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The Mediating Role of Parental Monitoring Styles in the Relationship Between Internet Addiction and Social Anxiety in Adolescents

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A B S T R A C T

Purpose: The present study aimed to examine the mediating role of parental monitoring styles in the relationship between social anxiety and internet addiction among students.

Methods and Materials: In terms of purpose, this study was fundamental; in terms of implementation method, it was descriptive; and in terms of design, it was a correlational study using structural equation modeling. The statistical population consisted of students in Zanjan Province during the 2025–2026 academic year. A sample of 220 participants was selected using cluster random sampling. Data were collected using Young's Internet Addiction Test (Young, 1998), the Small and Kerns Parental Monitoring Styles Questionnaire (Small & Kerns, 1993), and the Social Phobia Inventory (Connor et al., 2000). Data analysis was conducted using structural equation modeling and bootstrap procedures in SPSS version 24 and AMOS version 25.

Findings: The model fit indices indicated an acceptable fit. Social anxiety had a positive direct effect on internet addiction (β = 0.42), and parental monitoring styles had a negative direct effect (β = -0.38). The indirect effect of social anxiety through monitoring styles was significant (β = 0.17). Among the monitoring styles, the combined style, as a dynamic approach involving active monitoring, temporary restrictions, and gradual delegation of responsibility, was identified as the most effective approach in reducing internet addiction.

Conclusion: Social anxiety leads to increased internet addiction by weakening optimal parental monitoring styles, particularly by reducing combined monitoring. Training parents in the combined monitoring style can disrupt the harmful pathway from social anxiety to digital addiction.

Keywords: *Internet addiction, social anxiety, parental monitoring styles, adolescents.*

1. Introduction

The rapid integration of digital technologies into adolescents' daily lives has transformed patterns of communication, learning, recreation, and identity development. Internet-based platforms, smartphones, online games, and social networks now constitute a central ecology in which adolescents interact with peers, access educational content, construct self-presentation, and regulate emotion. Although digital engagement can provide important

educational and social opportunities, excessive or poorly regulated use may become maladaptive when it disrupts academic functioning, family interaction, sleep, emotional regulation, and face-to-face social participation. In this context, internet addiction and related forms of problematic digital media use have become major concerns in adolescent mental health research, particularly because adolescence is a developmental period characterized by heightened reward sensitivity, increasing autonomy, ongoing maturation of executive functions, and strong vulnerability to peer evaluation. Contemporary debates therefore emphasize that problematic technology use should not be reduced to screen exposure alone; rather, it should be examined as a multidimensional phenomenon shaped by psychological distress, family processes, self-regulatory capacities, and sociocultural conditions (Ting & Chen, 2020; Weiss & Bonell, 2025).

Internet addiction is generally conceptualized as a pattern of excessive, compulsive, or poorly controlled internet use associated with salience, tolerance, withdrawal-like symptoms, loss of control, mood modification, and functional impairment. In adolescents, this condition may manifest as persistent preoccupation with online activities, inability to limit use despite parental rules or academic demands, irritability when access is restricted, and progressive displacement of offline social or educational activities. The availability of smartphones has intensified these risks because online access is continuous, portable, and privately managed. Smartphone addiction and problematic smartphone use have therefore been studied as closely related constructs that overlap with internet addiction but also involve device-specific features such as notifications, social media checking, mobile gaming, and constant connectivity (Elhai et al., 2020; Ting & Chen, 2020). Empirical evidence further indicates that digital overuse is associated with loneliness, deficient self-regulation, psychological distress, and impaired academic functioning, suggesting that the problem is not merely behavioral but also affective, cognitive, and interpersonal in nature (Lin et al., 2021; Mahapatra, 2019; Noel et al., 2022).

One of the most important psychological correlates of problematic internet use is social anxiety. Social anxiety refers to persistent fear or distress in social or performance situations in which the individual may be exposed to scrutiny, negative evaluation, embarrassment, or rejection. Because adolescence is marked by heightened sensitivity to peer judgment, social comparison, and identity formation, socially anxious adolescents may experience face-to-face interactions as threatening and may therefore seek online environments that provide greater control over self-presentation and reduced immediacy of interpersonal feedback. Epidemiological research has shown that anxiety disorders commonly emerge early in life, and social anxiety represents one of the clinically significant forms of adolescent psychopathology due to its potential persistence and its association with avoidance, loneliness, depression, school impairment, and reduced social competence (Kessler et al., 2005; Salari et al., 2024). Recent findings also suggest that adolescent social anxiety has changed in meaningful ways across the pre-pandemic and COVID-19 periods, reflecting broader shifts in social exposure, school participation, and digital communication patterns (Ranta et al., 2024).

Theoretically, social anxiety may increase vulnerability to internet addiction through several mechanisms. First, online communication can function as an avoidance strategy, allowing adolescents to escape direct interpersonal evaluation while maintaining some form of social contact. Second, digital environments provide controllability, delayed response options, edited self-presentation, anonymity, and selective exposure, all of which may temporarily reduce social fear but reinforce long-term avoidance. Third, socially anxious adolescents may rely on online platforms for mood regulation and social reassurance, thereby increasing the risk of compulsive checking, excessive social networking, and dependence on virtual interactions. Longitudinal evidence indicates that depression and social anxiety can predict later symptoms of internet use disorder among children and adolescents, supporting the view that emotional vulnerability may precede and intensify problematic internet behaviors (Leo et al., 2021). Similarly, studies on smartphone use show that anxiety, depression, and fear of missing out are associated with problematic forms of digital engagement, particularly when online activity is used to regulate negative affect or reduce perceived social exclusion (Elhai et al., 2020).

