

Examining the Relationship Between Social Media Addiction and Academic Burnout with the Mediating Role of Social Anxiety and Loneliness Among Upper Secondary School Students

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ABSTRACT

Objective: The present study aimed to examine the relationship between social media addiction and academic burnout and to investigate the mediating roles of social anxiety and loneliness among upper secondary school students.

Methods and Materials: This study employed a descriptive–correlational design using structural equation modeling. The statistical population consisted of all upper secondary school students in Tehran during the second semester of the 2024–2025 academic year, from which 320 students were selected through multistage cluster random sampling. Data were collected using the Academic Burnout Inventory, Social Media Addiction Scale, Social Anxiety Scale for Adolescents, and the UCLA Loneliness Scale. After verifying statistical assumptions including normality and absence of multicollinearity, data were analyzed using SPSS and AMOS software. Model fit was evaluated using indices including χ^2/df , CFI, NFI, TLI, and RMSEA.

Findings: Structural equation modeling indicated that social media addiction had a significant direct positive effect on academic burnout ($\beta = 0.163$, $p < 0.05$). Social media addiction also significantly predicted social anxiety ($\beta = 0.625$, $p < 0.001$) and loneliness ($\beta = 0.474$, $p < 0.001$). Both social anxiety ($\beta = 0.407$, $p < 0.001$) and loneliness ($\beta = 0.216$, $p < 0.001$) had significant positive effects on academic burnout. Bootstrap analysis confirmed significant indirect effects of social media addiction on academic burnout through social anxiety ($\beta = 0.254$) and loneliness ($\beta = 0.102$). The total effect of social media addiction on academic burnout reached 0.519. The model demonstrated good fit ($\chi^2/df = 1.138$, CFI = 0.998, NFI = 0.980, RMSEA = 0.021), explaining 41% of the variance in academic burnout.

Conclusion: The findings indicate that social media addiction contributes to academic burnout both directly and indirectly through increased social anxiety and loneliness. These results highlight the importance of addressing students' emotional and interpersonal vulnerabilities alongside regulating social media use in order to reduce academic burnout and promote psychological well-being in adolescents.

Keywords: Academic burnout, social media addiction, social anxiety, loneliness, upper secondary school students

1. Introduction

Academic burnout has become a salient concern in contemporary educational systems, particularly

during late adolescence when academic demands intensify and developmental challenges converge. Burnout in students is commonly conceptualized as a multidimensional syndrome characterized by emotional exhaustion related to

learning demands, a cynical or detached attitude toward schoolwork, and a reduced sense of academic efficacy. This conceptualization parallels broader burnout frameworks and has been adapted to academic contexts to capture the progressive depletion of students' motivational and emotional resources in response to chronic educational stressors (Amelia, 2022; Demerouti & Bakker, 2025; Salmela-Aro et al., 2009; Salmela-Aro & Näätänen, 2005; Schaufeli et al., 2002). Empirically, academic burnout is not merely a transient state of fatigue; it is associated with impaired engagement and diminished academic outcomes at scale, as shown in meta-analytic evidence linking burnout to lower academic achievement across large samples (Madigan & Curran, 2021). In high-pressure school environments, burnout can therefore be viewed as both an individual mental health risk and a systemic educational performance issue.

Alongside traditional academic stressors, the digital ecology of adolescents' lives has evolved rapidly, with social media platforms occupying a central role in daily routines, identity exploration, peer interaction, and emotion regulation. While social networking can provide informational and interpersonal benefits, a growing body of research emphasizes that compulsive or dysregulated use may resemble behavioral addiction patterns, featuring salience, mood modification, tolerance, withdrawal-like distress, conflict, and relapse tendencies (Amirthalingam & Khera, 2024; Griffiths, 2005; Griffiths, 2018; Schou Andreassen & Pallesen, 2014). From a psychopathology perspective, diagnostic frameworks have increasingly acknowledged that problematic engagement with rewarding behaviors can share mechanisms with substance-related disorders, including impaired control and persistent use despite harm (American Psychiatric, 2013). Although "social media addiction" is not uniformly classified as a formal disorder, the construct is widely employed in psychological and educational research to describe maladaptive patterns of social media use that interfere with functioning and well-being (Andreassen et al., 2016; Sahin, 2018).

Recent evidence suggests that problematic digital engagement is meaningfully tied to academic burnout in student populations, though the strength and mechanisms of this relationship can vary by context, platform affordances, and developmental stage. For example, studies have reported that high levels of social media use or addiction-like patterns are associated with greater burnout symptoms among students, implying that persistent connectivity, attention fragmentation, upward social comparison, and sleep

disruption may contribute to exhaustion and disengagement (Feng et al., 2025; Iqbal et al., 2025; Santos & Alves, 2025). Related lines of inquiry on adjacent digital behaviors—such as smartphone or mobile phone addiction—also show consistent links to academic burnout, and they highlight intermediary processes such as technology-related conflict or stress that may transmit digital overuse effects into the academic domain (Yang et al., 2024; Yao et al., 2025). In Iranian student samples, similar patterns have been observed, strengthening the relevance of examining digital addiction–burnout pathways within local educational and cultural settings (Rahmani & Amani, 2025). Collectively, these findings suggest that digital overuse is not only a leisure-time phenomenon; it can plausibly function as a chronic demand that competes with academic recovery, undermines self-regulation, and intensifies emotional strain—core pathways emphasized in contemporary burnout research (Demerouti & Bakker, 2025).

