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Prediction of nomophobia based on shyness, loneliness and anxiety in Shiraz teenagers

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Abstract

Background: Various factors can be associated with nomophobia in teenagers due to their sensitive age during puberty. Establishing effective communication and social relations is one of the most important concerns for teenagers and young people.

Methods: The present applied study is conducted to predict nomophobia based on shyness, loneliness and anxiety among teenagers in Shiraz. This study is descriptive cross-sectional research in terms of method and time frame of data collection. This study's statistical population includes the teenagers of Shiraz, among which 150 were randomly selected. Four standard questionnaires (shyness scale, loneliness scale, anxiety scale and nomophobia scale) were used to collect research data. Iranian researchers have already translated, localized and validated these questionnaires. The validity and reliability of all four questionnaires have been confirmed. The multiple regression method has been used to test the research hypotheses and predict nomophobia.

Results: The results have shown that shyness, loneliness and anxiety explain 36% of the variance of nomophobia scores. According to the results, shyness can positively and significantly predict nomophobia ($p=0.001$, $\beta=0.362$). Loneliness can also positively and significantly predict nomophobia ($p=0.001$, $\beta=0.302$). In addition, anxiety can also positively and significantly predict nomophobia ($p=0.005$, $\beta=0.269$).

Conclusions: Shyness generally had the strongest prediction, and anxiety had the weakest. In addition, the avoidance component can positively and significantly predict nomophobia.The shyness component in the presence of strangers can also positively and significantly predict nomophobia. Therefore, loneliness, anxiety and shyness can positively and significantly predict nomophobia.

Keywords: Nomophobia; Shyness; Loneliness; Anxiety.

Introduction

The emergence of new technologies and their benefits for users has always been associated with disadvantages. Information and communication technology, especially smartphone technology, is among the technologies that have widely influenced society. All developed and developing countries have widely welcomed this technology; by 2020, more than 1.38 billion smartphones will be sold [1]. Due to the growing use of smartphones, not having a mobile phone has become a concern for many people, especially teenagers. Nomophobia is one of the emerging concepts in the "Pathology of Communication Phenomena literature." According to research, most people cannot live without a mobile phone, and more than half of mobile phone users suffer from a psychological disease called "no-

mophobia"[2]. "Nomophobia" is a disorder of excessive dependence on the mobile phone and the fear of losing it [3]. It also refers to the discomfort or anxiety experienced by people when they cannot use their mobile phone or its functions [4]; for example, fear of not being available, not having an internet line on the phone or running out of mobile battery. This complication has increased after the epidemic of mobile phones and social networks and the number of people using mobile phones [5].

Various factors can be associated with nomophobia in teenagers due to their sensitive age during puberty. Establishing effective communication and social relations is one of the most important concerns for teenagers and young people. This issue is even considered the main factor behind the current societies with others and their failure in different stages of life [6]. Shyness is a personality trait influenced by a person's relationships with society and others, and a person's selfconcept is low. Shyness is a psychosocial phenomenon resulting from improper interpersonal relationships and Social maladaptation in the first stages of development at home and school. In other words, shyness is a social phenomenon characterized by anxiety in social situations or interpersonal behaviors caused by concern about interpersonal evaluation [7]. Shyness deprives a person of any effort and revolution and paralyzes him mentally and physically. Shyness cannot be a mental disorder because it consists of various disorders and abnormalities. Shyness sometimes occurs in childhood by parents and teachers' wrong education, destroying self-confidence in children and students [8].

A shy person usually loves himself less and finds himself passive and less lovable than non-shy people [9]. In addition, these people are rejected by their peers and get less chance to develop social skills. If shyness continues until adolescence and adulthood, these people find themselves alone with few friends and have little contact with the opposite sex [10]. Shyness is extremely widespread. In every society, a significant percentage of children, teenagers, young people and adults are shy for several reasons. Shyness in children and teenagers is much more than in adults [11].

