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# Self-regulation and social networking sites addiction: The mediating role of academic resilience and psychological well-being

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***Abstract***

**Introduction:** This study aims to predict Social Networking Sites (SNS) addiction based on self-regulation, examining the mediating roles of academic resilience and psychological well-being.

**Materials and Methods:** This descriptive-correlational study was conducted with male high school students in Torbat-e Heydariyeh City, Iran, during the 2022-2023 academic year. A sample of 399 students was selected using multi-stage cluster random sampling. Participants completed the Social Networking Addiction (SNA) Scale, the Self-Regulated Learning Questionnaire, the Academic Resilience Questionnaire, and the Psychological Well-being Questionnaire. Data were analyzed using descriptive and inferential statistical methods, including correlation and structural equation modeling.

**Results:** The results indicated that self-regulation (β= -0.23, *P*< 0.01) and psychological well-being (β= -0.19, *P*= 0.03) significantly and negatively predict SNS addiction. However, academic resilience (β= -0.04, *P*= 0.60) does not significantly predict SNS addiction and, therefore, does not mediate the relationship between self-regulation and SNS addiction. Academic resilience can indirectly predict SNS addiction by influencing psychological well-being (β= -0.09, *P*= 0.09).

**Conclusion:** The findings reveal a complex relationship between self-regulation, academic resilience, psychological well-being, and social networking sites addiction. These variables should be considered in the development of practical and preventive programs aimed at addressing social networking sites addiction.

**Keywords:** Addiction, Psychological well-being, Resilience, Self-regulation, Social networks

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## Introduction

In today's world, the rise of new communication networks has dramatically altered various aspects of life (1). Among different social groups, youth have embraced Social Networking Sites (SNS) as an essential part of their lives. This growing reliance, coupled with the increasing variety of SNS platforms, heightens the risk of addiction (2). Currently, about 5% of youth engage in excessive and addictive SNS use (3). This overuse not only damages real-world relationships and academic performance (4) but also increases social anxiety (5), diminishes mental health (6), and fosters academic procrastination (7). Although SNS addiction is not officially recognized as a form of addiction (8), its harmful effects are a significant concern, some researchers attribute SNS addiction in adolescents to the stresses inherent in this developmental stage (9,10). Others, following Masten's theory, argue that it stems from adolescents' inability to resist the addictive allure of SNS. Cognitive studies suggest that addictive SNS use is a decision-making process where individuals overestimate the value of these networks (12). One cognitive factor that can mitigate SNS ,addiction is self-regulation which involves setting goals and responding appropriately to challenges. Numerous studies have shown that increased self-regulation is linked to reduced SNS addiction although some research does not support this finding (14-16). Resilience is another protective factor against stressors such as SNS addiction (9,10). 'Academic resilience enhances students academic success despite various challenges (17,18) a personal capability to and represents cope with adverse and stressful events (19). It is a positive psychology construct, enabling individuals to maintain balance after adversity (11). Psychological well-being is also crucial in preventing SNS addiction by managing stress and improving mental health (20). ,This concept which has gained attention in various areas of life reflects an individual's comprehensive and subjective view of themselves and their life (21). Enhanced psychological well-being leads to a positive self-view, better relationships with others, and more frequent positive emotions, significantly reducing or preventing SNS addiction (22). Given the expansion of SNS and detrimental effects, it is essential its increasing factors influencing the excessive to explore the use of these networks. As youth are the future builders of society, decisions that support their mental health will ultimately benefit social well-being.

## Materials and Methods

The statistical population of this descriptive-correlational study consists of 8,500 male high school students in Torbat-e Heydariyeh City, Iran, during the 2022-2023 academic year. Using Cochran's formula, the required sample size was 368. To account for potential sample drop, 31 additional students were included, resulting in a final sample size of 399. A multi-stage cluster random sampling method was utilized. Initially, four boys' schools were selected as clusters. Subsequently, 399 students were randomly chosen from the lists of these schools. The inclusion criteria included being male student, aged 15 to 18, using a smartphone with access to SNS for at least six months. The exclusion criteria included incomplete questionnaires or unwillingness to participate.