Research conducted in Iranian adolescent and student populations has also highlighted the relevance of social anxiety to internet addiction and related digital behaviors. Studies have reported associations among perfectionism, social anxiety, loneliness, procrastination, and internet addiction, indicating that problematic internet use may be embedded within broader patterns of maladaptive self-evaluation and avoidance-based coping (Hasanzadeh Banakar & Nosrati, 2024). Other findings have shown that social anxiety can mediate the association between virtual

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social-network addiction and cyberbullying among adolescents, further emphasizing that socially anxious adolescents may become involved in problematic online dynamics not only as passive users but also as participants in harmful digital interaction patterns (Rokhsari & Faghirpour, 2025). Evidence on the role of emotion control and positive thinking in relation to students' social anxiety also suggests that deficits in emotional regulation and cognitive appraisal may contribute to the persistence of socially anxious responses in educational settings (Nakhaei et al., 2022). Taken together, these studies support the need to examine social anxiety as a central antecedent or correlational factor in adolescent internet addiction.

Alongside individual psychological factors, family processes play a fundamental role in shaping adolescents' digital behaviors. Parents influence adolescents' technology use through explicit rules, monitoring practices, communication patterns, modeling of digital habits, emotional support, and the broader quality of the parent–child relationship. In the digital age, parental mediation refers to the strategies parents use to guide, restrict, supervise, discuss, or co-use media and technology with their children. Early conceptualizations of parental mediation distinguished among instructive or active mediation, restrictive mediation, and social co-viewing, providing a theoretical foundation for later research on digital parenting and online risk management (Valkenburg et al., 2009). In contemporary contexts, parental mediation has expanded beyond television to include smartphones, social media, online gaming, digital learning platforms, and internet-based peer interaction. As a result, parental monitoring is no longer limited to knowing where adolescents physically are; it also includes knowing what they do online, with whom they interact, how long they remain connected, and how they respond emotionally to digital content.

The empirical literature has generally shown that parental mediation and monitoring are associated with lower levels of problematic media use, although the effectiveness of different strategies varies by developmental stage, family climate, and type of digital activity. Systematic reviews indicate that parental mediation is often negatively associated with problematic media use among children and adolescents, but the strength and direction of associations depend on whether mediation is active, restrictive, inconsistent, intrusive, or embedded in supportive communication (Fam et al., 2023; Nielsen et al., 2019). Studies further suggest that parents' rules, role modeling, and relationships with children all contribute to children's problematic mobile phone involvement, meaning that parental influence operates simultaneously through behavioral regulation and relational quality (Hefner et al., 2019). Similarly, parent and child technoference—interruptions in family interaction caused by technology—has been linked to socioemotional and behavioral outcomes among adolescents, indicating that parental digital behavior may shape the emotional context in which adolescent technology use develops (Stockdale et al., 2018).

Parental monitoring styles are especially important because they reflect not only the degree of parental control but also the quality of parent–adolescent interaction. Active monitoring typically involves open communication, guidance, discussion of online risks, collaborative rule-setting, and parental awareness of adolescents' activities. Passive monitoring may involve limited engagement, low awareness, inconsistent supervision, or reliance on adolescents' spontaneous disclosure without systematic guidance. Combined monitoring can include a balanced, developmentally sensitive integration of active communication, temporary restrictions, gradual delegation of responsibility, and adaptive supervision. This distinction is important because excessive restriction may provoke secrecy or resistance, whereas insufficient monitoring may expose adolescents to unregulated digital reinforcement. In this regard, contemporary digital parenting research emphasizes that effective mediation requires parental self-efficacy, awareness of social context, and adaptive strategies rather than rigid prohibition alone (Arya & Sreejith, 2024; Krantz et al., 2026). Research on Iranian parents' mediation of children's digital gameplay also indicates that demographic and contextual factors may shape how parents regulate digital activities at home (Soyoof et al., 2025).

Recent studies on parental mediation and adolescent digital addiction increasingly support mediated and chain-mediated models. For example, parental mediation has been linked to smartphone addiction through psychological and behavioral pathways among Chinese adolescents, suggesting that the relationship between family regulation and digital addiction is not merely direct but operates through intermediate mechanisms (Chen et al., 2025). Research on parenting style, psychological control, media literacy, and cognitive emotion regulation among secondary-school students also indicates that family variables may influence internet addiction through adolescents' internal regulatory resources and digital competencies (Mehrazin et al., 2025). Likewise, evidence from longitudinal research

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has shown that parental conflict and parental control may mediate mechanisms leading to high school students' internet addiction, suggesting that control becomes maladaptive when embedded in conflictual family dynamics rather than supportive monitoring (Deng et al., 2020). These findings make it necessary to distinguish between constructive monitoring, passive disengagement, and psychologically controlling or inconsistent supervision.

Parental factors may also interact with adolescents' mental health vulnerabilities. Socially anxious adolescents may disclose less to parents, avoid family conversations about online behavior, or experience parental questions as intrusive or evaluative. Parents, in turn, may respond to adolescents' withdrawal either by reducing supervision, imposing rigid restrictions, or relying on passive monitoring. Such processes can weaken optimal parental monitoring and increase adolescents' reliance on online environments for emotional regulation and social compensation. The parent–child relationship and parental bonding have been shown to play important roles in explaining how parental smartphone addiction affects adolescent smartphone addiction, suggesting that adolescents' problematic digital use is shaped by both parental modeling and relational processes (Gong et al., 2022). Similarly, parental attitudes and sociodemographic factors have been identified as predictors of smartphone addiction in university students, supporting the broader assumption that parental socialization remains relevant beyond early adolescence (Cicek et al., 2021). These findings justify examining parental monitoring styles as potential mediating mechanisms between adolescents' social anxiety and internet addiction.

