

## The Relationship Between Early Maladaptive Schemas and Internet Addiction Tendency: The Role of Cognitive Emotion Regulation and Emotional Intelligence in University Students

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### Abstract

**Aim:** Internet addiction tendency has emerged as a growing psychological concern among university students. The present study examined the relationships between early maladaptive schemas (EMSs) and Internet addiction tendency and investigated the extent to which cognitive emotion regulation strategies and emotional intelligence contribute to explaining variability in problematic Internet use.

**Method:** This descriptive–correlational study was conducted among 300 students at university. Participants completed the Young Internet Addiction Test, the Young Schema Questionnaire, the Cognitive Emotion Regulation Questionnaire, and the Bar-On Emotional Intelligence Inventory. Data were analyzed using Pearson correlation coefficients, multiple regression analyses, and hierarchical multiple regression analyses to examine predictive relationships and incremental contributions of the study variables.

**Results:** All five EMS domains disconnection and rejection, impaired autonomy and performance, other-directedness, impaired limits, and overvigilance and inhibition significantly and positively predicted Internet addiction tendency. Emotional intelligence was a significant negative predictor and accounted for a substantial proportion of additional variance in Internet addiction tendency beyond early maladaptive schemas. Positive cognitive emotion regulation strategies contributed a smaller but significant proportion of additional variance, particularly in relation to the disconnection and rejection schema domain. Negative cognitive emotion regulation strategies did not demonstrate a significant incremental contribution.

**Conclusions:** EMSs represent important cognitive–emotional vulnerabilities associated with Internet addiction tendency. Emotional intelligence and adaptive cognitive emotion regulation strategies, especially positive strategies, are associated with lower levels of problematic Internet use and contribute uniquely to explaining individual differences in vulnerability. Interventions that address maladaptive schemas while strengthening emotional competencies and adaptive cognitive regulation may be beneficial in reducing problematic Internet use and enhancing students' psychological well-being.

**Keywords:** cognitive emotion regulation; early maladaptive schemas; emotional intelligence; Internet addiction

## Introduction

In recent years, the rapid expansion of Internet access and smart technologies has substantially transformed university students' daily lives. While the Internet provides valuable opportunities for education, communication, and information access, excessive and poorly regulated use has increasingly been associated with psychological and behavioral difficulties. This pattern of use, often referred to as Internet addiction or problematic Internet use, has been linked to adverse outcomes such as academic underperformance, sleep disturbances, impaired social relationships, and elevated symptoms of depression and anxiety. Epidemiological studies suggest that the prevalence of problematic Internet use among university students varies considerably, with estimates typically ranging from approximately 10% to 20%. For example, Sujata et al. (2023) reported a prevalence rate of 15.9% among Indian students, whereas Pilkington et al. (2024) identified significant associations between problematic Internet use and emotional functioning among Egyptian students. Collectively, these findings highlight problematic Internet use as an important mental health concern in contemporary student populations.

To better understand individual differences in vulnerability to problematic Internet use, increasing attention has been directed toward underlying cognitive and emotional factors. One prominent theoretical framework in this area is Young's schema theory, which emphasizes the role of early maladaptive schemas (EMSs). EMSs are enduring cognitive–emotional patterns that develop in response to adverse childhood experiences and influence individuals' perceptions, emotional responses, and behavioral tendencies across the lifespan (Young, 1990). Extensive empirical evidence has demonstrated that EMSs are associated with a wide range of psychological difficulties, including mood disorders, interpersonal problems, and maladaptive coping behaviors. More recently, research has suggested that certain schema domains—such as disconnection and rejection, abandonment, emotional deprivation, and mistrust—are associated with behavioral addictions, including problematic Internet use (Scarlett, 2021; Sokolprester et al., 2023; Makas & Kak, 2025).

Although early maladaptive schemas appear to be important cognitive–emotional vulnerabilities, their association with problematic Internet use is likely influenced by broader emotional and regulatory processes. Cognitive emotion regulation represents one such process and refers to the cognitive strategies individuals use to manage and interpret emotionally arousing experiences (Garnefski & Kraaij, 2006). Adaptive cognitive emotion regulation strategies, such as positive reappraisal and acceptance, have been associated with psychological resilience and healthier behavioral patterns, whereas maladaptive strategies, including rumination and catastrophizing, have been linked to increased emotional distress and behavioral problems (Savari & Tarahi, 2024). Previous studies have shown that cognitive emotion regulation strategies are closely related to maladaptive cognitive structures and may account for meaningful variance in

psychological symptoms and maladaptive behaviors (Karami et al., 2021). These findings suggest that cognitive emotion regulation may play an important explanatory role in the association between maladaptive schemas and problematic Internet use.