Anxiety is another factor that can be related to nomophobia. Living in the last century has constantly adapted humans to adversity. Anxiety is the most common disorder due to incompatibilities [12]. Low anxiety is believed to be necessary for human and daily life, but high anxiety causes serious damage to the body, mind, social relations, job and education and deprives the person of an acceptable quality of health in life [13]. All human beings are engaged in this problem. Anxiety and lack of courage disrupt academic performance, destroy intelligence and learning abilities, and reduce abstract thinking and talent stagnation. In addition, it harms the individual, family and society by creating economic problems. Anxiety significantly suppresses the flourishing power of adolescent inner talents [14]. The therapists consider anxiety a reaction that can be significantly justified based on learning rules. Behavioral problems are viewed as patterns of inappropriate responses that are likely to be learned in association with aversive stimulus conditions. Behavioral problems are preserved because they are effective in helping a person to avoid adverse consequences. Anxiety is a common or core component of psychopathic behavior[15]. Anxiety or fear has an unpleasant effect and prevents a person from doing daily activities or leads to more limited and inconsistent behavior. Anxiety or fear is unpleasant and prevents a person from doing daily activities or leads him to a more limited and incompatible behavior. Some people believe that anxiety is a learned behavior. In addition, behavior therapists believe that anxiety and behavior are appropriate and the person has not learned the necessary answers in principle [13]. It is very important to diagnose and treat anxiety in children. Children with anxiety often develop symptoms into adulthood, such as generalized adult anxiety, panic disorder, phobias, and some somatized disorders in which there are multiple physical complaints without a medical reason [16].

Using phones and virtual networks is associated with criteria such as isolation, depression, anxiety, and loneliness. The phenomenon of loneliness has social causes and can be the subject of sociological research due to its social consequences. According to [17], loneliness results from the lack of a network of social relationships with friends and peers, networks of relationships built through social contacts. Loneliness is similar to what is called a "silent disease" in medicine. The alone people apparently do not suffer from illness, but loneliness can provide all kinds of psychological and social problems (including depression, suicide, low self-esteem, and social isolation) and disrupt the normal routine of life, especially in metropolises and cities with high population density [18].

Loneliness means the difference between our desired level and the existing level of people's social relationships, and the greater this difference, the greater the loneliness [19]. Researchers consider loneliness a psychological state caused by quantitative and qualitative inadequacies in social relationships. This feeling happens when exciting relationships are less than the desired level of a person or the required intimacy is not realized. This feeling can be occurred and be experienced at any age [20]. Loneliness refers to the experience caused due to the lack of social contacts, intimacy or support in relationships [21]. The feeling of loneliness is an experience resulting from failure to satisfy basic human needs in establishing intimate and close relationships [18].

Among teenagers, nomophobia has become an important psychological-social problem; for example, some students committed suicide due to not having a mobile phone during the Covid-19 pandemic. Therefore, identifying the antecedents of nomophobia is the first step in developing suitable intervention programs to reduce the feeling of nomophobia among teenagers. Due to the role of anxiety, the importance of loneliness, the role of mobile phones in today's life, and the lack of sufficient research on shyness among teenagers, the present study aimed to predict nomophobia based on shyness, loneliness and anxiety among adolescents in Shiraz.

Methods

In terms of purpose, this research is an applied study conducted to predict nomophobia based on shyness, loneliness and anxiety in teenagers of Shiraz city. This study is descriptive research in terms of data collection method, and in terms of the data collection period, it is survey-cross-sectional research. This study is one of the correlation projects in a predictive way that predicts nomophobia based on shyness, loneliness and anxiety in teenagers of Shiraz city. This study's statistical population in-

