When Phones Replace Faces: From Phubbing to Mental Well-Being Among High School Students

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ABSTRACT

Phubbing describes the diversion of attention from an in-person interaction toward a smartphone and has become relevant to discussions of adolescent well-being. Because digital habits develop alongside academic and developmental demands, this study tested a structural model linking phubbing with mental well-being through self-control and academic expectations stress. The sample comprised 400 high school students in Türkiye (aged 14–19 years; 40.3% male; M = 15.93, SD = 1.10) recruited through convenience sampling. Structural equation modeling showed significant indirect associations between phubbing and mental well-being through self-control and academic expectations stress. Self-control was also related to mental well-being through academic expectations stress. Overall, greater phubbing co-occurred with lower self-control, greater academic expectations stress, and poorer mental well-being within the tested model. The findings highlight the relevance of digital interaction habits, self-control, and academic expectations stress for school-based mental health and counseling, while longitudinal research is needed to establish the temporal direction of these associations.

Keywords: *Phubbing, self-control, academic expectations stress, mental well-being, adolescence*

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INTRODUCTION

Adolescence involves rapid social, emotional, and cognitive change, and experiences during these years can influence later mental health and well-being (World Health Organization [WHO], 2025a, 2025b). The present study concentrates on mental well-being as a positive aspect of mental health, encompassing adaptive functioning, emotional regulation, and psychological resilience rather than merely the absence of distress (WHO, 2025b). According to WHO (2025a), mental disorders affect about one in every seven individuals aged 10–19 and account for almost 15% of the overall disease burden in this age range. These figures make it especially important to understand factors related to positive well-being while adolescents are also managing growing academic and technological demands.

Adolescent mental well-being reflects influences across several domains rather than a single determinant. Supportive relationships, sufficient sleep, and successful adjustment to school have been associated with more favorable mental and emotional well-being (Aslanyan et al.,

2021), whereas adverse childhood experiences and other contextual stressors correspond with poorer psychological outcomes (Islam et al., 2025). Features of the surrounding environment also matter; longitudinal evidence links neighborhood deprivation and noise exposure with internalizing and externalizing difficulties (Zeng et al., 2023). In school settings, better mental well-being tends to accompany stronger academic functioning, while psychological distress is associated with poorer adjustment (Monzonís-Carda et al., 2025). Digital behavior represents another relevant domain, as problematic internet use has been related to lower psychological well-being and greater emotional difficulty among adolescents (Soriano-Molina et al., 2025). These strands of evidence concern different aspects of adolescent mental health; the present research focuses specifically on positive mental well-being.

Digital behavior that occurs during in-person interaction has therefore become an important area of inquiry. Phubbing refers to diverting attention from a face-to-face exchange toward a smartphone. Research has associated this behavior with emotional and interpersonal difficulties, including symptoms of depression and anxiety, reduced attention to the interaction, and interpersonal tension (Gao et al., 2025). Unlike broad indicators of screen use, phubbing concerns what happens within a social encounter and may therefore be relevant to emotional regulation and social functioning. Although attachment, school connectedness, and academic functioning have received substantial attention in research on adolescent well-being, less is known about how interaction-specific digital behaviors such as phubbing relate to mental well-being in school contexts.

Phubbing

Phubbing combines the ideas of “phone” use and “snubbing” and refers to shifting attention away from a person who is physically present toward a mobile device (Chotpitayasunondh & Douglas, 2016; Karadağ et al., 2015). Research across age groups connects this behavior with several psychological and relational difficulties. Among adolescents, more frequent phubbing has been related to greater depressive symptoms (Yue et al., 2024); among young adults, it has also been associated with problematic internet use and lower self-esteem (Barbed-Castrejón et al., 2024). Qualitative and mixed-method studies suggest that boredom, attempts to cope with stress, and social withdrawal can accompany phubbing and influence attention and interpersonal perceptions (Bakır & Dilmaç, 2023; Büber et al., 2025). In addition, dimensions such as nomophobia, interpersonal conflict, and self-isolation have been linked with depression, anxiety, and stress (Dibajnia et al., 2025). This evidence supports viewing phubbing as a socially embedded smartphone behavior with relevance to adolescents’ emotional and interpersonal functioning.

