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Research Article

Problematic internet use, problematic smartphone use, social connectedness and social phobia in university students

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Abstract

Objective: This study examined the relationships among problematic smartphone use, problematic internet use, social connectedness, and social phobia among university students. Using a cross-sectional quantitative design, the study was conducted with 279 students enrolled at a public university in eastern Türkiye during the 2020–2021 academic year, selected through convenience sampling.

Method: Data were collected using a Personal Information Form, the Smartphone Addiction Scale, the Problematic Internet Use Scale, the Social Connectedness Scale, and the Liebowitz Social Anxiety Scale. Descriptive statistics, correlation and regression analyses, independent-samples *t* tests, one-way analysis of variance, the Kruskal–Wallis *H* test, and Scheffé post hoc tests were used to analyze the data.

Results: The findings showed that problematic smartphone use was positively associated with problematic internet use and the anxiety and avoidance dimensions of social phobia but negatively associated with social connectedness. In addition, social avoidance and social connectedness significantly predicted problematic smartphone use, whereas social anxiety and social connectedness significantly predicted problematic internet use.

Conclusion: Overall, higher levels of problematic technology use were associated with greater social phobia and lower social connectedness among university students.

Keywords: Problematic internet use, Problematic smartphone use, Social connectedness, Social phobia/ Anxiety, Social avoidance.

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INTRODUCTION

Internet-enabled technologies and smartphones have become integral to university students' academic, social, and recreational lives. Although these technologies provide important opportunities for communication and information access, excessive or poorly regulated use may develop into problematic patterns that interfere with daily and interpersonal functioning (Busch & McCarthy, 2021; Sánchez-Fernández & Borda-Mas, 2023). Problematic internet use generally refers to maladaptive or excessive online engagement associated with negative consequences in everyday life (Caplan, 2018; Davis, 2001), whereas problematic smartphone use involves patterns of smartphone engagement characterized by diminished control and functional impairment (Kwon et al., 2013). Among university students, both forms of problematic technology use have been associated with psychosocial difficulties, including reduced face-to-face interaction, weaker social connectedness, loneliness, and social anxiety (Busch & McCarthy, 2021; Elhai et al., 2020). From a broader digital well-being perspective, recent work emphasizes that technology-related experiences should be evaluated multidimensionally across psychological, social, physical, and academic domains rather than solely in terms of time spent online (Erdemir, 2025; Erdemir & Atik, 2026).

Social connectedness may be particularly relevant to understanding problematic technology use. It refers to individuals' sense of closeness, belonging, and integration within interpersonal relationships and the broader social environment (Lee & Robbins, 1998). University students face new interpersonal environments and developmental demands in which belonging and meaningful social relationships are especially salient. Lower social connectedness has been associated with greater reliance on online communication and problematic smartphone behaviors (Lin et al., 2021). Conversely, individuals who feel more socially connected may have less need to use digital environments as a substitute for unmet interpersonal needs.

Social phobia may represent another important interpersonal factor associated with problematic internet and smartphone use. Individuals experiencing social anxiety or avoidance may perceive online communication as less threatening and more controllable than face-to-face interaction, particularly when they fear negative evaluation. Previous research has linked social anxiety and psychological distress with problematic internet and smartphone use (Busch & McCarthy, 2021; Elhai et al., 2020). Social avoidance may also be relevant because individuals who withdraw from face-to-face interactions may increasingly rely on digitally mediated communication. Recent evidence further suggests that social anxiety can positively predict digital addiction among university students (Atik et al., 2026).

These relationships can be more explicitly understood within Compensatory Internet Use Theory, which proposes that individuals may engage in online activities to cope with unmet psychological or social needs and with difficulties experienced in offline life (Kardefelt-Winther, 2014). Within this framework, social connectedness, social anxiety, and social avoidance may represent different interpersonal conditions associated with compensatory technology use. Individuals with lower social connectedness may turn to online environments to compensate for unmet needs for belonging, closeness, and interpersonal integration. Consistent with this interpretation, lower social connectedness has been associated with greater reliance on online communication and problematic smartphone behaviors (Lin et al., 2021).

Social anxiety and social avoidance may operate through related but somewhat different mechanisms. Individuals with higher social anxiety may find digitally mediated interaction more manageable because it can reduce the immediacy of face-to-face evaluation and provide greater control over interpersonal interaction. Social avoidance, in turn, may reduce participation in direct social situations and increase reliance on online communication as an alternative form of interpersonal engagement.

Previous evidence linking social anxiety with problematic internet and smartphone use supports this interpretation (Atik et al., 2026; Busch & McCarthy, 2021; Elhai et al., 2020). Thus, from a compensatory internet use perspective, lower social connectedness and greater social anxiety or avoidance may be associated with increased reliance on internet- and smartphone-based environments for managing social needs or discomfort. When such compensatory use becomes repeated or poorly regulated, it may be associated with higher levels of problematic internet use and problematic smartphone use.

The present study

Previous research has linked problematic internet and smartphone use with social anxiety and social connectedness; however, these associations have often been examined separately or without distinguishing the anxiety and avoidance dimensions of social phobia. The contribution of the present study lies not in treating these individual associations as entirely new, but in examining social connectedness, social anxiety, and social avoidance simultaneously in relation to two related but distinct forms of problematic technology use: problematic internet use and problematic smartphone use. This approach makes it possible to examine whether the affective component of social phobia (social anxiety) and its behavioral component (social avoidance) show similar or different patterns of association with these two forms of problematic technology use, while also considering social connectedness as an interpersonal resource. In this way, the study is expected to provide a more differentiated account of which aspects of interpersonal functioning are most closely associated with problematic internet use and problematic smartphone use among university students. As a secondary contribution, the study also includes exploratory analyses examining whether these variables differ according to selected demographic characteristics and technology-use behaviors, thereby providing additional descriptive information about the contexts in which problematic technology use may be more pronounced.

Accordingly, the present study investigated the relationships among problematic smartphone use, problematic internet use, social connectedness, social anxiety, and social avoidance. Based on Compensatory Internet Use Theory and the empirical evidence reviewed above, the following hypotheses were proposed:

H1. Problematic smartphone use, problematic internet use, social connectedness, social anxiety, and social avoidance are significantly interrelated.

H2. Social connectedness, social anxiety, and social avoidance significantly predict problematic smartphone use among university students.

H3. Social connectedness, social anxiety, and social avoidance significantly predict problematic internet use among university students.

In addition to these hypothesis-driven analyses, exploratory analyses were conducted to examine whether the study variables differed according to selected demographic characteristics and technology-use behaviors, including age, gender, class level, sleep duration, internet-use duration, social media use, smartphone-use habits, and self-perceived problematic smartphone use. Given the number of comparisons, these analyses were considered secondary and exploratory rather than confirmatory hypothesis tests.

