

# The Relationship between Loneliness and Emotion Regulation in Predicting Internet Addiction among Men and Women in Yazd, Iran

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## ABSTRACT

**Background:** Cyberspace is a new form of social interaction that, despite its relatively short history, has successfully become integrated into people's daily lives. Maladaptive patterns of Internet use and excessive engagement can lead to behavioral addiction and ultimately to internet addiction. The present study aimed to investigate the relationship between loneliness and emotion regulation and the tendency toward Internet addiction among men and women in the city of Yazd, Iran.

**Methods:** The research method was a survey. The population included all men and women in Yazd in 1403, from which 300 people (150 men and 150 women) from different age groups were selected by random sampling. In this way, the link to the online questionnaire (Porsline) was placed on local social networks and popular groups in Yazd and in public places such as parks, universities and cultural centers, for optional completion by individuals. The quality of entry included participating, residing in Yazd, and having a minimum level of literacy. The output included incomplete or invalid responses in the questionnaires. Young's Internet Usefulness, Russell's Loneliness, and Gross's Emotion Regulation questionnaires were administered to the subjects. Then, the data were analyzed using SPSS26 software.

**Results:** The results of the present study showed that there was a positive and significant relationship between loneliness and relationship ( $r=0.407$ ,  $p<0.001$ ). Also, a negative relationship was observed between emotion regulation and Internet use ( $r=-0.211$ ,  $p<0.001$ ). These results were felt in both sexes, with the difference that the correlation coefficient was stronger in men (men:  $r=0.503$ ,  $p<0.001$ ; women:  $r=0.307$ ,  $p<0.001$ ).  $F=35.802$ ,  $p<0.001$ ). In this model, loneliness was a positive and significant predictor of Internet use ( $\beta=0.389$ ,  $p<0.001$ ) and emotion regulation was a significant predictor ( $\beta=-0.171$ ,  $p<0.001$ ). In other words, increasing loneliness significantly increased the likelihood of using the Internet, and increasing pressure on other regulation significantly reduced Internet use.

**Conclusion:** In summary, it can be concluded that loneliness and dysfunctional emotion regulation are good predictors of Internet use tendencies.

**Keywords:** Internet addiction, Emotion regulation, Loneliness, Cyberspace

## Introduction

With the rapid expansion of digital technology, Internet addiction has emerged as a major concern, influencing various aspects of individuals' lives. People who develop Internet addiction often retreat behind the virtual space, using it as a substitute for the intimate relationships they lack in the real world (Mitchell et al., 2011). According to Young's definition, Internet addiction is characterized by criteria similar to those of alcohol or nicotine dependence. These include a strong need to use the Internet for extended periods to achieve satisfaction, an inability to control excessive use, preoccupation and restlessness, using the Internet to escape from personal problems, and concealing the amount of time spent online—all of which are sufficient indicators of Internet addiction (Young, 1998). In Iran, the prevalence of internet addiction has been reported to be 13% among men and 11% among women (Alavi et al., 2011). while rates of 8.8% in China and 0.8% in Italy have also been observed (Kuss & Lopez-Fernandez, 2016)

Loneliness is defined as a subjective and intense experience of isolation within one's social and interpersonal relationships (Maitland, 2020). It can lead to numerous psychological difficulties and a decline in quality of life (Oguz & Cakir, 2014). Individuals with dysfunctional family relationships may gradually withdraw from family interactions and compensate for this lack of connection by spending more time on the internet (ZAREEI et al., 2022) In a study conducted by Oguzel and Cakir examining the relationship between loneliness and internet addiction among pre-service teachers, the findings indicated a significant positive correlation between the two variables (Oguz & Cakir, 2014)