Research instruments

*A) Social Networking Addiction Scale (SNA):* The SNA developed by Shahnavaz and Rahmanto assess the level of SNS addiction among adolescents and young users. This scale comprises 21 items that evaluate six ,components: salience, mood modification tolerance, withdrawal symptoms, conflict, and relapse. Respondents rate each item using a 5-point Likert scale (1= never to 5= always). The scores range from 21 to 105. Higher scores indicate a greater level of SNS addiction. Shahnavaz and Rahman reported convergent validity with the Facebook Addiction Scale and divergent validity with the Life Satisfaction Scale (23). In Iran, a validation study confirmed the construct validity of the SNA using confirmatory factor analysis (24).

*B) Self-Regulated Learning Questionnaire (SRLQ):* This questionnaire was designed by Bouffard, Boisvert, and Larouche (1995). The SRLQ measures self-regulated learning strategies. It consists of 14 items divided into cognitive strategies (9 items) and metacognitive strategies (5 items). Respondents rate their agreement with each item on a 5-point Likert scale (1= strongly disagree to 5= strongly agree). Items 5, 13, and 14 are reverse-scored. Total scores range from 14 to 60 (25). The validity of the SRLQ was established through content and construct validity assessments. Exploratory factor analysis indicated that the

questionnaire accounts for 52% of the variance in self-regulation. Criterion validity was confirmed by correlating the SRLQ with the Self-Control Questionnaire. The reliability of the SRLQ was found to be 0.72 using Cronbach's alpha, suggesting adequate internal consistency (26).

*C) Academic Resilience Inventory (ARI):* It was developed by Samuels in 2004, originally consisted of 40 questions (27). The Iranian adaptation includes 29 questions, utilizing a Likert scale ranging from strongly disagree (1) to strongly agree (5). This questionnaire evaluates three components: "communication," "future orientation," and "problem-focused and positive thinking". Two studies have confirmed the appropriateness of this tool. Reliability was estimated using Cronbach's alpha, yielding a coefficient of approximately 0.89, indicating high reliability. Construct validity was assessed using confirmatory factor analysis, and the indices suggested that the construct validity of the questionnaire was satisfactory (28).

*D) Psychological Well-Being Scale (PWBS):* This scale was designed by Ryff in 1989 and later revised in 2002. This study utilized the 18-item short version. This self-report tool employs a 6-point Likert scale (1= strongly disagree to 6= strongly agree), with scores ranging from 18 to 108. On this scale, items 3, 4, 5, 9, 10, 13, 16, and 17 are reverse-scored, while the remaining items are scored directly. The questionnaire measures six dimensions: self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, and personal growth, with three questions for each dimension (22). The reliability of this questionnaire was measured using two methods: Cronbach's alpha and split-half reliability. The overall reliability coefficient was 0.76 using Cronbach's alpha and 0.73 using the split-half method (29). The reliability coefficient using Cronbach's alpha for this study was also 0.78.

We used Pearson correlation, descriptive statistics, variable correlation analyses, SPSS version 26, and AMOS 24 software.

## Results

This study involved 399 students aged 15 to 18, with the mean age of 16.48. These students were selected from the 10$^{th}$ grade (91 students; approximately 23% of the sample), 11$^{th}$ grade (112 students; approximately 28% of the sample), and 12$^{th}$ grade (196 students; approximately 49% of the sample) across three academic majors: humanities (157 students; approximately 39% of the sample), experimental sciences (129 students; approximately 32% of the sample), and mathematics-physics (113 students; approximately 28% of the sample).Table 1 represents the results of these descriptive statistics. The correlation relationships are presented in Table 2.

**Table 1.** Descriptive indices of research variables

| Index | Minimum | Maximum | Mean | Standard deviation |
|---|---|---|---|---|
| Self-regulatory | 36 | 69 | 54.29 | 6.20 |
| Psychological well-being | 51 | 101 | 71.25 | 11.02 |
| Academic resilience | 58 | 124 | 89.76 | 12.79 |
| SNS addiction | 21 | 94 | 51.66 | 16.40 |

**Table 2.** Correlation (zero order) of research variables

| Variable | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| 1. Self-regulatory | 1 | | | |
| 2. Psychological well-being | 0.28** | 1 | | |
| 3. Academic resilience | 0.32** | 0.70** | 1 | |
| 4. SNS addiction | -0.28** | -0.23** | -0.60** | 1 |

*The correlation coefficient is significant at the *P*< 0.05 level. **Correlation coefficient is significant at *P*< 0.01 level.

