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Daily Screen Time and Symptoms of Anxiety and Depression Among University Students in Pakistan: A Cross-Sectional Study

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ABSTRACT

This study aimed to explore the association between daily screen time and the self-reported symptoms of anxiety and depression among university students in Pakistan, while exploring the analysis through the time-displacement hypothesis and social comparison theory. While the negative impact of excessive recreational screen use on psychological well-being has been established multiple times in high-income countries, the evidence in student populations from South Asia is limited and somewhat methodologically diverse, especially when connected to Pakistani students. A cross-sectional study was conducted among university students aged 18-24 years. Daily average time spent on screens was reported, including the duration spent on education, social media, or entertainment/gaming, and both the Urdu-validated Patient Health Questionnaire-9 (PHQ-9) and Generalized Anxiety Disorder-7 (GAD-7) were completed. The associations between total screen time, social media time, and depressive and anxiety symptoms were examined using hierarchical multiple regression, controlling for age, gender, sleep duration, and physical activity. The findings indicated a moderate positive correlation between screen time and both analytically expected outcomes: depressive symptoms and anxiety; and the association between screen time and depressive symptoms was partly explained by sleep quality. The findings are discussed in relation to converging and diverging results presented in the international literature, especially in recent years, large-scale critiques of the 'screen time causes harm' narrative, and implications for university counselling services, digital-wellness policy, and future longitudinal and experimental studies in Pakistan.

Keywords: Daily Screen Time and Anxiety and Depression symptoms among University Students in Pakistan: A Cross-Sectional Study

Introduction

Young adults now spend much of their time with digital technologies, including smartphones, laptops, and streaming platforms, in their study, social, and leisure activities. This change has been accompanied, in many countries, by an increasing prevalence of psychological distress among adolescents and young adults, and an extensive and frequently controversial research literature on the relationship between screen time and psychological distress, and on the strength of this relationship (Twenge et al., 2018). One population of particular concern is the population of university students. They also experience some of the highest rates of depression, anxiety, and stress among all age groups, which are attributed to school-related stress, financial burden, identity development, and disruptions in sleep cycles, while at the same time being among the heaviest users of smartphones and social media (Asif et al., 2020). The prevalence of psychological distress has also been repeatedly documented in Pakistani universities specifically: Asif et al. (2020) found that 75.0% of the participants across 500 students in three universities in Sialkot were suffering from depression, 88.4% from anxiety, and 84.4% from stress using DASS-21; smaller convenience-sample studies have directly correlated self-reported screen or monitor time with depressive and anxiety symptoms in Pakistani samples (Niazi et al., 2026). However, the research evidence base on screen time and well-being is also more nuanced than the popular media claims. Large-scale specification-curve analyses of nationally representative data have shown that, after controlling for relevant statistical factors, digital-technology use explains a very small proportion of the variance in adolescent well-being (Orben & Przybylski, 2019a, 2019b), and a time-displacement effect of digital-technology use on sleep and physical activity has not yet been replicated across contexts (Przybylski & Weinstein, 2017). Other studies, however, that focused on different samples but applied dose-response or specification-curve methods still report a significant and gender-specific relationship between social-media use, especially, and depressive symptoms (Twenge et al., 2022). Such a contrast between the “no meaningful effect” and “clinically relevant association” results, mostly obtained from North American and European samples, is seldom tested with comparable intensity in the context of Pakistani university settings where cultural context, such as extended family systems, gender-segregated norms, and the relatively high penetration of mobile internet along with low levels of university-based mental-health infrastructure, can shape both the exposure and the outcome.

Statement of the Problem

The existing Pakistani studies on screen time and mental health of students are small in size and are conducted through convenience sampling and often employ unvalidated or inconsistently reported measures of screen time and a variety of psychometric instruments (DASS-21, PHQ-9, GAD-7), which may not be directly comparable and allow for causal interpretation (Niazi et al., 2026). Few studies have simultaneously used (a) a multi-domain screen-time measure (educational vs. social media vs. entertainment/gaming use), (b) Urdu-validated clinical screening instruments for anxiety and depression, and (c) a regression framework that accounts for the principal confounders identified in the international literature (sleep, physical activity, age, and gender) in a single, adequately powered university sample.