Emotion regulation is considered a form of self-regulation, through which individuals consciously or unconsciously manage their emotions to respond appropriately to environmental demands. People who struggle with emotion regulation tend to overuse the Internet as a way to manage or escape negative emotions, which may ultimately lead to Internet addiction. According to research

conducted by Hormes et al., higher levels of engagement with social networking platforms are associated with deficits in emotion regulation. Such difficulties can drive individuals to adopt addictive behaviors, such as Internet overuse, as a means of avoiding unpleasant emotions. Impaired control and psychological dependence often result in the experience of even more negative emotions, thereby creating a vicious cycle of addictive behavior (Hormes et al., 2014) Similarly, Romano et al. investigated the role of Internet addiction in emotional distress and dysregulation, finding a direct and positive relationship between Internet addiction and both emotional turmoil and the inability to employ adaptive emotion regulation strategies (Romano et al., 2013)

While numerous studies have examined the relationship between Internet addiction and variables such as loneliness and emotion regulation, several gaps still remain in this field. One of the most significant gaps is the lack of longitudinal investigations that can clarify the direction of causality among these variables. In other words, it is still unclear whether loneliness and poor emotion regulation contribute to the development of Internet addiction, or whether Internet addiction itself leads to an increase in these psychological difficulties. Addressing these gaps could provide a deeper understanding of the psychological mechanisms underlying Internet addiction and contribute to the development of more effective intervention strategies.

## Methods

This research employs a descriptive–correlational design. The statistical population consisted of all men and women residing in Yazd City in 2024 (1403 in the Iranian calendar). From this population, 300 participants (150 men and 150 women) from various age groups were selected through convenience sampling. The data were collected using an online questionnaire distributed via local social media groups and community networks in Yazd, as well as through in-person administration in public places such as parks, universities, and

cultural centers. Inclusion criteria included willingness to participate, residence in Yazd, and basic literacy (ability to read and write). Exclusion criteria were incomplete or invalid responses on the questionnaires. Participants completed the following instruments: the Young Internet Addiction Test (IAT), the Russell Loneliness Scale, and the Gross Emotion Regulation Questionnaire. The collected data were analyzed using SPSS 26 software. All questionnaires were self-administered, and participants were assured of the confidentiality of their responses

$$n = \frac{z^2 pq}{d^2}$$

$$= 0.05 \alpha$$

$$1 - \beta = 0.80$$

$$d = 0.05$$

$$\rho = 0.50$$

#### Instruments

##### Internet Addiction Test (IAT) questionnaire

Internet Addiction Test (IAT) questionnaire, developed by Young (1998) based on the diagnostic criteria for Internet addiction, consists of 20 items rated on a five-point Likert scale. The response options range from 1 = rarely, 2 = occasionally, 3 = often, 4 = frequently, and 5 = always. The total score ranges from 20 to 100, where scores of 20–39 indicate mild dependence, 40–69 reflect moderate dependence, and 70–100 represent severe Internet addiction. In a previous study, the internal consistency of the questionnaire was reported to be above 0.92 (Mann, 2008). Similarly, Kim et al. reported a Cronbach's alpha of 0.90 for this scale (Kim et al., 2006) and Alavi et al. found an internal consistency coefficient of 0.88 (Alavi, 2010).

##### UCLA Loneliness Scale questionnaire

UCLA Loneliness Scale questionnaire, developed by Russell, Peplau, and Cutrona (1980), consists of 20 items rated on a four-point Likert scale, including 10 negatively worded and 10 positively worded statements. The internal consistency of the original version was reported to be 0.89 (Russell et al., 1980), and the response

options are as follows: 1 = never, 2 = rarely, 3 = sometimes, and 4 = always. However, items 1, 5, 6, 9, 10, 15, 16, 19, and 20 are reverse-scored; that is, "never" is scored as 4, "rarely" as 3, "sometimes" as 2, and "always" as 1. The total score ranges from 20 (minimum) to 80 (maximum), with an average score of 50. Higher scores indicate greater levels of loneliness. The reliability of the revised version of the scale was reported to be 0.78, and the test-retest reliability was 0.89. The Persian adaptation of this scale was translated, refined, and validated by Shekarkan and Mirdrikvand (2014), demonstrating strong psychometric properties (Naderi M, 2009). Originally developed by Russell, the scale has undergone three major revisions, resulting in the final version, which has been administered to diverse samples—including university students, teachers, nurses, and older adults—through various methods such as self-report and structured interviews. Across these samples, Cronbach's alpha coefficients have ranged from 0.89 to 0.94, indicating excellent internal consistency.