However, direct associations between social media addiction and academic burnout do not fully explain why some adolescents transition from heavy use to clinically meaningful academic exhaustion while others do not. Clarifying mediating mechanisms is thus essential for both theory and prevention. Two psychological constructs—social anxiety and loneliness—have strong theoretical plausibility and empirical support as intervening variables in the digital behavior–burnout relationship during adolescence. Social anxiety disorder is characterized by intense fear of negative evaluation, heightened self-focused attention, and avoidance or distress in social situations, often emerging in adolescence and impacting academic participation and peer functioning (Leichsenring & Leweke, 2017). Social media environments can simultaneously offer perceived safety (e.g., reduced face-to-face exposure) and amplify anxiety (e.g., evaluation concerns, visibility of social metrics, fear of missing out), potentially reinforcing cycles of avoidance and reassurance-seeking that resemble addictive engagement patterns (Amirthalingam & Khera, 2024; Griffiths, 2018). In parallel, loneliness—understood as the subjective distress arising from perceived deficits in social connection or relationship quality—represents a distinct construct from objective social isolation, with robust links to mental health outcomes and functional impairment (Gierveld et al., 2018; Lim et al., 2020). Adolescents may increase online engagement to compensate for unmet belonging needs, yet heavy online interaction may not satisfy deeper relational needs and can even intensify

perceived disconnection, thereby sustaining loneliness (Hawkey et al., 2008; Heu et al., 2021).

The mediating role of social anxiety is supported by evidence that anxiety-related vulnerabilities can shape digital coping and academic adjustment. Social anxiety has been linked to academic burnout in student samples, and intermediary traits such as emotional processing difficulties can strengthen this pathway, implying that anxious students may experience heightened academic depletion due to sustained threat appraisal and reduced adaptive coping (Moradi & Hasanzadeh Baghi, 2024). Moreover, anxiety-related dispositions and interpersonal fears have been shown to predict academic burnout alongside loneliness, suggesting that socio-emotional vulnerabilities operate as resource drains that erode academic efficacy and engagement over time (Pourehsan et al., 2022). Importantly, Iranian research focusing on adolescents indicates that social anxiety and loneliness are salient predictors of problematic internet-related behaviors, reinforcing the view that anxious students may rely on online contexts for regulation while simultaneously becoming trapped in patterns that impair offline functioning (Kermani Mamazandi & Abotorabi, 2024). When such patterns coincide with the high performance pressures typical of upper secondary education, the risk of academic burnout may increase through both physiological arousal (stress) and cognitive-emotional mechanisms (worry, self-criticism, avoidance).

Loneliness, in turn, has been repeatedly associated with academic burnout and related academic dysfunction. Studies have linked loneliness to burnout directly and in interaction with motivational and self-regulatory factors, indicating that loneliness may undermine engagement and amplify exhaustion by reducing perceived support and increasing emotional strain (Shahbazian Khonigh et al., 2018; Singh et al., 2021). Research in Iranian students has also connected loneliness to patterns of technology use and impulsivity, suggesting a broader self-regulatory and interpersonal vulnerability profile that could predispose adolescents to both excessive digital engagement and academic depletion (Naderi & Haghshenas, 2009). Cross-national evidence further indicates that loneliness is shaped by cultural and relational contexts, making it particularly important to examine in specific sociocultural settings rather than assuming uniform processes across societies (Heu et al., 2021). In university samples, including those in Turkey, social media addiction has been associated with social and emotional loneliness, supporting the plausibility of loneliness as both an antecedent and a consequence of

addictive digital use patterns (Uyaroğlu et al., 2022). These results align with theoretical accounts that emphasize the reciprocal nature of loneliness and maladaptive coping: loneliness increases reliance on compensatory behaviors, while those behaviors can, in certain contexts, deepen loneliness by displacing in-person relationships or increasing negative social comparison (Gierveld et al., 2018; Lim et al., 2020).