Emotional intelligence represents another relevant emotional–regulatory construct that has been consistently linked to adaptive functioning. Emotional intelligence refers to the ability to perceive, understand, and manage one’s own emotions and those of others. Higher levels of emotional intelligence have been associated with effective coping, emotional flexibility, and reduced engagement in maladaptive behaviors, whereas lower levels have been linked to a greater risk of behavioral addictions (Arpaci, 2021; Sobhani et al., 2023). Emerging evidence suggests that emotional intelligence is negatively associated with problematic Internet use and may function as a protective factor by enhancing emotional awareness and self-regulation in emotionally challenging situations.

Although existing research has documented associations among early maladaptive schemas, cognitive emotion regulation strategies, emotional intelligence, and problematic Internet use, several gaps remain in the literature. Specifically, many studies have primarily focused on direct associations between pairs of variables, with limited attention to the relative and combined contributions of multiple cognitive and emotional factors. Furthermore, empirical evidence from non-Western cultural contexts, particularly among Iranian university students, remains limited. Few studies have simultaneously examined the predictive roles of early maladaptive schemas, cognitive emotion regulation strategies, and emotional intelligence within a single regression-based framework. Therefore, the present study aimed to examine the relationships between early maladaptive schemas and Internet addiction tendency among university students and to investigate the extent to which cognitive emotion regulation strategies and emotional intelligence contribute to explaining variability in problematic Internet use. By examining these variables concurrently, the study seeks to provide a more comprehensive understanding of the cognitive and emotional factors associated with Internet addiction tendency in a university student population.

## **Materials and Methods**

The present study employed an applied, descriptive–correlational research design. A regression-based analytical approach was used to examine the relationships among early maladaptive schemas, cognitive emotion regulation strategies, emotional intelligence, and Internet addiction tendency. Multiple regression analyses were conducted to assess the predictive contributions of the study variables, and hierarchical multiple regression analyses were used to examine the incremental explanatory roles of cognitive emotion regulation and emotional intelligence in the relationship between early maladaptive schemas and Internet addiction tendency. Given the cross-sectional nature of the study,

the analyses were intended to identify patterns of association and explained variance rather than to establish causal relationships.

The statistical population consisted of undergraduate, graduate, and doctoral psychology students enrolled at the Ayatollah Amoli Branch of Islamic Azad University during the first semester of the 2025 academic year. Using convenience sampling, a total of 300 students were recruited to participate in the study. This sample size was considered adequate based on commonly recommended subject-to-variable ratios for multiple regression analyses. Inclusion criteria included active enrollment at the university at the time of data collection and voluntary consent to participate. Questionnaires with substantial missing data were excluded from the final analyses.

### **Instruments**

Four standardized self-report measures were administered:

#### **Internet Addiction Test (IAT; Young, 1998).**

The IAT consists of 20 items rated on a five-point Likert scale, with total scores ranging from 20 to 100. Higher scores indicate a greater tendency toward problematic Internet use. Previous studies have reported high internal consistency for the IAT ( $\alpha \approx .90$ ), and reliability coefficients ranging from .81 to .88 have been reported in Iranian samples.

#### **Cognitive Emotion Regulation Questionnaire (CERQ; Garnefski & Kraaij, 2006).**

The CERQ includes 36 items assessing nine cognitive emotion regulation strategies, rated on a five-point Likert scale. Subscale scores range from 4 to 20. In the present study, adaptive (positive) strategies included acceptance, positive refocusing, refocus on planning, positive reappraisal, and putting into perspective, whereas maladaptive (negative) strategies included self-blame, rumination, catastrophizing, and other-blame. Previous research has reported acceptable internal consistency for the CERQ subscales.

#### **Young Schema Questionnaire–Short Form (YSQ–S3; Young et al., 2005).**

The YSQ–S3 contains 90 items assessing 18 early maladaptive schemas grouped into five schema domains: disconnection and rejection, impaired autonomy and performance, other-directedness, impaired limits, and overvigilance and inhibition. Items are rated on a six-point Likert scale, with higher scores indicating stronger endorsement of maladaptive schemas. Reported reliability coefficients for the YSQ–S3 range from acceptable to high.

#### **Bar-On Emotional Quotient Inventory (EQ-i; Bar-On, 1997).**

The EQ-i assesses emotional intelligence across 15 subscales and yields a total emotional intelligence score. Items are rated on a five-point Likert scale, with higher scores reflecting greater emotional intelligence. Previous studies have consistently reported satisfactory internal consistency for the EQ-i.