METHODS

Research design

This study employed a descriptive correlational design. Correlational research examines the relationships among two or more variables without manipulating them (Büyüköztürk et al., 2017). This design also enables researchers to assess differences among variables and determine the strength of their relationships (Büyüköztürk et al., 2009).

Participants

The sample comprised 279 volunteer students enrolled at Hakkari University during the 2020–2021 academic year. Participants were recruited

using convenience sampling. Students were invited to participate through both face-to-face contact and online communication channels, depending on the COVID-19 conditions and accessibility at the time of data collection. Online invitations were shared through student WhatsApp groups, e-mail, and course-related communication groups. Participation was voluntary, and students who received the invitation could choose whether to complete the questionnaire.

Because recruitment was based on convenience sampling and existing student communication channels rather than probability sampling, it cannot be assumed that all eligible students had an equal probability of being reached or participating. Incomplete responses were excluded from the analyses. Of the final 279 participants, 184 (65.9%) were female and 95 (34.1%) were male. Most were aged 21–25 years (67.7%), followed by 18–20 (15.8%), 26–30 (11.8%), and 31 or older (4.7%). Regarding class level, 39.1% were first-year, 28.7% second-year, 17.9% third-year, and 14.3% fourth-year students.

Before data collection, an a priori sample-size calculation was conducted using G*Power 3.1 for the multiple regression analyses. Based on three predictors, a medium effect size ($f^2 = 0.15$), $\alpha = .05$, and a power level of .80, the minimum required sample size was calculated as 77 participants. The final sample consisted of 279 students, exceeding this minimum requirement. The sample-size calculation was conducted specifically for the primary regression analyses; the demographic and technology-related group comparisons were treated as secondary exploratory analyses. Because the participants were recruited through convenience sampling from a single university, the generalizability of the findings remains limited.

Data collection tools

In this study, personal information data form, “Liebowitz Social Phobia/Anxiety”, “Social Connectedness”, “Problematic Internet Use” and

“Smartphone Addiction” scales were used in the data collection process.

Personal information data form

The personal information form assessed participants' gender, age, grade level, sleep duration, daily internet and social media use, purposes of internet and smartphone use, and time spent accessing the internet via mobile phones. It also included items on excessive phone use, immediate phone checking in new environments or during free time, and self-perceived problematic smartphone use.

Problematic internet use scale

The Problematic Internet Use Scale assesses healthy and problematic internet use among university students. It contains 33 items across three subdimensions: excessive use, social benefit, and negative consequences (Ceyhan et al., 2007). Scores range from 33 to 165, with higher scores indicating greater problematic use; two items are reverse-coded. The scale has demonstrated high internal consistency in university samples ($\alpha = .94$; Ceyhan et al., 2007). In the present sample, the scale demonstrated excellent internal consistency (Cronbach's $\alpha = .97$).

Smartphone addiction scale

The Smartphone Addiction Scale was developed by Kwon et al. (2013) to assess problematic smartphone use. Turkish adaptations were conducted by Noyan et al. (2015) for university students and by Şata and Karip (2017) for adolescents. The unidimensional scale yields scores between 10 and 60, with higher scores indicating higher levels of problematic smartphone use. In the present study, scale scores were treated as a continuous indicator of problematic smartphone use rather than as evidence of a clinical diagnosis of addiction. Reliability coefficients were high across samples, including Cronbach's α values of .867 and .90, test-retest reliability of .926, and McDonald's ω of .94 (Noyan et al., 2015; Şata & Karip, 2017). In the present sample, the Smartphone Addiction Scale demonstrated excellent internal consistency (Cronbach's $\alpha = .94$).

Liebowitz social phobia/anxiety scale

The Liebowitz Social Anxiety Scale was developed by Liebowitz (1987) to assess social anxiety and avoidance. It comprises 24 items across two subdimensions: anxiety and avoidance. Thirteen items address performance situations, and 11 assess social interactions. The scale has demonstrated excellent reliability, including *Cronbach's* α of .98, *test-retest reliability* of .97, and *inter-rater reliability* of .96 (Heimberg et al., 1999). Turkish adaptation studies also supported its validity and reliability (Dilbaz & Güz, 2001; Soykan et al., 2003). Higher scores indicate greater social anxiety and avoidance. In the present sample, internal consistency was excellent for both the anxiety dimension (*Cronbach's* α = .92) and the avoidance dimension (*Cronbach's* α = .94).

Social connectedness scale

The Social Connectedness Scale was developed by Lee and Robbins (1995) to assess perceived interpersonal closeness and belonging. It includes eight items rated on a six-point Likert scale, with total scores ranging from 8 to 48; higher scores indicate stronger social connectedness. The scale contains no reverse-coded items. Its Turkish adaptation demonstrated high internal consistency (α = .90; Duru, 2007), supporting its validity and reliability. In the present sample, the Social Connectedness Scale demonstrated excellent internal consistency (*Cronbach's* α = .95).

Data collection process

Ethical permission for this study was obtained from the Social and Human Sciences Ethics Committee of Atatürk University, Erzurum, dated 18.02.2021 and numbered 02. Following ethical approval, data were collected from volunteer university students during the COVID-19 pandemic. Because pandemic-related restrictions affected access to students and face-to-face teaching, questionnaires were administered using both face-to-face and online procedures.

When face-to-face access was possible, eligible students were informed about the study and invited to complete the questionnaire voluntarily. When in-person data collection was not feasible, the questionnaire was prepared using Google Forms, and the survey link was distributed to students through WhatsApp groups, e-mail, and course-related communication groups. The invitation provided information about the purpose of the study and the voluntary nature of participation. Students were free to decline participation.

Because the online invitation was circulated through multiple communication channels and the exact number of students who received or viewed the invitation was not recorded, a precise response rate could not be calculated. In addition, because convenience sampling was used, the recruitment procedure did not ensure that every eligible student in the university had an equal probability of participation. Because the mode of questionnaire administration was not recorded as a participant-level variable, the exact numbers of students who completed the questionnaires face-to-face and online could not be determined retrospectively. Consequently, it was not possible to conduct a direct statistical comparison between the two administration modes.

Data analysis

Data were analyzed using IBM SPSS Statistics 22.0. Frequencies and percentages were used to summarize demographic characteristics, while Pearson correlations examined associations among problematic internet use, problematic smartphone use, social connectedness, social anxiety, and social avoidance. Two Enter-method linear regression analyses were conducted, with problematic smartphone use and problematic internet use entered separately as dependent variables and social connectedness, social anxiety, and social avoidance as predictors.