A growing stream of contemporary research has begun to integrate these constructs into more comprehensive explanatory models linking digital addictions to academic burnout and mental health. Network and co-occurrence analyses among student populations indicate that social media addiction is embedded within broader mental health symptom clusters, and that academic burnout can be intertwined with these clusters in clinically meaningful ways (Andreassen et al., 2016; Feng et al., 2025). Similarly, recent work on adolescent smartphone addiction and academic burnout highlights that digital stressors can operate alongside psychological flourishing or protective resources, indicating the value of testing mediational pathways rather than relying on simple bivariate associations (Yao et al., 2025). In parallel, evidence from diverse student groups suggests that burnout is commonly comorbid with depressive symptoms and suicidal ideation in high-demand training environments, underscoring the urgency of early identification and prevention of burnout precursors even before entry into tertiary education (Deeb et al., 2018; Kadhum et al., 2022). Within this broader landscape, social media burnout and internet addiction have also been modeled as interrelated phenomena shaped by personality and self-concept, supporting the idea that individual differences interact with online environments to produce burnout-like outcomes (Santos & Alves, 2025). Iranian evidence also points to pathways from internet addiction to academic burnout through interpersonal patterns of communication, suggesting that relational processes are not peripheral but central to how digital behaviors translate into academic exhaustion (Rahmani & Amani, 2025).

From an intervention and prevention standpoint, identifying mediators has practical implications because social anxiety and loneliness are modifiable targets through evidence-based psychological interventions and school-based supports. Social anxiety disorder is treatable through established therapeutic approaches, and prevention frameworks often emphasize skill-building, cognitive restructuring, exposure-based methods, and interpersonal effectiveness to reduce avoidance and threat-based

processing (Leichsenring & Leweke, 2017). Loneliness can be addressed through multi-level strategies that target social cognition, relationship building, and community or school connectedness (Lim et al., 2020). Additionally, environmental and lifestyle factors that support mental health may indirectly buffer burnout-related pathways; for example, exposure to greenspace has been associated with beneficial health outcomes, suggesting a potential protective context for stress reduction and emotional recovery in youth populations (Twohig-Bennett & Jones, 2018). Although such contextual variables are not always included in structural models, they strengthen the rationale for a comprehensive approach that combines behavioral, psychological, and environmental components.

For rigorous empirical modeling, valid and reliable measurement tools are essential. Social media addiction is commonly measured using standardized scales developed for adolescent and student populations, with evidence supporting factorial validity and reliability (Sahin, 2018; Schou Andreassen & Pallesen, 2014). Academic burnout measurement in students is frequently based on the School Burnout Inventory tradition and related instruments, with confirmatory evidence supporting the three-component structure in different samples, including Iranian high school populations (Badri Gargari et al., 2012; Salmela-Aro et al., 2009; Salmela-Aro & Näätänen, 2005). Social anxiety measurement in adolescents similarly benefits from validated scales with demonstrated psychometric adequacy in Persian adaptations and factor-analytic examinations (Khodaei et al., 2011). The availability of these instruments allows for structural equation modeling tests of direct and indirect effects with acceptable measurement precision, which is particularly important when studying mediation pathways in adolescent samples.

Despite the accumulation of findings, there remains a need for integrative models that simultaneously examine (a) the direct effect of social media addiction on academic burnout and (b) the indirect effects transmitted through core socio-emotional vulnerabilities such as social anxiety and loneliness, especially in upper secondary school contexts where academic competition, identity consolidation, and peer evaluation pressures are pronounced. Recent Iranian research has explicitly emphasized the predictive roles of social anxiety and loneliness in social media addiction, including models where emotion regulation processes operate as intervening mechanisms, highlighting the clinical and educational relevance of these constructs among Tehran high school students (Agajanloo, 2025). At the same time,

international studies continue to document that academic burnout is meaningfully tied to digital behavior patterns and to socio-emotional distress, reinforcing the cross-context importance of testing coherent mediation models rather than isolated associations (Feng et al., 2025; Iqbal et al., 2025; Malakcioglu, 2024; Yang et al., 2024). Furthermore, conceptual progress in burnout science has called for revitalized models that are sensitive to changing work-and-study ecologies, including the digital transformation of learning and social life, making adolescent-focused investigations timely and theoretically aligned with current directions in the field (Demerouti & Bakker, 2025).

Accordingly, the aim of this study was to examine the relationship between social media addiction and academic burnout, with the mediating roles of social anxiety and loneliness, among upper secondary school students.

2. Methods and Materials

2.1. Study Design and Participants

The present study was designed using a descriptive–correlational approach. The statistical population consisted of all upper secondary school students, from whom a sample of 320 participants was selected through multistage cluster random sampling based on Klein’s (2013) recommendation. Inclusion criteria included willingness to participate and enrollment in upper secondary education, whereas exclusion criteria consisted of incomplete questionnaires and unwillingness to continue participation. Questionnaires measuring the four main variables were administered using a paper-and-pencil format. Prior to completion, participants were assured that their responses would remain completely confidential and were instructed to answer all questions carefully. The researcher was physically present during the data collection process and provided necessary explanations when required. After the completion of data collection, responses were analyzed using appropriate statistical tests to examine correlations among variables.

