the significance of the indirect association and to investigate the mediating role of smartphone addiction. To this end, the general effect of the predictive variable on the criterion variable was determined in the absence of a mediator. According to Table 5, the indirect path showed that the association between flexibility and symptoms of other psychometric diseases in the presence of the mediating variable was not significant ( $\beta = -$

0.27,  $P = 0.001$ ). In other words, smartphone addiction completely attracts the effect of flexibility on the symptoms of psychometric disorders and completely mediates this association.

**Discussion**

The present study designed to assess the association between mental flexibility and somatoform mediated by smartphone addiction among university students.

Table 5. Results of the Bootstrap method for investigating indirect and intermediary paths

Predictor variable	Mediator Variable	Criterion variable	The final modified model	
			Bootstrap	P
Mental flexibility	Smartphone addiction	Somatoform	-0.27	0.001

According to the findings of the present study, the causal model of the association between mental flexibility and the symptoms of psychometric disorders with the mediating role of smartphone addiction in students was fit. The first path was the direct association between flexibility and smartphone addiction. This finding is consistent with the research results of Sharifi et al. (19) and Kim et al. (24). To explain, it could be the result of a low level of flexibility, as a key factor in the process of information and cognitive response to the stimulator, can lead to smartphone and Internet addiction. People with flexible thoughts use alternative justifications and positively reconstruct their thinking framework and accept challenging and stressful events. New and flexible theories, as a multidimensional structure of perspective, includes fundamental variables, such as temperament, and specific skills, such as problem-solving. These skills allow the person to adapt to the damaging events of life. Flexibility refers to a person's ability to use cognition process approaches for dealing with new abnormal and unexpected conditions in the work environment (25). Therefore, people with a high level of flexibility have a better problem-solving ability when it comes to life challenges and problems. This characteristic prevents them from online addictive behaviors, such as smartphone addiction. Therefore, flexibility is expected to predict smartphone addiction in students.

The second path is the direct path of smartphone addiction to the symptoms of psychometric disorder. This finding is consistent with the research results of Demir and Sumer (9) and Lee et al. (10). To explain, it can be said that excessive use of smartphones may disrupt sleep at night and cause stress and depression. There are other explanations why the harmful use of smartphones can lead to health problems: Blue light emitted from smartphones can

disrupt sleep quality. Moreover, digital dependency can result in stress and depression (24, 27, 28). It can result in the symptoms of different psychometric diseases.

To investigate the mediating role of smartphone addiction, given that one condition to investigate the mediating role is the significance of the direct path of the predictive variable to criterion variable, the results showed a significant positive association between flexibility and symptoms of psychometric diseases among university students in the absence of a mediating role. The results showed that there was a significant positive association between flexibility and symptoms of psychometric disorders in the absence of mediating role in university students. This finding is consistent with the research results of Leonidou et al. (11). To explain, it can be said that flexibility, as a person's confidence in his/her abilities to cope with stress, is characterized by coping abilities, self-esteem, emotional literacy, and personal characteristics. Increasing psychological flexibility helps people to reduce cognitive fusion and experiential avoidance through improving mindfulness, accepting events instead of controlling them, and challenging thoughts and feelings. It encourages people to shift their energy from emotional control to valuable measures, which meet their values despite personal problems and sufferings (29,30). This resulted in a significant reduction in anxiety and depression and subsequently the symptoms of psychometric diseases.

Due to the important role of smartphones for adolescents and youths, this finding was completely mediated in compliance with the findings of the present study. To explain the complete mediating role of smartphone addiction in the association between flexibility and the symptoms of psychometric disorders, it can be said that flexibility, as a

person's confidence in his/her abilities to cope with stress, is characterized by coping abilities, self-esteem, emotional literacy, and personal characteristics. Due to the extensive use and accessibility of smartphones, their mediating role can be explained for the majority of university students. Since smartphones in the recent century are the most accessible communication system among youths, personal characteristics, such as low flexibility, have resulted in the symptoms of psychometric diseases through smartphone addiction.