The quality of family communication is also relevant to adolescent risk outcomes. Open and supportive communication may reduce emotional isolation, facilitate disclosure, and help adolescents negotiate online risks, whereas poor communication may intensify avoidance and maladaptive coping. Research has shown that family communication can moderate the association between victimization and suicidal ideation in adolescents, underscoring the protective role of family relational processes in high-risk psychological contexts (Buelga et al., 2024). Related work on psychological distress, loneliness, and adolescent vulnerability during periods of social disruption indicates that loneliness and distress can increase when ordinary social supports are weakened, potentially increasing reliance on digital environments as substitute spaces for connection (McGinty et al., 2020). Moreover, systematic review evidence on psychological distress in children and adolescents with self-harm and suicidal thoughts highlights the importance of addressing emotional dysregulation and distress in youth mental health interventions (Shah Hosseini et al., 2025). Although these studies do not focus exclusively on internet addiction, they strengthen the rationale for investigating how family monitoring may buffer or transmit the effects of adolescent social anxiety on problematic digital use.

Educational and contextual factors also need consideration. Adolescents' information and communication technology use profiles differ in relation to academic performance, stress, and parental mediation, indicating that the effects of digital engagement depend on patterns of use and family regulation rather than simple exposure metrics (Diaz Lopez et al., 2025). In populations with special educational needs, such as children with mild intellectual disability, parental digital mediation strategies may also vary according to child characteristics and parental predictors, showing that digital parenting must be understood as a context-sensitive process (Nasution et al., 2025). In Iranian research, structural modeling has already shown that parental monitoring styles can mediate relationships between mental health and social network addiction among secondary-school students, providing a close conceptual foundation for examining similar mechanisms in relation to internet addiction and social anxiety (Ebrahimi-Naseri et al., 2022). These findings support the relevance of structural equation modeling for testing direct and indirect pathways among social anxiety, parental monitoring, and internet addiction.

Measurement validity is another essential issue in this line of research. Young's Internet Addiction Test remains one of the most widely used instruments for assessing problematic internet use, and validation studies in Persian-speaking populations have supported the psychometric properties of its short version (Amiri, 2018). Reliable assessment is particularly important because internet addiction overlaps conceptually with smartphone addiction, social network addiction, problematic gaming, and general screen overuse, while also differing from each in behavioral specificity. Similarly, social anxiety and parental monitoring should be measured as theoretically distinct constructs to avoid interpretive ambiguity in mediation analysis. Methodologically, structural models that test indirect effects require careful attention to estimation, model fit, and confidence intervals; broader statistical discussions on uncertainty estimation and confidence intervals reinforce the importance of using appropriate inferential procedures when

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testing mediated pathways (Lee et al., 2023). Therefore, bootstrap estimation of indirect effects provides an appropriate analytic strategy for evaluating whether parental monitoring styles significantly transmit the relationship between social anxiety and internet addiction.

Despite the growing literature, several gaps remain. First, many studies have examined direct associations between psychological distress and internet addiction without adequately modeling family monitoring as a mediating mechanism. Second, parental mediation research often emphasizes restrictive versus active strategies but less frequently examines combined monitoring as a dynamic and developmentally adaptive style that integrates supervision, dialogue, limits, and gradual autonomy. Third, Iranian adolescent samples remain underrepresented in mediation models that integrate social anxiety, parental monitoring, and internet addiction within a single structural framework. Fourth, the direction of associations among social anxiety, parental monitoring, and internet addiction requires further empirical clarification, especially because socially anxious adolescents may both elicit and resist parental monitoring, while problematic internet use may further intensify family conflict and emotional withdrawal. Addressing these gaps can contribute to more precise prevention and intervention strategies by identifying whether improving parental monitoring practices may weaken the pathway from adolescent social anxiety to digital addiction.

The present study aimed to examine the mediating role of parental monitoring styles in the relationship between social anxiety and internet addiction among adolescents.

2. Methods and Materials

2.1. Study Design and Participants

In terms of purpose, the present study was fundamental; in terms of implementation method, it was descriptive; and in terms of design, it was a correlational study using structural equation modeling. The statistical population consisted of students in Zanjan Province during the 2025–2026 academic year. Sampling was performed using cluster random sampling. Accordingly, different schools in the province were first selected as sample clusters, and then students were randomly selected from each school. Kline (2010) recommends 5 to 10 participants for each parameter to be estimated. Accordingly, 220 participants were selected as the sample to ensure adequate statistical power.

The inclusion criteria were as follows: age range of 12 to 18 years, willingness to participate in the study, and no use of specific psychiatric medications. The exclusion criteria included severe disorders, invalid responses, and incomplete completion of the questionnaires.

To conduct this study, the necessary permissions were first obtained from the General Department of Education of Zanjan Province. Subsequently, the researchers referred to District 1 Department of Education in Zanjan. After the necessary coordination, the questionnaire link was created and sent by school principals to educational groups on the schools' Shad platform. To observe research ethics, the objectives and all stages of the study were fully explained alongside the questionnaire link. Participants were asked to respond honestly to the items while being assured of anonymity, confidentiality of information, the right to withdraw from the study, and the fact that their participation was solely intended to contribute to a research project.