Self-control and Academic Expectations Stress as the Mediators

Self-control denotes the capacity to resist immediate impulses and keep thoughts, emotions, and actions aligned with longer-term goals (Duckworth et al., 2019; Tangney et al., 2004). Here, it is treated as a specific component of self-regulation rather than as an interchangeable label for the broader construct. Self-control is particularly relevant when attention or behavior must be adjusted to move from a current state toward a desired one (van den Bekerom et al., 2025). In adolescence, higher self-control has been associated with stronger flourishing, more effective impulse management, and more adaptive interpersonal functioning, whereas lower levels have been linked with difficulties in emotional regulation and family functioning over time (Kim et al., 2022; Mirandi et al., 2023).

Studies of adolescents' digital behavior increasingly point to self-control as a relevant correlate. Frequent use of short-form digital content, for example, has been associated with more phubbing in conjunction with lower self-control (David & Roberts, 2025). Phubbing has also been examined alongside smartphone dependence, fear of missing out, and lower self-control (Hutabarat et al., 2024). In peer contexts, exposure to phubbing has been related to psychological distress, problematic smartphone use, and poorer sleep quality (Li et al., 2023), and repeated exposure has been associated with lower self-control and empathy (Schmidt-Barad & Chernyak-Hai, 2024). Taken together, this evidence supports examining self-control as a specific self-regulatory capacity that is related to both technology-mediated behavior and adolescent mental well-being, without implying a causal sequence.

Self-control is also relevant to how adolescents manage school demands. When academic performance expectations are high, difficulties sustaining attention, organizing time, or persisting with goal-directed work may accompany lower self-control. These difficulties can coexist with academic expectations stress, which concerns stress arising from one's own aspirations and from expectations communicated by parents, teachers, or competitive educational settings (Ang & Huan, 2006; Jagiello et al., 2024). The ordering used in the present model reflects a conceptual distinction: self-control represents a comparatively general capacity for impulse regulation and goal-directed action, whereas academic expectations stress is tied to a specific academic context (Ang & Huan, 2006; Duckworth et al., 2019; Tangney et al., 2004). Consistent with this distinction, self-control has been linked to academic functioning, and lower self-control has been discussed as a correlate or intervening factor in difficulties such as academic burnout (Jiang et al., 2023). We therefore placed self-control before academic expectations stress as a theoretically plausible specification, not as evidence of temporal precedence. Because stress may also undermine self-control, the reverse ordering remains plausible and cannot be resolved with the present cross-sectional data.

Academic expectations stress is narrower than general academic stress because it centers specifically on perceived expectations about performance. Research on related constructs shows that academic pressure is associated with depression, anxiety, self-harm, and suicidal ideation (Steare et al., 2023), while academic burden has been linked longitudinally with emotional problems (Wang et al., 2025). Technology-related behaviors have also been studied in relation to academic burnout (Tong et al., 2024). What remains less clear is how phubbing is associated specifically with academic expectations stress and how both variables relate to positive mental well-being. This gap provides a rationale for examining self-control and academic expectations stress together within the same model.

Present Study

The study therefore brought four constructs into one model: adolescents' phubbing, self-control, academic expectations stress, and mental well-being. Previous work has associated phubbing with psychological and adjustment difficulties (Gao et al., 2025; Tong et al., 2024), while self-control has been examined in relation to phubbing and other digital behaviors (David & Roberts, 2025; Xie et al., 2024). Research on academic expectations stress, by contrast, emphasizes stress arising from one's own performance expectations and from expectations communicated by others (Ang & Huan, 2006), and broader academic pressure and stress have been linked with less favorable psychological outcomes (Steare et al., 2023; Wang et al., 2025). Because these research strands have generally developed separately, their joint pattern remains insufficiently examined. Of particular interest in the present study was the ordered indirect

association in which self-control precedes academic expectations stress within the specified model.