cluded all Shiraz teenagers in 2019. One district was randomly selected from among the educational districts of Shiraz city. Two high schools for boys and girls were randomly selected referring to that area. In addition, 150 second-grade high school students were selected to conduct the research by referring to selected high schools based on the sample size. Three standard scales have been used to collect data. The standard scale of [22], including 14 items, was used to measure shyness. [23] have investigated and localized the Persian version's construct validity and reliability. The standard scale of [24], including 20 items, was used to measure the feeling of loneliness. [25] have investigated and localized the Persian version's construct validity and reliability. The standard scale of [26], including 21 items, was used to measure anxiety. Construct validity and reliability of its Persian version have been investigated and localized by [27]. Finally, the nomophobia scale (fear of life without a mobile phone) known as NMPQ (Nomobophobia Questionnaire) has been used. This scale was designed by [3], and translated and validated in Iran.

The data obtained from the distribution and collection of questionnaires were analyzed with SPSS 23 software at two descriptive and inferential levels. Descriptive indices such as mean, standard deviation, minimum and maximum of research variables are calculated at the descriptive level. In addition, at the inferential level, the multiple regression coefficients were used to check the predictive power of the predictor variables for the criterion variable, nomophobia.

Table 1: Scales used to collect research data.

Title	Number of items	Designer	Persian example	Cronbach's alpha
Shyness	14	Cheek Briggs (1990)	Rajabi and Abbasi (2009)	0.81
Loneliness	20	Russell, Pepella and Ferguson (1978)	Monshaei et al. (2016)	0.94
anxiety	21	Beck and Brown (1988)	Rafiei et al. (2015)	0.92
nomophobia	20	Yildirim, Correia (2015)	Azadmanesh et al. (2016)	0.87

Results

A sample of 150 people was used in this study. Table 2 shows the frequency of demographic variables of people by gender, age and mother's literacy. In terms of gender, both boys and girls form 50% of the participants. Regarding age, three age groups of 15, 16 and 17 years with a sample size of 50 people (33%) have been selected. In addition, 58% of the participants' mothers have fewer than a bachelor's degree, 25% have a bachelor's degree, and 17% have higher than a bachelor's degree.

As observed in Table 3, the scores related to examining the state of nomophobia, shyness, loneliness and anxiety of teenagers are presented. According to the results, the average and standard deviation of the participants' nomophobia equals 76.52 and 9.94. The mean and standard deviation of participants' shyness equal 41.65 and 37.75. In addition, the mean and standard deviation of the participants' loneliness equals 48.63 and 7.73. The average and standard deviation of participants' anxiety are also equal to 29.63 and 6.95.

Table 2: Descriptive findings of demographic variables of teenagers.

Variable	Group	Number	Percentage
gender	Girl	75	50%
	Boy	75	50%
Age	15 years	50	33.30%
	16 years	50	33.30%
	17 years	50	33.30%
Mother's literacy level	Less than Bachelor's degree	88	58%
	Bachelor's degree	38	25%
	Above bachelor's degree	24	17%

Table 3: Examining the condition of nomophobia, shyness, loneliness and anxiety of teenagers.

Title	Average	Standard deviation	Minimum	Maximum
Nomophobia	76.52	9.94	39	112
Shyness	41.65	7.75	25	64
Loneliness	48.63	7.73	35	71
Anxiety	29.63	6.95	15	45

On the scale of shyness, scores vary between 14 and 70. A high score indicates a higher level of subject shyness. The average shyness (41.65) shows that the teenagers' shyness is average. On the loneliness scale, the minimum score indicates the absence of loneliness is 20, and the maximum score is 80. In addition, the average feeling of loneliness (48.63) is in the middle. The range of anxiety scale scores is between 0 and 63. The average anxiety level (29.63) was obtained, which is moderate. Finally, the range of nomophobia scores is between 20 and 140. According to the scale interpretation method, the observed average (76.52) is between 60 and 100; therefore, they suffer from nomophobia with a normal condition. Before conducting the inferential analysis, the default related to the normality of the data was tested using the Kolmogorov Smirnov test. The Kolmogorov Smirnov test results are presented in Table 4. In all cases, the significance value of the test is greater than the error level (5%); therefore, the data distribution is normal.