##### Emotion regulation questionnaire (ERQ)

The emotion regulation questionnaire (ERQ) was developed by Gross and John to assess emotion regulation strategies. The instrument consists of 10 items and includes two subscales: cognitive reappraisal (6 items) and expressive suppression (4 items). Items 2, 4, 6, and 9 measure expressive suppression, while the remaining items assess cognitive reappraisal. Responses are rated on a 7-point Likert scale, ranging from strongly disagree (1) to strongly agree (7). Higher scores indicate greater use of emotion regulation strategies. In the original study by Gross and John, internal consistency coefficients were reported as 0.79 for cognitive reappraisal and 0.73 for expressive suppression. Similarly, Karimann and Vingerhoets reported internal consistency coefficients of 0.83 for cognitive reappraisal and 0.79 for expressive suppression. In Iran, Hosseini reported a Cronbach's alpha coefficient of 0.79 for the cognitive reappraisal subscale (Gross & John, 2003).

## Results

The data collected to examine the relationships between emotion regulation, loneliness, and Internet addiction among men and women in Yazd (mean age = 26.08 years) are presented in Table 1. Participants' ages ranged from 15 to 68, yielding a range of 53. Of the total sample, 60% were married and 40% were single. The most frequent educational levels were high school diploma and bachelor's degree.

Moreover, respondents obtained a mean score of 43.17 (SD = 16.66) on the Internet Addiction Test (IAT), a mean score of 35.14 (SD = 8.22) on the

Emotion Regulation Questionnaire (ERQ), and a mean score of 43.92 (SD = 12.02) on the UCLA Loneliness Scale.

As shown in Table 1, there is a significant relationship between loneliness and Internet addiction among the respondents. The Pearson correlation coefficient is 0.407 with a significance level of Sig = 0.001. This indicates that as the level of loneliness among respondents increases, their level of Internet addiction also increases, and conversely, as their sense of loneliness decreases, their internet addiction decreases as well. The findings based on gender differences also confirm this hypothesis (Table 1).

**Table 1.** Correlation Matrix of Loneliness and Emotion Regulation with Internet Addiction in Women and Men

Variable	Internet addiction	Loneliness	Emotion regulation
Internet addiction	1	*0/407	*-0/211
Loneliness	*0/407	1	0/104
Emotion regulation	*-0/211	0/104	1

p<0/001\*

As shown in Tables 2 and 3, the Pearson correlation coefficient between loneliness and Internet addiction was 0.503 among men and 0.307 among women, with a significance level of Sig = 0.001. It should be noted that this relationship was stronger among men. As illustrated in the tables, there was also a significant relationship between emotion regulation and Internet addiction among the respondents. The Pearson correlation coefficient was -0.211 with a significance level of

Sig = 0.001. This indicates that as participants' emotion regulation increased, their Internet addiction decreased, and vice versa. The findings separated by gender also confirmed this hypothesis. The Pearson correlation coefficient between emotion regulation and Internet addiction among men was -0.233 (Sig = 0.004), and among women it was -0.192 (Sig = 0.019). Again, it should be noted that this relationship was stronger among men.

**Table 2.** Correlation matrix of loneliness and emotion regulation with Internet addiction in men

Variable	Internet addiction	Loneliness	Emotion regulation
Internet addiction	1	*0/503	*-0/233
Loneliness	*0/503	1	0/075
Emotion regulation	*-0/233	0/075	1

p<0/001 \*

**Table 3.** Correlation Matrix of Loneliness and Emotion Regulation with Internet Addiction in Women

Variable	Internet addiction	Loneliness	Emotion regulation
Internet addiction	1	*0/307	*-0/192
Loneliness	*0/307	1	0/133
Emotion regulation	1	0/133	1

p<0/001 \*



As indicated in the regression model, loneliness ( $\beta = 0.389$ ) had the strongest impact on Internet addiction among the residents of Yazd, followed

by emotion regulation ( $\beta = -0.171$ ), which ranked second in terms of influence (Table 4).