2.2. Measures

Young's Internet Addiction Test (IAT): This scale was developed by Kimberly Young in 1998 and is one of the valid instruments for measuring internet addiction. The IAT consists of 20 items, and respondents indicate their level of agreement with each item based on a five-point Likert scale ranging from 1 = rarely to 5 = always. This scale examines four main dimensions: personal and social problems, effects on occupational and academic performance, time management, and emotional dependence. The reliability and validity of this scale have been confirmed in various international and domestic studies. In Young's initial studies, Cronbach's alpha was reported as 0.93, indicating high reliability, and Young (1998) defined the content validity of the instrument based on behavioral addiction criteria. In addition, Wei et al. (2025) examined the psychometric properties of Young's Internet Addiction Test among Chinese university students. The results showed that the scale had acceptable reliability, with Cronbach's alpha and test–retest reliability coefficients higher than 0.70, and its three-factor structure was confirmed through exploratory and confirmatory factor analyses. Sufficient evidence was also obtained for convergent, discriminant, and criterion validity, supporting the validity of using the IAT to assess internet addiction in student populations. In domestic studies, Amiri (2018) reported Cronbach's alpha coefficients of 0.87 and 0.88 for the Persian version, which are considered valid indicators of the reliability of this instrument in the Iranian population. The results of exploratory and confirmatory factor analyses also supported

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the factorial structure of the questionnaire and indicated that the short form of Young's Internet Addiction Test has acceptable psychometric properties in the Iranian population (Amiri, 2018). Moreover, in the study by Mehrazin et al. (2025), the reliability of this instrument was calculated using Cronbach's alpha coefficient as 0.77.

Small and Kerns Parental Monitoring Styles Questionnaire (SKSS): This instrument was developed by Small and Kerns in 1993. The main purpose of developing this questionnaire was to measure parents' awareness of their adolescent children's activities, friends, and whereabouts, as well as to assess the extent to which adolescents inform their parents about their activities and places of movement. This instrument includes 9 items and was designed as a single, one-dimensional subscale. Scoring is based on a Likert scale. This 26-item questionnaire includes active monitoring style, passive monitoring style, and combined monitoring style. Items 3, 6, 9, and 11 are reverse-scored, while the remaining items are scored conventionally on a five-point Likert scale. A score below 25 indicates a passive monitoring style, a score between 25 and 40 indicates a combined style, and a score above 40 indicates an active monitoring style. In the study by Ebrahimi Naseri et al. (2022), Cronbach's alpha coefficient was reported as 0.74.

Social Phobia Inventory (SPIN): This questionnaire was developed in 2000 by Connor et al. in the Department of Psychiatry and Behavioral Sciences at Duke University. The instrument consists of 17 items and measures three main subscales: fear, avoidance, and physiological discomfort. Scoring is based on a five-point Likert scale ranging from 0 to 4, and the respondent specifies how distressing each item was during the past week. The total score ranges from 0 to 68. Scores are interpreted categorically as follows: scores below 20 indicate the absence of social phobia, scores of 21–30 indicate mild social phobia, scores of 31–40 indicate moderate social phobia, scores of 41–50 indicate severe social phobia, and scores of 51 and above indicate very severe social phobia. In the original study conducted on 253 individuals with social phobia and 239 healthy individuals, convergent validity was obtained using a social anxiety questionnaire, with correlations ranging from 0.47 to 0.66. Divergent validity was also confirmed using three measures of general health and physical disability, with correlations ranging from 0.01 to 0.34. Construct validity was confirmed through the instrument's ability to distinguish between individuals with and without social phobia; specifically, the cutoff score was able to significantly differentiate individuals with social phobia from healthy individuals. The original factor analysis indicated a five-factor structure, although preliminary evidence supported both three-factor and five-factor structures. The internal consistency of this instrument was reported to be highly acceptable in the original study, with Cronbach's alpha equal to 0.94 for the total scale and ranging from 0.80 to 0.91 for the subscales. In addition, two-week test–retest reliability showed a correlation coefficient of 0.87, indicating appropriate temporal reliability (Connor et al., 2000). In domestic studies, Nakhai et al. (2022) confirmed the face validity of the questionnaire through psychology experts and calculated its reliability using Cronbach's alpha coefficient as 0.68. In the study by Rokhsari and Faqirpour (2025), the reliability of this instrument was also calculated using Cronbach's alpha coefficient as 0.78.

2.3. Data Analysis

After data collection, analysis was conducted using structural equation modeling in SPSS version 24 and AMOS version 25.

3. Findings and Results

The descriptive findings of the research variables, including social anxiety and its dimensions, parental monitoring styles and their dimensions, and internet addiction, are reported in Table 1.

Table 1

Descriptive Statistics

Variables	Dimension	Maximum Score	Minimum Score	Mean	Standard Deviation	Skewness	Kurtosis
Social anxiety	Fear	28	4	14.2	5.6	0.25	-0.18
	Avoidance	24	3	11.8	5.0	0.32	-0.12
	Physiological symptoms	16	2	8.5	3.4	0.38	0.20
	Total	50	11	34.5	11.8	0.28	-0.22
Parental monitoring styles	Active	40	12	27.3	5.4	-0.20	0.30
	Passive	20	10	14.5	2.8	0.42	-0.15
	Combined	35	14	24.8	4.9	0.26	0.22
	Total	55	36	66.6	11.3	-0.17	0.28

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Internet addiction	Total	80	30	52.5	11.0	0.48	0.75	

Based on the descriptive statistics presented for 220 students, the findings show that the mean scores of social anxiety (34.5 out of 50) and internet addiction (52.5 out of 80) in the studied sample were relatively high and within the warning range, respectively. Meanwhile, the mean score of active parental monitoring style (27.3 out of 40) was lower than those of the passive style (14.5 out of 20) and the combined style (24.8 out of 35). This pattern indicates that the parents of these students mainly use passive or inconsistent monitoring, and the desirable style based on dialogue and participation is used less frequently. The standard deviation values indicate that the greatest dispersion was related to social anxiety (11.8), whereas the lowest dispersion was related to passive style (2.8), reflecting high variability among students in terms of anxiety symptoms and relatively high homogeneity among parents in passive monitoring style. In addition, all skewness values, ranging from -0.48 to +0.48, and kurtosis values, ranging from -0.30 to +0.75, fell within the acceptable range for normal distribution, thereby allowing the use of parametric tests to examine the mediating role. Overall, these descriptive findings are consistent with the research hypothesis and indicate that the predominance of passive and combined parental monitoring styles, along with the lack of active monitoring, is associated with an increase in both pathological variables, namely social anxiety and internet addiction, and that the necessary conditions for testing the mediation model are met.