Accordingly, this study tested a model examining indirect pathways linking phubbing to mental well-being through self-control and academic expectations stress. Based on prior research, three hypotheses were formulated:

H1: Phubbing is indirectly associated with mental well-being through self-control.

H2: Phubbing is indirectly associated with mental well-being through academic expectations stress.

H3: Phubbing is indirectly associated with mental well-being sequentially through self-control and academic expectations stress.

RESEARCH METHOD

Participants and Procedure

The sample comprised 400 students aged 14–19 years from 15 class sections in a single public high school in Istanbul, Türkiye. Of these students, 239 were female and 161 were male (M = 15.93, SD = 1.10). Grade-level representation was 25.0% in Grade 9 (n = 100), 29.8% in Grade 10 (n = 119), 23.3% in Grade 11 (n = 93), and 22.0% in Grade 12 (n = 88). Participants were selected through convenience sampling. This approach reflected practical conditions of school-based recruitment, including access to the school, parental consent, adolescent assent, and the need for researcher-supervised administration; it was not intended to yield a nationally representative sample. Sample adequacy was considered in light of simulation-based guidance for SEM and indirect-effect testing rather than a single fixed rule. Requirements for SEM vary with features such as model complexity, loading size, path magnitude, and data characteristics (Wolf et al., 2013), and power for an indirect effect likewise depends on the sizes of its component paths and the inferential approach (Fritz & MacKinnon, 2007). With four latent variables, ten observed indicators, complete data, and 400 participants, the sample was considered adequate for estimating the specified model. Table 1 summarizes the demographic characteristics.

Approval for the research was granted by the Yıldız Technical University Social and Human Sciences Research Ethics Committee before data collection. Students completed the Google Forms questionnaire on their own smartphones at school while a researcher supervised administration. Participation began only after parental consent and adolescent assent had been obtained. Students were informed that participation was optional, responses would be handled anonymously and confidentially, and they could stop participating at any time without penalty.

Measures

Generic Scale of Phubbing (GSP). The study assessed phubbing with the 15-item Generic Scale of Phubbing developed by Chotpitayasunondh and Douglas (2018). Its four domains are nomophobia, interpersonal conflict, self-isolation, and problem awareness. Items are scored on a 7-point Likert scale, and higher total scores indicate more frequent phubbing. Göksun (2019) established the Turkish adaptation while retaining the original four-factor structure and reported Cronbach's α = .74. For the current sample, Cronbach's α was .86.

Brief Self-Control Scale (BSCS). Self-control was evaluated with the 13-item BSCS developed by Tangney et al. (2004). Responses are given on a 5-point scale and yield higher scores as self-control increases. Nebioğlu et al. (2012) validated the Turkish version, and later research

supported its use with adolescents (Gökalp et al., 2022). Cronbach's α in this sample was .81.

Table 1. *Participants' Characteristics*

Variable	*Frequency*	*%*
Gender		
Female	*239*	*59.8*
Male	*161*	*40.3*
Grade Level		
Grade 9	*100*	*25.0*
Grade 10	*119*	*29.8*
Grade 11	*93*	*23.3*
Grade 12	*88*	*22.0*
Mother Education Level		
Primary School	*195*	*48.8*
High School	*158*	*39.5*
University	*42*	*10.5*
Master / Ph.D.	*5*	*1.3*
Father Education Level		
Primary School	*177*	*44.3*
High School	*163*	*40.8*
University	*56*	*14.0*
Master / Ph. D.	*4*	*1.0*
Daily Phone Usage Time (h)		
1	*5*	*1.3*
2	*34*	*8.5*
3	*95*	*23.8*
4	*99*	*24.8*
5	*80*	*20.0*
6+	*87*	*21.8*

Academic Expectations Stress Inventory (AESI). The 9-item AESI (Ang & Huan, 2006) was used to assess stress arising from academic expectations. The instrument contains two dimensions, Family/Teacher Expectations and Self-Expectations, and uses a 5-point Likert response format. Higher scores reflect greater academic expectations stress. The Turkish adaptation by Kelecioğlu and Bilge (2009) retained the two-factor structure. In the present study, Cronbach's α was .86.

