

EXCESSIVE SOCIAL MEDIA USE AND ADHD SYMPTOMATOLOGY IN EMERGING ADULTS: A NEUROCOGNITIVE STUDY FORM PAKISTAN

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Abstract

Introduction: The rapid rise of social media use among emerging adults has raised concerns about its association with attention-deficit/hyperactivity disorder (ADHD) symptoms. From a neurocognitive perspective, social media platforms promote rapid reward processing and frequent attentional shifts, which may disproportionately attract individuals with attentional vulnerabilities. Evidence from South Asian contexts, however, remains limited.

Methods: A cross-sectional study was conducted with 300 undergraduate and postgraduate students at the University of Okara, Pakistan. Participants completed self-report measures assessing excessive social media use, daily time spent on social media, and ADHD symptom severity, including inattention and hyperactivity-impulsivity. Data was analyzed using descriptive statistics, Pearson correlations, and hierarchical multiple regression.

Results: Participants reported high levels of daily social media use. Both excessive use and greater daily exposure were significantly and positively associated with ADHD symptom severity, with stronger relationships observed for inattentive symptoms. Regression analyses indicated that social media use explained a substantial proportion of variance in ADHD symptoms beyond demographic factors.

Discussion: The findings provide cross-cultural evidence linking dysregulated social media engagement with ADHD symptomatology, particularly attentional difficulties, in emerging adults. These results highlight the importance of considering digital behavior in understanding attentional processes and underscore the need for culturally sensitive approaches in ADHD research and intervention.

Keywords: ADHD symptoms; social media use; inattention; emerging adulthood; digital behavior; cross-cultural psychology

Introduction

The pervasive integration of social media into daily life has substantially reshaped the cognitive, social, and academic functioning of emerging adults. Attention-deficit/hyperactivity disorder (ADHD), characterized by inattention and hyperactivity-impulsivity, is increasingly conceptualized as a dimensional construct, with symptoms distributed along a continuum in the general population (Faraone et al., 2021). Individuals with elevated ADHD traits may be particularly vulnerable to compulsive social media engagement due to deficits in executive control and heightened reward sensitivity, a mechanism supported by emerging neuroimaging evidence (Schmitgen et al., 2025).

Recent research distinguishes problematic social media use from mere time spent online, emphasizing that dysregulated use is more strongly associated with attentional

difficulties, impulsivity, and academic impairment (Busch & McCarthy, 2021). Empirical studies further indicate that maladaptive motives and self-regulatory deficits underlie both excessive social media use and ADHD symptomatology (Arness & Ollis, 2023). Meta-analytic and longitudinal evidence consistently demonstrates a moderate to strong positive association between problematic social media use and ADHD symptoms particularly inattention with bidirectional influences over time (Ding et al., 2025; Halkett & Hinshaw, 2024; Lin et al., 2024).

Collectively, these findings highlight the clinical importance of considering digital behavior in ADHD assessment and intervention, as excessive social media use may both reflect and exacerbate attentional difficulties (Dekkers & van Hoorn, 2022; Hartnett & Cummings, 2024; Sihoe et al., 2023).

Problem statement

Global literature has repeatedly shown the strong relationship between the overuse of social media applications and Attention-Deficit/Hyperactivity Disorder (ADHD) symptomatology. However, there are very few clinically based, neurocognitively oriented studies that have restricted our knowledge on these relationships among the emergent adult groups in Pakistani university settings. The ability to ascertain the meaningful relationship between overuse of social media and the severity of the symptoms of ADHD in this cultural context is essential to the creation of culturally sensitive screening tests, preventive strategies, and treatment plans. Because social media usage is a behavioral determinant that can be changed, the explanation of the relationship between social media usage and the severity of ADHD symptoms has important clinical practice and population health policy implications.

Objectives of the study

The present study, conducted at the University of Okara, Pakistan, aimed to (a) characterize patterns of social media use among emerging adults, (b) examine associations between excessive social media use, daily social media hours, and ADHD symptom severity, and (c) determine whether excessive social media use predicts ADHD symptoms beyond demographic factors.

Hypothesis

Based on neurocognitive theory and prior empirical evidence, the following hypotheses were tested:

H1: Excessive social media use will be positively associated with ADHD symptom severity.

H2: Daily social media hours will be positively associated with ADHD symptom severity.

H3: Excessive social media use will significantly predict ADHD symptom severity after controlling demographic variables.

H4: Models including excessive social media use and daily social media hours will explain greater variance in ADHD symptoms than demographic variables alone.

Methodology

Study Design

The present study adopted a cross-sectional correlational design to investigate the association between social media use and attention-deficit/hyperactivity disorder (ADHD) symptoms among emerging adults. A survey-based approach was employed to capture variations in digital media engagement and attentional functioning within a university population.

Participants and Setting

Participants consisted of 300 undergraduate and postgraduate students recruited from the University of Okara, Pakistan, through convenience sampling across diverse academic disciplines. Eligibility criteria required participants to be (a) currently enrolled in a university, (b) aged 18 years or older, and (c) active users of at least one social media platform. Individuals with a prior clinical diagnosis of ADHD were excluded to ensure that the findings reflected non-clinical or subthreshold symptom patterns. Cases with incomplete data were removed

using listwise deletion to maintain the integrity of statistical analyses.

Measures

Demographic Characteristics: Participants provided demographic information including age group, gender, academic year, employment status, field of study, and estimated weekly academic workload. These variables were used for descriptive purposes and as covariates in subsequent analyses where appropriate.

