




RESEARCH ARTICLE

The relationship between phubbing behavior and social media addiction, emotion regulation difficulties, and social anxiety in adolescents

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ABSTRACT

Objective: Phubbing—defined as the act of ignoring people in one's physical environment in favor of engaging with a smartphone—has become increasingly prevalent among adolescents. While social media use is often central to this behavior, the psychological mechanisms underlying phubbing remain insufficiently explored. This study aimed to investigate the relationships between phubbing behavior, social media addiction, emotion regulation difficulties, and social anxiety in adolescents. It was hypothesized that social media addiction would predict phubbing both directly and indirectly through emotional and social factors.

Method: The sample consisted of 125 adolescents aged 12–17 years who attended a child and adolescent psychiatry outpatient clinic in Turkiye. Standardized self-report measures were used to assess phubbing behavior, social media addiction, emotion regulation difficulties, and social anxiety. Correlation and mediation analyses were conducted using SPSS and Hayes' PROCESS Macro (Models 4 and 6), with 5,000 bootstrap resamples applied to test indirect and serial effects.

Results: Social media addiction, emotion regulation difficulties, and social anxiety were all positively and significantly associated with phubbing behavior. Mediation analyses indicated that both social anxiety and emotion regulation difficulties partially mediated the relationship between social media addiction and phubbing. The serial mediation model further suggested that social media addiction may be linked to phubbing through increased social anxiety and subsequent emotion regulation difficulties.

Conclusion: These findings highlight a potential interplay between digital habits and emotional functioning in adolescents. Phubbing may be understood not only as a behavioral outcome of digital engagement but also as a maladaptive coping strategy shaped by emotional vulnerabilities. Preventive interventions targeting emotion regulation and social media use may help reduce phubbing-related social difficulties.

Keywords: Phubbing, social media addiction, emotion regulation difficulties, social anxiety, adolescents

INTRODUCTION

The development of smartphones has transformed the way individuals communicate, enabling constant

and convenient interaction. These multifunctional devices provide seamless access to communication tools, allowing users to maintain contact with others regardless of time or location (1). Smartphone

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ownership has increased substantially in recent years, with nearly 70% of the global population reported to be using these devices by 2023 (2). This trend is particularly pronounced among younger age groups; studies indicate that approximately one-third of 8-year-old children (3) and nearly all adolescents in the United States own a smartphone (4). However, concerns have been raised about the negative effects of smartphones on the mental and physical health of young people, as these devices provide not only communication but also access to entertainment and online gaming (5-7).

While smartphones facilitate social connection, they may also contribute to social disconnection during face-to-face interactions (8). A common manifestation of this is the diversion of attention from physically present individuals to a smartphone. This behavior, referred to as phubbing, has become increasingly normalized in everyday communication (9). Phubbing can negatively affect interpersonal relationships by reducing relationship satisfaction and overall well-being (10). It is a complex, multifaceted phenomenon influenced by various forms of digital dependency, including mobile phone use, text messaging, social media, internet use, and online gaming (11). Moderate associations have also been observed between phubbing and factors such as smartphone addiction, internet addiction, and fear of missing out (FoMO) (9).

Although research on the prevalence of phubbing remains limited, available evidence suggests that it is relatively widespread among young people. One study involving individuals aged 15 to 29 found that nearly half (49%) engaged in phubbing (12). In Spain, 17% of participants aged 12 to 21 reported being distracted by their phones during face-to-face interactions (13). Similarly, an Australian study demonstrated that younger individuals exhibit phubbing more frequently than older adults (14). Furthermore, a systematic meta-analysis examining predictors of phubbing identified a strong association with problematic smartphone use, as well as moderate links with psychopathology and the experience of being phubbed by others (15).

Social media use has become increasingly pervasive, with nearly half of the global population engaging in social networking; a substantial proportion of users are adolescents belonging to the digital generation (16). Although these platforms facilitate communication, excessive use has raised concerns regarding its impact on mental health (17). Despite the absence of formal diagnostic criteria, social media addiction has been conceptualized as a behavioral

addiction characterized by compulsive engagement with social networking sites that interferes with daily functioning (18). Problematic social media use—marked by excessive preoccupation, compulsive engagement, and difficulty disengaging—can adversely affect mental health and overall well-being (19). For example, social media addiction has been associated with poorer academic performance (20).