In addition to these hypothesis-driven analyses, exploratory group comparisons were conducted across selected demographic characteristics and

technology-use behaviors. Independent-samples *t* tests and one-way ANOVA were used where appropriate, followed by Scheffé post hoc tests when significant, while the Kruskal–Wallis *H* test was applied when parametric assumptions were not met. Scheffé post hoc tests were used only following significant one-way ANOVA results. For significant Kruskal–Wallis tests, the available records from the original dissertation analyses did not document a non-parametric pairwise comparison procedure in sufficient detail to allow its reliable identification or reproduction. Therefore, the revised manuscript reports and interprets only the omnibus Kruskal–Wallis results and does not make unverified pairwise post-hoc claims. No formal adjustment for multiple comparisons across the full set of exploratory analyses was applied. Because these comparisons involved multiple demographic and technology-use variables, they were treated as secondary exploratory analyses rather than confirmatory hypothesis tests and were interpreted cautiously. Normality of the observed study variables was evaluated using skewness and kurtosis values. However, because the present article was prepared from an earlier doctoral dissertation dataset and the original participant-level dataset and regression diagnostic outputs are no longer available in a form that permits reliable retrospective reanalysis, additional diagnostic statistics for multiple linear regression (e.g., tolerance/VIF, Durbin–Watson statistics, and residual plots) could not be reproduced for the present revision. Accordingly, the regression findings should be interpreted with this limitation in mind. (Table 1).

Table 1. Normality test results of social phobia scale (anxiety and avoidance dimensions), social connectedness scale, problematic internet use scale and smartphone addiction scale for university students

	<i>Skewness</i>	<i>Kurtosis</i>
Smartphone Addiction Scale	.628	-.176
Problematic Internet Use Scale	1.068	.603
Social Connectedness Scale	-.265	.466
Social Phobia (Anxiety Dimension) Scale	.582	.117
Social Phobia (Avoidance Dimension) Scale	.623	-.196

As shown in Table 1, the skewness and kurtosis values for social anxiety, social avoidance, social connectedness, problematic internet use, and problematic smartphone use were within ± 1.5 , indicating an approximately normal distribution (Tabachnick & Fidell, 1996).

RESULTS

Table 2. Correlation analysis of study variables

		1	2	3	4	5
Smartphone Addiction Scale-Short Form	<i>r</i>	1				
	<i>p</i>					
Problematic Internet Use Scale	<i>r</i>	.604**	1			
	<i>p</i>	< .001				
Social Connectedness Scale	<i>r</i>	-.254**	-.453**	1		
	<i>p</i>	< .001	< .001			
Liebowitz Social Anxiety/Phobia Scale Anxiety Dimension	<i>r</i>	.199**	.076	-.163**	1	
	<i>p</i>	< .001	.203	.006		
Liebowitz Social Anxiety/Phobia Scale Avoidance Dimension	<i>r</i>	.171**	.243**	-.149*	.289**	1
	<i>p</i>	.004	< .001	.013	< .001	

(*) $p < .05$, (**) $p < .001$.

As shown in Table 2, problematic smartphone use was positively correlated with problematic internet use, social anxiety, and social avoidance, but negatively correlated with social connectedness ($p < .05$). Problematic internet use was negatively associated with social connectedness and positively associated with social avoidance, whereas its relationship with social anxiety was not significant ($p > .05$). Social connectedness was negatively correlated with both social anxiety and social avoidance, while the anxiety and avoidance dimensions were positively correlated with each other ($p < .05$).

Table 3. Linear regression analysis results regarding the prediction of problematic smartphone use by university student social connectedness, social anxiety, and social avoidance

Variable	<i>B</i>	<i>Standard Error</i>	<i>Beta</i>	<i>t</i>	<i>p</i>
Constant	26.466	4.192		6.314	< .001
Social avoidance	.116	.052	.134	2.229	.027
Social anxiety	.091	.055	.100	1.659	.098
Social connectedness	-.257	.069	-.218	-3.731	< .001
R = .315	R ² =.099				
$F_{(3,275)} = 10.087 \quad p < .001$					

a. Dependent variable: Problematic smartphone use

As shown in **Table 3**, social avoidance and social connectedness significantly predicted problematic smartphone use ($R = .315$, $R^2 = .099$, $p < .05$), jointly explaining approximately 10% of its variance among university students.

Table 4. Linear regression analysis results regarding the prediction of problematic internet use by university students' social connectedness, social anxiety and social avoidance

Variable	<i>B</i>	<i>Standard Error</i>	<i>Beta</i>	<i>t</i>	<i>p</i>
Constant	89.178	8.899		10.021	< .001
Social avoidance	-.099	.110	-.050	-.900	.369
Social anxiety	.408	.117	.193	3.493	< .001
Social connectedness	-1.177	.146	-.432	-8.052	< .001
R = .488	R2=.239				
$F(3,275) = 28.717 \quad p < .001$					

a. Dependent variable: Problematic internet use

As shown in **Table 4**, social anxiety and social connectedness significantly predicted problematic internet use ($R = .488$, $R^2 = .239$, $p < .05$), jointly explaining approximately 24% of its variance among university students.

Exploratory analyses showed that male students had higher problematic smartphone use and problematic internet use scores than female students. Problematic smartphone use also differed by class level, with Scheffé comparisons indicating higher scores among third- and fourth-year students than among first-year students. Daily internet-use duration was significantly associated with both problematic smartphone use and problematic internet use in the omnibus Kruskal–Wallis analyses. Other demographic comparisons are presented in **Table 5**.

Several exploratory differences were observed according to internet-use patterns. Entertainment-oriented and social-media use were associated with higher problematic smartphone use and problematic internet use, while internet use for chatting was associated with higher scores on both outcomes and lower social connectedness. Problematic internet use also differed according to gaming, and longer daily social-network use was associated with higher problematic smartphone use and problematic internet use. Additional activity-specific comparisons are reported in **Table 6**.

