



Original Article

# The study of structural relationship between depression, and pornography consumption with mediating loneliness

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## Abstract

**Introduction:** Pornography addiction is a chronic sexual phenomenon that can adversely affect mental health, sexual behavior, family, and personal relationships. This study aimed to investigate the structural relationships between depression and pornography with the mediation of loneliness in the form of a structural equation modeling.

**Materials and Methods:** This study was a descriptive-correlational study. The statistical population included all non-native students living in student dormitories in Sari city, Mazandaran, during academic year of 2018-2019. Amongst them, 150 students were selected through convenient sampling. All participants were asked to complete Beck Depression Inventory, Social and Emotional Loneliness Scale for adults and Pornography Consumption Inventory. The data were analyzed by correlation and Structural Equation Modeling (SEM) methods using SPSS and Amos software.

**Results:** The results showed that the proposed model had an appropriate goodness of fit. There was a direct relationship between depression and feeling lonely with pornography consumption and loneliness mediated the relationship between depression and pornography consumption ( $P < 0.001$ ).

**Conclusion:** Consistent with conceptual model, the results revealed that depression directly and through loneliness is related with pornography in university students.

**Keywords:** Depression, Loneliness, Pornography

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## Introduction

Today, the internet is an essential part of modern life that has brought significant changes and convinced people to spend more time on it and be online (1). Since the internet is the most suitable instrument for communication and serves as a resource of extensive information around the world, the number of Internet users and its application among educated people is increasing

exponentially (2). The internet provides numerous educational advantages worldwide, but too much Internet use can lead to unfavorable outcomes such as social isolation and poor academic achievement (3), dysfunction, and weakness in personal well-being (4). The internet allows people to remain anonymous, making them feel safe and free from many obstacles and prohibitions. In many cases, such a condition

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leads to participation in cyber sexual activity or the use of pornography (5,6). Pornography is a form of sexual entertainment based on sexual images, movies, music, and written material and can be obtained through electronic media (television, radio, and DVDs) and printed media (newspapers, magazines, and the internet) (7). Regardless of the negative consequences of pornography, losing control and constantly watching it leads to problematic use and behavioral addiction to pornography (8,9). Pornography addiction is a controversial, chronic, and sexually recurring phenomenon (10). Early exposure to pornography may affect mental health, life satisfaction, sexual behaviors, and attitudes and patterns of viewing pornography in adulthood (11).

It can also harm family and personal relationships (12). Various factors play a vital role in this phenomenon. One of the risk factors leading to pornography consumption is depression (13-16). Depression is common among people with Internet addiction and social media (17,18). Depression, as one of the most common psychological problems, is a disposition that includes boredom and avoidance of activity or immorality and can affect a person's thoughts, behavior, feelings, happiness, and health (19).

Studies on the use of pornography and psychological disorders have shown that users who use pornography report more depressive symptoms, poor quality of life, and mental and psychological repression than those who do not (13). People looking for pornography are more likely to be exposed to depressive symptoms (20). Also, frequent pornography consumption has initially predicted psychological symptoms, but with increasing use and more intense involvement, depressive symptoms can be identified (21). As a mental health issue, loneliness is another reason for consuming pornography (5,22,23).

Loneliness is a mental dimension of social isolation and is one of the consequences of pornography use. There are various definitions of loneliness. Loneliness refers to a negative psychological experience associated with negative interpersonal experiences and loss of trust in others (24).

Loneliness is associated with mental and physical symptoms such as depression, anxiety,

personality disorders, sleep disorders, migraines, high blood pressure, and cardiovascular diseases. Several longitudinal studies have shown that loneliness can predict changes in health (25). Loneliness is a negative aspect of social functioning that disrupts a person's ability to communicate effectively with others and relieve anxiety. People who feel lonely may become addicted to the internet to make up for the lack of social contact (26).