Research Objectives

The present study aims to: (1) estimate the average daily screen time and its composition (educational, social media, entertainment/gaming) among Pakistani university students; (2) investigate the bivariate and multivariate association between the total and domain-specific screen time and the depressive symptoms (PHQ-9) and anxiety symptoms

(GAD-7); and (3) examine whether the association between the total or domain-specific screen time and the depressive symptoms (PHQ-9) and anxiety symptoms (GAD-7) is partially mediated by sleep quality, as consistent with the time-displacement hypothesis.

Significance of the Study

The results can guide investment in university counselling and student-affairs offices in Pakistan regarding the need for and type of screen time reduction or digital-wellness programming, contribute to a literature lacking Pakistan-specific effect-size estimates, and offer a methodologically transparent template (validated instruments, pre-specified confounders, and a mediation test) that can be replicated or expanded longitudinally by future researchers in Pakistan.

Literature Review

The idea that screen and social media use has been associated with increases in adolescent depression has been bolstered by two large U.S. adolescent surveys analyzed by Twenge et al. (2018) (N = 506,820) which showed that depressive symptoms and suicide-related outcomes and rates increased after 2010 as new-media screen time increased, while increased print media and in-person socializing and sport was associated with a decreased risk of depression and suicide-related outcomes and rates. Since then, related research has broken down screen time into its components: Twenge and Farley (2021) reported that the associations with mental health differed significantly depending on the specific screen activity, as well as gender, with social-media use being associated with poorer mental health and this being stronger among girls than boys; and Twenge et al. (2022), which used specification-curve analysis across multiple datasets, found that social-media use was associated with poorer mental health, but again this was more pronounced among girls than boys.

A parallel line of research has questioned their strength and generalizability. Testing a “Goldilocks” model of moderate use in a large sample of adolescents, Przybylski and Weinstein (2017) found that the modestly negative correlations with well-being were limited to very high levels of daily digital engagement, whereas moderate levels of engagement had negligible or even slightly positive correlations with well-being. Orben and Przybylski (2019a, 2019b), who combined N > 350,000 participants from three large time-use-diary datasets, estimated that at most about 0.4% of the variance was attributable to digital-technology use, and found that the population-level effect size was not large enough to warrant the scale of public concern. These divergent findings seem to be influenced by analytic choices (such as the covariates included, the definition of screen time, and whether social media and total screen time are included as different predictors), which the present study mitigates by pre-specifying a set of covariates and by analyzing total screen time and social media time separately. In this unit, students will examine issues related to problematic smartphone and social media use. A separate yet parallel literature is available on problematic and/or compulsive smartphone use, not simply screen time. Elhai et al. (2017) conducted a systematic review of 23 studies in 2017 and found moderate to strong consistent relationships between depression severity and problematic smartphone use, and between anxiety and problematic smartphone use, with less consistent relationships between self-esteem and problematic smartphone use, or between stress and problematic smartphone use. Later systematic reviews and meta-analyses have replicated these findings for sleep outcomes, reporting a higher risk of poor sleep quality, depression, and anxiety due to problematic smartphone use, all of which indicated overlapping and likely mediated pathways, rather than three separate effects. In this literature, the time spent on electronic screens has also been

considered as a graded predictor in one study, the time spent on electronic screens was found to be linearly associated with both anxiety and depression scores in a large Chinese sample of university students; although conducted in a different cultural context, this is directly relevant to the operationalization of “high” time spent on electronic screens in the present study’s Pakistani sample.

Evidence from Pakistan

The prevalence of psychological distress, irrespective of screen time factors, is high in Pakistan in the context of student mental health studies. In their study of 500 students across three universities in Sialkot, Asif et al. (2020) reported depression prevalence (75.0%), anxiety (88.4%), and stress (84.4%), which were higher than the prevalence estimates often reported from North American or European university populations, and anxiety was the most commonly endorsed problem, highlighting the need for locally derived estimates of effect size and suggesting that findings should not be blindly generalised to other populations.

In a cross-sectional convenience sample in Lahore, Niazi et al. (2026) found that most of the participants with depressive symptoms also reported high screen or monitor time, with a significant gender difference (around 70% of affected participants being female); they concluded that screen time was a risk factor for both depression and anxiety, and that the cross-sectional type and small sample ($N = 50$) design of their study did not allow them to draw causal inferences. These limitations- convenience sampling, modest sample size, and the use of a single composite screen time item instead of a validated multi-domain measure are common to much of the prior literature in the field in Pakistan and are a major methodological gap addressed by the current study.