Table 5. Demographic and internet use characteristics

Variable	Categories	N (%)	SAS $\bar{x} \pm SD$	PIUS $\bar{x} \pm SD$	SCS $\bar{x} \pm SD$	LSAS (Avoidance) $\bar{x} \pm SD$	LSAS (Anxiety) $\bar{x} \pm SD$
Gender	Female	184 (%65.9)	27.28±11.875	64.73±24.786	31.15±10.171	46.99±13.390	50.29±12.996
	Male	95 (%34.1)	30.43±10.961	74.34±29.704	31.99±9.294	45.91±13.844	49.79±12.278
	<i>t</i>		-2.154	-2.864	-.675	.637	.309
	<i>p</i>		.032	.005	.500	.525	.757
Age	18-20	44 (%15.8)	29.07±10.857	71.42±28.672	29.42±10.271	48.47±14.173	50.37±11.836
	21-25	189 (%67.7)	28.13±11.914	67.37±25.882	31.35±9.783	47.04±13.426	50.92±13.372
	26-30	33 (%11.8)	29.73±11.985	72.12±31.968	33.39±10.671	45.09±14.780	46.82±11.631
	31+	13 (%4.7)	25.23±10.026	55.31±19.889	34.23±7.201	38.46±6.226	46.46±6.887
	<i>KW</i>		1.690	4.532	3.321	7.001	3.879
	<i>p</i>		.639	.209	.345	.072	.275
Class level	Grade 1	109 (%39.1)	26.07±10.851	63.17±22.513	30.88±9.572	46.39±13.195	49.84±12.767
	Grade 2	80 (%28.7)	28.38±11.139	68.73±25.542	31.75±10.096	45.93±13.646	49.95±11.817
	Grade 3	50 (%17.9)	30.16±13.241	71.06±27.828	33.38±10.107	46.30±12.795	50.94±14.018
	Grade 4	40 (%14.3)	32.28±11.618	75.90±36.294	29.88±9.890	49.08±15.252	50.18±13.191
	<i>F</i>		3.390	2.603	1.123	.527	.090
	<i>p</i>		.019	.052	.340	.664	.965
How many hours of sleep per day	4-6 hours	40 (%14.3)	27.73±11.345	65.25±23.754	32.13±10.459	47.15±16.351	48.45±12.808
	7-9 hours	212 (%76)	27.95±11.071	66.89±26.032	31.86±9.329	46.45±12.891	50.10±12.649
	10-12+hours	27 (%9.7)	32.73±15.853	81.77±34.925	26.88±12.443	46.38±12.989	52.04±13.168
	<i>KW</i>		1.341	3.829	3.724	.059	.721
	<i>p</i>		.512	.147	.155	.971	.697
How many hours a day university students use the internet	0-2 hours	38 (%13.6)	23.61±8.032	57.74±25.349	31.66±9.674	43.53±13.842	48.63±13.468
	3-5 hours	159 (%57)	26.66±10.882	65.14±24.966	31.59±9.656	46.75±13.247	49.53±12.163
	6-9 hours	57 (%20.4)	34.40±12.382	74.93±26.088	32.11±10.304	46.75±12.088	50.82±12.008
	10-12 hours	12 (%4.3)	30.33±13.276	77.25±29.118	28.00±9.789	48.33±18.042	55.67±14.742
	13+ hours	13 (%4.7)	34.08±13.813	93.83±35.162	29.42±12.206	52.67±17.753	53.83±18.683
	<i>KW</i>		23.069	22.458	2.379	4.055	4.153
	<i>p</i>		< .001	< .001	.666	.399	.386

(Note: SAS: Smartphone Addiction Scale; PIUS: Problematic Internet Use Scale; SCS: Social Connectedness Scale; LSAS (Avoidance): Liebowitz Social Anxiety/ Phobia Scale Avoidance Dimension; LSAS (Anxiety): Liebowitz Social Anxiety/Phobia Scale Anxiety Dimension)

Table 6. Internet use patterns of participants

Variable	Categories	N (%)	SAS $\bar{x} \pm SD$	PIUS $\bar{x} \pm SD$	SCS $\bar{x} \pm SD$	LSAS (Avoidance) $\bar{x} \pm SD$	LSAS (Anxiety) $\bar{x} \pm SD$
University students' use of the internet for entertainment purposes	Yes	69 (%24.73)	33.49±12.310	76.04±25.912	30.00±8.451	44.68±13.014	50.78±11.544
	No	210 (%75.27)	26.67±10.936	65.36±26.751	31.90±10.272	47.26±13.667	49.90±13.123
	t		4.358	2.901	-1.393	-1.377	.499
	p		< .001	.004	.165	.170	.618
University students' use of the internet for social media- Twitter/X-Instagram- Facebook-WhatsApp Purposes	Yes	214 (%76.63)	29.56±12.210	70.37±27.061	31.74±9.723	46.38±13.738	50.88±12.718
	No	65 (%23.37)	24.40±8.512	60.18±24.997	30.43±10.365	47.42±12.899	47.62±12.568
	t		3.831	2.705	.935	-.538	1.817
	p		< .001	.007	.351	.591	.070
University students' use of the internet for watching films and listening to music purposes	Yes	135 (%48.39)	29.44±11.664	68.56±27.141	31.16±9.098	44.46±12.449	49.91±12.103
	No	144 (%51.61)	27.33±11.581	67.48±26.755	31.69±10.573	48.65±14.218	50.31±13.342
	t		1.516	.333	-.455	-2.614	-.263
	p		.131	.739	.649	.009	.793
University students' use of the internet for shopping purposes	Yes	101(%36.20)	28.95±12.339	68.26±27.919	30.93±8.994	43.74±12.673	50.96±12.727
	No	178 (%63.80)	28.02±11.259	67.85±26.382	31.72±10.352	48.26±13.763	49.64±12.753
	t		.643	.120	-.666	-2.709	.831
	p		.521	.904	.506	.007	.406
University students' use of the internet for chatting purposes	Yes	106 (%37.92)	30.24±12.186	72.88±28.622	29.20±9.400	45.08±12.861	51.56±12.440
	No	173 (%62.08)	27.20±11.187	65.01±25.411	32.80±9.932	47.57±13.877	49.24±12.871
	t		2.125	2.391	-3.003	-1.499	1.480
	p		.035	.017	.003	.135	.140
University students' use of the internet for gaming purposes	Yes	43 (%15.41)	31.42±11.638	76.51±24.860	30.09±8.375	43.35±13.202	50.86±12.005
	No	236 (%84.59)	27.80±11.588	66.45±27.015	31.68±10.118	47.22±13.533	49.98±12.885
	t		1.884	2.273	-.968	-1.732	.415
	p		.061	.024	.334	.084	.679
Duration of daily social networking site use	Less than 1 hour	89 (%31.9)	23.96±10.391	59.21±23.696	32.79±10.041	47.96±14.798	49.49±13.191
	More than 1 hour	190 (%68.1)	30.42±11.658	72.12±27.376	30.80±9.755	46.00±12.889	50.41±12.542
	t		-4.652	-4.029	1.571	1.071	-.559
	p		< .001	< .001	.117	.286	.576

