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Original Article

Relationship between Self-compassion and Symptoms of Psychosomatic Disorders Mediated by Smartphone Addiction in University Students

Zahra Feizollahi[1], PhD Candidate; Hassan Asadzadeh[2]*, PhD; Saeed Bakhtiarpour[3], PhD; Noorali Farrokhi[4], PhD

[1]Department of Psychology, Science and Research Branch, Islamic Azad University, Tehran, Iran
[2]Department of Educational Psychology, Faculty of Psychology and Education, Allameh Tabataba'i University, Tehran, Iran
[3]Department of Psychology, Ahvaz Branch, Islamic Azad University, Ahvaz, Iran
[4]Department of Assessment and Measurement, Faculty of Psychology and Education, Allameh Tabataba'i University, Tehran, Iran

Abstract

Introduction: The use of various information technologies such as smartphones has substantially increased in recent decades and has directly affected human health. The present study aimed to investigate the relationship between self-compassion and symptoms of psychosomatic disorders mediated by smartphone addiction in university students.

Methods: This research was applied in terms of purpose and correlational descriptive study in terms of the data collection method. The study population consisted of all students studying in the academic year of 2020-2021 at Islamic Azad University, Ahvaz Branch, among whom 254 individuals were selected using convenience sampling. The data were collected using Neff's Self-Compassion Scale, Somatic Symptoms Experiences Questionnaire (SSEQ), and Smartphone Addiction Scale (SAS); the collected data were analyzed using path analysis.

Results: The results showed a direct relationship between self-compassion and smartphone addiction (β=-0.32, P=0.001) and a significant relationship between smartphone addiction and symptoms of psychosomatic disorders (β=0.34, P=0.001). Smartphone addiction was directly associated with symptoms of psychosomatic disorders in the participants (β=-0.11, P=0.041). In addition, smartphone addiction fully mediated the relationship between self-compassion and symptoms of psychosomatic disorders (β=-0.28, P=0.001).

Conclusion: According to the results, the proposed model had a good fit. Therefore, authorities can organize training programs to improve self-compassion in young people, thereby helping them overcome their smartphone addiction. This can consequently reduce symptoms of psychosomatic disorders in these individuals.

Keywords: Self-compassion, Smartphone addiction, Psychosomatic disorders, Students

*Correspondence to:
Hassan Asadzadeh, PhD;
Department of Educational Psychology, Faculty of Psychology and Education, Allameh Tabataba'i University, Tehran, Iran
Email: asadzadehhsn@gmail.com

Introduction

Psychosomatic disorders are among the main concerns of today's human societies. People with psychosomatic disorders always need to receive counseling because they suffer from a variety of symptoms with unknown biological origins. The previous diagnostic classes of somatosensory disorders have been recently replaced with symptoms of psychosomatic disorders in the Diagnostic and Statistical Manual of Mental Disorders-5 (1, 2). Psychosomatic disorders involve a wide range of diseases with physical signs and symptoms as their main component. These physical signs and symptoms include cardiovascular, respiratory, gastrointestinal, musculoskeletal, genitourinary, and skin disorders and other conditions such as migraine headaches, dizziness, fatigue, memory impairment, concentration difficulty, shortness of breath, nausea, vomiting, and insomnia, in which major psychological events are closely related to physical symptoms (3-5).

Stress is an undeniable fact in today's life (6). It cannot and should not be completely removed from life. Laziness and mental stagnation are the products of a boring stress-free life. On the other hand, high levels of stress can knock the body off balance and impair its functioning. Therefore, the only way to handle stress is to adopt effective stress management techniques devised by professionals (7). Stress can have psychological and physical manifestations. Some psychological manifestations of stress include

unwillingness to socialize, lack of appetite, reluctance to live and communicate, and depression. Common physical manifestations of stress include migraine, hypertension, cardiovascular diseases, insomnia, chronic low back pain, and stomach ulcers (8, 9).

The use of various information technologies such as smartphones has substantially increased in recent decades. Today, smartphones have to some extent become integral parts of human life. Due to recent advances in information technologies, face-to-face communication has been replaced by online communication, as billions of people easily communicate with each other from great distances (10). Mobile phones have become essential parts of daily life of university students. Like other parts of the world, the growing number of mobile phone users in Iran signals the beginning of a revolution in the use of these communication devices and a change in the pattern of relationship and behavior (11). University students are major users of smartphone technology, and in their view, smartphones are the most important means of communication as they enable them to both manage their daily activities and to stay in touch with their family and friends (12, 13). In a study on Australian and Malaysian students, the most common reason for using a mobile phone was easy communication with others (via message and voice call) without any temporal or spatial limitation. American students stated that they needed to have mobile phones to keep in touch with their parents, ask them for guidance, and receive emotional support (14). Smartphones and cyberspace are a vast and innovative realm that brings new possibilities, freedoms, opportunities, harms, and limitations to its users and affects various aspects of university students' lives (15). Unreasonable use of smartphones and cyberspace poses major challenges for university students. Challenges that may alienate the student from society and ultimately create a kind of isolation and loneliness for the individual (16).