Findings showed that the university students' excessive use of smartphones involves their getting familiar with their effective use by controlling the antecedents of addiction. It is also needed to explain the risks of psychometric diseases through training health and lifestyle skills to reduce their negative outcomes. The results can be used to inform students, their families, and education authorities, and promote the physical and psychological health of youths in the era of technology and virtual space.

In the end, it is worth noting that the findings of the present study should be interpreted and generalized based on research limitations. The study was conducted by using a self-report instrument, instead of studying the behavior and probable research gap, and at least within the framework of research variables and research population. This limitation justifies that caution must be taken in the generalization and interpretation of the results. It is recommended to conduct complementary experimental and causal-comparative studies in different communities, such as the clinical community, specifically by controlling the gender of university students. The conduction of longitudinal studies, such as time panels, within the modeling framework of the structural equation, is also recommended.

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### ***Author's contribution***

ZF, and HA developed the study concept and design. ZF, and SB acquired the data. ZF, HA, and SB analyzed and interpreted the data, and wrote the first draft of the manuscript. All authors contributed to the intellectual content, manuscript editing and read and approved the final manuscript. HA, and NF provided administrative support.

### ***Informed consent***

Questionnaires were filled with the participants' satisfaction and written informed consent was obtained from the participants in this study.

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### ***Conflict of interest***

The authors declare that they have no conflict of interests.

### ***References***

1. Slavich GM. Life Stress and Health: A Review of Conceptual Issues and Recent Findings. *Teach Psychol.* 2016;43(4):346-355.
2. Sohrabi MR, Karimi HR, Malih N, Keramatinia AA. Mental Health Status of Medical Students in Tehran: A Cross Sectional Study. *Social Determinants of Health.* 2015;1(2):81-8.
3. Herzog A, Voigt K, Meyer B, Wollburg E, Weinmann N, Langs G, et al. Psychological and interactional characteristics of patients with somatoform disorders: Validation of the Somatic Symptoms Experiences Questionnaire (SSEQ) in a clinical psychosomatic population. *J Psychosom Res.* 2015;78(6):553-62.
4. Mollinedo I, Ma Cancela J. Evaluation of the psychometric properties and clinical applications of the Timed Up and Go test in Parkinson disease:



- a systematic review. *J Exerc Rehabil.* 2020;16(4):302-312.
5. Amiri M, Dowran B, Salimi H, Zarghami M. The problematic use of mobile phone and mental health: A review study in Iran. *J Educ Health Promot.* 2020;9(1):290.
  6. Demirci K, Akgönül M, Akpınar A. Relationship of smartphone use severity with sleep quality, depression, and anxiety in university students. *J Behav Addict.* 2015;4(2):85-92.
  7. Kwon M, Kim DJ, Cho H, Yang S. The smartphone addiction scale: development and validation of a short version for adolescents. *PLoS One.* 2013;8(12):e83558.
  8. Mohammadi Nasab N, Manshaee G, Nadi MA. The Effectiveness of Nomophobia Therapy on Self-Esteem and Nomophobia Symptoms in High School Students, Iran *J Psychiatry Behav Sci.* 2021;15(1):e109291.
  9. Demir YP, Sumer MM. Effects of smartphone overuse on headache, sleep and quality of life in migraine patients. *Neurosciences (Riyadh).* 2019;24(2):115-121.
  10. Cao H, Sun Y, Wan Y, Hao J, Tao F. Problematic Internet use in Chinese adolescents and its relation to psychosomatic symptoms and life satisfaction. *BMC Public Health.* 2011;11(1):802.
  11. Leonidou C, Panayiotou G, Bati A, Karekla M. Coping with psychosomatic symptoms: The buffering role of psychological flexibility and impact on quality of life. *J Health Psychol.* 2019;24(2):175-187.
  12. Safari Mousavi SS, Nadri M, Amiri M, Radfar F, Farokhcheh M. The predictive role of psychological flexibility and cognitive emotion regulation strategies on depression, anxiety and stress in type 2 diabetic patients. *Middle Eastern Journal of Disability Studies.* 2019;9(0):50.
  13. Ramaci T, Bellini D, Presti G, Santisi G. Psychological Flexibility and Mindfulness as Predictors of Individual Outcomes in Hospital Health Workers. *Front Psychol.* 2019;10:1302.
  14. Kashdan TB, Rottenberg J. Psychological flexibility as a fundamental aspect of health. *Clin Psychol Rev.* 2010;30(7):865-878.
  15. Østergaard T, Lundgren T, Zettle RD, Landrø NI, Haaland VØ. Psychological Flexibility in Depression Relapse Prevention: Processes of Change and Positive Mental Health in Group-Based ACT for Residual Symptoms. *Front Psychol.* 2020;11:528.
  16. Muris P, Meesters C, Herings A, Jansen M, Vossen C, Kersten P. Inflexible Youngsters: Psychological and Psychopathological Correlates of the Avoidance and Fusion Questionnaire for Youths in Nonclinical Dutch Adolescents. *Mindfulness (N Y).* 2017;8(5):1381-1392.
  17. Levin ME, MacLane C, Daflos S, Seeley J, Hayes SC, Biglan A, et al. Examining psychological inflexibility as a transdiagnostic process across psychological disorders. *J Contextual Behav Sci.* 2014;3(3):155-63.
  18. Sairanen E, Lappalainen P, Hiltunen A. Psychological inflexibility explains distress in parents whose children have chronic conditions. *PLoS One.* 2018;13(7):e0201155.
  19. Sharifi P, Mousavi S A, Hasani J. The Discriminational Role of Reinforcement sensitivity theory, Emotion Regulation Processes Strategies and Cognitive Flexibility in Discrimination of People with Internet Addiction. *Journal of Cognitive Psychology.* 2018;6(2):51-60
  20. Amiri S, Jamali Y. Psychometric assessment of somatic symptoms experiences instrument based on DSM-5. *Koomesh.* 2018;20(4):699-704.
  21. Yahyazadeh S, Fallahi-Khoshknab M, Norouzi K, Dalvandi A. The prevalence of smart phone addiction among students in medical sciences universities in Tehran 2016. *Advances in Nursing & Midwifery.* 2017;26(94):1-10.
  22. Dennis JP, Vander Wal JS. The Cognitive Flexibility Inventory: Instrument Development and Estimates of Reliability and Validity. *Cognitive Therapy and Research.* 2010;34(3):241-53.
  23. Soltani S, Shareh H, Bahreyniyan SA, Farmani A. The mediating role of cognitive flexibility in correlation of coping styles and resilience with depression. *Pajooohandeh.* 2013;18(2):88-96.
  24. Kim SG, Park J, Kim HT, Pan Z, Lee Y, McIntyre RS. The relationship between smartphone addiction and symptoms of depression, anxiety, and attention-deficit/hyperactivity in South Korean adolescents. *Ann Gen Psychiatry.* 2019;18:1.
  25. Winskel H, Kim TH, Kardash L, Belic I. Smartphone use and study behavior: A Korean and Australian comparison. *Heliyon.* 2019;5(7):e02158.
  26. Lee S, Kim M, Mendoza JS, McDonough IM. Addicted to cellphones: exploring the psychometric properties between the nomophobia questionnaire and obsessiveness in college students. *Heliyon.* 2018;4(11):e00895.
  27. Panova T, Carbonell X. Is smartphone addiction really an addiction? *J Behav Addict.* 2018;7(2):252-259.
  28. Thomée S. Mobile Phone Use and Mental Health. A Review of the Research That Takes a

- Psychological Perspective on Exposure. *Int J Environ Res Public Health*. 2018;15(12):2692.
29. García-Gómez M, Guerra J, López-Ramos VM, Mestre JM. Cognitive Fusion Mediates the Relationship between Dispositional Mindfulness and Negative Affects: A Study in a Sample of Spanish Children and Adolescent School Students. *Int J Environ Res Public Health*. 2019;16(23):4687.
30. Scott W, Hann KE, McCracken LM. A Comprehensive Examination of Changes in Psychological Flexibility Following Acceptance and Commitment Therapy for Chronic Pain. *J Contemp Psychother*. 2016;46:139-148.