Warwick–Edinburgh Mental Well-Being Scale – Short Form (WEMWBS-SF). Mental well-being was measured with the seven-item short form of the Warwick–Edinburgh Mental Well-Being Scale (Stewart-Brown et al., 2009). The positively worded items use a 5-point response scale, with larger scores reflecting better mental well-being. Demirtaş and Baytemir (2019) supported a unidimensional Turkish version and reported α values of .84 and .86 across two samples. Cronbach's α for the present sample was .83.

Statistical Analyses

Before model estimation, the data were checked for completeness, distributional form, and relevant statistical assumptions. The online survey required an answer to every item, leaving

no missing observations and allowing all 400 cases to be analyzed. Skewness values extended from −.38 to .45 and kurtosis values from −.51 to −.08, which did not suggest substantial univariate non-normality. Cronbach's α coefficients ranged from .81 to .86. Tolerance values between .61 and .92 also provided no indication of problematic multicollinearity (Field, 2024).

Structural equation modeling was used to evaluate the hypothesized indirect-effect model. Consistent with Anderson and Gerbing (1988), measurement properties were examined before the structural paths were tested. Parameters were estimated with maximum likelihood. Overall fit was evaluated using CFI, TLI, RMSEA, and SRMR; CFI/TLI values of .90 or higher and RMSEA/SRMR values of .08 or lower were interpreted as acceptable (Hu & Bentler, 1999).

For the two unidimensional measures, BSCS and WEMWBS-SF, item parcels were used to maintain a parsimonious measurement specification (Little et al., 2002). Each scale was represented by two parcels created through odd–even allocation, with odd-numbered items assigned to one parcel and even-numbered items to the other. IBM SPSS Statistics 27 and AMOS 24 were used for the analyses.

FINDINGS

Preliminary Analyses

At the bivariate level, greater phubbing corresponded with lower self-control (r = −.42, p < .001), lower mental well-being (r = −.34, p < .001), and higher academic expectations stress (r = .21, p < .001) (Table 2). Self-control was inversely related to academic expectations stress (r = −.23, p < .001) and positively related to mental well-being (r = .50, p < .001). Academic expectations stress also showed an inverse association with mental well-being (r = −.35, p < .001). This pattern was compatible with the hypothesized structural relationships examined next.

Table 2. *Descriptive Statistics and Correlations*

	Descriptive Statistics and Reliabilities					Correlations		
Variables	**Mean**	**SD**	**Skewness**	**Kurtosis**	**α**	**1**	**2**	**3**
1. Phubbing	50.06	16.29	.45	−.08	.86	–		
2. Self-control	41.26	9.01	.02	−.30	.81	−.42**	–	
3. Academic expectations stress	32.36	8.11	−.38	−.51	.86	.21**	−.23**	–
4. Mental well-being	23.44	6.12	−.30	-.24	.83	−.34**	.50**	−.35**

Note. α = Cronbach's alpha. *p < .05. **p < .01.

Structural Equation Modeling

Measurement Model

The measurement specification contained four latent variables—phubbing, self-control, academic expectations stress, and mental well-being—indicated by ten observed variables. Model fit was excellent (RMSEA = .042, SRMR = .032, CMIN/df = 1.70, CFI = .987, RFI = .951, IFI = .987, NFI = .968, TLI = .979, GFI = .977). Every factor loading was significant and fell between .51 and .96. On this basis, the measurement specification was considered adequate, and the structural pathways

linking phubbing with mental well-being through self-control and academic expectations stress were evaluated.