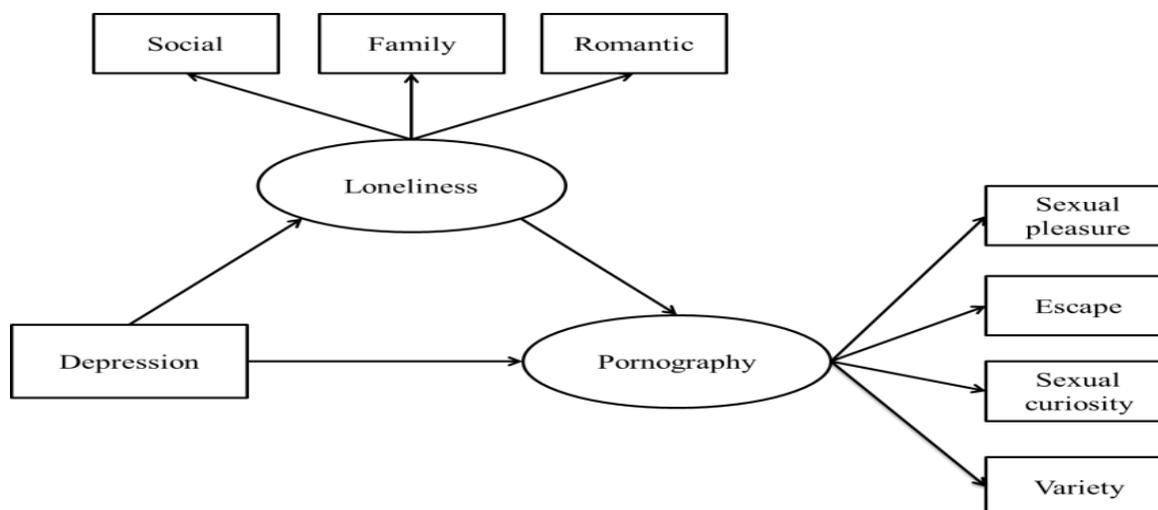
Studies have also shown a significant relationship between online pornography consumption and feelings of loneliness (22,27). A review of the research literature shows that loneliness is associated with depression and pornography. In addition, when examining the relationship between depression and pornography consumption, it can be argued that feelings of loneliness can play a mediating role in the relationship between depression and pornography consumption. In other words, people who are depressed will feel lonely, and as a result, will use more pornography.

Therefore, based on the research literature and the theoretical framework, the objective of the present study was to investigate the mediating role of loneliness in depression and pornography consumption. Several studies have examined the relationship between loneliness and pornography consumption.

There are few studies in Iran have investigated the problem of pornography. These studies have shown that sexual pornography hurts the love and marital satisfaction of married students (28). And religious commitment, attitude toward pornography, and self-control have detrimental roles in predicting a tendency to internet pornography. Self-control plays a crucial role in predicting Internet pornography and can protect against it (29).

However, no study has emphasized the mediating role of loneliness in the relationship between depression and pornography consumption.

Given the importance of pornography and its negative consequences for students, this study can make a significant contribution in this regard. The conceptual model of this research is presented in Figure 1.



**Figure 1.** The causal model between depression and pornography consumption with the mediating of loneliness

## Materials and Methods

The present study is a descriptive study of correlation and structural equation modeling. The statistical population of this study included non-native students living in student dormitories in Sari (3500 students). In order to select a sample, a list of student dormitories in Sari was prepared and selected from the dormitories of public and private universities (two public dormitories, one non-profit dormitory, and one private dormitory). Then, after coordination with research officials and dormitories, 200 non-native students were selected from these students by the convenient sampling method. In this research, ethical principles such as freedom of action, informed consent, and confidentiality of information were considered.

It should be noted that this study has been approved by the Research Council and the Ethics Committee in Biomedical Research, Islamic Azad University, Sari Branch. Among the questionnaires distributed in the dormitories, 37 incomplete questionnaires and 13 questionnaires were not returned and were removed from the sample. Since there is no precise strategy for determining the sample size in the SEM method, the minimum sample size of 100 and the maximum sample size of 200 is desirable (30). Inclusion criteria included age between 18 to 28, settlement or residence in one of the dormitories in Sari, studying at any university degree, voluntary consent to participate in research, and mastery in Persian. Exclusion criteria included

dissatisfaction with participation in the study, lack of accommodation in dormitories, lack of education or graduation from universities, and age of 18 and more than 28 years. A total of 150 questionnaires were tested and analyzed.