2.2. Measures

The Academic Burnout Inventory, developed by Salmela-Aro and Näätänen (2005), was designed to assess students’ academic burnout and consists of 15 items across three subscales: emotional exhaustion (Items 1, 4, 7, 10, 13), cynicism (Items 2, 5, 8, 11), and efficacy (Items 3, 6, 9, 12, 14, 15). Scoring is based on a 7-point Likert scale ranging from 0 to 6, yielding a total score between 0 and 90. High

scores in exhaustion and cynicism combined with low efficacy scores indicate academic burnout. Previous studies, including Salmela-Aro et al. (2009) and Boles et al. (2000), reported satisfactory reliability for this instrument. Badri Gargari et al. (2012) reported a Cronbach's alpha coefficient of 0.86 for the total scale and values ranging from 0.77 to 0.84 for the subscales. Discriminant validity was supported through a significant negative correlation with motivational engagement in learning.

The Social Media Addiction Scale, developed by Sahin (2018), was designed to assess social media addiction among individuals aged 12–21 years and includes 29 items across four subscales: virtual tolerance (Items 1–5), virtual communication (Items 6–14), virtual problems (Items 15–23), and virtual information (Items 24–29). Responses are rated on a 5-point Likert scale (1 to 5), with total scores ranging from 29 to 145; higher scores indicate greater levels of addiction. Sahin (2018) assessed reliability using Cronbach's alpha, the Guttman split-half coefficient, and the Spearman–Brown coefficient, reporting values between 0.74 and 0.93 for the subscales and total scale. Content validity was confirmed through expert evaluation. Shirazi et al. (2023) reported Cronbach's alpha coefficients between 0.777 and 0.805 for the subscales and very high test–retest reliability, indicating strong temporal stability.

The Social Anxiety Scale for Adolescents, developed by Paklek (1997), was used to measure social anxiety among adolescents and consists of 28 items in two subscales: fear of negative evaluation and social perception (Items 2, 4, 5, 7, 8, 10, 12, 14, 15, 16, 18, 21, 25, 26, 27) and social avoidance and distress in social encounters (Items 1, 3, 6, 9, 11, 13, 17, 19, 20, 22, 23, 24, 28). Responses are scored on a 5-point Likert scale (1 to 5), with several items (1, 3, 9, 11, 13, 17, 20, 22, 28) reverse scored. Total scores range from 28 to 140, with higher scores indicating higher levels of social anxiety. Paklek (1997) reported Cronbach's alpha coefficients of 0.89 and 0.79 for the subscales. Khodaei et al. (2011) reported overall reliability of 0.83 and acceptable test–retest reliability coefficients ranging from 0.60 to 0.77. Factor validity was confirmed through confirmatory factor analysis, as well as convergent and discriminant validity evidence.

The UCLA Loneliness Scale, developed by Russell (1996), was used to assess loneliness and consists of 20 items scored on a 4-point Likert scale ranging from 1 (never) to 4 (always). Nine items (1, 5, 6, 9, 10, 15, 16, 19, 20) are reverse scored. Total scores range from 20 to 80, with higher scores indicating greater perceived loneliness. Reliability

coefficients reported in Russell's original studies ranged between 0.89 and 0.94. In Iran, the scale was translated and adapted by Shokrkon and Mirdrikvand, and its validity was confirmed through expert evaluation. Subsequent studies also confirmed its reverse scoring procedure and construct validity.

2.3. Data Analysis

After completion of the questionnaires, the required data were extracted and analyzed. In the present study, descriptive statistical methods including frequency, percentage, mean, and standard deviation were used, along with inferential statistics based on structural equation modeling to analyze the data. Statistical analyses were conducted using AMOS and SPSS software.

3. Findings and Results

In the present study, the statistical population consisted of 320 students. The gender distribution indicated that female students (63.7%) were more prevalent than male students (36.3%). Regarding age distribution, the majority of students were 16 years old (50.3%), followed by 17-year-olds (32.5%), 18-year-olds (11.6%), 15-year-olds (5%), and finally 19-year-olds (0.6%). In terms of grade level, most participants were in the 10th grade (56.6%), followed by the 11th grade (31.6%) and the 12th grade (11.9%). Concerning academic major, students in the experimental sciences field represented the largest proportion (42.8%), followed by mathematics (33.4%) and humanities (23.8%).

Prior to testing the research hypotheses using structural equation modeling (SEM), the statistical assumptions of this method were examined. Based on the Kolmogorov–Smirnov test results, the significance values for all research variables were greater than 0.01, indicating normal distribution of the variables. Furthermore, Pearson correlation analysis demonstrated significant positive relationships among all study variables at the 0.01 significance level. Academic burnout showed correlations with social media addiction ($r = 0.446$), social anxiety ($r = 0.502$), and loneliness ($r = 0.418$). Scatterplot diagrams also revealed upward and linear patterns between the independent and mediating variables (social media addiction, social anxiety, and loneliness) and academic burnout, indicating consistent positive relationships among these variables. Additionally, multicollinearity diagnostics using tolerance and variance inflation factor (VIF) indices showed tolerance values greater than 0.10 and VIF values lower than 10 for all

predictors, confirming the absence of multicollinearity. Therefore, all assumptions required for SEM were satisfied, allowing hypothesis testing using this analytical approach.