Table 2

Correlation Coefficients of the Variables

Variables	Dimension	1	2	3	4	5	6	7	8	9
Social anxiety	1. Fear	1								
	2. Avoidance	0.68**	1							
	3. Physiological symptoms	0.54**	0.51**	1						
	4. Total	0.87**	0.84**	0.72**	1					
Parental monitoring styles	5. Active	-0.34**	-0.29**	-0.22**	-0.35**	1				
	6. Passive	0.41**	0.38**	0.30**	0.43**	-0.49**	1			
	7. Combined	0.23**	0.20**	0.17*	0.24**	-0.32**	0.38**	1		
	8. Total	-0.12	-0.10	-0.07	-0.12	0.74**	0.71**	0.56**	1	
Internet addiction	9. Total	0.45**	0.42**	0.35**	0.48**	-0.41**	0.53**	0.31**	-0.15	1

Note. *p < .05. **p < .01.

Based on the correlation findings, all components of social anxiety had positive and significant correlations with one another, with r values ranging from 0.51 to 0.87, p < .01. In addition, active monitoring style showed significant negative correlations with all components of social anxiety, with r values ranging from -0.22 to -0.35, p < .01, and with internet addiction, r = -0.41, p < .01. In contrast, passive monitoring style had significant positive correlations with total social anxiety, r = 0.43, p < .01, and internet addiction, r = 0.53, p < .01. The strongest correlation among the main variables was related to the relationship between passive monitoring style and internet addiction, r = 0.53. This correlation pattern provides the necessary prerequisite for testing the mediating role of monitoring styles in the relationship between internet addiction and social anxiety.

Table 3

Fit Indices of the Model of the Indirect Effect of Social Anxiety on Internet Addiction Through Parental Monitoring Styles

Fit Indices	X^2	df	X^2/df	Sig.	RMSEA	GFI	IFI	NFI	AGFI	NNFI	CFI
Index value	148.32	87	1.72	0.021	0.058	0.92	0.88	0.90	0.93	0.94	0.96
Desired values	—	—	< 3	> .05	< .08	> .90	> .80	> .90	> .90	> .90	

The findings related to the goodness-of-fit indices of the structural model showed that the chi-square to degrees of freedom ratio (X^2/df) was 1.72, which is lower than the desirable value of 3 and indicates a good model fit. Although the significance value of chi-square was lower than .05 (Sig. = 0.021), this is expected due to the high sensitivity of this

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index to sample size (N = 220) and does not seriously challenge the model fit. The RMSEA value was 0.058, which falls within the acceptable range of less than 0.08 and indicates a relatively low model fit error. The GFI value of 0.92 and the CFI value of 0.96 were evaluated as good and excellent, respectively. In addition, the values of IFI = 0.88, NFI = 0.90, AGFI = 0.93, and NNFI = 0.94 were within acceptable or desirable ranges. Overall, all goodness-of-fit indices were within desirable or acceptable ranges, and the research model had an appropriate fit with the data. Therefore, the proposed model concerning the mediating role of parental monitoring styles in the relationship between internet addiction and social anxiety was confirmed based on the data collected from 220 students and can serve as a basis for interpreting the structural relationships among the variables.