Adolescents may use social media as a strategy to cope with difficulties in emotion regulation. Evidence suggests that individuals with social media addiction often exhibit poor self-control, which may further impair their capacity to regulate emotions (21). Moreover, studies have demonstrated significant associations between social media addiction and depressive symptoms among youth aged 12 to 23, (22) and excessive social media use has been linked to diminished self-perception and increased depressive symptoms (23).

Social media platforms may also provide socially anxious adolescents with a perceived safe space, allowing them to avoid face-to-face interactions. However, such avoidance may negatively affect real-life social relationships, potentially increasing dependence on online platforms, exacerbating social anxiety symptoms, and hindering emotional and social development (24). Adolescents are particularly sensitive to social media feedback, which activates dopaminergic reward systems and reinforces prolonged engagement. Individuals who frequently seek reassurance or engage in passive scrolling may rely on social media to manage anxiety; however, this strategy may paradoxically intensify feelings of loneliness, social disconnection, and persistent negative thought patterns (25-28).

Based on this framework, the present study aimed to examine the relationships among phubbing behavior, social anxiety, social media addiction, and difficulties in emotion regulation in adolescents. It was hypothesized that higher levels of social media addiction, social anxiety, and emotion regulation difficulties would each be positively associated with increased phubbing behavior. Furthermore, difficulties in emotion regulation were expected to mediate the relationship between social media addiction and phubbing. Similarly, social anxiety was anticipated to act as a mediator. A serial mediation model was also proposed, suggesting that social media addiction may be associated with phubbing behavior through a sequential pathway involving social anxiety and emotion regulation difficulties. At the same time,

alternative theoretical sequences are plausible, including models in which difficulties in emotion regulation may precede or interact with social anxiety. Accordingly, the proposed serial mediation model is examined as one theoretically informed pathway rather than a definitive causal ordering.

METHODS

Study Design and Participants

The study was conducted with individuals who presented to the Child and Adolescent Psychiatry Outpatient Clinic of Balikesir Ataturk City Hospital. Participants were excluded if they had a diagnosis of autism spectrum disorder, intellectual disability, or a psychotic disorder. All participants and their parents provided informed consent/assent, and participation was voluntary. Psychiatric evaluations were conducted by child and adolescent psychiatrists in accordance with the diagnostic criteria of the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5). Diagnoses were established through comprehensive clinical assessments performed during routine outpatient evaluations. Comorbid psychiatric conditions were not considered exclusion criteria unless they corresponded to the predefined exclusion diagnoses (i.e., autism spectrum disorder, intellectual disability, or psychotic disorder). In addition, participants receiving psychotropic medication were not excluded. This approach allowed for the inclusion of a clinically representative outpatient sample.

A power analysis conducted using the G*Power 3.1.9 indicated that a minimum of 82 participants would be required to detect a medium effect size, assuming a significance level of 0.05 and a statistical power of 0.80, for examining the relationships between phubbing behavior, social media addiction, and emotion regulation difficulties in adolescents. Accordingly, the study was designed to include at least 82 participants.

A total of 132 adolescents aged 12 to 17 years were initially recruited. However, seven participants were excluded due to incomplete responses on the administered scales. The final sample consisted of 125 adolescents and their families, all of whom provided written informed consent to participate in the study.

Ethical Considerations

Written and verbal informed consent was obtained from all participants and their legal guardians prior to participation. The study protocol was approved by the institutional review board of the participating hospitals

at the meeting held on February 20, 2025 (approval number: E-30041352-514.19.99-269198443).

Data Collection

Data were collected using several standardized instruments. In addition to a sociodemographic data form, the following scales were administered:

Sociodemographic Data Form

Developed by the researchers, this form included questions regarding participants' age, gender, number of siblings, family structure, socioeconomic status, parental age and education level, peer relationships, family harmony, academic performance, and screen time.

General Phubbing Scale

Developed by Chotpitayasunondh and Douglas, (9) this 15-item scale uses a 7-point Likert format (1=never to 7=always) and comprises four subscales: nomophobia, interpersonal conflict, self-isolation, and problem acknowledgment. Higher scores indicate greater levels of phubbing behavior. The Turkish validity and reliability study for adolescents was conducted by Gavcar et al. (2023), (29) reporting a Cronbach's alpha coefficient of 0.94.