Model 1 examined the structural equation modeling results concerning the relationship between social media addiction and academic burnout with the mediating roles of social anxiety and loneliness. Before interpreting the path coefficients, model fit was evaluated using statistical indices

including χ^2/df (a non-significant χ^2 and a ratio below 5 indicate acceptable fit), the Comparative Fit Index (CFI) and Normed Fit Index (NFI) (values ≥ 0.90 indicate good fit), and the Root Mean Square Error of Approximation (RMSEA) (values < 0.08 indicate acceptable fit). These indices demonstrated that the proposed model exhibited relatively good fit with the data, and the exact values are presented in Table 1.

Figure 1

Structural equation modeling of the relationship between social media addiction and academic burnout with the mediating roles of social anxiety and loneliness

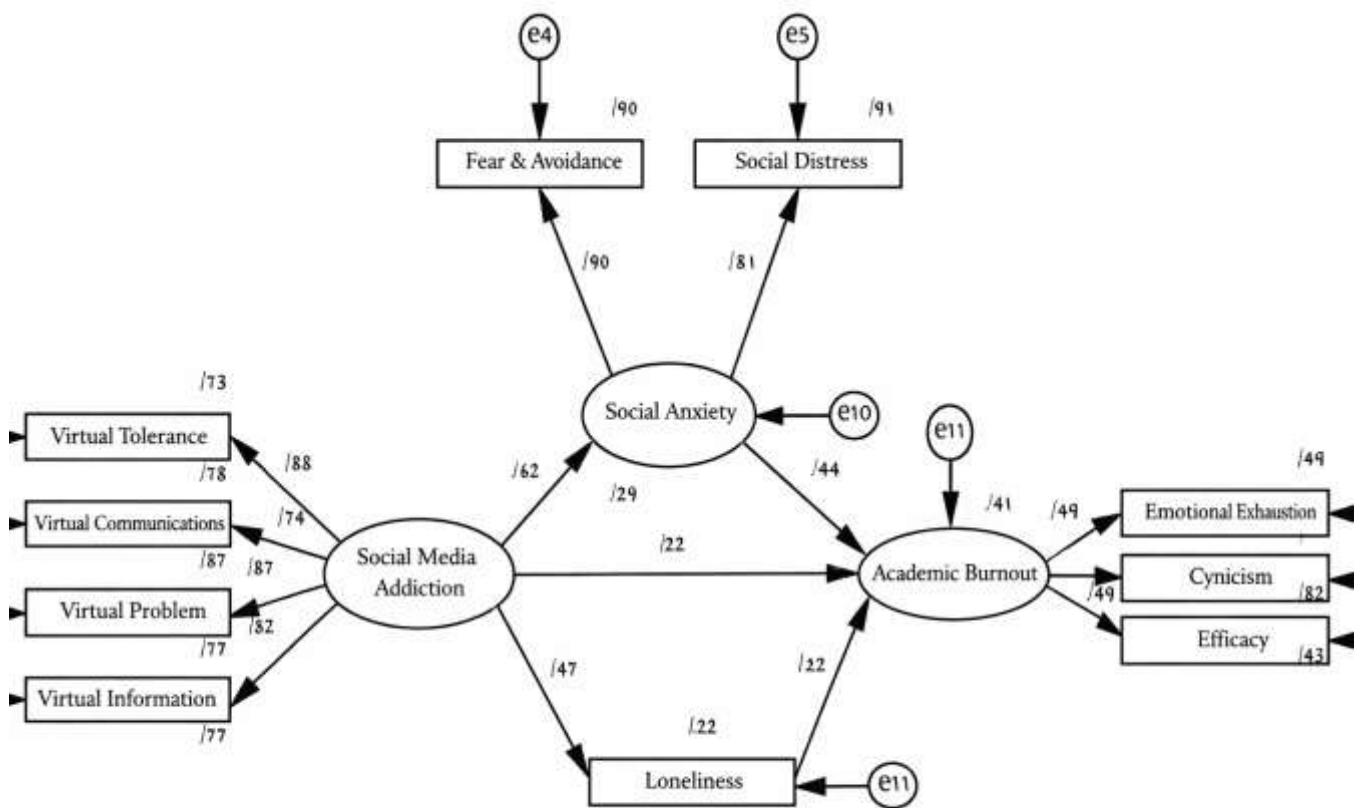


Table 1 presents the goodness-of-fit indices for the structural model examining the relationship between social media addiction and academic burnout mediated by social anxiety and loneliness. The χ^2/df ratio was 1.138 (less than 5), confirming adequate model fit. The NFI (0.980), CFI

(0.998), and Tucker–Lewis Index (TLI = 0.996) were all above 0.90, and the RMSEA value was 0.021 (less than 0.08). Therefore, all fit indices for Model 1 were within acceptable ranges, and the overall model was supported.