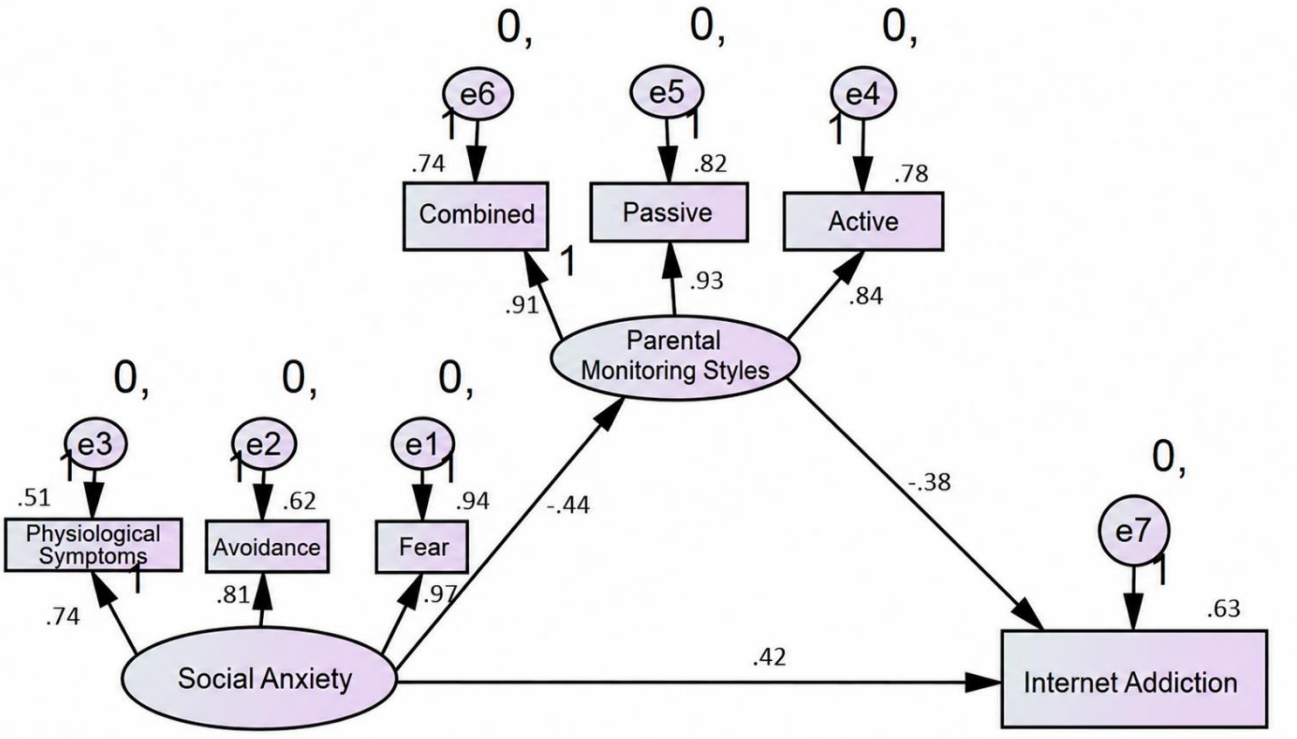
Table 4

Analysis of the Direct Effects of Variables on One Another

Path	β	Standard Error (S.E.)	t	p	Interpretation
Social anxiety → Internet addiction	0.42	0.065	6.46	p < .001	Direct, positive, and significant effect
Monitoring styles → Internet addiction	-0.38	0.058	-6.55	p < .001	Direct, negative, and significant effect
Social anxiety → Monitoring style	-0.44	0.062	-7.10	p < .001	Direct, negative, and significant effect

Figure 1

Conceptual Model of the Study With Standardized Coefficients



The results of the path analysis of direct effects among the variables (Table 4) showed that social anxiety had a direct, positive, and significant effect on internet addiction, β = 0.42, t = 6.46, p < .001. In other words, a one-standard-deviation increase in social anxiety was associated with a 0.42-standard-deviation increase in internet addiction. In addition, parental monitoring styles had a direct, negative, and significant effect on internet addiction, β = -0.38, t = -6.55, p < .001. This means that the more desirable the parental monitoring style is, particularly the more active the monitoring, the lower the level of internet addiction. Moreover, social anxiety had a direct, negative, and significant effect on parental monitoring style, β = -0.44, t = -7.10, p < .001. This indicates that as students' social anxiety increases, parental monitoring style shifts toward a more

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passive and less desirable form of monitoring. All direct effects were significant at the .001 level.

Table 5

Bootstrap Results for the Indirect Effects of Variables

Variable Path	Indirect Effect	Standard Error	Lower Bound	Upper Bound
Social anxiety → Monitoring styles → Internet addiction	0.17	0.038	0.102	0.248

To test the significance of the indirect effect, the bootstrap method was used. The findings showed that the indirect effect of social anxiety on internet addiction through parental monitoring styles, $\beta = 0.17$, with a confidence interval ranging from 0.102 to 0.248 and a standard error of 0.038, did not include zero. Therefore, parental monitoring styles play a significant mediating role in the relationship between social anxiety and internet addiction, $p < .05$. This finding indicates that social anxiety leads to increased internet addiction among students by weakening desirable parental monitoring styles, specifically through a tendency toward passive and controlling monitoring.

4. Discussion and Conclusion

The present study examined the mediating role of parental monitoring styles in the relationship between social anxiety and internet addiction among adolescents. The findings supported the proposed structural model and showed that social anxiety had a positive and significant direct effect on internet addiction, parental monitoring styles had a negative and significant direct effect on internet addiction, and social anxiety had a negative and significant direct effect on parental monitoring styles. Moreover, the bootstrap results confirmed that parental monitoring styles significantly mediated the relationship between social anxiety and internet addiction. These results indicate that adolescents with higher levels of social anxiety are more likely to show problematic patterns of internet use, and that this association is partly explained by the weakening of optimal parental monitoring. In other words, social anxiety appears to increase adolescents' vulnerability to internet addiction not only through individual emotional and behavioral mechanisms but also through family-level regulatory processes. The acceptable model fit indices further suggest that the proposed mediation model provides a suitable explanatory framework for understanding how social anxiety, parental monitoring, and internet addiction are structurally connected in adolescence.

The descriptive results showed relatively elevated levels of social anxiety and internet addiction among the participating students. This pattern is theoretically meaningful because adolescence is a developmental period in which sensitivity to social evaluation, peer comparison, belongingness needs, and autonomy-seeking behaviors intensify. When adolescents experience fear, avoidance, and physiological symptoms in social contexts, online environments may become psychologically attractive because they provide controllability, reduced immediacy of interpersonal feedback, and opportunities for selective self-presentation. This interpretation is consistent with evidence showing that social anxiety is a significant adolescent mental health concern and may be associated with avoidance, loneliness, emotional distress, and reduced social functioning (Ranta et al., 2024; Salari et al., 2024). It is also aligned with broader epidemiological evidence indicating that anxiety-related disorders often emerge early in life and may shape later patterns of coping, avoidance, and impairment (Kessler et al., 2005). Therefore, the elevated scores observed in the present sample suggest that problematic internet use may function partly as an avoidant coping strategy for adolescents who experience face-to-face social interaction as threatening.

The first main finding showed that social anxiety had a positive and significant direct effect on internet addiction. This result is consistent with the compensatory internet use perspective, according to which adolescents who experience distress, loneliness, or interpersonal insecurity may turn to online spaces to regulate negative emotions or compensate for unmet social needs. Online interaction allows socially anxious adolescents to reduce exposure to immediate judgment, edit their responses, manage self-presentation, and avoid spontaneous interpersonal demands. Although these features may provide temporary relief, repeated reliance on them can strengthen avoidance and increase dependence on digital interaction. This finding is supported by longitudinal evidence showing that depression and social anxiety predict subsequent symptoms of internet use

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disorder among children and adolescents (Leo et al., 2021). It is also consistent with findings that anxiety, depression, and fear of missing out are associated with problematic smartphone use and other maladaptive forms of digital engagement (Elhai et al., 2020). Similarly, studies have shown that subjective smartphone screen time and comorbid mental health problems are interrelated, suggesting that problematic digital involvement often co-occurs with psychological distress rather than representing a purely behavioral issue (Noel et al., 2022).