Self-compassion can contribute to the development or exacerbation of symptoms of psychosomatic disorders (17). Self-compassion consists of the following three components: self-kindness versus self-judgment (understanding oneself with kindness and accepting shortcomings and inadequacies instead of judging and criticizing oneself harshly), common humanity versus isolation (acknowledging that all human beings have shortcomings and make mistakes), and mindfulness versus over-identification (having a balanced and clear awareness of the present moment and ignoring painful aspects of experiences rather than repeatedly thinking of them) (18). Today,

a combination of these three components determines the levels of self-compassion. Research suggests that higher levels of self-compassion are associated with higher psychological well-being, higher resilience to stress, lower anxiety levels, and lower possibility of developing depression or mental disorders (19, 20). Over the past decade and with the arrival of the third wave of cognitive behavioral therapies, extensive research has been carried out on psychological problems such as anxiety, depression, and stress, all of which are associated with symptoms of psychosomatic disorders. Over this period, scholars have paid special attention to the concept of psychological flexibility, which is closely related to self-compassion (21, 22). Therefore, based on the issues outlined above, the main objective of the current study was to investigate the relationship between self-compassion and symptoms of psychosomatic disorders mediated by smartphone addiction in university students.

Methods
This research was applied in terms of purpose and correlational descriptive study in terms of the data collection method. The study population consisted of all students studying in the academic year of 2020-2021 at Islamic Azad University, Ahvaz branch. To assess the proposed model and test the research hypotheses, 300 individuals were enrolled (with regard to the number of variables) using convenience sampling and online announcement (due to the closure of universities during the COVID-19 pandemic). After explaining the research objectives to the participants and assuring them about the confidentiality of their information, they filled out electronic informed consent forms, and completed the research questionnaires. The final sample size was determined 254 after excluding all individuals with incomplete questionnaires. The authors enrolled all undergraduate students with no history of serious physical or mental illness studying in the academic year of 2020-2021 at Islamic Azad University, Ahvaz branch. The most important hypotheses of the present study were as follows: 1) there is a relationship between self-compassion and smartphone addiction; 2) there is a relationship between smartphone addiction and symptoms of psychosomatic disorders; 3) there is a relationship between self-compassion and symptoms of psychosomatic disorders; 4) smartphone addiction has a mediated role in the relationship between self-compassion and symptoms of psychosomatic disorders in university students. The theoretical model of the research is presented in Figure 1.
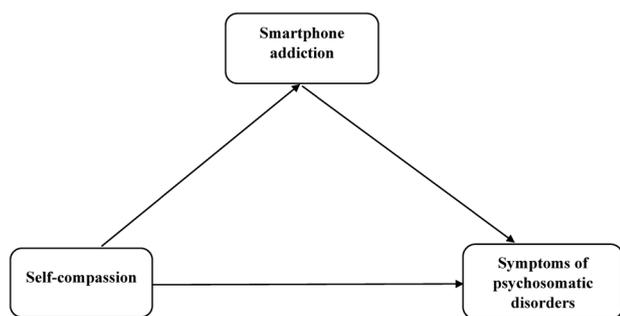
Figure 1: The theoretical model of the research

Research Instruments

Somatic Symptoms Experiences Questionnaire (SSEQ): This 13-item scale includes 4 components of health worries (5 items), illness experience (2 items), difficulties in interaction with doctors (3 items), and impact of illness (3 items). The items are scored on a five-point Likert scale from never (score 1) to always (score 5). The designers reported an average Cronbach's alpha value of 0.90 for components of SSEQ. Amiri and Jamali (23) reported the reliability of this questionnaire equal to 0.85 based on Cronbach's alpha coefficient. In the present study, Cronbach's alpha coefficient was 0.84 for the questionnaire.

Smartphone Addiction Scale (SAS): This 33-item tool was designed by Kwon et al. (24). The items are scored on a six-point Likert scale from strongly disagree (score 1) to strongly agree (score 6). The subscales of SAS include daily-life disturbance, positive anticipation, withdrawal, cyberspace-oriented relationship, overuse, and tolerance. Higher scores indicate greater dependence on smartphones, and scores ≥99 signify smartphone addiction. This scale was standardized in Iran by Yahyazadeh et al. (25) 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.