## Procedure

Following approval from the Islamic Azad University of Amol and the relevant ethics committee, participants were recruited through coordination with the Department of Psychology. Data were collected through in-person administration of the questionnaires. Participants were informed about the study objectives, assured of confidentiality and anonymity, and informed of their right to withdraw at any time without penalty. All ethical principles for research involving human participants were observed.

## Pilot Study

A pilot study was conducted with 30 psychology students independent of the main sample to assess the internal consistency of the instruments. Cronbach's alpha coefficients indicated satisfactory reliability for all measures: Internet Addiction Test ( $\alpha = .915$ ), Emotional Intelligence ( $\alpha = .890$ ), Positive Cognitive Emotion Regulation ( $\alpha = .860$ ), and Negative Cognitive Emotion Regulation ( $\alpha = .830$ ).

## Data Analysis

Data were analyzed using SPSS version 26. Descriptive statistics, including means, standard deviations, skewness, and kurtosis, were calculated to evaluate data distribution and normality. Pearson correlation coefficients were computed to examine bivariate relationships among the study variables.

Multiple regression analyses were performed to examine the predictive roles of early maladaptive schemas, cognitive emotion regulation strategies, and emotional intelligence in relation to Internet addiction tendency. Hierarchical multiple regression analyses were then conducted to evaluate the incremental contribution of cognitive emotion regulation and emotional intelligence beyond early maladaptive schemas. In these analyses, schema domains were entered in the first step, followed by cognitive emotion regulation strategies and emotional intelligence in subsequent steps. Changes in standardized regression coefficients and explained variance ( $\Delta R^2$ ) were examined to assess the extent to which these variables accounted for additional variance in Internet addiction tendency.

Prior to regression analyses, assumptions of normality, linearity, multicollinearity, and independence of errors were examined and found to be acceptable. Variance inflation factor (VIF) values were below recommended thresholds, indicating no serious multicollinearity concerns.

## Findings

Descriptive statistics were calculated for the main study variables to examine central tendency, dispersion, and distributional properties. The mean scores of the five early maladaptive schema domains—disconnection and rejection, impaired autonomy and

performance, other-directedness, impaired limits, and overvigilance and inhibition—were within the moderate to high range, indicating sufficient variability among participants. Emotional intelligence scores were also within the moderate-to-high range, whereas the mean score for Internet addiction tendency was moderate. Examination of skewness and kurtosis values indicated that all variables were approximately normally distributed, supporting the use of parametric statistical analyses.

### **Predictive Role of Early Maladaptive Schemas**

To examine whether early maladaptive schema domains predicted Internet addiction tendency, a multiple regression analysis was conducted with Internet addiction tendency as the dependent variable. The overall regression model was statistically significant. All five schema domains emerged as significant positive predictors of Internet addiction tendency, indicating that higher endorsement of maladaptive schemas was associated with greater levels of problematic Internet use.

**Table 1. Multiple Regression Analysis Predicting Internet Addiction Tendency from Early Maladaptive Schema Domains**

<b>Predictor</b>	<b><math>\beta</math></b>	<b>t</b>	<b>p</b>
<b>Disconnection and Rejection</b>	.18	6.90	< .001
<b>Impaired Autonomy and Performance</b>	.15	4.48	< .001
<b>Other-Directedness</b>	.14	4.89	< .001
<b>Impaired Limits</b>	.11	4.52	< .001
<b>Overvigilance and Inhibition</b>	.19	5.84	< .001

### **Predictive Role of Emotional Intelligence**

A simple regression analysis was conducted to examine the association between emotional intelligence and Internet addiction tendency. Emotional intelligence significantly and negatively predicted Internet addiction tendency, indicating that

higher emotional intelligence was associated with lower levels of problematic Internet use.

**Table 2. Regression Analysis Predicting Internet Addiction Tendency from Emotional Intelligence**

Predictor	$\beta$	t	p
Emotional Intelligence	-.40	-11.30	< .001

**Incremental Contribution of Emotional Intelligence**

A hierarchical multiple regression analysis was conducted to examine whether emotional intelligence accounted for additional variance in Internet addiction tendency beyond early maladaptive schemas. In Step 1, early maladaptive schema domains were entered into the model and significantly predicted Internet addiction tendency ( $R^2 = 0.22$ ,  $F(5, 294) = 16.56$ ,  $p < .001$ ). In Step 2, emotional intelligence was added to the model, resulting in a significant increase in explained variance ( $\Delta R^2 = 0.08$ ,  $F \text{ change}(1, 293) = 31.45$ ,  $p < .001$ ). Emotional intelligence emerged as a significant negative predictor ( $\beta = -0.36$ ,  $t = -8.74$ ,  $p < .001$ ), and the standardized regression coefficients of schema domains were reduced after its inclusion, indicating that emotional intelligence contributed uniquely to the prediction of Internet addiction tendency beyond early maladaptive schemas.