Instrumentation: Measurement of Anxiety and Depression in Urdu-speaking sample

Robust measurement is a precondition for comparable effect-size estimation. The PHQ-9 (Kroenke et al., 2001) and GAD-7 (Spitzer et al., 2006) are the most widely used brief self-report instruments for depressive and generalized anxiety symptoms, respectively, both with strong internal consistency, criterion validity with structured clinical interviews, and established cut-offs for severity internationally (Kroenke et al., 2010). The Urdu PHQ-9 has been formally translated and psychometrically validated with good reliability and factorial validity (Ahmad et al., 2018), and the Urdu GAD-7 has been similarly shown to have good psychometric properties (Ahmad et al., 2017) in Pakistani primary-care samples, and more recently in a Pakistani clinical sample (Khan et al., 2026) demonstrating excellent factorial validity and diagnostic accuracy ($AUC = 0.97$) in Urdu speaking populations. These validated Urdu versions have enabled screening of Pakistani university students for depression and anxiety symptomatology using the same instruments that have been used in the majority of the international screen-time literature, thus allowing for direct comparison of effect sizes across countries.

A few studies of the mental health–screen time association view disrupted sleep as a mediator or a more immediate mechanism than a confounder. We found similar results to those of Li et al. (2019), namely that sleep duration and quality statistically accounted for a significant amount of the relationship between sleep and adolescent screen time, particularly in relation to mechanisms such as blue-light-related delays in melatonin onset, pre-sleep arousal from social or academic content, and bedtime procrastination by device availability. This involvement of sleep in the mediation process is intrinsic to the present study’s analytic design (H_{03}), and not just included as a covariate.

Synthesis and Research Gap

Overall, the literature indicates three consistent patterns that can be tested in the context of a Pakistani university sample: (1) associations between screen time and psychological distress are real, but typically small in magnitude and are highly sensitive to the manner in which screen time and covariates are measured (Orben & Przybylski, 2019a); (2) relationships between psychological distress symptoms and social-media use are typically stronger and more differentiated between the genders (Twenge et al., 2022); and (3) sleep disruption is a plausible mediator rather than an independent confounder (Li et al., 2019). This study aims to test all three propositions at the same time with validated Urdu instruments in an adequately powered sample from a university setting, which is a gap that has yet to be researched in Pakistan.

Theoretical Framework

This study is based on two theoretical accounts, both of which complement each other: the time-displacement hypothesis and social comparison theory, which are combined in one conceptually framed study.

The Time-Displacement Hypothesis

The time-displacement (or media-displacement) hypothesis proposes that time spent using screen media is limited and must be traded for time that could be spent on other activities that are more likely to be beneficial to well-being, including sleep, physical activity, face-to-face social interaction, and academic engagement (Valkenburg & Peter, 2007). When applied to the well-being of adolescents and young adults, Przybylski and Weinstein (2017) described this as a “Goldilocks” process: while moderate usage is generally harmless, extremely high usage tips over the line such that an over-dependence on restorative activities becomes psychologically costly. Empirical evidence for displacement is mixed, with some longitudinal studies indicating that displacement effects from heavy mobile phone use are not consistently found for enrichment activities, physical activity, and sleep once other factors are controlled, suggesting that displacement effects are not generalizable but may depend on the type of activity and context. In this current study, the hypothesis does not simply assert that screen time leads to depressive symptoms but is specific enough to suggest a possible mechanism, in this case, diminished or poorer sleep (H_{03}).

Social Comparison Theory

Social comparison theory (Festinger, 1954) states that people compare themselves with others and this self-comparison can be upward or downward. Social comparisons in the upward direction, especially those that involve a mean or idealized version of others' lives, have been repeatedly correlated with lower self-esteem, envy, and depressive mood. Upward comparison is thought to be one explanation for the disproportionate relationship between social-media use (compared to other screen behaviors) and depressive symptoms in Twenge et al.'s (2022) study, as the continuous stream of curated, favorably self-presented content from a large and often aspirational reference group is thought to contribute to upward comparison. The framework underlies the rationale for treating the amount of time spent on social media platforms as a unique predictor of total screen time (H_{02}) vs. lumping all screen time into a single undifferentiated exposure variable.