Table 7. Smartphone use patterns and addiction perception

Variable	Categories	N (%)	SAS $\bar{x} \pm SD$	PIUS $\bar{x} \pm SD$	SCS $\bar{x} \pm SD$	LSAS (Avoidance) $\bar{x} \pm SD$	LSAS (Anxiety) $\bar{x} \pm SD$
How many hours a day university students use their phones to access the internet other than talking	0-2 hours	82 (%29.4)	23.68±9.873	57.02±19.972	33.37±10.226	44.90±13.915	48.74±12.105
	3-5 hours	141(%50.5)	28.01±10.605	69.94±27.064	30.38±9.390	46.75±12.558	49.84±12.147
	6-9 hours	41 (%14.7)	36.88±12.406	74.71±27.129	32.34±9.707	47.49±14.782	52.44±14.239
	10-12 hours	7 (%2.5)	29.57±11.928	77.71±27.250	27.86±7.493	52.86±14.358	57.14±15.005
	13+ hours	8 (%2.9)	37.63±15.052	103.50±36.661	28.75±14.791	52.13±18.411	51.13±18.388
	KW		35.648	27.889	7.239	4.334	4.275
	<i>p</i>		< .001	< .001	.124	.363	.370
University students' complaints about spending too much time on the phone	Yes	116(%41.6)	34.43±10.684	81.70±30.277	29.59±9.976	47.00±13.714	49.59±12.712
	No	163(%58.4)	24.03±10.323	58.25±18.998	32.75±9.614	46.36±13.436	50.49±12.779
	<i>t</i>		8.174	7.372	-2.666	.391	-.578
	<i>p</i>		< .001	< .001	.008	.696	.563
When I enter a new environment, I immediately start playing with my phone	Yes	36(%12.9)	36.14±13.508	97.97±32.409	21.78±8.761	50.86±14.383	56.61±12.807
	No	243(%87.1)	27.20±10.915	63.56±22.932	32.86±9.217	46.00±13.317	49.16±12.467
	<i>t</i>		3.791	6.147	-6.777	2.025	3.337
	<i>p</i>		< .001	< .001	< .001	.044	< .001
University students' immediately start of dealing with the phone in their free time	Yes	154(%55.2)	32.16±11.330	78.06±28.997	29.38±10.160	48.51±13.906	52.14±13.060
	No	125(%44.8)	23.66±10.278	55.61±17.443	33.97±8.913	44.30±12.730	47.62±11.911
	<i>t</i>		6.559	7.991	-3.964	2.606	2.989
	<i>p</i>		< .001	< .001	< .001	.010	.003
Purpose of using cell phones the most	Talking	81(%29.0)	24.94±9.825	59.85±22.476	31.67±9.882	44.38±13.946	49.05±12.225
	SMS	19(%6.8)	26.26±10.192	58.53±17.011	37.00±7.386	50.42±13.558	54.21±16.023
	E-mail	10(%3.6)	29.30±16.879	49.10±14.662	35.20±7.671	40.20±11.952	43.60±10.102
	Surfing(internet)	46(%16.5)	31.76±11.503	74.24±26.677	30.57±10.033	46.07±12.950	49.74±11.194
	Social Networking	111(%39.8)	29.15±11.931	72.52±29.362	31.04±9.636	47.37±13.126	50.54±13.113
	Taking Photos	5(%1.8)	37.00±11.937	85.40±24.203	22.40±10.807	59.40±15.010	53.80±15.834
	Gaming	7(%2.5)	31.00±14.810	89.86±28.334	26.71±14.209	54.14±12.694	53.86±13.018
	KW		15.281	28.895	12.544	13.725	5.944
	<i>p</i>		.018	< .001	.051	.033	.430
Perception of Themselves as Having Problematic Smartphone Use	No	136(%48.7)	22.15±9.077	53.04±14.610	33.13±9.395	45.15±12.174	48.88±12.174
	Not sure	117(%41.9)	32.71±9.906	79.08±26.570	31.21±9.640	47.56±14.060	50.85±12.858
	I am definitely	26(%9.3)	41.23±11.738	96.38±31.441	23.58±9.799	50.15±17.017	53.31±14.655
	KW		94.425	91.116	17.268	2.496	3.384
	<i>p</i>		< .001	< .001	< .001	.287	.184

Exploratory analyses indicated that problematic smartphone use and problematic internet use differed according to daily smartphone-based internet-use duration. Students who had received complaints about excessive phone use also reported higher problematic smartphone use and problematic internet use and lower social connectedness. The broadest differences were observed among students who reported immediately using their phones in new environments or during free time, with differences across all five study variables. Problematic technology-use scores also varied according to the primary purpose of smartphone use and participants' self-perceived problematic smartphone use. Full results of these exploratory comparisons are presented in Table 7.

DISCUSSION

The present study examined the relationships among problematic smartphone use, problematic internet use, social connectedness, and the anxiety and avoidance dimensions of social phobia in university students. Problematic smartphone use was positively related to problematic internet use and both dimensions of social phobia and negatively related to social connectedness. Problematic internet use was positively related to social avoidance and negatively related to social connectedness, whereas its bivariate association with social anxiety was not significant. In the regression models, social avoidance and social connectedness significantly predicted problematic smartphone use, whereas social anxiety and social connectedness significantly predicted problematic internet use. However, the explanatory power of these models should be interpreted cautiously. The predictors accounted for approximately 10% of the variance in problematic smartphone use and 24% of the variance in problematic internet use. Thus, although the identified interpersonal variables were statistically significant predictors, a substantial proportion of variance in both outcomes remained unexplained. These findings therefore suggest that social connectedness, social anxiety, and social avoidance represent relevant but only partial correlates of problematic technology use, which is likely associated with a broader range of psychological, behavioral, and contextual factors.

The associations involving social connectedness suggest that stronger offline relational resources are associated with lower levels of problematic technology use. Students reporting a stronger sense of belonging and interpersonal closeness also tended to report lower problematic smartphone use and problematic internet use. Conversely, lower social connectedness was associated with higher levels of problematic technology use. These findings are consistent with previous research linking online involvement with face-to-face interaction and social ties and with studies reporting an association between social connectedness and problematic internet use (McIntyre et al., 2015; Shen & Williams,

2011; Yalçinkaya, 2019). However, the cross-sectional design of the present study does not allow conclusions about whether social connectedness influences technology use or whether patterns of technology use influence social connectedness.