Neff's Self-Compassion Scale: This 26-item tool was developed by Neff et al. (26), and its subscales include self-kindness, self-judgment, common humanity, isolation, mindfulness, and over-identification. The items are scored on a five-point Likert scale from strongly disagree (score 1) to strongly agree (score 5). Items 1, 2, 4, 6, 8, 11, 13, 16, 18, 20, 21, 24, and 25 are scored inversely (26). Azizi et al. (27) reported Cronbach's alpha coefficient of 0.78 for this scale. In this study, the reliability of the scale was found to be 0.82 using Cronbach's alpha coefficient.

Statistical Analyses

The path analysis was used to assess the proposed model. The data were analyzed in SPSS 23 and Amos 23.

Results

According to the results of demographic data, a total of 254 (142 male and 112 female) university students aged 20.06±1.80 years old participated in this study. Table 1 shows the descriptive indicators (including the mean, standard deviation, minimum, and maximum) calculated for all research variables. It also presents the results of Pearson correlation coefficient test, which was performed to investigate the relationships of the predictor, mediating, and criterion variables. Significant correlations were found among all research variables. Before analyzing the data, the multivariate normality, linearity, multicollinearity, and independence of errors were all tested and confirmed using path analysis. All these assumptions were approved; thus, goodness of fit indices was used to assess the model fit.

The calculated goodness of fit indices presented in Table 2 indicate the desirable fit of the proposed model (χ^2/df=1.67, GFI=0.98, RMSEA=0.04). The proposed model is presented in Figure 2.

Table 3 presents the structural research model, relevant paths, and standardized path coefficients in the proposed model. Given the standardized coefficients and their respective levels of significance presented in Table 3, the direct paths of the research
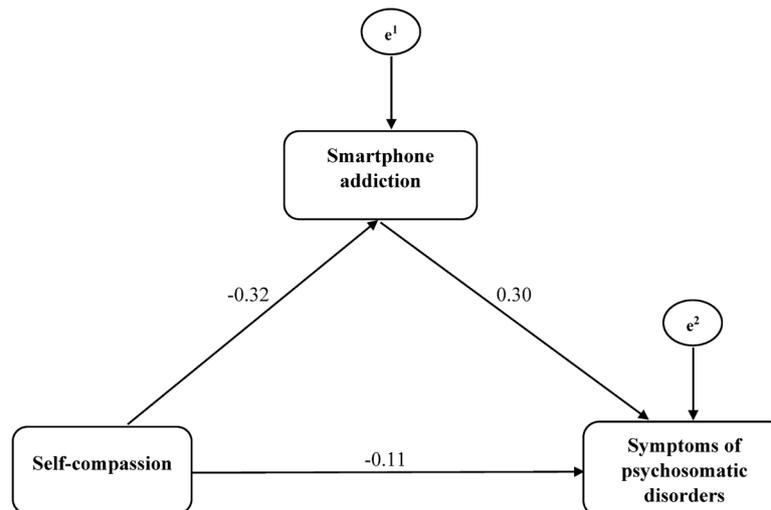
Table 1: Mean, standard deviation (SD), minimum, maximum, and Pearson correlation coefficients of the studied variables

Variables	M±SD	Min.	Max.	1	2	3
1- Self-compassion	82.11±16.67	58	111	1		
2- Smartphone addiction	77.03±17.14	52	83	-0.34**	1	
3- Symptoms of psychosomatic disorders	43.32±6.34	21	58	-0.23**	0.29**	1

**P<0.01

Table 2: Proposed model fit indicators

Fit indicators	χ^2	df	(χ^2/df)	IFI	TLI	GFI	NFI	GFI	RMSEA
Proposed model	3.35	2	1.67	0.96	0.97	0.99	0.99	0.98	0.04

Figure 2: The proposed model pertaining to the mediating role of smartphone addiction in the association between self-compassion and symptoms of psychosomatic disorders

Table 3: Path coefficients of direct effects between the studied variables in the model

Path	Path type	β	P
Self-compassion to smartphone addiction	Direct	-0.32	0.001
Self-compassion to symptoms of psychosomatic disorders	Direct	-0.11	0.041
Smartphone addiction to symptoms of psychosomatic disorders	Direct	0.30	0.001

Table 4: Results of the Bootstrap method for investigating indirect and intermediary paths

Predictor variable	Mediator Variable	Criterion variable	Bootstrap	P
Self-compassion	Smartphone addiction	Symptoms of psychosomatic disorders	-0.28	0.001

variables were all significant. There was a significant negative relationship between self-compassion and smartphone addiction (β=-0.32, P=0.001). However, a significant positive relationship was observed between smartphone addiction and symptoms of psychosomatic disorders (β=0.30, P=0.001). There was also a negative relationship between self-compassion and symptoms of psychosomatic disorders (β=-0.11, P=0.041).