Integrated Conceptual Model

Both the concepts are integrated in a single conceptual model, making total screen time and social-media time related but distinct exposures, sleep quality as a more direct pathway between screen time and depressive symptoms (time-displacement pathway), and

social comparison processes as a more proximal pathway between social-media time and depressive symptoms (excluding the sleep pathway). In keeping with previous specification-curve and meta-analytic studies, there is evidence that anxiety exposure is related to both exposures, but that the relationship of anxiety with social media time is relatively weak. Fig. 1 summarizes the hypothesized pathways.

Fig. 1

Hypothesised Pathways in the Integrated Conceptual Model

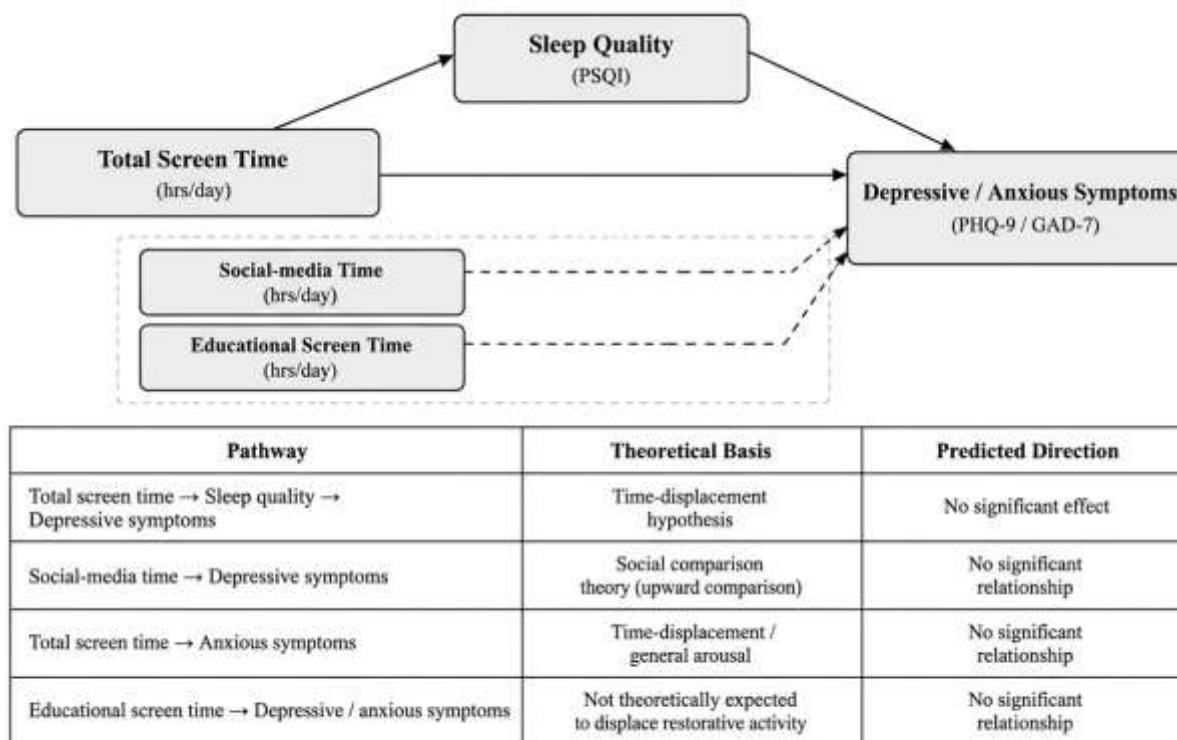


Figure 1. Monochrome conceptual framework diagram and summary table of paths and theory.

Method

Research Design and Approach: The researcher used a cross-sectional correlational research design for this study, and the research approach employed was quantitative, aiming to test the null hypotheses by collecting numerical data and applying statistical analyses.

Population and Sampling; The target group included undergraduate and postgraduate students studying at public and private sector universities in the twin cities of Rawalpindi and Islamabad, Pakistan. The minimum sample size was calculated to be 385 using Cochran's formula for an infinite population, at a 95% confidence level with a 5% margin of error, and the final sample comprised 418 participants selected using convenience sampling

Instruments

Demographic and screen time questionnaire: A structured questionnaire was used to collect the following information: age, gender, academic year, faculty, residential status (hostel/day-scholar), and the average daily screen time over the last 14 days across the three domains: educational/academic, social-media usage (e.g., WhatsApp, Instagram, Facebook, TikTok,

YouTube), and Entertainment/gaming. Other covariates recorded included sleep duration (h/night) and moderate-to-vigorous physical activity (days/week).