The social phobia findings require a more differentiated interpretation. Social avoidance was positively associated with problematic internet use at the bivariate level, whereas the bivariate association between social anxiety and problematic internet use was small and nonsignificant. However, social anxiety emerged as a significant positive predictor of problematic internet use in the multivariable regression model after social avoidance and social connectedness were simultaneously considered. This change may reflect the shared variance among social anxiety, social avoidance, and social connectedness. In particular, social anxiety was positively correlated with social avoidance and negatively correlated with social connectedness, indicating that these interpersonal variables were not statistically independent. Controlling for their overlapping variance may therefore have revealed variance in social anxiety that was more specifically associated with problematic internet use. This pattern is consistent with a possible suppression effect; however, because a formal suppression analysis was not conducted, this interpretation should be considered tentative rather than definitive. More broadly, the finding suggests that the association of social anxiety with problematic internet use may depend on the interpersonal context in which anxiety occurs rather than being evident as a simple bivariate relationship. Digital environments may offer socially anxious students a more controllable setting in which exposure to evaluation can be reduced. Recent structural equation modeling evidence likewise indicates that social anxiety positively predicts digital addiction and may operate as an avoidance-oriented pathway to problematic use (Atik et al., 2026). Nevertheless, the cross-sectional design does not establish directionality, and these findings should be interpreted cautiously.

The demographic findings were limited and should

not be overinterpreted. Male students reported higher problematic internet use and problematic smartphone use, whereas age was unrelated to the study variables. Evidence on gender is mixed: some studies have reported higher problematic use among men, others higher levels among women, and several no difference (Busch & McCarthy, 2021; Kılıç, 2018; Odacı & Çelik, 2011). The present result is consistent with earlier Turkish evidence showing higher internet addiction scores among male university students, although the effect was small and the broader literature remains inconsistent (Erdemir & Kutlu, 2018). Problematic smartphone use was also higher among third- and fourth-year students than first-year students. This difference may reflect cumulative academic demands, established digital routines, or cohort-specific circumstances rather than a simple developmental effect. Because age and grade level are related but not equivalent, the absence of an age effect further suggests that the grade-level finding should be treated cautiously.

Technology-use patterns produced the clearest subgroup differences. Longer daily internet use and longer smartphone-based internet access were consistently associated with higher problematic smartphone use and problematic internet use. This dose-response pattern is compatible with prior findings showing that problematic use increases as time online rises (Kılıç, 2018; Tohumcu, 2018). Duration alone, however, should not be equated with addiction, because students may spend long periods online for academic or occupational reasons. The more informative pattern concerned the combination of extended use, activity type, loss of control, and interference with social functioning.

Purpose of use was also associated with problematic technology use. Entertainment, social media, chatting, gaming, internet browsing, and other highly engaging or continuously available activities were more strongly associated with problematic internet use and problematic smartphone use than primarily functional communication activities. These results are consistent with evidence that problematic internet-use scores vary by purpose and are higher

for entertainment, gaming, and communication than for information seeking (Erdemir & Kutlu, 2025). Complementing these findings, research with high school students has shown that aggression levels differ significantly according to internet-use duration, purpose, commonly used sites, game types, and exposure to harmful online content (Erdemir & Özkamalı, 2021). Together, these findings suggest that the behavioral context and content of internet use may be relevant alongside duration of use. Chatting was additionally associated with lower social connectedness, suggesting that frequent online communication does not necessarily correspond to a stronger subjective sense of belonging. Uses such as watching films, listening to music, shopping, or taking photographs showed more selective associations, including differences in social avoidance. Given the number of categories and comparisons, these isolated findings should be interpreted as exploratory rather than as evidence that a particular activity independently causes social phobia.

Situational smartphone behaviors formed a third thematic cluster. Students who immediately engaged with their phones in new environments or during free time reported greater problematic use, higher social phobia, and lower social connectedness. Complaints from other people about excessive phone use showed a similar pattern: students receiving such complaints had higher problematic smartphone use and problematic internet use and lower connectedness. These indicators may capture salience, automaticity, and interpersonal interference more directly than screen time alone. Turning to a phone in an unfamiliar social setting may function as a safety behavior that temporarily reduces discomfort but limits opportunities for corrective interpersonal experience. Likewise, immediate phone use during unstructured time may reflect habitual or poorly regulated engagement rather than intentional use.

Participants' self-perception of problematic smartphone use was also consistent with their standardized scale scores. Students who identified themselves as problematic smartphone use had

higher problematic smartphone use and problematic internet use scores, whereas those who did not identify themselves as addicted reported higher social connectedness. However, this self-identification reflects participants' subjective perception and should not be interpreted as a clinical diagnosis. Such perceptions may reflect experiences of diminished control, unsuccessful attempts to reduce smartphone use, or interference with daily and social functioning (Billieux et al., 2015).

The extensive subgroup analyses warrant particular caution. Numerous tests were conducted across demographic characteristics, durations, purposes, and situational behaviors. Without a formal adjustment for multiple comparisons, the probability of Type I error increases, and some statistically significant differences may be chance findings. The subgroup results should therefore be regarded as exploratory and secondary to the correlation and regression findings. Future research should preregister a smaller set of theoretically justified comparisons or apply procedures such as false discovery rate control, while also reporting effect sizes and confidence intervals to distinguish practically meaningful differences from statistically significant but small effects.

The timing of data collection is an important consideration when interpreting these findings. Data were collected during the 2020–2021 COVID-19 pandemic, when remote education, restrictions on face-to-face interaction, and increased reliance on digital technologies were common among university students. These conditions may have influenced both the amount and patterns of internet and smartphone use observed in the present study. Therefore, findings concerning duration of use, purposes of use, and specific technology-use behaviors should not be assumed to directly represent current post-pandemic university students. The interpersonal associations observed in the study should also be interpreted within this historical context. Replication with contemporary university samples is needed to determine the extent to which these findings remain applicable to current patterns of student technology use.

Limitations of the study

Several limitations should be considered. The participants were recruited through convenience sampling from a single university in Hakkari, which limits generalizability. The cross-sectional and self-report design prevents causal inference and may be affected by common-method and response biases. The large number of subgroup comparisons increased the risk of Type I error, and no formal multiple-testing correction was applied. Because the study was completed in 2022 and the original participant-level dataset and complete analysis files were not available in a form permitting reliable retrospective reanalysis, effect sizes and confidence intervals could not be calculated consistently for the exploratory group comparisons. Consequently, these subgroup findings should be interpreted cautiously as exploratory evidence of group differences rather than as precise estimates of the magnitude or precision of those differences.

Data were collected during the 2020–2021 COVID-19 pandemic using online and face-to-face procedures. Remote education, restrictions on social interaction, and increased reliance on digital devices may have influenced both exposure levels and the relationships observed. Because more than five years have passed and university digital practices have continued to change, replication with current post-pandemic samples is essential. In addition, because administration mode was not recorded at the individual-participant level, the potential effect of data-collection mode on responses could not be examined. Differences between face-to-face and online administration, such as perceived anonymity, social desirability, or response context, may therefore have introduced additional measurement variability. Future studies should record administration mode and, where possible, test whether responses differ across data-collection procedures.