Bootstrapping was performed to determine the significance of the indirect relationships among the variables and examine the mediating role of smartphone addiction. Table 4 shows the bootstrapping results. First, the overall effect of the predictor variable on the criterion variable was assessed at the absence of the mediating variable. A significant relationship was found between self-compassion and symptoms of psychosomatic disorders at the absence of smartphone addiction. The indirect path results showed a significant relationship between self-compassion and symptoms of psychosomatic disorders at the absence of smartphone addiction (β=-0.28, P=0.001) (Table 4). Therefore, smartphone addiction fully mediated the

relationship between self-compassion and symptoms of psychosomatic disorders.

Discussion

This study aimed to investigate the relationship between self-compassion and symptoms of psychosomatic disorders mediated by smartphone addiction in university students. The findings confirmed goodness of fit of the model proposed for assessing the causal relationship between self-compassion and symptoms of psychosomatic disorders mediated by smartphone addiction in university students. Accordingly, the mediating role of smartphone addiction was examined by analyzing relevant paths. This finding is consistent with the research results of Krieger et al. (28) and Abdolpour et al. (29).

A direct relationship was found between self-compassion and smartphone addiction in university students. University students tend to display addictive behaviors (e.g., smartphone addiction) to avoid painful emotions, negative thoughts, and feelings of failure. Self-compassion helps students accept their unpleasant emotional states by developing self-kindness and

avoiding self-judgment in the face of different problems. It also encourages them to take responsibility for their emotional and psychological states and to avoid such addictive behaviors by developing their acceptance and conscious attention (30).

A significant relationship was also observed between the variables of self-compassion and symptoms of psychosomatic disorders in the studied students. This finding is consistent with the research results of Yeshua et al. (31) and Ferrari et al. (32). University students with higher levels of self-compassion can more effectively choose their health goals, analyze the path to these goals, and strive to achieve the established goals (e.g., following medical treatments and instructions). Self-compassion increases the clarity and accuracy of a person's self-assessment, as he/she does not need to hide his/her own flaws and mistakes to avoid cruel self-judgments. In addition, self-compassionate people do not make severe self-criticisms if they fail to achieve their ideal goals and standards; rather, they bravely acknowledge their past mistakes and display behaviors that help them achieve their desired goals (20). Furthermore, mindfulness helps the students experience traumatic feelings, and improves people's understanding of their own feelings and emotions, and thereby increases levels of self-compassion.

Smartphone addiction was directly associated with symptoms of psychosomatic disorders in the participants. This finding is consistent with the results of Demir and Sumer (33). Excessive use of smartphones at night causes sleep disruptions, increases stress levels, and raises the possibility of developing depression (34). Smartphones can also cause other health problems. For example, the blue light emitted by smartphone screens causes sleep disorders, and digital addiction can cause stress and burnout, which in turn can lead to the development of symptoms of a variety of psychosomatic disorders. Internet addiction sometimes manifests in the form of social isolation, and sometimes leads to unhealthy relations, mendacity, selection of inappropriate role models, and promotion of luxury lifestyles. In addition, some students use smartphones to establish inappropriate relationships. The Internet and smartphone technology have provided students with the opportunity to easily communicate with their friends and family around the world; however, evidence suggests that smartphones also facilitate communication with strangers because special technical features of smartphones enable students to transfer their personal information to others without any limitation (35).

At 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. Moreover, the study was conducted during the COVID-19 pandemic, when the fear of illness and psychosomatic symptoms was exacerbated. Thus, over time, the relationships may assume different forms. Furthermore, the sample comprised of students studying at the Islamic Azad University of Ahvaz only, and the cultural and ethnic characteristics of the region may have affected the results. The results should thus be generalized to other statistical populations with caution.

Conclusion

The findings confirmed the goodness of fit of the model proposed for assessing the causal relationship between self-compassion and symptoms of psychosomatic disorders mediated by smartphone addiction in university students. Overall, there was a negative relationship between self-compassion with smartphone addiction and symptoms of psychosomatic disorders in university students. It could be concluded that the proposed model achieved a desirable good fit, and it is considered a crucial step in understanding the factors affecting the symptoms of psychosomatic disorders of university students. Therefore, authorities can organize training programs to improve self-compassion in young people, and thereby help them overcome their smartphone addiction. This can consequently reduce the symptoms of psychosomatic disorders in these individuals. Moreover, the result of the present study can improve the self-compassion of university students as well as their psychological health.

Conflict of Interest: None declared.

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