Table 1

Fit Indices of the Structural Equation Model Examining the Relationship Between Social Media Addiction and Academic Burnout with the Mediating Roles of Social Anxiety and Loneliness

Fit Index	Value
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CMIN/DF (χ^2/df)	1.138
NFI	0.980
CFI	0.998
RMSEA	0.021
TLI	0.996

The results presented in Table 2 indicate that social media addiction had a significant direct effect on social anxiety (standardized coefficient $\beta = 0.625$) and loneliness ($\beta = 0.474$), both significant at $p = 0.001$. Social media addiction also showed a positive and significant direct effect on academic burnout ($\beta = 0.163$, $p = 0.043$). Loneliness

demonstrated a significant positive direct effect on academic burnout ($\beta = 0.216$), and social anxiety also exhibited a significant positive relationship with academic burnout ($\beta = 0.407$). These findings indicate that social media addiction contributes to academic burnout both directly and indirectly through increased social anxiety and loneliness.

Table 2

Direct Effects of Research Variables (Standardized and Unstandardized Coefficients)

Research Path	Unstandardized Coefficient (b)	Standardized Coefficient (β)	Standard Error (S/E)	Critical Ratio	p-value
Social Media Addiction → Social Anxiety	1.638	0.625	0.167	9.836	0.001
Social Media Addiction → Loneliness	1.513	0.474	0.177	8.530	0.001
Social Media Addiction → Academic Burnout	0.177	0.163	0.087	2.023	0.043
Loneliness → Academic Burnout	0.074	0.216	0.020	3.743	0.001
Social Anxiety → Academic Burnout	0.169	0.407	0.033	5.127	0.001

The results shown in Table 3 indicate that social media addiction exerted a significant positive indirect effect on academic burnout through the mediating variable of loneliness ($\beta = 0.102$, $p = 0.001$). Additionally, social media addiction demonstrated a positive indirect effect on academic burnout through social anxiety mediation ($\beta =$

0.254). These findings suggest that part of the effect of social media addiction on academic burnout is transmitted through increases in loneliness and social anxiety, highlighting the important mediating roles of these two psychological variables.

Table 3

Bootstrap Test Results for Indirect Effects of Social Media Addiction on Academic Burnout

Indirect Path	Standardized Indirect Effect	Standard Error	Lower Bound	Upper Bound	p-value
Social Media Addiction → Academic Burnout (via Loneliness)	0.102	0.054	0.258	0.470	0.001
Social Media Addiction → Academic Burnout (via Social Anxiety)	0.254	—	—	—	0.001

The results presented in Table 4 indicate that social media addiction had the strongest direct effect on social anxiety ($\beta = 0.625$), followed by loneliness ($\beta = 0.474$), and also demonstrated a positive direct effect on academic burnout ($\beta = 0.163$). Considering indirect pathways, the total effect of social media addiction on academic burnout reached 0.519 through social anxiety (0.254) and loneliness (0.102). Both social anxiety ($\beta = 0.407$) and loneliness ($\beta = 0.216$) also exerted significant direct positive effects on academic burnout. These findings suggest that social media addiction

influences academic burnout not only directly but also indirectly by strengthening social anxiety and loneliness, confirming the mediating roles of these variables. The coefficients of determination indicated that 39% of the variance in social anxiety, 23% of the variance in loneliness, and 41% of the variance in academic burnout were explained by the model variables—particularly social media addiction—demonstrating relatively strong predictive power for social anxiety and academic burnout and moderate predictive power for loneliness.

Table 4

Direct, Indirect, and Total Effects of Study Variables

Research Path	Direct Effect	Indirect Effect	Total Effect
Social Media Addiction → Social Anxiety	0.625	—	0.625
Social Media Addiction → Loneliness	0.474	—	0.474
Social Media Addiction → Academic Burnout	0.163	Via Loneliness: 0.102 Via Social Anxiety: 0.254	0.519
Loneliness → Academic Burnout	0.216	—	0.216
Social Anxiety → Academic Burnout	0.407	—	0.407

4. Discussion

The present study aimed to examine the structural relationships between social media addiction and academic burnout among upper secondary school students, considering the mediating roles of social anxiety and loneliness. The findings demonstrated that social media addiction exerted both direct and indirect effects on academic burnout, while social anxiety and loneliness significantly mediated this relationship. Overall, the structural equation model showed satisfactory fit indices, suggesting that the proposed conceptual framework appropriately explained the relationships among the variables and supported the theoretical assumptions guiding the study.