An additional methodological limitation concerns the verification of multiple linear regression assumptions. Although normality of the observed variables was evaluated using skewness and kurtosis

values, the original participant-level dataset and regression diagnostic outputs were not available for retrospective reproduction of additional diagnostics, including linearity, multicollinearity, independence of residuals, and residual-distribution checks. Therefore, these assumptions could not be re-evaluated for the present revision, and the regression findings should be interpreted with appropriate caution.

CONCLUSION

Problematic internet use and problematic smartphone use were associated with university students' social functioning. Lower social connectedness was consistently associated with higher levels of both forms of problematic technology use, while social anxiety and social avoidance showed different patterns of association with these outcomes. Greater duration of internet and smartphone use, highly engaging purposes such as social media, entertainment, chatting, and gaming, and automatic phone use in new environments or free time were also associated with higher problematic technology-use scores. Because the study was cross-sectional, these findings should be interpreted as associations and do not indicate that the identified interpersonal or technology-use characteristics cause, increase, reduce, or protect against problematic technology use.

Future studies should use longitudinal or experimental designs to clarify the temporal relationships among social connectedness, social anxiety and avoidance, problematic internet use, and problematic smartphone use. Multisite studies with probability-based or more diverse sampling would improve generalizability. Researchers should prioritize theoretically specified hypotheses, limit subgroup testing, preregister analyses, apply appropriate multiple-comparison controls, and report effect sizes and confidence intervals. Contemporary post-pandemic data are particularly needed to determine which findings persist under current educational and social conditions.

University prevention efforts should focus on functional impairment and loss of control rather than

screen time alone. Brief screening can incorporate duration and purpose of use, automatic phone checking, complaints from others, self-perceived loss of control, and social withdrawal. Psychoeducational or counseling interventions may combine digital self-regulation, time management, social skills, and exposure-based or cognitive-behavioral strategies for social anxiety. Programs that strengthen social connectedness, psychological resilience, and life satisfaction may also reduce reliance on online environments as a compensatory coping strategy (Erdemir, 2026). Multidimensional assessment of digital life balance can help counselors identify psychological, social, physical, and academic risk domains and tailor support accordingly (Erdemir & Atik, 2026).

REFERENCES

- Atik, S., Sumbas, E., & Erdemir, N. (2026). In the shadow of the digital age: The dance of self-efficacy, psychological resilience, social anxiety, and digital addiction among university students. *Acta Psychologica*, 265, 106681. <https://doi.org/10.1016/j.actpsy.2026.106681>
- Billieux, J., Maurage, P., Lopez-Fernandez, O., Kuss, D. J., & Griffiths, M. D. (2015). Can disordered mobile phone use be considered a behavioral addiction? An update on current evidence and a comprehensive model for future research. *Current Addiction Reports*, 2(2), 156–162. <https://doi.org/10.1007/s40429-015-0054-y>
- Busch, P. A., & McCarthy, S. (2021). Antecedents and consequences of problematic smartphone use: A systematic literature review of an emerging research area. *Computers in Human Behavior*, 114, 106414. <https://doi.org/10.1016/j.chb.2020.106414>
- Büyükoztürk, Ş., Çakmak, E. K., Akgün, Ö. E., Karadeniz, Ş., & Demirel, F. (2017). *Bilimsel Araştırma Yöntemleri*. [Scientific Research Methods]. Pegem Akademi
- Büyükoztürk, Ş., Kılıç-Çakmak E., Akgün, Ö. E., Karadeniz, Ş., & Demirel, F. (2009). *Bilimsel Araştırma Yöntemleri*. [Scientific Research Methods]. (4. basım). Pegem Akademi
- Caplan, S. E. (2018). The changing face of problematic internet use: An inter personal approach. Peter Lang International Academic Publishers.
- Ceyhan, E., Ceyhan, A. A., & Gürçan, A. (2007). The validity and reliability of the problematic internet use scale. *Educational Sciences: Theory & Practice*, 7(1), 411–416.
- Davis, R. A. (2001). A cognitive-behavioral model of pathological internet use. *Computers in Human Behavior*, 17(2), 187–195. [https://doi.org/10.1016/S0747-5632\(00\)00041-8](https://doi.org/10.1016/S0747-5632(00)00041-8)
- Dilbaz, N., & Güz, H. (2001, Ekim 2-6). Liebowitz sosyal kaygı ölçeğinin geçerlik ve güvenilirliği. [Validity and reliability of the Liebowitz social anxiety scale]. 37. Ulusal Psikiyatri Kongresi, İstanbul.
- Duru, E. (2007). Sosyal bağıllık ölçeğinin Türk kültürüne