Based on Table 2, there was a significant negative correlation between self-regulation and SNS addiction (r= -0.28, *P*< 0.01). In other words, as self-regulation increases, SNS addiction decreases. Additionally, there were significant negative correlations between psychological well-being and SNS addiction (r= -0.23, *P*< 0.01) and between academic resilience and SNS addiction (r= -0.26, *P*< 0.01). The presence of relationships between the exogenous variables, first mediator, second mediator, and endogenous variables indicates

the linear nature of the relationships among the research variables. Hence, path analysis can be perform using structural equation modelling.

Before using structural equation modeling, univariate outliers were examined using a box plot, and multivariate outliers were assessed using Mahalanobis distance square. Consequently, 28 students were excluded from the dataset. The skewness and kurtosis values of the score distributions for the variables fall within the range of -2 to 2. Therefore, univariate normality was satisfied. The Mardia coefficient was used to assess the multivariate normality of the data distribution (2.3). Since a value greater than 5 for this index indicates a non-normal distribution, it can be concluded that the multivariate normality assumption was satisfied for the data in this study. The Durbin-Watson statistic was used to test the assumption of independence of errors in the research model regression equations. The coefficient of 1.63 falls in the desirable range of 1.5 to 2.5. The errors were not sequentially related, so the assumption of independence of errors was satisfied. The Tolerance (TOL) and Variance Inflation Factor (VIF) statistics were calculated in addition to the correlation coefficients to assess the assumption of non-multicollinearity. Based on the findings, none of the tolerance values were smaller than the permissible limit of 0.1, and none of the variance inflation factor values were greater than the permissible limit of 10. Hence, based on these two indices, no multicollinearity was observed in the data. After examining the assumptions and ensuring they were met, structural equation modeling was used to evaluate the model under investigation. In examining the fit of the model, a Chi-square value was calculated at 1.91. Since this value falls within the range of 1 to 5, the model fit is considered acceptable. Moreover, the Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), and Bentler's Comparative Fit Index (CFI) always have values between zero and one. The closer the reported value is to one, the better the model fit. The GFI, AGFI, and CFI values were 0.91, 0.89, and 0.91, respectively, indicating a good fit for the model. The Root Mean Square Error of Approximation (RMSEA) was 0.06, below the acceptable threshold of 0.08, indicating an acceptable error level in the model. Table 3 presents the direct effect of the variables in the structural equation.

**Table 3.** The direct effect of the variables in the structural equation

| Direction | Non-standard coefficients | Standard coefficients | S.E. | C.R. | P |
|---|---|---|---|---|---|
| Self-regulation → SNS Addiction | -0.41 | -0.23 | 0.17 | -2.43 | 0.01 |
| Self-regulation → Psychological well-being | 0.41 | 0.36 | 0.11 | 3.70 | 0.001 |
| Self-regulation → Academic resilience | 0.56 | 0.54 | 0.12 | 4.72 | 0.001 |
| Academic resilience → SNS addiction | -0.07 | -0.04 | 0.14 | -0.52 | 0.60 |
| Academic resilience → Psychological well-being | 0.38 | 0.35 | 0.09 | 3.92 | 0.001 |
| Psychological well-being → SNS Addiction | -0.30 | -0.19 | 0.14 | -2.16 | 0.03 |

As shown in Table 3, self-regulation (β= -0.23, *P*< 0.01) and psychological well-being (β= -0.19, *P*< 0.03) had a direct negative effect on SNS addiction. However, the effect of academic resilience (β= -0.04, *P*> 0.60) on SNS addiction is not significant. In subsequent analyses, the bootstrap statistical technique was used to examine the indirect effects or the mediating hypotheses of the research model. However, self-regulation did not have a significant effect on SNS addiction ((β= -0.37, *P*= 0.20) through the mediation of academic resilience. In the following analyses, the bootstrap technique was used to investigate the indirect effects and mediating factors of the research model. Findings demonstrated an indirect negative effect of self-regulation on SNS addiction (β= -0.06, *P*= 0.04) through the mediation of psychological well-being. Additionally, self-regulation, mediated by psychological well-being and academic resilience (β= -0.09, *P*= 0.05) had an indirect negative effect on SNS addiction. In this way, self-regulation, by enhancing academic resilience and subsequently increasing psychological well-being, reduced SNS addiction.