The positive path from social anxiety to internet addiction is also compatible with Iranian findings showing that social anxiety is associated with digital and behavioral vulnerabilities. Hasanzadeh Banakar and Nosrati reported that perfectionism, social anxiety, and loneliness were related to internet addiction, with procrastination playing a mediating role, suggesting that socially anxious individuals may become vulnerable to maladaptive online use through avoidance-based self-regulatory processes (Hasanzadeh Banakar & Nosrati, 2024). Rokhsari and Faghirpour also showed that social anxiety mediated the relationship between virtual social-network addiction and cyberbullying among adolescents, indicating that social anxiety may be embedded in broader patterns of problematic online interaction (Rokhsari & Faghirpour, 2025). In addition, research on emotion control, positive thinking, and social anxiety among students suggests that emotional regulation deficits may intensify socially anxious responses and increase vulnerability to maladaptive coping strategies (Nakhaei et al., 2022). The present finding extends this literature by showing that social anxiety is not merely correlated with internet addiction but has a significant structural effect in a model that also accounts for parental monitoring.

The second main finding showed that parental monitoring styles had a negative and significant direct effect on internet addiction. This means that more desirable monitoring styles were associated with lower levels of internet addiction. Theoretically, parental monitoring can reduce problematic internet use by increasing adolescents' awareness of digital risks, regulating time spent online, encouraging balanced offline activities, strengthening self-regulation, and creating opportunities for dialogue about online experiences. This finding is consistent with systematic review and meta-analytic evidence indicating that parental mediation is generally negatively associated with problematic media use among children and adolescents (Fam et al., 2023). It is also aligned with a systematic review showing that parental mediation practices are linked to adolescents' problematic online screen use, although the effectiveness of these practices depends on their form, consistency, and relational context (Nielsen et al., 2019). Thus, the present study supports the view that parental monitoring can function as a protective factor against adolescent internet addiction when it is applied as a constructive and developmentally appropriate regulatory process.

This finding is also consistent with research emphasizing the importance of parents' rules, role modeling, and parent–child relationships in adolescents' problematic mobile phone involvement (Hefner et al., 2019). Parental influence is not limited to explicit restriction; it also includes modeling healthy digital habits, establishing family norms, maintaining emotional availability, and communicating about online risks. Stockdale et al. showed that parent and child technoference is associated with socioemotional and behavioral outcomes, suggesting that family digital practices shape adolescents' emotional and behavioral adaptation (Stockdale et al., 2018). Similarly, Gong et al. found that parental smartphone addiction affects adolescent smartphone addiction through the parent–child relationship and parental bonding, indicating that parental behavior and relational quality operate together in the intergenerational transmission of digital habits (Gong et al., 2022). Therefore, the negative direct effect of parental monitoring on internet addiction in the present study can be interpreted as evidence that effective parental involvement provides both behavioral boundaries and relational support.

The third main finding showed that social anxiety had a negative and significant direct effect on parental monitoring styles. This result suggests that as adolescents' social anxiety increases, parental monitoring may become less optimal, less active, or less adaptive. One explanation is that socially anxious adolescents may engage in less disclosure, avoid conversations with parents, and conceal online behaviors because they fear criticism, restriction, or misunderstanding. In response, parents may either withdraw from active involvement or rely on passive and inconsistent monitoring. Another possibility is that social anxiety creates emotional distance in the parent–adolescent relationship, thereby reducing opportunities for collaborative rule-setting and open discussion about internet use. This interpretation is consistent with research showing that family communication is a significant protective factor in adolescent risk contexts (Buelga et al., 2024). It is also compatible with studies showing that parental conflict and parental control are mechanisms involved in high school students' internet

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addiction, particularly when parental regulation occurs in emotionally strained family contexts (Deng et al., 2020). Therefore, adolescent social anxiety may weaken monitoring not only because adolescents hide their behavior but also because family communication becomes less open and less reciprocal.

The mediating effect of parental monitoring styles was one of the most important findings of the study. The significant indirect effect showed that social anxiety increases internet addiction partly through its negative influence on parental monitoring styles. This means that parental monitoring is not simply an independent predictor of internet addiction; rather, it is part of the mechanism through which adolescents' emotional vulnerability becomes translated into problematic digital behavior. This finding is closely aligned with Ebrahimi-Naseri et al., who demonstrated structural relationships among mental health, social network addiction, and parental monitoring styles among secondary-school students (Ebrahimi-Naseri et al., 2022). It also supports more recent mediated models showing that parental mediation can influence smartphone addiction through intermediate psychological and behavioral pathways (Chen et al., 2025). Similarly, Mehrazin et al. found that parenting style and psychological control predicted internet addiction through media literacy and cognitive emotion regulation, suggesting that family processes affect digital addiction through regulatory and cognitive mechanisms (Mehrazin et al., 2025). The present study adds to this evidence by identifying parental monitoring styles as a significant mediator between social anxiety and internet addiction.

Among the monitoring styles, the combined style was identified as the most effective approach in reducing internet addiction. This is an important practical and theoretical finding because it suggests that neither strict restriction nor passive observation is sufficient on its own. A combined monitoring style integrates active dialogue, temporary limitations, parental awareness, and gradual delegation of responsibility. Such a style is developmentally appropriate for adolescence because it respects adolescents' growing need for autonomy while maintaining necessary supervision and emotional support. This finding is consistent with digital parenting research emphasizing adaptive mediation rather than rigid prohibition (Arya & Sreejith, 2024; Krantz et al., 2026). It also corresponds with studies showing that parental mediation strategies differ across contexts and that effective digital parenting depends on parents' confidence, knowledge, demographic background, and awareness of children's digital activities (Nasution et al., 2025; Soyoof et al., 2025). Therefore, the combined style may be especially protective because it prevents both extremes: overcontrol that may provoke secrecy and under-monitoring that may allow compulsive use to develop unchecked.