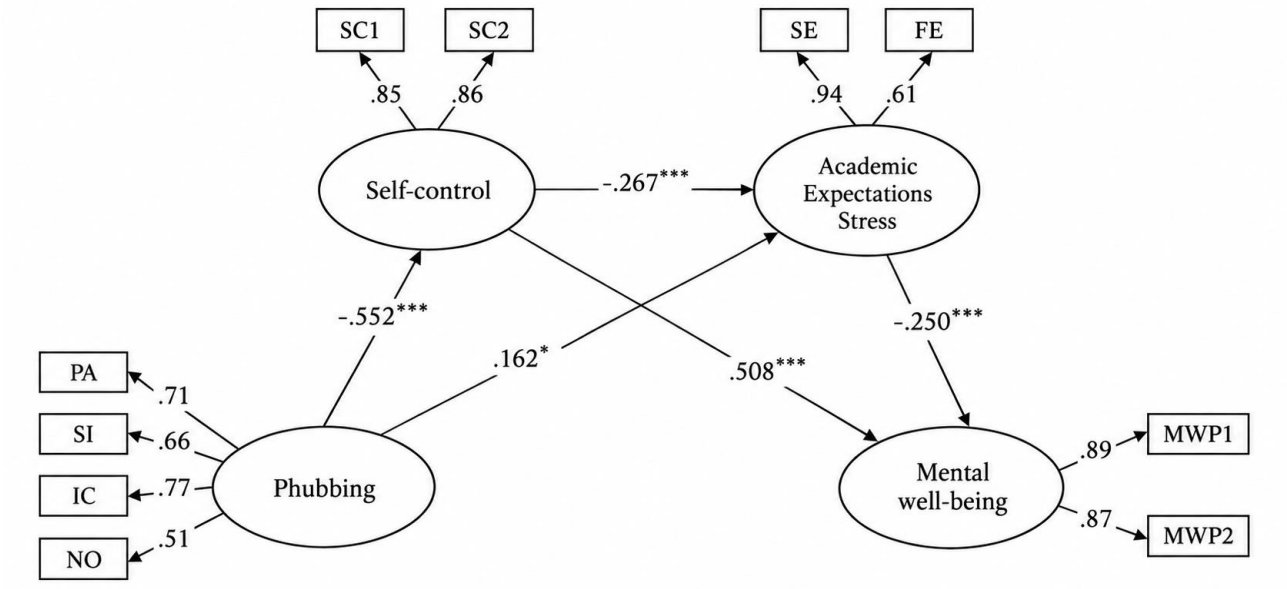
Structural Model

The first structural specification retained a direct path from phubbing to mental well-being in addition to the proposed indirect paths. Although fit indices were acceptable (CMIN/df = 1.697, CFI = .987, TLI = .979, RMSEA = .042, SRMR = .032), the direct phubbing–mental well-being coefficient was not statistically significant. The direct path was therefore set to zero to obtain a more parsimonious alternative model containing only the indirect routes.

The more parsimonious model continued to show good fit (CMIN/df = 1.755, CFI = .985, TLI = .977, RMSEA = .043, SRMR = .036) and was retained for interpretation. Specific indirect effects were examined with 5,000 bootstrap resamples and 95% bias-corrected confidence intervals. Following Hayes (2018), an indirect association was considered statistically significant when its interval did not cross zero.

Each hypothesized indirect pathway was supported by the bootstrap analysis. For H1, the specific indirect association through self-control was $B = -.275$, 95% BCa CI [−.385, −.194], $p < .001$. For H2, the pathway through academic expectations stress was $B = -.040$, 95% BCa CI [−.119, −.002], $p = .034$. The ordered pathway specified in H3—phubbing → self-control → academic expectations stress → mental well-being—was also significant ($B = -.036$, 95% BCa CI [−.075, −.015], $p = .001$). None of the three bias-corrected intervals contained zero. These estimates describe indirect associations within a cross-sectional model and do not establish causal or temporal ordering. Figure 1 reports the standardized structural estimates, whereas Table 3 presents the unstandardized bootstrapped specific indirect effects.