Social Media Addiction Scale for Adolescents

This 9-item scale was developed based on DSM-5 criteria for behavioral addiction and uses a 5-point Likert response format (1=never to 5=always). Total scores range from 9 to 45, with higher scores indicating greater levels of social media addiction. The reliability coefficient (Cronbach's alpha) was reported as 0.904 by Özgenel et al. (2019) (30).

Emotion Regulation Scale for Adolescents

This brief version assesses four subdimensions of emotion regulation using a 5-point Likert scale (1=never to 5=always). The scale has demonstrated good reliability ($\alpha=0.92$) (31). Higher scores on each subdimension indicate more frequent use of that specific emotion regulation strategy (32). In the present study, the total score was used rather than individual subscale scores. Although the instrument assesses the frequency of emotion regulation strategies, higher total scores were interpreted as reflecting greater difficulties in emotion regulation.

Social Anxiety Scale for Adolescents

This 18-item scale, developed by La Greca and Lopez (33), includes three subscales: Fear of Negative Evaluation; Social Avoidance and Anxiety in General Situations; and

Social Avoidance and Anxiety in New Situations. Items are rated on a Likert scale, with total scores ranging from 18 to 90. Higher scores indicate greater social anxiety. The Turkish version has demonstrated good construct validity and internal consistency, with a Cronbach's alpha coefficient of 0.88 (34).

Statistical Analysis

All statistical analyses were performed using IBM SPSS Statistics version 26.0. Descriptive statistics were used to summarize demographic and clinical characteristics and are presented as mean±standard deviation (SD) for continuous variables and frequency (n) and percentage (%) for categorical variables.

Normality assumptions were assessed using the Kolmogorov–Smirnov and Shapiro–Wilk tests. For comparisons between two independent groups, the Mann–Whitney U test was used when parametric assumptions were not met, and the independent samples t-test was applied when assumptions were satisfied. For comparisons involving more than two groups, the Kruskal–Wallis test or analysis of variance (ANOVA) was used, depending on the distribution of the data.

Correlations between continuous variables were examined using Pearson's correlation analysis when parametric assumptions were met and Spearman's correlation analysis otherwise. The level of statistical significance was set at $p < 0.05$.

Mediation analyses were conducted using a bootstrapping approach, following the recommendations, models, and procedures outlined by Preacher and Hayes (2008) (35). All analyses were performed using the PROCESS Macro developed by Hayes. A bootstrap resampling procedure with 5,000 iterations was applied. A mediation effect was considered statistically significant if the 95% confidence interval (CI) did not include zero (36). PROCESS Macro Model 4 was used for simple mediation analyses, while Model 6 was employed for serial mediation analyses. Age, gender, and daily internet use duration were included as covariates in the mediation models.

RESULTS

Of the 125 adolescents included in the study, 53.6% were female. Regarding parental education, 48.8% of mothers and 64% of fathers had completed high school or higher education. A majority of participants (72.8%) reported having at least one social media account, and 59.2% indicated using the internet for

Table 1: Sociodemographic characteristics of the participants (n=125)

Variables	Category	n	%
Gender	Female	67	53.6
	Male	58	46.4
Family structure	Intact	99	79.2
	Non-intact	26	20.8
Mother's education	Below high school	64	51.2
	High school or above	61	48.8
Father's education	Below high school	45	36.0
	High school or above	80	64.0
Perceived economic status	Low	11	8.8
	Moderate	86	68.8
	High	28	22.4
Academic achievement	Low	24	19.2
	Moderate	67	53.6
	High	34	27.2

Percentages may not total 100 due to rounding.

more than three hours per day. The mean age of the participants was 14.20 years ($SD=1.75$), with a median age of 14.00 years (Table 1).

Correlation Analysis

Spearman's correlation analysis revealed a strong and significant positive relationship between social anxiety and difficulties in emotion regulation ($r=0.561$, $p < 0.001$), suggesting that higher levels of social anxiety are associated with greater difficulty in regulating emotions. Social anxiety was also positively correlated with phubbing behavior ($r=0.357$, $p < 0.001$) and, to a lesser extent, with social media addiction ($r=0.229$, $p < 0.05$).