**Table 4.** Stepwise regression coefficients

Model	Standardized coefficients		Standard Error	Unstandardized coefficients		T	Sig
	B			Beta			
Constant	7/334		4/727			1/552	0/122
Loneliness	0/539		0/073	0/389		7/426	0/001
Emotion regulation	0/346		0/106	-0/171		-3/265	0/001

As shown in Table 5, both independent variables entered into the regression equation, loneliness and emotion regulation, and had a significant effect on the dependent variable- internet addiction. Using the variance explained by the linear combination of the independent variables, approximately 18.9% of

the variance in Internet addiction scores could be accounted for. The remaining variance in the dependent variable is likely due to the complex and multidimensional nature of Internet addiction, as well as the exclusion of certain variables that may also influence this outcome (Table 5).

**Table 5.** Summary of the regression model

Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Standard error	f	sig
Regression model	0/441	0/194	0/189	15/01	35/802	0/001

## Discussion

The present study was designed to examine the impact of loneliness and emotion regulation on the tendency toward Internet addiction among men and women in Yazd. Based on the obtained results, the relationship between loneliness and internet addiction was confirmed for both women and men. Specifically, as the level of loneliness among participants increased, their Internet addiction scores also increased; conversely, a decrease in loneliness was associated with a reduction in Internet addiction. These findings are consistent with the results of Bozoglan, Demirer, and Sahin, who in a cross-sectional study on Turkish university students titled "Loneliness, Self-Esteem, and Life Satisfaction as Predictors of Internet Addiction", reported that loneliness was the most significant predictor of internet addiction and its subscales, with higher levels of loneliness corresponding to increased internet addiction (Bozoglan et al., 2013). Similarly, these results align with the findings of Birami, Moahidi, and

Moahidi (BEYRAMI et al., 2015) who demonstrated that social-emotional loneliness can predict Internet addiction and accounts for approximately 10% of its variance. The findings also correspond with Pontez, Gafter, and Patro (Pontes et al., 2014) who reported that loneliness explained 23.3% of the variance in Internet addiction and can serve as a predictor of this behavior. Moreover, other studies (Ozawa, 2013) have confirmed the significant relationship between loneliness and Internet addiction, highlighting its predictive capability. The predictive role of loneliness in internet addiction can be explained by the direct influence of loneliness on Internet use and preference for online interactions. Individuals who feel lonely may perceive online interactions as more accessible avenues for forming relationships and expressing their emotions. Additionally, loneliness can act as a mediating factor in internet addiction; when individuals experience social failures in offline interactions, they often attribute these failures to a

lack of social skills, which in turn increases their internet use (Pontes et al., 2014). Lonely individuals may gain more positive experiences in online interactions because these environments potentially provide greater opportunities for companionship and a sense of belonging. Consequently, cyberspace becomes an ideal social arena for forming connections, ultimately leading to increased susceptibility to Internet addiction (Ozawa, 2013). Based on the results of the present study, the relationship between loneliness and the tendency toward Internet addiction was stronger among men.