## Research instrument

A) *The Short Form of the Beck III Depression Inventory*: Beck's depression questionnaire was developed to facilitate rapid performance in clinical and research situations. This tool contains 13 items that are associated with specific symptoms of depression. Each item has a 4-point Likert scale ranging from 0 to 3. The total score of this questionnaire determines different degrees of depression from mild to severe. This tool has been normed and standardized by Rajabi (31). The Cronbach's alpha and the split-half coefficient for the total questionnaire were 0.89 and 0.82, and the correlation coefficient between the short form and the 21-question form of the Beck Depression Questionnaire was 0.67 (31). Faro and Pereira reported the Alpha Cronbach coefficient for this questionnaire as 0.93 (32). In this study, to determine the construct validity of the depression questionnaire, the confirmatory factor analysis method was used. The fit index of  $GFI = 0.94$ ,  $AGFI = 0.90$ ,  $CFI = 0.96$ ,  $RMSEA = 0.065$ , indicated the optimal fit of the data with the measurement model. Also, the concurrent validity of the short-form questionnaire with the adults' social and emotional loneliness was 0.37

( $P = 0.001$ ), and the reliability of the tool in this study was 0.77 using Cronbach's alpha.

*B) The short form of the Social and Emotional Loneliness Scale for Adults (SELSA-S):* This scale was designed by Ditommaso and Spinner, which includes 14 items and three subscales of romantic loneliness, social loneliness, and family loneliness. This 14-item instrument was a five-point Likert Scale ranging from 1 strongly disagrees to 5 strongly agree (5). The designers of such a questionnaire reported that Cronbach's alpha coefficient for romantic, family and social loneliness were 0.89, 0.93, and 0.93 (33). In another study, the Cronbach's alpha for social, familial, and romantic loneliness was 0.77, 0.86, and 0.93 (34). In Iran, Jokar and Salimi reported the reliability coefficient for romantic, family, and social loneliness dimensions as 0.92, 0.78, and 0.84, respectively (35). In this study, confirmatory factor analysis was used to determine the construct validity of the questionnaire. The fit index of GFI= 0.99, AGFI= 0.97, CFI= 0.99, RMSEA= 0.75, indicated the optimal fit of the data with the measurement model. Also, the reliability coefficient of Cronbach's alpha for the subscales of romantic loneliness was 0.95, and for family, loneliness was 0.98, and social loneliness was 0.92 of the total questionnaire of 0.98.

*C) Pornography Consumption Inventory (PCI):* This questionnaire was developed by Reid et al. to evaluate the motivations for using pornography among people with transgender disorders (36). It has fifteen questions, ranging from 5 (it most often applies to me) to 1 (it never applies to me) on the Likert scale. The maximum and minimum scores on this scale are 75 and 15. This

questionnaire has four subscales of (a) sexual pleasure; (b) to escape, cope, or avoid uncomfortable emotional experiences or stress; (c) to satisfy sexual curiosity; and (d) to satisfy desires for excitement, novelty, and variety. The reliability of this questionnaire for each subscale was reported by Reid et al. as 0.71, 0.73, 0.87, and 0.85, respectively (36). Baltieri and et al. reported the reliabilities of the subscales as 0.84, 0.83, 0.70, and 0.93, respectively (37). The reliability and validity of this tool have not been studied in Iran so far. In this study, in order to determine the construct validity, confirmatory factor analysis was used. The fit index of GFI= 0.95, AGFI= 0.90, CFI= 0.96, RMSEA= 0.29 indicated the optimal fit of the data with the measurement model. Also, the concurrent validity of this questionnaire with the Internet Sex Screening Test (ISST) was 0.17 ( $P = 0.001$ ), and the Cronbach's alpha of each subscale was 0.93, 0.70, 0.83, and 0.87, respectively.

## Results

Considering the 150 students under study, 101 were men, and 49 were women. The mean age of students was  $24.16 \pm 2.49$ . The minimum age of the participants was 21, and the maximum age was 28 years.

The mean and standard deviation of the research variables are shown in Table 1. The results of the Pearson correlation coefficient also show that there is a positive and significant relationship between depression and the use of pornography and between loneliness and the use of pornography, and between depression and loneliness (Table 1).