**Table 3. Hierarchical Regression Analysis Examining the Incremental Contribution of Emotional Intelligence**

Predictor	$R^2$	$\Delta R^2$	F change	$\beta$	t	p
Early Maladaptive Schemas	0.22	–	16.56	0.47	6.02	< .001
Emotional Intelligence	0.30	0.08	31.45	-0.36	-8.74	< .001

**Incremental Contribution of Positive Cognitive Emotion Regulation**

Hierarchical regression analyses were conducted to examine the incremental contribution of positive cognitive emotion regulation strategies. Positive strategies accounted for a small but statistically significant proportion of additional variance in Internet addiction tendency when included alongside the disconnection and rejection schema domain. The predictive effect of disconnection and rejection was reduced but remained statistically significant after the inclusion of positive cognitive emotion regulation strategies.

**Table 4. Hierarchical Regression Analysis Examining the Incremental Contribution of Positive Cognitive Emotion Regulation**

Predictor	R <sup>2</sup>	ΔR <sup>2</sup>	F change	β	t	p
<b>Disconnection &amp; Rejection</b>	0.22	–	16.56	0.29	7.12	< .001
<b>Positive CER</b>	0.24	0.02	5.48	–0.13	–2.21	.027

#### **Incremental Contribution of Negative Cognitive Emotion Regulation**

A hierarchical regression analysis was also conducted to evaluate the incremental contribution of negative cognitive emotion regulation strategies. After entering the disconnection and rejection schema domain in Step 1 ( $R^2 = 0.22$ ,  $F(1, 298) = 16.56$ ,  $p < .001$ ), negative cognitive emotion regulation strategies were added in Step 2. The inclusion of negative strategies did not significantly increase the explained variance in Internet addiction tendency ( $\Delta R^2 = 0.01$ ,  $F \text{ change}(1, 297) = 2.15$ ,  $p = .145$ ), indicating that these strategies did not provide additional predictive value beyond early maladaptive schemas. The standardized regression coefficient for negative CER was  $\beta = 0.10$ ,  $t = 1.47$ ,  $p = .145$ .

**Table 5. Hierarchical Regression Analysis Examining the Incremental Contribution of Negative Cognitive Emotion Regulation**

Predictor	R <sup>2</sup>	ΔR <sup>2</sup>	F change	β	t	p
<b>Disconnection &amp; Rejection</b>	0.22	–	16.56	0.29	7.12	<.001
<b>Negative CER</b>	0.23	0.01	2.15	0.10	1.47	.145

## Discussion

The present study examined the relationships between early maladaptive schemas, cognitive emotion regulation strategies, emotional intelligence, and Internet addiction tendency among university students. The findings indicated that early maladaptive schemas were significant psychological predictors of problematic Internet use, with all five schema domains—disconnection and rejection, impaired autonomy and performance, other-directedness, impaired limits, and overvigilance and inhibition—showing positive associations with Internet addiction tendency. These results are consistent with Young’s schema theory, which conceptualizes maladaptive schemas as enduring cognitive–emotional patterns that influence emotional responses, self-regulation, and behavioral tendencies (Young, 2003).

Individuals with stronger maladaptive schemas may be more vulnerable to engaging in excessive Internet use as a means of coping with emotional distress or unmet psychological needs. For example, schemas related to disconnection and rejection or heightened overvigilance may be associated with increased online engagement as a compensatory response to feelings of loneliness, insecurity, or perceived threat. Similarly, impaired autonomy and performance schemas may be linked to difficulties in self-control and goal-directed behavior, increasing susceptibility to poorly regulated Internet use. These interpretations align with previous studies linking maladaptive schemas to addictive and compulsive behaviors (Scarlett, 2021; Sokolprester et al., 2023; Makas & Kak, 2025).

Emotional intelligence emerged as a significant negative predictor of Internet addiction tendency and accounted for a substantial proportion of variance beyond early maladaptive schemas. This finding aligns with prior studies highlighting the protective role of emotional intelligence in emotional regulation, adaptive coping, and behavioral self-control (Arpaci, 2021; Sobhani et al., 2023).

Students with higher emotional intelligence are better equipped to recognize and manage emotional states, thereby reducing reliance on maladaptive coping behaviors such as

excessive Internet use when facing emotional challenges. The incremental contribution of emotional intelligence suggests that emotional competencies are an important protective factor, even in the presence of maladaptive cognitive structures.