First, a correlation test was conducted to check the relationships between the structures under study. The results of Pearson's correlation test to investigate the relationship between research constructs are shown in Table 4. In addition, there is a positive and significant relationship between the dimensions of shyness, loneliness and anxiety with nomophobia.

The multiple regression method was used to test research hypotheses and predict nomophobia based on shyness, loneliness and anxiety. This test was performed at the 5% error level.

Based on Table 6, the amount of R is equal to 0.600, and the amount of R2 is equal to 0.360. In other words, shyness, loneliness, and anxiety explain a total of 36% of the variance of nomophobia scores. In addition, shyness can positively and significantly predict nomophobia ($p=0.001$, $\beta=0.362$). The feeling of loneliness can also positively and significantly predict nomophobia ($p=0.001$, $\beta=0.302$). Anxiety can also positively and significantly predict nomophobia ($p=0.005$, $\beta=0.269$).

Table 4: Kolmogorov Smirnov test.

Variables	Kolmogorov Smirnov test		
	N	Z value	Significance level
Lack of decisiveness	150	0.22	0.13
Avoidance	150	0.63	0.16
Shyness in the presence of strangers	150	0.44	0.11
Loneliness	150	0.33	0.36
Anxiety	150	0.27	0.21
Nomophobia	150	0.45	0.33

Table 5: Pearson correlation matrix between research variables.

	1	2	3	4	5	6
Lack of decisiveness (1)	1					
Avoidance (2)	0.35**	1				
Shyness in the presence of strangers (3)	0.31**	0.33**	1			
Loneliness (4)	0.24**	0.28**	0.30**	1		
Anxiety (5)	0.20*	0.43**	0.54**	0.22**	1	
Nomophobia (6)	0.25**	0.21**	0.19*	0.33**	0.30**	1

(p≤0.01** p≤005*) (p≤0.01** p≤0.05*)

Table 6: Prediction of nomophobia based on shyness, loneliness and anxiety.

Predictor variable shyness	R	R^2	F	P	β	T	P
Feeling lonely anxiety	1	0.360	37.653	0.001	0.36	4.06	0
					0.3	3.54	0
					0.27	3	0.01

A simultaneous multiple regression test was used to test the first sub-hypothesis. As observed in Table 7, the amount of R is equal to 0.536, and the amount of R2 is equal to 0.287. The dimensions of shyness explain 28% of the variance of nomophobia scores. In addition, the avoidance component can positively and significantly predict nomophobia (p=0.001, β=0.317). The shyness component in the presence of strangers can also positively and significantly predict nomophobia (p=0.001, β=0.287).

A univariate regression test was used to test the second sub-hypothesis. Based on Table 8, R is 0.328, and R2 is 0.107. In other words, loneliness explains 10% of the variance of nomophobia scores. In addition, loneliness can positively and significantly predict nomophobia (p=0.001, β=0.328). Predictor variable of loneliness. The univariate regression test was used to test the third sub-hypothesis. As observed in table 8, the amount of R is equal to 0.299, and the amount of R2 is equal to 0.089. In other words, anxiety explains nearly 9% of the variance of nomophobia scores. In addition, anxiety can positively and significantly predict nomophobia (p=0.001, β=0.299).

Regression analysis tests examined and tested the research hypothesis at the explanatory level. According to the results, shyness can positively and significantly predict nomophobia (p=0.001, β=0.362). Loneliness can also positively and significantly predict nomophobia (p=0.001, β=0.302). In addition, anxiety can also positively and significantly predict nomophobia (p=0.005, β=0.269). Shyness generally had the strongest prediction, and anxiety had the weakest. In addition, the avoidance component can positively and significantly predict nomophobia (p=0.001, β=0.317). The shyness component in the presence of strangers can also positively and significantly predict nomophobia (p=0.001, β=0.287).