**Table 1.** Mean standard deviation and correlation coefficients between research variables

Variables	Mean	Standard Deviation	Correlation Coefficient		
			1	2	3
Depression	3.846	0.383	1		
Loneliness	3.141	0.541	0.178	2	
Pornography	3.900	0.350	0.750	*0.215	3

Before conducting the model fitness, the normality assumption of the research variables was examined using the Kolmogorov–Smirnov test. The results for the depression variables ( $Z=2.71, P=0.178$ ), loneliness ( $Z=2.58, P=0.267$ ), and the pornography consumption ( $Z=2.44, P=0.182$ ), indicated that the variables were normal. Structural equation modeling was used to evaluate the proposed model. Before examining the path coefficients, the model was evaluated

using fitness indicators. Goodness of fit indices showed that the model was a good fit to the data ( $\chi^2/df=1.59$ , Goodness of Fit Index (GFI)= 0.99, Comparative Fit Index (CFI)= 0.93, Incremental Fit Index (IFI)= 0.97 and Root Mean Square Error of Approximation (RMSEA)= 0.02). Standard coefficients and other measurement parameters of this model showed that the presented coefficients and critical values of all routes were significant (Table 2).

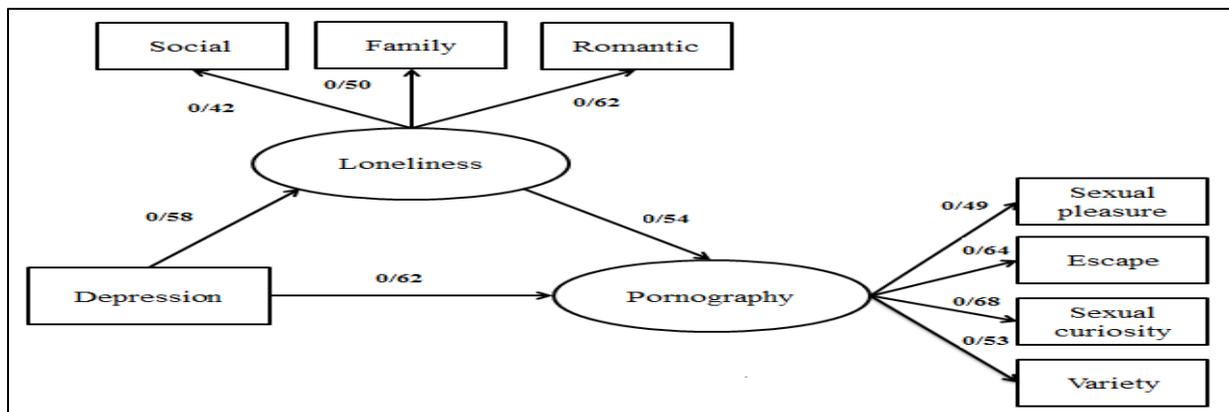


Figure 2. The causal relationship model between depression and students' pornography consumption with the mediation of loneliness

Table 2. Direct impact of depression on pornography

Path parameter	Standard Estimation	Non-standard estimation	Standard error	Critical ratio	P
Depression - loneliness	0.58	0.60	0.07	-2.91	0.001
Loneliness - pornography	0.54	0.56	0.06	-2.72	0.002
Depression - pornography	0.62	0.64	0.08	-2.99	0.001

Table 3. Measurement parameters of mediating effects in the proposed model using the bootstrap method

Path Parameters	Non-standard estimation	Standard estimation	Lower limit	Upper limit	P
Depression to pornography through the mediation of loneliness	0.058	0.054	0.13	0.04	0.02