Difficulties in emotion regulation showed moderate and significant correlations with both phubbing behavior ($r=0.534$, $p < 0.001$) and social media addiction ($r=0.465$, $p < 0.001$). The strongest correlation was observed between social media addiction and phubbing behavior ($r=0.744$, $p < 0.001$), indicating that higher levels of social media addiction are closely associated with increased phubbing behavior (Table 2).

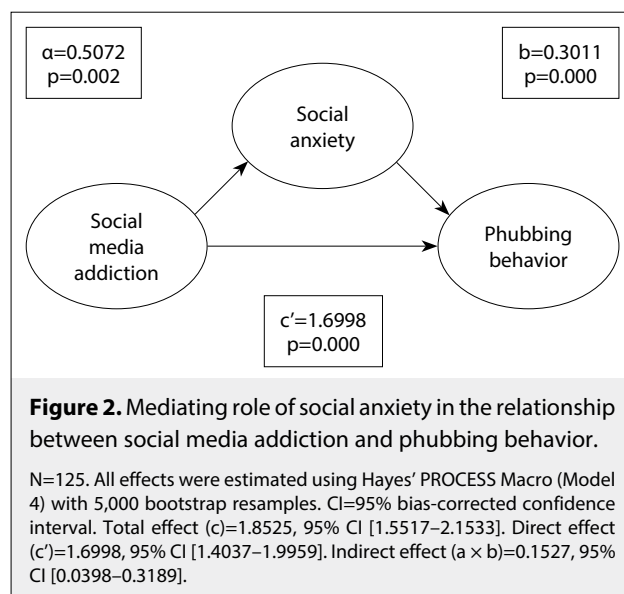
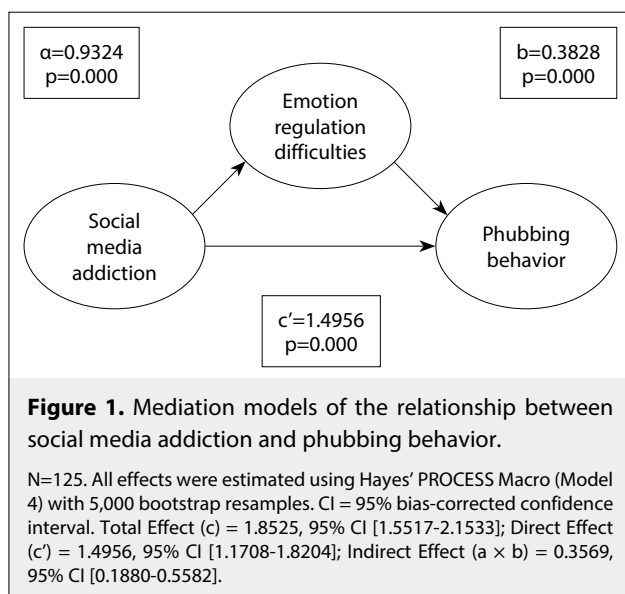
Mediation Analyses

Age, gender, and daily internet use duration were included as covariates in all mediation models. After controlling for these variables, both direct and indirect effects remained statistically significant, indicating that the findings were robust to the inclusion of covariates.

Table 2: Spearman correlations among study variables (n=125)

Variables	1. Social anxiety	2. Emotion regulation difficulties	3. Phubbing behavior	4. Social media addiction
1. Social anxiety	–			
2. Emotion regulation difficulties	0.561**	–		
3. Phubbing behavior	0.357**	0.534**	–	
4. Social media addiction	0.229*	0.465**	0.744**	–

*p<0.05; **p<0.01. Correlation coefficients are based on Spearman's rho.



Model 1: Mediation Model of the Relationship Between Social Media Addiction and Phubbing Behavior

A mediation analysis using PROCESS Macro Model 4, with 5,000 bootstrap resamples and a 95% confidence interval, was conducted to examine whether difficulties in emotion regulation mediated the relationship between social media addiction and phubbing behavior. As the confidence interval did not include zero, the indirect effect was statistically significant (Indirect Effect=0.3569, 95% CI [0.1880–0.5582]). These findings suggest that the association between social media addiction and phubbing may be partially explained by increased difficulties in emotion regulation (Fig. 1).