- uyarlanması. [Adaptation of the social connectedness scale to Turkish culture]. *Eğitim Araştırmaları*, 1(26), 85-94.
- Erdemir, N. (2025). Dijital Bağımlılıklar ve Ruh Sağlığı. [Digital Addictions and Mental Health] In N. Öztürk & E. Sumbas (Eds.), *Okullarda Güncel Ruh Sağlığı Sorunları [Current Mental Health Issues In Schools]* (pp. 183–212). Nobel Akademik Yayıncılık.
- Erdemir, N. (2026). The mediating role of life satisfaction in the relationship between psychological resilience and internet addiction. *Scientific Reports*, 16, 21056. <https://doi.org/10.1038/s41598-026-50933-0>
- Erdemir, N., & Arik, S. (2026). Validity and reliability analysis of the Artificial Intelligence-Digital Life Balance Scale. *Psychiatric Quarterly*, 97, 1–21. <https://doi.org/10.1007/s11126-025-10167-1>
- Erdemir, N., & Kutlu, M. (2018). Üniversite öğrencilerinin internet bağımlılığı ile sosyal zeka düzeylerinin çeşitli değişkenler açısından incelenmesi [Investigation of internet addiction and social intelligence levels of university students in terms of various variables]. *Uluslararası Sosyal Araştırmalar Dergisi*, 11(57), 401–409. <https://doi.org/10.17719/jisr.2018.2457>
- Erdemir, N., & Kutlu, M. (2025). Ortaokul ve lise öğrencilerinin internet bağımlılığı ve problemli internet kullanımının incelenmesi [An investigation of internet addiction and problematic internet use of secondary and high school students]. *Kahramanmaraş Sütçü İmam Üniversitesi Sosyal Bilimler Dergisi*, 22(1), 46–65. <https://doi.org/10.33437/ksusb.1523134>
- Erdemir, N., & Özkamalı, E. (2021). Farklı tür liselerde öğrenim gören öğrencilerin internet kullanım durumları ile saldırganlık düzeyleri arasındaki ilişkinin incelenmesi (Gaziantep ili örneği). [Examining the relationship between internet usage and aggression levels among students attending different types of high schools (Gaziantep province example)]. *İnönü Üniversitesi Eğitim Fakültesi Dergisi*, 22(3), 2407-2430. <https://doi.org/10.17679/inuefd.1000104>
- Elhai, J. D., Gallinari, E. F., Rozgonjuk, D., & Yang, H. (2020). Depression, anxiety and fear of missing out as correlates of social, non-social and problematic smartphone use. *Addictive Behaviors*, 105, 106335. <https://doi.org/10.1016/j.addbeh.2020.106335>
- Elhai, J. D., Yang, H., McKay, D., & Asmundson, G. J. G. (2020). COVID-19 anxiety symptoms associated with problematic smartphone use severity in Chinese adults. *Journal of Affective Disorders*, 274, 576–582. <https://doi.org/10.1016/j.jad.2020.05.080>
- Heimberg, R. G., Horner, K. J., Juster, H. R., Safren, S. A., Brown, E. J., Schneier, F. R., & Liebowitz, M. R. (1999). Psychometric properties of the Liebowitz Social Anxiety Scale. *Psychological Medicine*, 29(1), 199–212. <https://doi.org/10.1017/S0033291798007879>
- Kardefelt-Winther, D. (2014). A conceptual and methodological critique of internet addiction research: Towards a model of compensatory internet use. *Computers in Human Behavior*, 31, 351–354. <https://doi.org/10.1016/j.chb.2013.10.059>
- Kılıç, Z. (2018). Üniversite öğrencilerinde internet kullanımının genel psikolojik belirtiler ve sosyal fobi ile ilişkisi. [The relationship between internet use and general psychological symptoms and social phobia among university students]. (Tez No. 516040) [Yüksek lisans tezi, Sakarya Üniversitesi]. Yükseköğretim Kurulu Ulusal Tez Merkezi.
- Kwon, M., Kim, D. J., Cho, H., & Yang, S. (2013). The smartphone addiction scale: Development and validation of a short version for adolescents. *PLOS ONE*, 8(12), Article e83558. <https://doi.org/10.1371/journal.pone.0083558>
- Kwon, M., Lee, J.-Y., Won, W.-Y., Park, J.-W., Min, J.-A., Hahn, C., Gu, X., Choi, J.-H., & Kim, D.-J. (2013). Development and validation of a smartphone addiction scale (SAS). *PLOS ONE*, 8(2), Article e56936. <https://doi.org/10.1371/journal.pone.0056936>
- Lee, R. M., & Robbins, S. B. (1995). Measuring belongingness: The social connectedness scale and social assurance scales. *Journal of Counseling Psychology*, 42(2), 232-241. <https://doi.org/10.1037/00220167.42.2.232>
- Lee, R. M., & Robbins, S. B. (1998). The Relationship between social connectedness and anxiety, self- esteem, and social identity. *Journal of Counseling Psychology*, 45(3), 338-345. <https://doi.org/10.1037/0022-0167.45.3.338>
- Liebowitz, M. R. (1987). Social phobia. *Modern Problems of Pharmacopsychiatry*, 22, 141–173. <https://doi.org/10.1159/000414022>
- Lin, L., Wang, X., Li, Q., Xia, B., Chen, P., & Wang, W. (2021). The influence of interpersonal sensitivity on smartphone addiction: A moderated mediation model. *Frontiers in Psychology*, 12, 670223. <https://doi.org/10.3389/fpsyg.2021.670223>
- McIntyre, E., Saliba, A. J., & Wiener, K. K. K. (2015). Compulsive internet use and relations between social connectedness, and introversion. *Computers in Human Behavior*, 48, 569-574. <https://doi.org/10.1016/j.chb.2015.02.021>
- Noyan, C. O., Enez Darçın, A., Nurmedov, S., Yılmaz, O., & Dilbaz, N. (2015). Akıllı Telefon Bağımlılığı Ölçeği'nin kısa formunun üniversite öğrencilerinde Türkçe geçerlilik ve güvenilirlik çalışması. [Turkish validity and reliability study of the short form of the Smartphone Addiction Scale among university students]. *Anadolu Psikiyatri Dergisi*, 16(Özel Sayı 1), 73–81. <https://doi.org/10.5455/apd.176359>
- Odacı, H., & Çelik, B.Ç. (2011, September 22-24). Üniversite öğrencilerinin problemli internet kullanımlarının akademik öz-yeterlik, akademik erteleme ve yeme tutumları ile ilişkisi. [The relationship between problematic internet use among university students and academic self-efficacy, academic procrastination, and eating attitudes]. 5th International Computer&Instructional Technologies Symposium.
- Sánchez-Fernández, M., & Borda-Mas, M. (2023). Problematic smartphone use and specific problematic internet uses among university students and associated predictive factors: A systematic review. *Education and Information Technologies*, 28, 7111–7204. <https://doi.org/10.1007/s10639-022-11437-2>
- Shen, C., & Williams, D. (2011). Unpacking time online: Connecting internet and massively multiplayer online game use with psychosocial well-being. *Communication Research*, 38(1), 123–149. <https://doi.org/10.1177/0093650210377196>
- Soykan, Ç., Özgüven, H. D., & Gençöz, T. (2003). Liebowitz Social Anxiety Scale: The Turkish version. *Psychological Reports*, 93(3), 1059–1069. <https://doi.org/10.2466/pr0.2003.93.3.1059>

Şata, M., & Karip, F. (2017). Akıllı telefon bağımlılığı ölçeği-kısa versiyonunun ergenler için Türk kültürüne uyarlanması. [Smartphone addiction scale - short version: Adaptation of the scale for adolescents to Turkish culture]. Cumhuriyet Uluslararası Eğitim Dergisi, 6(4), 426-440. <https://doi.org/10.30703/cije.343863>

Tabachnick, B.G., & Fidell, L.S. (1996). Using multivariate statistics. Harper Collins College.

Tohumcu, M. U. (2018). İnternet ve akıllı telefon bağımlılığı ile benlik saygısı ve yalnızlık arasındaki ilişkinin çeşitli demografik değişkenler açısından incelenmesi [Examining

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The authors declare that they have no conflict of interest regarding the content of this article.

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Ethical Declaration

Ethical permission for this study was obtained from the Social and Human Sciences Ethics Committee of Atatürk University, Erzurum, dated 18.02.2021 and numbered 02.

Authorship Contributions

Concept: CD, BG, Design: CD, BG Supervising: BG, Data collection and entry: CD, Analysis and interpretation: CD, Literature search: CD, Writing: CD, Critical review: BG

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