## Discussion

The results revealed a negative and significant relationship between self-regulation and SNS addiction. In this regard, Favini et al. conducted a study on 462 fifteen-year-old Italian adolescents with a mean age of 15.2. The results showed that self-regulation beliefs development can reduce both short and long-term SNS addiction with controlling age, gender, sexual orientation, and socioeconomic status differences. They used Bergen's Social Media Addiction Scale (BSMAS) and Pastorelli's Self-Regulatory Self-Efficacy Scale (SRSE) measures within the latent difference score framework in the context of a pilot school-based intervention to predict SNS addiction based on self-regulation beliefs (15). In another study, Teimurzadeh et al. examined a structural equation model using Young's Internet Addiction, Magno's academic self-regulation, and Samuels' academic resilience questionnaires with a sample of 300 student teachers. Similarly, they found academic self-regulation negatively predicts internet addiction (16). In contrast to these findings, another study in Iran conducted on 236 medical students, found no connection between self-regulation and SNS addiction (17). Another result indicates that academic resilience does not directly predict SNS study addiction. In the conducted by Robertson, Yan, and Rapoza, 240 online participants completed a questionnaire measuring general internet addiction, resilience levels, and addictive behavior for online games and Facebook. The study found no relationship between resilience levels and Facebook addiction (19). On the other hand, the results of Teimurzadeh et al. are inconsistent with the results of the present study, as they indicated a negative effect of academic resilience on Internet addiction (16). According to Masten's theory of self-worth and the need for achievement, adolescents are more prone to failure than college students due to their age and lack of experience. Therefore, they may lack sufficient motivation to overcome SNS addiction despite improvements in academic resilience and stress reduction, exhibiting learned helplessness regarding SNS addiction (10). The findings also demonstrate a direct negative relationship between psychological well-being and SNS addiction. Consistent with this result, Arabi, Bagheri, and Mirhashemi conducted a study on 480 female high school students. They used Ryff's psychological well-being and Khajeh Ahmadi et al.'s addiction to SNS questionnaires. The results indicated that psychological well-being was able to predict addiction to social networks (20). According to Ryan and Deci's Self-Determination Theory, individuals with high psychological well-being possess a sense of control and autonomy over their lives. Conversely, those with low psychological well-being lose control when facing challenges, such as SNS addiction, leading to increased and uncontrolled SNS use (31). In this regard, Hassanzadeh et al.'s (31) and Kamble's (32) studies were conducted on undergraduate students using Connor and Davidson's resilience questionnaire. In the presence of academic stressors, individuals with educational resilience maintain motivation and performance, experience fewer stressful events, and develop a sense of satisfaction that fosters psychological well-being (11,33). Limited research can be attributed to cultural and personality differences among students (34). Additionally, the analysis showed a direct positive effect of self-regulation on psychological well-being. The research evidence from Fomina, Burmistrova-Savenkova, and Morosanova supports this result. In their two-wave longitudinal study involving 239 secondary school students in Moscow, they found that self-regulation is crucial in determining psychological well-being (35). Other findings confirm the positive direct effect of self-regulation on academic resilience. Similarly, Mohan and Verma studied 162 Indian students between 15 and 20 years old and observed that students with high self-regulation have higher academic resilience than others (36). Moreover, this study examined the indirect effect of self-regulation on SNS addiction, mediated by academic resilience and psychological well-being. The significant paths in the model confirmed that self-regulation decreases SNS addiction by increasing psychological well-being and enhancing academic resilience, which in turn boosts well-being. Although no studies fully align with or deviate from these findings, this conclusion may help clarify inconsistencies in the literature regarding the impact of self-regulation on online SNS addiction. This study is limited to male high school students, so the results should not be generalized to all students. Future research should extend this study to a larger sample and include diverse populations

of varying ages, genders, and other demographic characteristics. The findings of this study not only expand theoretical knowledge about the emerging phenomenon of SNS addiction but also have practical implications for families, school teachers, and educational policymakers.

## Conclusion

The findings of this study suggest that in male high school students, the negative impact of self-regulation on addiction to social network sites is mediated by academic resilience and psychological well-being.

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**Conflict of Interest**

The authors declare no conflict of interest.

**Funding**

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**Ethical Considerations**

The researchers introduced the objectives and guaranteed data confidentiality. The ethics committee of Semnan University of Medical Sciences approved the present study.

**Code of Ethics**

IR.SEMUMS.REC.1402.005

**Authors ' Contributions**

Mohammad Salehi Manzari: Study concept and design, data collection, and writing a manuscript. Mohammadagha Delavarpour: Manage and supervise the research process and statistical analysis. Siavash Talepasand: Drafting the manuscript and final edition.

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