Model 2: The Mediating Role of Social Anxiety in the Relationship Between Social Media Addiction and Phubbing Behavior

A second mediation model (PROCESS Model 4) tested the mediating role of social anxiety in the same relationship. The total effect of social media addiction on phubbing behavior remained significant (c=1.8525, 95% CI [1.5517–2.1533]), as did the direct effect (c'=1.6998, 95% CI [1.4037–1.9959]). The indirect effect through social anxiety was also statistically

significant (Indirect Effect=0.1527, 95% CI [0.0398–0.3189]), indicating that social media addiction may be indirectly associated with phubbing behavior through increased levels of social anxiety (Fig. 2).

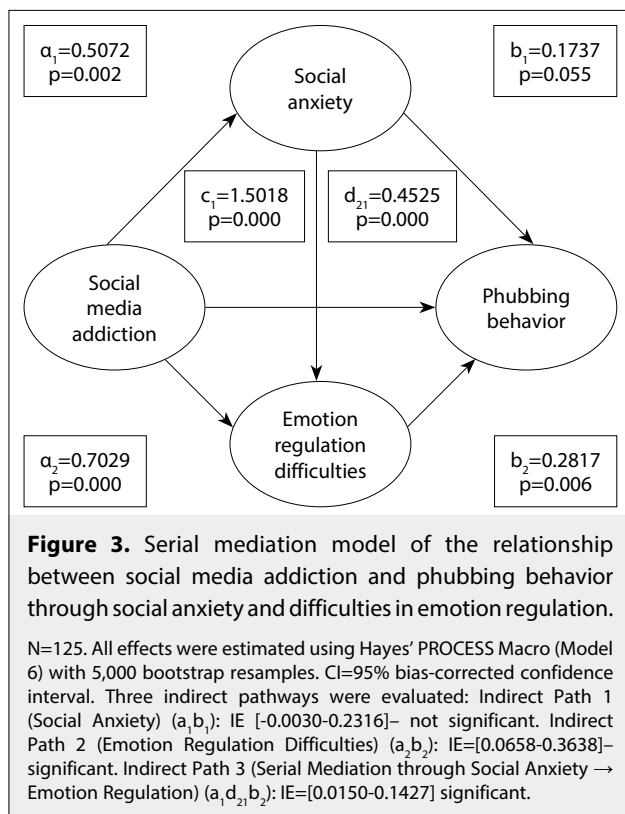
Model 3: Serial Mediation Model of the Relationship Between Social Media Addiction and Phubbing Behavior via Social Anxiety and Difficulties in Emotion Regulation

Finally, a serial mediation analysis (PROCESS Model 6) was conducted to examine the sequential mediating roles of social anxiety and emotion regulation difficulties in the relationship between social media addiction and phubbing behavior.

Social media addiction significantly predicted both social anxiety (a₁=0.5072, p=0.002) and difficulties in emotion regulation (a₂=0.7029, p<0.001). Social anxiety also significantly predicted difficulties in emotion regulation (d₂₁=0.4525, p<0.001).

Regarding the b paths, difficulties in emotion regulation significantly predicted phubbing behavior (b₂=0.2817, p=0.006), whereas social anxiety did not reach statistical significance (b₁=0.1737, p=0.055).

The direct effect of social media addiction on phubbing behavior remained significant after



controlling for the mediators ($c'=1.5018$, $p<0.001$), indicating partial mediation.

Bootstrapping analyses showed that the indirect effect through social anxiety alone was not statistically significant (95% CI [-0.0030–0.2316]). In contrast, the indirect effect through difficulties in emotion regulation was significant (95% CI [0.0658–0.3638]). Importantly, the serial indirect pathway—from social media addiction to social anxiety, to difficulties in emotion regulation, and finally to phubbing behavior—was also statistically significant (95% CI [0.0150–0.1427]), as the confidence interval did not include zero (Fig. 3).

These findings indicate that social media addiction contributes to phubbing behavior both directly and indirectly through increased difficulties in emotion regulation, as well as through a sequential process in which elevated social anxiety leads to greater emotion regulation difficulties, which in turn increase phubbing behavior.