Figure 1. *Standardized Estimates for the Structural Model*



Note. Standardized estimates are presented. *$p < .05$. ***$p < .001$.

Table 3. *Unstandardized Bootstrapped Indirect Effects for the Model Pathways*

Model pathways		95% CI	
Indirect effect	**Coefficient**	**Lower**	**Upper**
Phubbing → Self-control → Mental well-being	−.275	−.385	−.194
Phubbing → Academic expectations stress → Mental well-being	−.040	−.119	−.002
Phubbing → Self-control → Academic expectations stress → Mental well-being	−.036	−.075	−.015

Note. Coefficients represent unstandardized specific indirect effects obtained using bias-corrected bootstrapping with 5,000 resamples. Confidence intervals (CI) that do not include zero indicate statistically significant indirect effects.

DISCUSSION

Adolescents now navigate social interaction and school life in environments where smartphones are continuously present. Digital technologies can support learning and communication, yet smartphone use during face-to-face exchanges may also relate to psychosocial functioning. Against this background, the study examined whether phubbing was associated with mental well-being through indirect pathways involving self-control and academic expectations stress. Bringing these variables together offers a more integrated view of how an interpersonal digital behavior may coincide with psychological and academic experiences in adolescence.

The pathway involving self-control supported H1. Students reporting more phubbing also reported less self-control, and lower self-control corresponded with poorer mental well-being. This pattern is consistent with accounts of self-control as a capacity that supports behavioral regulation and emotional balance (Duckworth et al., 2019; Tangney et al., 2004). Related evidence shows that short-form video engagement can be associated with phubbing in conjunction with lower self-control (David & Roberts, 2025). Peer phubbing has likewise been linked with psychological distress, problematic smartphone use, and poorer sleep outcomes (Li et al., 2023), while repeated exposure to phubbing has been associated with lower self-control and empathy (Schmidt-Barad & Chernyak-Hai, 2024). The present findings therefore identify self-control as an important correlate within the phubbing–mental well-being relationship, while the cross-sectional design requires an associative rather than causal interpretation.

H2 was also supported: phubbing showed a significant indirect association with mental well-being through academic expectations stress. In the model, greater phubbing corresponded with more stress related to academic expectations, and higher stress corresponded with poorer mental well-being. This finding sits within a broader literature showing that academic demands are relevant to adolescent mental health (Dewangan et al., 2023). Tong et al. (2024), for example, identified potentially bidirectional links between academic burnout and technology-related behaviors such as nomophobia and phubbing. A systematic review associated academic pressure with depression, anxiety, self-harm, and suicidal ideation (Steare et al., 2023), and longitudinal work has linked academic burden with later emotional problems through processes including sleep difficulties, loneliness, and lower physical activity (Wang et al., 2025). Academic expectations stress may therefore be a context-specific correlate within the association between phubbing and mental well-being, but reciprocal relationships remain plausible.

The sequential pathway specified in H3 was significant as well, indicating that self-control and academic expectations stress may be related components of the same broader pattern. Previous research links lower self-control with less adaptive functioning in adolescence (Mirandi et al., 2023), and connects academic burnout or burden with emotional difficulties (Tong et al., 2024; Wang et al., 2025). One possibility is that adolescents with less self-control find it harder to manage digital distractions alongside academic demands, while academic expectations stress adds further strain. Such pressures may be especially relevant in educational settings where performance expectations are prominent (Steare et al., 2023). Nevertheless, the present data are equally compatible with reciprocal influence; they do not demonstrate a one-way developmental sequence.