Table 7: Multiple regression test to predict nomophobia based on shyness dimensions.

Criterion variable: Nomophobia					
Predictor variable	R F	R^2 P	β	T	P
Lack of decisiveness avoidance	0.536 31.390	0.287 0.001	0.14	1.51	0.1
Shyness in the presence of strangers			0.32	3.43	0
			0.29	3.13	0

Table 8: Univariate regression test to predict nomophobia based on loneliness and anxiety.

Criterion variable: Nomophobia							
Loneliness predictor variable	R	R2	F	P	β	T	P
	0.328	0.107	25.664	0.001	0.0328	6.773	0.001
Anxiety predictor variable	R	R^2	F	P	β	T	P
	0.299	0.089	21.538	0.001	0.299	5.178	0.001

Discussion

This research was conducted to predict nomophobia based on shyness, loneliness and anxiety among Shiraz teenagers. In this study, nomophobia is considered a criterion variable, and shyness, loneliness and anxiety are also predictive variables of the research. A simultaneous multiple regression method was used to test the research hypotheses used.

The first hypothesis test results show that the avoidance component can positively and significantly predict nomophobia. In addition, the component of shyness in the presence of strangers can positively and meaningfully predict nomophobia. The test results are consistent with the research results of [11,28]. The results of the second hypothesis test indicate that loneliness can positively and meaningfully predict nomophobia. These test results are consistent with the research of [29-31]. The results of the third hypothesis show that anxiety can positively and significantly predict nomophobia. The results of this test are also consistent with the research results of Panahi Qeshtoti et al. [11,30,31].

Practical suggestions can be presented due to this research achievements. Most mobile phone users and virtual spaces are teenagers and young; therefore, culturalizing is necessary to reduce its consequences. In addition, informing and teaching how to use this technology can be effective. In this case, capacities such as visual and audio media, newspapers, magazines, and publications effectively institutionalize cyber culture in families. The province's cultural institutions are required to hold educational sessions to inform and introduce parents to new technologies, especially the Internet and virtual social net-

works. In addition, educational classes should be held in schools to inform teenagers and young people about the advantages and disadvantages of new technologies and how to use them correctly. Islamic Culture and Guidance are also suggested to broadcast educational programs on radio and television to increase the awareness of families about the dangers of using mobile phones.

Conclusions

The present applied study was conducted to predict nomophobia based on shyness, loneliness and anxiety among teenagers in Shiraz. This study was descriptive crosssectional research in terms of method and time frame of data collection. The multiple regression method has been used to test the research hypotheses and predict nomophobia. The results have shown that shyness, loneliness and anxiety explain 36% of the variance of nomophobia scores. In addition, loneliness, anxiety and shyness can positively and significantly predict nomophobia. This research also has limitations. Conducting this research only in one city makes it difficult to generalize the results.

Another research limitation is the researchers' inability to control disturbing variables. Participants may present themselves as better or worse than they are due to the self reporting of the research tool. It is suggested to future researchers conduct this research in other regions and cities to solve the existing limitations so that the results can be expanded and generalized well. Next, research can examine the relationship between variables such as personality dimensions, coping strategies, family function and process, and self-esteem with nomophobia. Using other measurement tools such as interview and observation is also suggested.

Declarations

Ethics approval and consent to participate: All authors declare that they have agreed for authorship, have read and approved the manuscript, and have given consent for submission and subsequent publication of the manuscript. This article is extracted from the MS.c Theseses with ethical code ir.pnu.rec.1399.121 dated 2020.04.21 at Payam Noor University in Tehran.

Consent for publication: All authors are consenting to publish this article with its included data in The Borderline Personality Disorder and Emotion Dysregulation journal and approve its final version.

Availability of data and material: The authors confirm that the data supporting the findings of this study are available within the article.

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