DISCUSSION

This study examined the relationships among phubbing behavior, social media addiction, difficulties in emotion regulation, and social anxiety in adolescents. The findings revealed several significant

associations that enhance our understanding of how digital behaviors and emotional difficulties interact during this developmental period.

First, a strong positive correlation was observed between phubbing behavior and social media addiction. This finding supports previous research suggesting that phubbing may be a byproduct of excessive and compulsive smartphone and social media use (9). In the context of social media addiction—characterized by disruptions in social relationships and engagement in deceptive behaviors during platform use (37)—individuals may experience negative emotions such as irritability, sadness, or stress when access to social media is restricted (38). These adverse emotional experiences, combined with a preference for online interactions over face-to-face communication, may directly interfere with social participation and interpersonal functioning (39). Excessive focus on social media at the expense of real-life interactions has been associated with reduced social competence and impaired interpersonal relationships (40, 41). The decline in social skills observed in such individuals may be linked to phubbing, whereby individuals increasingly prioritize virtual interactions over in-person communication (42). Those who frequently engage in phubbing tend to divert their attention away from their immediate social environment toward their smartphones and social media platforms (43). This behavioral pattern is consistent with the findings of the present study, which demonstrate a strong association between phubbing behavior and social media use.

In addition, phubbing behavior was positively associated with both difficulties in emotion regulation and social anxiety. A 2022 meta-analysis demonstrating a strong association between emotion dysregulation and problematic smartphone use (44) supports our finding that phubbing is significantly related to difficulties in emotion regulation. Such difficulties may predispose individuals to maladaptive coping behaviors, including excessive smartphone use. Given that phubbing can be conceptualized as a specific form of problematic smartphone use, it may serve a functional role beyond merely signaling social disengagement, particularly among adolescents with elevated social anxiety. This behavior may reflect an attempt to cope with overwhelming emotional states. Supporting this interpretation, a study involving 1,401 Chinese undergraduate students (45) found that peer phubbing was positively associated with social networking site addiction, with social anxiety partially mediating this relationship. Recent findings from Turkiye

further support the link between problematic digital engagement and emotional processes in youth (46). A clinical study on school refusal reported that higher levels of social media disorder symptoms were associated with increased emotional distress and avoidance-related behaviors in children and adolescents. These findings suggest that excessive digital media use may co-occur with emotional vulnerability and avoidance tendencies, consistent with the pattern observed in the present study. In line with our results, phubbing may be associated with heightened social anxiety, particularly among adolescents who are sensitive to social evaluation. This may indicate that adolescents who struggle to regulate their emotions or experience increased social discomfort turn to their phones as a maladaptive coping strategy. While digital device use may provide temporary relief from social demands or negative emotions, it may also hinder the development of effective emotional and interpersonal skills.

Finally, the observed associations between social media addiction, emotion regulation difficulties, and social anxiety further support the notion that adolescents may use social media as a means of managing or avoiding emotional distress. Our findings are consistent with a meta-analysis indicating a strong and bidirectional relationship between social media use and anxiety (47), suggesting that increased engagement with social media may both contribute to and be exacerbated by anxiety symptoms. Given that adolescence is a developmental stage characterized by heightened vulnerability to low self-esteem, anxiety, and depression (48, 49), understanding the impact of social media use on these psychological factors is critically important. This behavioral pattern may contribute to increased phubbing, ultimately weakening real-life social connections. Excessive engagement with screen-based media has been associated with higher levels of social anxiety symptoms, particularly among developmentally vulnerable adolescents (50). Individuals who frequently seek reassurance or engage in passive scrolling on social media platforms may initially attempt to cope with anxiety; however, this pattern may exacerbate feelings of loneliness, social withdrawal, and repetitive negative thinking (25–28). The finding that difficulties in emotion regulation are associated with higher levels of social media addiction is consistent with existing literature. Previous research has shown that poor emotion regulation skills are linked to increased impulsive behaviors (51), and impulsivity has been identified as a significant risk factor in the development of various forms of addiction (52). In this context, our results support the view that individuals with difficulties in emotion regulation may be

more vulnerable to problematic social media use due to heightened impulsivity, in line with prior theoretical and empirical findings.