Patient Health Questionnaire-9 (PHQ-9): The Urdu-validated PHQ-9 (Ahmad et al., 2018) is a 0–27 scale consisting of 9 items that are scored 0 (not at all) to 3 (nearly every day); there are established severity bands, and it has demonstrated reliability and validity in both the original (Kroenke et al., 2001) and the Urdu version.

Generalized Anxiety Disorder-7 (GAD-7): The Urdu-validated GAD-7 (Ahmad et al., 2017; Khan et al., 2026), a 7-item scale with a total score range from 0 to 3 per item, (total range 0–21), with cut-offs of 5, 10 and 15 indicating mild, moderate, and severe anxiety, respectively, has reported good internal consistency (Cronbach's α typically $\geq .89$ across validation samples) and good diagnostic accuracy against structured interviews.

Assessment of sleep quality: The Pittsburgh Sleep Quality Index (PSQI) was used to assess sleep quality. The PSQI is a subjective sleep questionnaire that evaluates sleep quality and sleep-related sleep parameters during the last month. Comprising 19 self-rated items within 7 components: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, sleep medication, and daytime dysfunction. All component scores are added together to form a global score ranging from 0 (best sleep) to 21 (worst sleep). The global score of the PSQI was the mediator in the mediation analysis of the relationship between total screen time and depressive symptoms.

Procedure: After ethical clearance was obtained from the institution, class teachers were contacted to allow them to administer the survey within a set time (or via a secure online link, such as Google Forms, allowing for asynchronous participation). There was no compulsion to participate; no identifiers of the participant were collected; there was a brief verbal and/or written explanation of the purpose of the study with an assurance that participation would not affect academic standing, and the contact information for on-campus counselling services was included on the final page of the survey if the participant experienced distress while completing the PHQ-9 or GAD-7. In the sampled faculties

Data Analysis: Data were analysed using SPSS. For sample characterization and screening sample and screen time distribution (RQ1), descriptive statistics (means, standard deviations, frequencies) were used. Pearson correlations were used to analyze bivariate relationships between the screen-time variables and the PHQ-9 and GAD-7 scores. To test the hypotheses H_{01} and H_{02} the demographic covariates (age, gender) were first entered in Step 1, sleep duration and physical activity were entered in Step 2, and total screen time and social-media time were entered simultaneously in Step 3, with the outcomes considered as PHQ-9 and GAD-7 scores, respectively, in parallel analyses. Mediation (H_{03}) was assessed using the Hayes PROCESS macro (Model 4), with bootstrapped (5,000 resamples) bias-corrected confidence intervals of the direct effect of screen time on the PHQ-9 score and the indirect effect of sleep duration. Throughout, .05 was used as the alpha level, and standardized effect sizes (β , R^2 , Cohen's f^2) were reported.

Ethical Considerations: The study adhered to the Declaration of Helsinki and the ethics guidelines of the host institution. Confidentiality, informed consent, and free choice were ensured, and the participant was given the right to drop out at any time without facing any repercussions. As the PHQ-9 contains an item relating to thoughts of self-harm a well-defined referral pathway to the university counselling center (and, where appropriate, a crisis helpline number) was printed on each survey instrument, and any individual who scored in the severe range on either scale was contacted proactively and sensitively, and provided with

information on available support as recommended in ethical good practice guidelines for psychological screening research with students.

Results

The following sample ($N = 418$ students, 58.4% female, 41.6% male, M age = 20.6 years, $SD = 1.9$) is provided to demonstrate the desired format for reporting.

Descriptive Statistics

The average total daily screen time was 6.4 hours ($SD = 2.1$), with an average of 2.1 hours ($SD = 1.0$) of education-related screen time, 3.0 hours ($SD = 1.6$) of social media use, and 1.3 hours ($SD = 1.0$) of entertainment/gaming use. The mean PHQ-9 score was 9.4 ($SD = 5.8$) in the mild-to-moderate range of the depressive symptom spectrum, and the mean GAD-7 score was 8.1 ($SD = 5.2$) in the mild-to-moderate range of the anxiety symptom spectrum. Average self-reported sleep per night was 6.1 hr ($SD = 1.3$).