The findings also need to be interpreted in light of the broader educational and psychosocial consequences of problematic digital use. Adolescents' digital use profiles have been shown to differ in relation to academic performance, stress, and parental mediation, indicating that the quality and regulation of technology use are more important than access alone (Diaz Lopez et al., 2025). Excessive smartphone and internet use can impair academic engagement, reduce concentration, disrupt sleep, and intensify stress, especially when adolescents rely on digital platforms to avoid offline demands. Lin et al. also showed that smartphone use is related to academic performance in complex ways, suggesting that digital engagement can be beneficial or harmful depending on patterns of use and self-regulation (Lin et al., 2021). In the present study, parental monitoring may have reduced internet addiction by helping adolescents organize use, avoid excessive engagement, and maintain balance between online and offline responsibilities. This interpretation is also consistent with evidence linking loneliness and self-regulation to smartphone addiction and its consequences (Mahapatra, 2019).

The present findings support contemporary arguments that adolescent digital problems should not be addressed only through restrictive school or policy-level approaches. Weiss and Bonell argued that the relationship between smartphone use and mental health requires approaches that go beyond school restriction policies and consider broader psychosocial mechanisms (Weiss & Bonell, 2025). The present study reinforces this position by showing that family-level monitoring and adolescent social anxiety must be included in explanatory and preventive models. At the same time, measurement and methodological considerations remain important. The use of validated instruments such as Young's Internet Addiction Test is essential for distinguishing problematic use from ordinary digital engagement, and Persian validation evidence supports the psychometric utility of this measure (Amiri, 2018). Moreover, because mediation models depend on indirect effect testing and confidence interval interpretation, appropriate inferential methods such as bootstrapping strengthen the validity of conclusions about mediation pathways (Lee et al., 2023). Therefore, the present study contributes both conceptually and methodologically by

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testing a structurally supported mediation model in an adolescent sample.

Overall, the findings suggest that internet addiction among adolescents should be understood as the outcome of interacting emotional and family processes. Social anxiety increases the likelihood of problematic internet use because online environments provide temporary relief from social threat, but this relief can reinforce avoidance and dependence. Parental monitoring reduces internet addiction when it is active, supportive, and balanced, but social anxiety may weaken such monitoring by reducing adolescent disclosure and disrupting parent–child communication. The significant mediating effect indicates that parental monitoring styles are a meaningful mechanism linking social anxiety to internet addiction. This conclusion is consistent with the broader literature on parental mediation, smartphone addiction, social anxiety, digital parenting, and adolescent mental health (Cicek et al., 2021; McGinty et al., 2020; Shah Hosseini et al., 2025; Valkenburg et al., 2009). Accordingly, interventions aimed at reducing adolescent internet addiction should not focus solely on limiting access to technology; they should also reduce social anxiety, improve parent–adolescent communication, and teach parents how to implement combined monitoring strategies that balance supervision with adolescent autonomy.

One limitation of the present study is its cross-sectional and correlational design, which prevents definitive causal conclusions about the direction of relationships among social anxiety, parental monitoring styles, and internet addiction. Although the proposed model was theoretically grounded and statistically supported, it remains possible that internet addiction also increases social anxiety over time or that problematic digital use reduces the quality of parent–adolescent communication and monitoring. Another limitation concerns the reliance on self-report questionnaires, which may be affected by social desirability, recall bias, or adolescents' subjective interpretation of parental monitoring. The study was also conducted among students in one province, which may limit the generalizability of the findings to adolescents in other cultural, socioeconomic, or educational contexts. In addition, the study did not separately examine possible moderating variables such as gender, age, family socioeconomic status, parental education, type of internet use, daily screen time, or specific online activities such as gaming, social networking, or educational use.

Future research should use longitudinal and experimental designs to clarify the temporal and causal relationships among social anxiety, parental monitoring styles, and internet addiction. Longitudinal studies can determine whether social anxiety predicts later changes in internet addiction through changes in parental monitoring or whether reciprocal pathways exist across time. Future studies should also examine gender and developmental differences, because younger and older adolescents may respond differently to parental monitoring strategies. It is recommended that future research distinguish among different forms of digital engagement, including social media use, online gaming, streaming, academic internet use, and smartphone-based communication, because each may have different psychological functions for socially anxious adolescents. In addition, multi-informant designs using adolescent, parent, and teacher reports would provide a more comprehensive assessment of monitoring practices and digital behavior. Qualitative studies could also explore how adolescents perceive parental monitoring, why socially anxious adolescents may hide online activity, and which forms of parental involvement are experienced as supportive rather than controlling.

The practical implication of the present study is that prevention and intervention programs for adolescent internet addiction should include both psychological and family-based components. School counselors and mental health professionals should screen for social anxiety among adolescents who show excessive internet use, because problematic digital engagement may reflect underlying avoidance, fear of evaluation, or emotional distress. Parent training programs should focus on the combined monitoring style, including open communication, collaborative rule-setting, reasonable time limits, monitoring of online activities, and gradual transfer of responsibility to adolescents. Parents should be taught to avoid both extreme restriction and passive neglect, and instead use supportive supervision that preserves trust while maintaining clear boundaries. Schools can also hold digital literacy workshops for parents and students to strengthen awareness of online risks, healthy screen habits, and emotional self-regulation. Finally, interventions should encourage adolescents to develop offline social confidence, balanced routines, and adaptive coping strategies so that internet use becomes a regulated tool rather than a substitute for social functioning.

Authors' Contributions

All authors significantly contributed to this study.

Declaration

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In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

In this study, to observe ethical considerations, participants were informed about the goals and importance of the research before the start of the study and participated in the research with informed consent.

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