**Discussion**

This study aimed to investigate the structural relationships between depression and pornography consumption through the mediation of loneliness in a model of structural equations. The results showed that depression had a positive and significant impact on pornography

consumption. These results are consistent with other findings (6,20,21). So far, no study in Iran has been done with a sample, tool, and method similar to this finding. However, a comparison of this finding with Scott's study, which investigated the relationship between depression and pornography on Internet users using a web-based

questionnaire, showed a positive and significant correlation between pornography use and depression in men (6). Also, a comparison of this finding with the results of the Perry study conducted on a sample of Internet users with different tools showed that depressive symptoms have a positive and significant relationship with the use of pornography (20). In addition, a study by Mattebo et al., which was performed using a longitudinal procedure on a group of Swedish adolescents, showed that the use of pornography was associated with depressive symptoms (21). Explaining this finding, it can be stated that according to behavioral theory, inappropriate use of the internet, such as pornography, increases psychological problems and can act as reinforcement and encourage inappropriate use of the internet. Furthermore, the short period of depression, since it is a way to relieve stress or deal with negative emotions, may affect people using pornography (20). In this regard, Kafka reduced the use of pornography in men by using antidepressants (38). This finding suggests that depression leads to the use of pornography. Therefore, since the dysfunctional use of pornography can be a way to deal with depressed or anxious moods (39), the relationship between depression and pornography is explained. Another finding of this study showed a positive and significant relationship between loneliness and pornography consumption. The results of this finding are consistent with other findings (22,23,27). So far, no similar study has been conducted in Iran. However, a comparison with the results of a study by Yoder et al. on the Internet users using a web-based questionnaire showed a significant relationship between the use of internet pornography and loneliness (22). Butler et al., in a web-based study on a clinical sample, achieved similar results to the present study. They found a positive relationship between loneliness and the use of pornography (23). Similar to the findings of this study, in an online survey with a different tool, Pereyra found a positive and significant relationship between the use of pornography and loneliness (27). According to the findings of these studies, feeling lonely can lead to pornography, and pornography can also lead to loneliness. People, who have problems with face-to-face relationships, use different solutions to eliminate their loneliness.

Problematic internet use, such as watching pornography, is one of the methods chosen by individuals to overcome loneliness (40). Studies also support the view that some people use pornography to deal with negative emotions such as sadness, grief, anxiety, and loneliness (41). Based on the theoretical-cognitive-behavioral model, it can be said that people with psychological problems prefer online interaction instead of face-to-face communication in order to compensate for their lack of social skills (42). Due to the temporary escape from loneliness, these people may use pornography and be sexually aroused. Attempts to eliminate the experience of loneliness created by pornography may create more profound loneliness in the individual and lead to greater use of pornography (23). Another finding of this study showed that the indirect impact of depression on pornography through feelings of loneliness was significant. As mentioned above, no study has pointed to such an indirect effect. Depression is a syndrome with symptoms such as worthlessness, collapse, pessimism, indifference, and deep sadness (40), associated with Internet addiction through social isolation and loneliness (43). Research shows that constant use of pornography leads to depression due to loneliness and isolation (20). In explaining this finding, it can be declared that learning theorists consider lack of reinforcement as the leading cause of depression and believe that inactivity and feeling of sadness in a depressed person is due to low positive reinforcement or unpleasant experiences (44). According to the theoretical model of Lewinsohn et al. (45), when depression occurs, the primary source of reinforcement during depression is empathy and the attention of relatives and friends. However, since it is frustrating to be with someone who does not want to be happy and is depressed, the behavior of the depressed person eventually leads to rejection by relatives, friends, and family and loneliness, which ultimately leads to high-risk sexual behavior to reduce the prevalence of psychological distress (46). In this regard, the loneliness and high-risk behavior model of Torres and Gore-Felton suggest a lack of reinforcement such as social support in depressed people may increase a person's vulnerability to loneliness. As a result, it can lead to sexual obsessions and high-risk sexual behaviors such as pornography (47).

In general, the present study results showed that depression is directly and indirectly significantly related to pornography through the mediation of loneliness. The most important limitation of this study was the impossibility of generalizing the results of the entire population of Iran and using the self-report scale. Self-report scales are prone to distortion due to unconscious defenses and bias in response. Therefore, it is suggested that this study be conducted in other populations and researchers use qualitative interview-based research in future research. It is also suggested that university officials and administrators use the results of this research and strengthen dormitory counseling centers. In addition, to improve student's mental health, hold various educational

workshops and provide conditions to reduce depression and loneliness and thereby reduce the use of pornography.

### Conclusion

Consistent with conceptual model, the results revealed that depression directly and through loneliness is related with pornography in university students.

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