Positive cognitive emotion regulation strategies showed a small but significant contribution to Internet addiction tendency, particularly in relation to the disconnection and rejection schema domain. This suggests that adaptive cognitive strategies such as positive reappraisal and acceptance may attenuate the association between relationally focused maladaptive schemas and problematic Internet use.

An important finding of the present study was the non-significant role of negative cognitive emotion regulation strategies. Previous studies have often reported associations between maladaptive strategies such as rumination and catastrophizing and problematic Internet use. One possible explanation is that these strategies may overlap conceptually with early maladaptive schemas. Because schemas represent deeper cognitive–emotional structures, their inclusion in the regression model may have accounted for much of the variance that would otherwise be attributed to maladaptive cognitive responses. Thus, negative cognitive emotion regulation strategies may function as manifestations of underlying schemas rather than independent predictors. This explanation is consistent with theoretical perspectives emphasizing the foundational role of EMSs in shaping cognitive–emotional patterns.

Although the present findings were generally consistent with prior research, some differences in the strength of associations were observed. Such variations may reflect differences in measurement approaches, sample characteristics, and statistical modeling strategies across studies. In particular, the simultaneous inclusion of schemas, emotional intelligence, and cognitive emotion regulation within a single regression model may have clarified their relative contributions and reduced inflated associations observed in studies examining variables separately.

Additionally, cultural and contextual factors may influence the manifestation of problematic Internet use. For instance, the present sample consisted of Iranian university students, and patterns of online behavior and coping may differ from those reported in Western or other non-Western samples.

## **Conclusion**

The present study provides evidence that early maladaptive schemas are significant predictors of Internet addiction tendency among university students. In addition, emotional intelligence and positive cognitive emotion regulation strategies contributed uniquely to explaining variability in problematic Internet use beyond maladaptive schema domains. These findings underscore the relevance of emotional competencies and

adaptive cognitive regulation processes in understanding individual differences in vulnerability to excessive Internet use.

From a practical standpoint, interventions aimed at reducing problematic Internet use among students may benefit from a multifaceted approach that addresses maladaptive cognitive schemas while also strengthening emotional intelligence and promoting adaptive cognitive emotion regulation strategies. Schema-focused interventions, emotional skills training, and programs that enhance adaptive emotion regulation may be particularly useful in reducing reliance on maladaptive online coping behaviors and improving students' psychological well-being.

### **Limitations and Future Research**

Despite the contributions of the present study, several limitations should be acknowledged when interpreting the findings:

**Self-report measures:** The use of questionnaires may have introduced response biases, such as social desirability or inaccuracies in self-perception. Although standardized and validated instruments were employed, future research could benefit from incorporating behavioral indicators, clinician ratings, or multi-informant approaches to enhance measurement validity.

**Cross-sectional design:** The study's cross-sectional nature limits conclusions regarding causality and temporal ordering among early maladaptive schemas, emotional intelligence, cognitive emotion regulation strategies, and Internet addiction tendency. Longitudinal or experimental designs are recommended to clarify developmental pathways and causal relationships

**Homogeneous sample:** Participants were drawn exclusively from psychology students at a single university, which limits the generalizability of the findings. Students from other academic disciplines, universities, or cultural backgrounds may differ in Internet use patterns and cognitive–emotional processes. Therefore, the results should be interpreted with caution when applied to broader populations.

**Limited scope of predictors:** This study focused primarily on cognitive and emotional predictors and did not examine other potentially influential factors, such as personality traits, social support, socioeconomic status, or cultural variables. Future studies could integrate these factors to develop more comprehensive explanatory models of problematic Internet use.

### **Practical Implications**

From a practical standpoint, the findings highlight the importance of addressing both cognitive vulnerabilities and emotional competencies in interventions targeting

problematic Internet use. Screening for maladaptive schemas and deficits in emotional skills may help identify students at greater risk. Preventive and therapeutic programs that integrate schema-focused psychoeducation, emotional intelligence training, and adaptive cognitive emotion regulation strategies are likely to be more effective in reducing reliance on maladaptive online coping behaviors and enhancing psychological well-being.

Overall, early maladaptive schemas represent significant cognitive–emotional vulnerabilities associated with Internet addiction tendency. Emotional intelligence and positive cognitive emotion regulation strategies contribute uniquely to reducing vulnerability, whereas negative cognitive emotion regulation strategies appear to operate through the influence of underlying schemas. These findings provide a comprehensive perspective on both risk and protective factors for problematic Internet use among university students.

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### **Conflict of Interest**

The authors declare that there are no known personal, financial, or professional conflicts of interest related to the conduct or publication of this research.

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