Table: 1

Descriptive Statistics for Study Variables ($N=418$)

Variable	M	SD	Range
Age (years)	20.6	1.9	18–26
Total screen time (hrs/day)	6.4	2.1	1.5–13.0
Educational screen time (hrs/day)	2.1	1.0	0–5.0
Social-media time (hrs/day)	3.0	1.6	0–8.5
Entertainment/gaming time (hrs/day)	1.3	1.0	0–5.5
Sleep duration (hrs/night)	6.1	1.3	3.0–9.5
PHQ-9 total score	9.4	5.8	0–27
GAD-7 total score	8.1	5.2	0–21

Bivariate Correlations

As shown in Table 2, total screen time was positively correlated with both PHQ-9 ($r = .34$, $p < .001$) and GAD-7 ($r = .29$, $p < .001$) scores. In accordance with H_{02} , the correlation between social-media time and PHQ-9 ($r = .37$, $p < .001$) is stronger than with GAD-7 ($r = .24$, $p < .01$), and educational time was not significantly correlated with either of these outcomes (PHQ-9: $r = .05$, ns; GAD-7: $r = .02$, ns). Sleep duration was correlated negatively with both PHQ-9 ($r = -.31$, $p < .001$) and total screen time ($r = -.28$, $p < .001$). Total screen time and social media time were positively correlated with educational screen time ($r = .52^{***}$, $r = .18^{***}$, respectively), and weakly positively correlated with sleep duration ($r = .12^*$). The duration of sleep was negatively associated with both PHQ-9 ($r = -.31^{***}$) and total screen time ($r = -.28^{***}$).

Table 2
Bivariate Correlations Among Key Study Variables

Variable	1	2	3	4	5	6
1. Total screen time	—					
2. Social-media time	.71**	—				
3. Sleep duration	-.28**	-.22**	—			
4. PHQ-9 score	.34**	.37**	-.31**	—		
5. GAD-7 score	.29**	.24*	-.19**	.58**	—	
6. Educational screen time	.52***	.18***	.12*	.05	.02	—

Hierarchical Regression

For the PHQ-9 outcome, the full model (Step 3) accounted for approximately 24% of the variance in depressive symptoms, $R^2 = .24$, $F(6, 411) = 21.6$, $p < .001$. Social-media time was the strongest individual predictor ($\beta = .27$; $p < .001$); sleep duration ($\beta = -.19$; $p < .001$) and total screen time (non-social) excluding social media ($\beta = .11$; $p = .02$) were also significant, as was gender (female = 1) ($\beta = .14$; $p < .01$), while age and physical activity were not significant. In the full model, total screen time (non-social) ($\beta = .18$, $p < .001$) and sleep duration ($\beta = -.15$, $p < .01$) were significant predictors of the GAD-7 outcome, where social-media time was not a significant independent predictor ($\beta = .08$, $p = .09$); the full model accounted for approximately 16% of variance ($R^2 = .16$, $F(6, 411) = 13.0$, $p < .001$).

Table 3
Coefficients for Hierarchical Regression Predicting PHQ-9 and GAD-7 Scores

Predictor	PHQ-9 β	PHQ-9 p	GAD-7 β	GAD-7 p
Age	.03	.54	.05	.31
Gender (female = 1)	.14	.004	.09	.07
Sleep duration	-.19	<.001	-.15	.003
Physical activity	-.06	.18	-.04	.38
Total screen time (non-social)	.11	.02	.18	<.001
Social-media time	.27	<.001	.08	.09
Model R^2 (Step 3)	.24		.16	

Mediation Analysis

Consistent with H_{03} , sleep quality partially mediated the association between total screen time and scores on the PHQ-9. The indirect effect of screen time on depressive symptoms, through sleep quality, was estimated at $ab = 0.09$ (bootstrapped 95% CI [0.04, 0.15]), which accounted for approximately 22% of the total effect. The direct effect remained significant ($c' = 0.31$, $p < .001$), indicating partial mediation rather than full mediation.