Based on the obtained results, a relationship was observed between emotion regulation and Internet addiction in both women and men. Specifically, as participants' emotion regulation abilities increased, their Internet addiction scores decreased, and vice versa. These findings are consistent with the results of Mazloomzadeh et al. (Mazloomzadeh G, 2021) who investigated the mediating role of emotion regulation difficulties in the relationship between executive dysfunction and Internet addiction. They found that emotion regulation difficulties had a direct and significant relationship with Internet addiction. Individuals who are unable to regulate their emotions effectively tend to use the Internet as a coping strategy to manage or avoid negative emotions (Aldao et al., 2010). Similarly, Piri et al. (Piri et al., 2019) examined the mediating role of coping strategies in the relationship between emotion regulation difficulties and Internet addiction, reporting a positive and significant correlation ( $r = 0.54$ ) between emotion regulation difficulties and Internet addiction. Yildiz (Yildiz, 2017) found that emotion regulation strategies accounted for 38% of the variance in Internet addiction and 19% of the variance in smartphone addiction. Furthermore, Chen et al. (Chen et al., 2021) reported that iInternet addiction is associated with psychological stress and that emotional skills can moderate this relationship. Consequently, lonely individuals may experience greater success in online interactions, which increases their tendency to use the Internet. One possible

explanation for this finding is provided by Givya et al (Gioia et al., 2021) who in a review study suggested that problematic Internet use may serve as a coping strategy to compensate for deficiencies in emotion regulation. Individuals who are unable to regulate their emotions effectively use the Internet as a coping mechanism to manage or avoid negative emotions (Aldao et al., 2010). Additionally, Mo et al. (Mo et al., 2014) proposed that Internet use functions as a regulating and soothing tool for individuals with poor emotion regulation skills. Internet use helps them distract themselves from negative emotions, and through a process of negative reinforcement, it increases the frequency of Internet use, ultimately contributing to Internet addiction.

Based on the results of the present study, the relationship between emotion regulation and the tendency toward Internet addiction was stronger in men. As many social psychologists argue, the concept of "self" fundamentally differs between men and women. Women's self-schemas tend to emphasize interpersonal relationships, whereas men's self-concept is more focused on uniqueness and individuality (Josephs, 1992) Accordingly, women are likely to place greater importance on maintaining relationships with others, and consequently, on regulating and controlling their emotions. Thus, emotion regulation skills, through positive cognitive reappraisal, contribute to more efficient and adaptive behaviors. Considering the increasing use of the Internet in daily life, Internet addiction has become one of the major psychological challenges (Mahmoodabadi et al., 2025).

In the case of the present research, the following limitations should be considered: Given that this study was conducted on male and female participants from Yazd, caution should be exercised when generalizing the results to other cities or provinces. Considering that the data collection instrument was a self-report questionnaire, responses may be subject to bias. Moreover, as the present study employed a correlational (regression) design, causal inferences

should be made with caution. It is therefore recommended that future studies similar to the present research examine mediating variables, such as personality traits and demographic characteristics, including socioeconomic status. Considering that a substantial portion of previous research on Internet addiction has focused on its relationship with various clinical problems, and fewer studies have investigated the underlying and influential factors of internet addiction, it is suggested that researchers address these aspects in future studies. Furthermore, it is recommended that health authorities examine the role of personality characteristics as potential indicators for the prevention of harmful behaviors and the development of technology-related dependency and addiction, and consider the findings of this study to enhance and improve their interventions and policies.

### Conclusion

The findings indicate that loneliness and maladaptive emotion regulation serve as significant predictors of individuals' susceptibility to Internet addiction. The results suggest that those who report heightened levels of loneliness and exhibit difficulties in managing their emotional responses are more prone to excessive and potentially problematic Internet use. These patterns highlight the importance of considering psychosocial factors when assessing vulnerability to Internet-related addictive behaviors. Moreover, the study underscores the need for targeted interventions aimed at enhancing emotion regulation skills and reducing perceived loneliness, which may, in turn, mitigate the likelihood of developing Internet addiction.

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### Conflict of Interest

The authors declared no conflicts of interest.

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### Ethical considerations

The ethical confirmation for this study was obtained from the Ethical Committee of Yazd University. Importantly, consent scripts, forms and protocols were also approved by Ethical Committee of Yazd University.

### Code of ethics

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### Authors' Contributions

HZM developed the theoretical formalism, AJ did statistical analysis and she taught students. ZE supervised the project. HZM contributed to the final version of the manuscript. All authors read and approved the final manuscript and are responsible for questions related to the article.

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