Model 1 – Emotion Regulation Difficulties as a Mediator

The mediation analysis revealed that difficulties in emotion regulation significantly mediated the relationship between social media addiction and phubbing behavior. This finding suggests that adolescents who struggle to manage their emotional responses may turn to excessive smartphone use as a maladaptive coping strategy. Consistent with previous research, problematic social media use appears to be associated with increased emotion dysregulation, which in turn is linked to greater phubbing behavior (44, 53). Thus, difficulties in emotion regulation may serve as a key explanatory mechanism in the association between social media addiction and phubbing behavior.

Model 2 – Social Anxiety as a Mediator

The second mediation model demonstrated that social anxiety also mediates the relationship between social media addiction and phubbing behavior. This suggests that adolescents with higher levels of social anxiety may rely on their smartphones to avoid face-to-face interactions, thereby increasing their likelihood of engaging in phubbing. Although the indirect effect through social anxiety was smaller than that observed for emotion regulation difficulties, the finding nonetheless supports the notion that social anxiety may contribute to a preference for online interactions over in-person social engagement.

Serial Mediation Model – Social Anxiety and Emotion Regulation Difficulties as Sequential Mediators

The serial mediation analysis indicated a sequential pattern in which social media addiction was associated with higher levels of social anxiety, which in turn were linked to greater difficulties in emotion regulation and, ultimately, increased phubbing behavior. This pattern highlights how emotional and anxiety-related processes may co-occur and interact in adolescents' disengagement from their immediate social environment. The presence of indirect effects, including the serial pathway, suggests that these psychological mechanisms may operate jointly in shaping phubbing behavior. Consistent with prior research, these findings align with broader evidence indicating that internalizing symptoms and deficits in self-regulation are closely associated with maladaptive technology use during adolescence (54).

However, although the serial mediation findings are consistent with the proposed model, alternative pathways should also be considered. In particular, difficulties in emotion regulation may represent a pre-existing vulnerability that contributes to the development or maintenance of social anxiety, rather than solely arising as a downstream consequence. Given the cross-sectional design of the study, the temporal ordering of these variables cannot be established. Therefore, the observed pathways should be interpreted as theoretically informed associations rather than definitive causal relationships. Future longitudinal research is needed to test competing models and clarify the directionality of these associations.

Taken together, these findings suggest that phubbing is not merely a social habit but may reflect broader emotional and psychological challenges, particularly among emotionally vulnerable adolescents. Interventions targeting emotion regulation skills and social anxiety may therefore be beneficial in addressing problematic smartphone and social media use. However, as the sample was drawn from a child and adolescent psychiatry outpatient clinic, these implications should be interpreted with caution, and the findings may not be directly generalizable to adolescents in community settings.

Limitations

Despite the valuable insights provided by this study, certain limitations should be acknowledged. First, the cross-sectional design precludes causal inferences regarding the observed relationships. Second, the data were based on self-report measures, which may be subject to social desirability and recall biases. The exclusive reliance on self-report instruments also raises the possibility of shared method variance and construct overlap, particularly among conceptually related variables such as social anxiety, emotion regulation difficulties, and social media addiction. Future longitudinal or experimental studies employing multi-method assessment approaches are needed to better clarify the directionality and underlying mechanisms of these relationships.

CONCLUSION

The present study demonstrated that social media addiction significantly predicts phubbing behavior both directly and indirectly through difficulties in emotion regulation and social anxiety. Correlational analyses revealed strong associations among social media addiction, emotion regulation difficulties, social anxiety,

and phubbing behavior. Mediation analyses further highlighted the central role of emotion regulation difficulties as a mediator, with additional evidence supporting a serial mediation pathway involving social anxiety. These findings suggest that interventions aimed at reducing phubbing behavior in adolescents should address not only patterns of social media use but also underlying emotional and psychological processes, particularly anxiety and emotion regulation skills.

Ethical Approval: The study was approved by the Ethics Committee of Balikesir Ataturk City Hospital. (Approval Number: E-30041352-514.19.99-269198443, Date: 20.02.2025).

Informed Consent: Written informed consent was obtained from all participating adolescents and their legal guardians prior to participation in the study.

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	Data acquisition	S.A., O.D.T.
	Data analysis/Interpretation	E.G.G.
Category 2	Drafting manuscript	S.A.A., S.A., E.G.G., O.D.T.
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