The results indicated that social media addiction had a significant direct positive effect on academic burnout. This finding aligns with contemporary research suggesting that excessive engagement with digital platforms can function as a chronic psychological demand that drains emotional and cognitive resources required for academic functioning. Studies examining student populations have consistently reported that problematic social media use predicts increased academic exhaustion, reduced motivation, and disengagement from learning activities (Feng et al., 2025; Iqbal et al., 2025). Similarly, network analyses of mental health variables have demonstrated that social media addiction is strongly interconnected with academic burnout symptoms, reinforcing the view that persistent digital engagement may contribute to sustained emotional overload (Yao et al., 2025). The findings are also consistent with evidence showing that technology-related addiction behaviors, including smartphone dependence, interfere with concentration, time management, and sleep regulation, thereby intensifying burnout symptoms among students (Yang et al., 2024).

From a theoretical standpoint, these results can be interpreted within the biopsychosocial model of behavioral addiction, which posits that repeated engagement in rewarding digital behaviors gradually alters emotional regulation processes and increases psychological dependency (Griffiths, 2005). Social networking environments are intentionally designed to promote habitual use through reinforcement mechanisms such as notifications, social validation, and continuous content streams, which may increase compulsive engagement patterns among adolescents (Griffiths, 2018; Schou Andreassen & Pallesen, 2014). When academic responsibilities compete with these reinforcing digital experiences, students may experience role conflict and attentional fragmentation, ultimately leading to emotional exhaustion and reduced academic efficacy, core components of academic burnout (Salmela-Aro & Näätänen, 2005; Schaufeli et al., 2002). These findings further support emerging research highlighting social media burnout and internet addiction as intertwined phenomena influenced by personality, self-concept, and psychosocial adjustment (Amirthalingam & Khera, 2024; Santos & Alves, 2025).

A central contribution of the present study lies in demonstrating that social anxiety significantly mediated the relationship between social media addiction and academic burnout. Students with higher levels of social media addiction reported elevated social anxiety, which in turn predicted higher burnout levels. This result corroborates earlier findings indicating that individuals with heightened fear of negative evaluation and interpersonal sensitivity are more likely to rely on online environments for communication, potentially reinforcing avoidance of real-life social interactions (Leichsenring & Leweke, 2017). Research has shown that social anxiety is closely linked to maladaptive internet and social media use patterns, particularly among adolescents seeking perceived social safety in digital contexts (Andreassen et al., 2016; Kermani Mamazandi & Abotorabi, 2024). The findings of the present

study therefore suggest that social media platforms may function as compensatory spaces for socially anxious students, but excessive reliance on such environments may paradoxically intensify psychological distress.

The mediating role of social anxiety also supports prior research linking anxiety-related psychological vulnerabilities to academic burnout. Studies have shown that students experiencing heightened social anxiety often exhibit cognitive overload, rumination, and reduced participation in academic and social activities, which may progressively undermine engagement and academic resilience (Moradi & Hasanzadeh Baghi, 2024). Moreover, academic burnout has been associated with broader mental health challenges, including anxiety symptoms and psychological distress across student populations worldwide (Kadhun et al., 2022). Consistent with Iranian research, anxiety sensitivity and interpersonal fears have been identified as significant predictors of burnout, emphasizing that emotional vulnerabilities can translate into academic exhaustion through sustained stress activation (Pourehsan et al., 2022). Thus, the present findings reinforce the interpretation that social anxiety acts as a psychological pathway through which digital addiction contributes to academic maladjustment.

Another key finding was the significant mediating role of loneliness in the association between social media addiction and academic burnout. Students reporting higher levels of social media addiction experienced greater loneliness, which subsequently predicted higher academic burnout. This finding is consistent with theoretical perspectives emphasizing loneliness as a subjective perception of insufficient social connection rather than mere physical isolation (Gierveld et al., 2018). Although social media platforms provide opportunities for interaction, they do not necessarily fulfill deeper relational needs, and excessive online engagement may even exacerbate feelings of social disconnection (Lim et al., 2020). Previous studies have demonstrated that loneliness is strongly associated with both problematic technology use and academic difficulties among students (Naderi & Haghshenas, 2009; Uyaroglu et al., 2022).

Empirical research has further shown that loneliness is a significant predictor of academic burnout through mechanisms such as reduced perceived support, diminished academic engagement, and increased emotional fatigue (Shahbazian Khonigh et al., 2018; Singh et al., 2021). Longitudinal and cross-cultural studies also suggest that loneliness negatively affects psychological well-being by

altering perceptions of relationship quality and increasing vulnerability to stress responses (Hawkey et al., 2008; Heu et al., 2021). In the educational context, students experiencing loneliness may struggle with collaboration, classroom participation, and academic motivation, which can gradually contribute to burnout symptoms. The present findings therefore support the hypothesis that loneliness represents an important socio-emotional mechanism linking excessive social media use to academic exhaustion.