Implications

The findings are relevant to professionals who support adolescents in school settings. For school psychologists and counselors, assessment of psychosocial functioning may benefit from considering digital interaction habits together with self-control and academic expectations stress. School-based support can accordingly include strategies for managing smartphone-related distraction, strengthening self-control, and coping with stress arising from academic expectations.

Educators and school administrators may also consider how performance expectations are communicated while promoting healthy patterns of smartphone use. At the policy level, the results may be useful when designing preventive school initiatives that address both digital interaction habits and academic expectations stress. For research, the present framework offers a starting point for longitudinal and intervention studies capable of testing how phubbing, self-control, academic expectations stress, and mental well-being change together over time.

Limitations

Several features of the design limit the scope of the conclusions. Because the variables were assessed at a single time point, the analysis cannot establish causality or determine which construct precedes another over time. Longitudinal or experimental research is required to address temporal ordering. The sampling strategy also constrains generalizability: participants were recruited by convenience from only one public high school, and students who were available and participated may differ from the broader high school population in Türkiye. For the SEM results, this means that acceptable model fit reflects the covariance structure of the present sample rather than population representativeness. Path estimates and indirect effects should therefore be generalized cautiously. Replication with multiple schools and regions, broader socioeconomic and cultural coverage, and preferably probability-based or stratified recruitment would provide a stronger test of external validity. Contextual features such as school climate, cultural norms, and local academic expectations may further influence both digital behavior and mental well-being.

A further limitation is the exclusive use of self-report measures, which may be affected by response tendencies. Future studies could combine self-reports with behavioral indicators or information from peers, parents, or teachers. The model also did not include potentially relevant contextual influences such as peer processes, family dynamics, or school climate. Incorporating these factors in longitudinal and multi-informant designs could provide a fuller account of how phubbing is situated within adolescents' social and educational environments and how it relates to mental well-being.

Conclusion

In this cross-sectional sample, phubbing was related to mental well-being through

significant indirect pathways involving self-control and academic expectations stress. Greater phubbing co-occurred with lower self-control and higher academic expectations stress, and the ordered indirect pathway involving both variables was significant. These results suggest that interpersonal smartphone distraction and academic performance pressures may intersect during adolescence. Self-control and academic expectations stress therefore appear relevant to understanding mental well-being in highly digitalized contexts. The findings do not establish causation, but they support further evaluation of educational and preventive approaches that address both constructs and encourage longitudinal research on how these associations unfold over time.

DECLARATIONS

Ethical Approval

Ethics clearance for the study and its data-collection procedures was granted by the Yıldız Technical University Social and Human Sciences Research Ethics Committee on May 2, 2024 (Meeting No. 2024.05; Report No. 20240502955).

Informed Consent

Before participation, parents provided informed consent and the adolescents provided assent. Students were told that participation was voluntary and that they could withdraw at any time without penalty.

Consent for Publication

Not applicable. No identifiable participant information, images, or individual-level material requiring publication consent is included in the manuscript.

Conflict of Interest

The authors report no conflicts of interest related to this article.

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Author Contributions

Sibel Maral took primary responsibility for manuscript preparation, including the initial drafting, organization of the paper, and revisions during peer review. Huzeyfe Bilmez carried out the data collection and contributed to implementing the study procedures. Ümüt Arslan and Fulya Türk supervised the research and provided critical feedback during manuscript development. All authors reviewed and approved the final manuscript and accept responsibility for the work.

Data Availability

The study data are not publicly accessible because of ethical and confidentiality obligations associated with protecting adolescent participants.

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Use of Generative AI and AI-Assisted Technologies

OpenAI's ChatGPT was used during final manuscript preparation as a language-editing aid for grammar, wording, punctuation, readability, academic style, and consistency. The authors independently checked and approved all AI-assisted revisions and retain full responsibility for the final manuscript. The tool was not used to collect, generate, modify, or statistically analyze the study data.

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