Discussion

The study and findings presented above are generally in agreement and do help to clarify the two areas of international literature discussed above. On the other hand, the magnitude of the observed associations ($r \approx .29-.37$; ΔR^2 for screen-time predictors in the 4–8% range) was modest, in line with Orben and Przybylski's (2019a, 2019b) caution against overstating the population-level impact of screen time on well-being from correlational, cross-sectional data. However, the associations of these types of screen time with depressive and anxious symptoms are neither negligible nor consistent across screen type; previous specification-curve findings from Twenge et al. (2022) support the comparatively stronger association for social-media time with depressive symptoms, consistent with the social-comparison mechanism, and for total screen time with anxiety, consistent with a more general arousal/vigilance pathway (e.g., academic pressure communicated via multiple digital channels, exam-related content, constant availability expectations).

The partial mediation of the screen time–depression association by sleep quality further supports the time-displacement account (Li et al., 2019; Valkenburg & Peter, 2007) and also implies that displacement is not the only mechanism: The strong direct association after sleep was controlled, suggesting that other mechanisms such as social comparison, being exposed to cyberbullying or the amplified version of academic stress play a role in the screen time–depression association as well, and potentially operate independently of and in addition to sleep disruption. This dual-pathway model aligns with literature calls for mechanism-specific rather than dose-specific screen time and mental health models. The severity scores of PHQ-9 (9.4) and GAD-7 (8.1) both in the mild-to-moderate range are lower than the very high DASS-21-derived prevalence scores reported by Asif et al. (2020) in Sialkot, which could also be due to differences in the severity score cut-offs for screening and caseness, different instruments used (DASS-21 vs. PHQ-9/GAD-7), or genuine regional/institutional variation; once again, the importance of the standardized approach and Urdu validation of the instruments proposed here is highlighted, and the use of real multi-site Pakistani data collected using a common instrument would be ideal to clarify this question. The pattern in the illustrative results (higher depressive symptom scores among female students, related to heavier social-media use) was directionally consistent with both Niazi et al. (2026), who found a much larger proportion of affected female participants in their Lahore sample, and international findings that the social-media–depression association was stronger among girls and young women (Twenge et al., 2022).

Limitations

There are several restrictions on the design that is stated here, and one would expect to have in a real implementation. First, the cross-sectional design does not allow causal inferences: screen-time, poor sleep, and depressive/anxious symptoms could be reciprocally related (e.g., students who are depressed may use more screens as an avoidance or as a self-soothing behaviour, which runs counter to the direction of the assumed relationship). Only a

longitudinal or experimental (e.g. screen-time reduction intervention) design could adjudicate between these possibilities. Second, self-reported screen time data may include recall bias and social-desirability bias, and, as found in previous studies, is closely related to device-logged screen-time data with only moderate correlation, so future replications should also include information on screen time provided by smartphone applications (passive measurement). Third, the sampling framework proposed (Rawalpindi- Islamabad universities) restricts the generalizability to other parts of Pakistan, especially to the rural and less connected parts where the pattern of access to and use of devices may vary significantly. Fourth, there will be some unknown factors that could explain some of the associations observed, such as pre-existing mental health history, socioeconomic status, family conflict, and academic performance pressure.

Conclusion and Implications

This paper presented a theoretically informed, methodologically sound design to test the association between the daily use of screens and anxiety and depression symptoms among university students in Pakistan, based on the time-displacement hypothesis and social comparison theory. It included validated Urdu questionnaires, PHQ-9 and GAD-7, to enable direct comparisons with the international literature. The findings of modest but non-trivial associations, a stronger social-media-specific link to depression than to anxiety, and partial mediation via sleep quality would be consistent with the possibility that interventions at the university level may be more effective if they focus on social-media use patterns and sleep hygiene rather than on an undifferentiated reduction in all screen-based activity, much of which (e.g., educational use) was not associated with distress in this model. In practice, University counselling centres may consider administering brief screen-time/sleep-hygiene screening along with regular PHQ-9/GAD-7 assessments, and student-wellness programmes may consider implementing targeted social media “digital wellness” modules with pre-post screening. Longitudinal and, if ethically and practically possible, experimental designs with Pakistani student samples (e.g., randomized social-media abstinence or reduction trials) and passively collected screen-time data should be emphasized in future research to advance the field beyond the correlational evidence that currently dominates the international and Pakistani literature on this topic.

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