Importantly, the results demonstrated that social media addiction influenced academic burnout simultaneously through both mediators, indicating a multidimensional psychological process. This combined mediational pathway aligns with integrative models proposing that digital addiction impacts well-being through interconnected emotional and interpersonal mechanisms rather than isolated psychological factors (Agajanloo, 2025). Similar findings have been reported in studies examining internet addiction and academic burnout, where communication patterns and psychosocial adjustment mediated the relationship between online behavior and academic functioning (Rahmani & Amani, 2025). These convergent findings strengthen the argument that interventions targeting only behavioral reduction of social media use may be insufficient unless underlying emotional vulnerabilities such as anxiety and loneliness are also addressed.

The substantial explained variance in academic burnout observed in the structural model highlights the strong predictive power of psychosocial variables in educational outcomes. Contemporary burnout theory emphasizes the imbalance between demands and psychological resources as a primary driver of burnout development (Demerouti & Bakker, 2025). Within adolescent populations, excessive digital engagement may function as an additional demand that competes with restorative processes such as sleep, face-to-face relationships, and academic recovery. Evidence from burnout research indicates that chronic exposure to such demands gradually leads to emotional exhaustion and disengagement, particularly when students lack adequate coping resources (Amelia, 2022; Safarzaie et al., 2017). Furthermore, academic burnout has been consistently associated with decreased engagement and long-term educational risks, highlighting the importance of early identification and prevention (Madigan & Curran, 2021).

The present findings also contribute to the broader literature emphasizing the developmental vulnerability of adolescents in digital environments. Adolescence represents a period marked by identity formation, heightened peer

sensitivity, and increased emotional reactivity, making young individuals particularly susceptible to social comparison and online evaluation pressures. Research has shown that addictive social media use is strongly associated with psychiatric symptoms and emotional dysregulation among youth (Andreassen et al., 2016). At the same time, environmental and lifestyle factors influencing mental health, such as exposure to supportive physical and social environments, may buffer stress responses and reduce burnout risk (Twhig-Bennett & Jones, 2018). Taken together, the findings underscore that academic burnout among adolescents cannot be understood independently of the digital social ecosystems in which students are embedded.

5. Conclusion

Overall, the study extends existing literature by empirically demonstrating that social media addiction contributes to academic burnout both directly and indirectly through social anxiety and loneliness. By integrating addiction theory, burnout models, and socio-emotional perspectives, the findings offer a comprehensive explanation of how digital behaviors translate into academic maladjustment. Consistent with prior empirical research across cultures and educational contexts, the results highlight the importance of considering psychological mediators when examining technology-related risks in adolescence (Feng et al., 2025; Malakcioglu, 2024; Yang et al., 2024). These findings therefore provide valuable theoretical and practical insight into the mechanisms linking modern digital lifestyles with students' academic well-being.

6. Limitations & Suggestions

Despite its contributions, the present study has several limitations that should be acknowledged. First, the cross-sectional design limits causal inference, meaning that although structural relationships were supported statistically, definitive conclusions about temporal causality cannot be drawn. Second, data were collected using self-report questionnaires, which may introduce response bias, social desirability effects, or inaccuracies in students' self-perceptions. Third, the sample was restricted to upper secondary school students within a single educational context, which may reduce the generalizability of findings to other age groups, cultures, or educational systems. Additionally, unmeasured variables such as family

environment, personality traits, academic pressure intensity, and sleep patterns may also influence academic burnout but were not included in the model.

Future studies should employ longitudinal or experimental designs to clarify causal pathways between social media addiction, emotional vulnerabilities, and academic burnout. Researchers are encouraged to investigate additional mediators and moderators, such as emotion regulation strategies, self-esteem, resilience, academic motivation, and parental monitoring. Comparative studies across different educational levels and cultural contexts would also enhance understanding of developmental and sociocultural influences on digital addiction and burnout. Furthermore, mixed-method approaches incorporating qualitative data could provide deeper insight into students' lived experiences with social media use and academic stress. Future research may also benefit from integrating objective behavioral indicators of digital use, such as screen-time tracking, alongside psychological assessments.

Educational practitioners and school psychologists should develop preventive programs that promote balanced digital habits and enhance students' emotional competencies. Interventions aimed at reducing academic burnout should not only address study skills but also target social anxiety reduction, social skills development, and strengthening interpersonal connectedness among students. Schools can implement psychoeducational workshops focused on responsible social media use, emotional regulation, and peer support networks. Counseling services should screen students for loneliness and anxiety symptoms as early indicators of academic burnout risk. Collaboration among educators, parents, and mental health professionals is essential to foster supportive school environments that encourage healthy technology use, psychological well-being, and sustained academic engagement.

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Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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Authors' Contributions

N.S.A. contributed to the formulation of the research idea, coordination of sampling procedures, administration of questionnaires, and preparation of the original manuscript draft. M.Y. supervised the study, designed the analytical framework, conducted path analysis, and provided critical evaluation and revision of the manuscript. Both authors participated in interpretation of findings and approved the final version of the manuscript for publication.

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