Daily Social Media Use: Daily time spent on social media was assessed self-report. Participants estimated their average daily usage in hours and additionally categorized their usage into predefined ranges (e.g., less than 1 hour to 10 or more hours). Continuous scores were used for correlational analyses, while categorical groupings supported descriptive comparisons.

Excessive Social Media Use: Excessive engagement with social media was measured using the Excessive Social Media Usage Scale (ESMUS), a 16-item instrument developed for this study. The scale was informed by theoretical models of behavioral addiction and prior empirical research on problematic social media use (Andreassen, 2015; Kuss & Griffiths, 2017). Items captured key features such as compulsive checking, loss of control, preoccupation, withdrawal-like experiences, and functional impairment. Responses were recorded on a 5-point Likert scale ranging from 0 (never) to 4 (very often). Total scores were computed by summing item responses, with higher scores indicating greater dysregulation. The scale demonstrated excellent internal consistency in the current sample (Cronbach's $\alpha = .93$).

ADHD Symptomatology: ADHD symptoms were assessed using the Adult ADHD Self-Report Scale (ASRS-v1.1), developed by the World Health Organization as a screening tool for adult ADHD (Kessler et al., 2005). The scale comprises 18 items representing two domains: inattention and hyperactivity-impulsivity, consistent with DSM-based criteria. Participants rated the frequency of symptoms over the past six months on a 5-point Likert scale (0 = never to 4 = very often). Minor contextual modifications were made to reflect academic environments without altering the conceptual meaning of items. Total and subscale scores were calculated, with higher scores indicating greater symptom severity. The ASRS-v1.1 demonstrated strong reliability in this study (total $\alpha = .92$; inattention $\alpha = .88$; hyperactivity-impulsivity $\alpha = .89$). It is important to note that ASRS-v1.1 is a screening instrument and does not provide a formal clinical diagnosis.

Procedure

Data were collected structured, paper-based questionnaires administered in person. Participants were informed about the study objectives and provided written informed consent prior to participation. Participation was voluntary, and confidentiality as well as anonymity were strictly maintained. The questionnaire required approximately 15–20 minutes to complete. Ethical approval was obtained from the Institutional Ethics Committee of the University of Okara, and all procedures were conducted in accordance with the ethical principles outlined in the Declaration of Helsinki (World Medical Association, 2013).

Statistical Analysis

All statistical analyses were conducted using IBM SPSS Statistics (Version 30). Descriptive statistics were computed to summarize demographic characteristics and primary study variables. Internal consistency reliability was assessed using Cronbach's alpha coefficients. Prior to inferential analyses, assumptions of normality, linearity, and multicollinearity were evaluated. Pearson product-moment correlation coefficients were calculated to examine associations between social media use variables and ADHD symptom severity. Hierarchical multiple regression analyses were performed to determine whether excessive social media use significantly predicted ADHD symptoms after controlling demographic variables (age, gender, and academic year). Statistical significance was established at $p < .05$ (two-tailed).

Results

Table 1

Pearson correlations among social media use and ADHD variables

Variable	1	2	3	4	5
Excessive social media use	—				
Daily social media hours	.87***	—			
ADHD total score	.69***	.69***	—		
Inattention	.68***	.67***	.91***	—	
5. Hyperactivity–impulsivity	.57***	.58***	.91***	.65***	—

Note. *** $p < .001$ (two-tailed).

Group Comparisons

Independent samples *t* tests were conducted to explore potential gender differences in excessive social media use, daily social media hours, and ADHD symptom severity. No statistically significant gender differences were observed for any of the primary variables (all $p > .05$), with effect sizes in the small range.

One-way analyses of variance (ANOVA) were conducted to examine differences in ADHD symptom severity across categorical levels of daily social media use. These analyses did not yield statistically significant group differences for total ADHD symptoms, inattention, or hyperactivity–impulsivity (all $p > .05$). These non-significant findings likely reflect reduced statistical power due to categorization of a continuous exposure variable and substantial within-group variability. Results of group comparisons are presented in *Tables 2 and 3*.

Table 2

Independent-samples t tests comparing gender groups

Variable	t(df)	p	Cohen's d
Excessive social media use	−0.20 (291)	.84	−.02
Daily social media hours	−1.13 (291)	.26	−.13
ADHD total score	−1.53 (291)	.13	−.18
Inattention	−1.50 (291)	.14	−.18
Hyperactivity–impulsivity	−1.30 (291)	.19	−.15

Note. Cohen's d values of .20, .50, and .80 indicate small, medium, and large effects, respectively.

Table 3:
One-way ANOVA comparing ADHD symptoms across daily social media use categories

Outcome variable	F(4, 295)	p	η^2
ADHD total score	0.72	.581	.01
Inattention	1.04	.389	.01
Hyperactivity-impulsivity	0.47	.759	.01

Note. η^2 values of .01, .06, and .14 indicate small, medium, and large effects.

Hierarchical Multiple Regression Analysis

Hierarchical multiple regression analysis was conducted to examine whether excessive social media use accounted for variance in self-reported ADHD symptom severity beyond demographic factors. Age group, gender, and year of study were entered in Step 1 as control variables. Excessive social media use (ESMUS total score) was entered in Step 2.

Demographic variables entered in Step 1 did not account for a significant proportion of variance in ADHD symptom severity ($R^2 = .006$, $F(3, 296) = 0.57$, $p = .634$). In Step 2, the inclusion of excessive social media use resulted in a substantial and statistically significant increase in explained variance ($\Delta R^2 = .505$, $p < .001$). In the final model, excessive social media use emerged as a strong statistical predictor of ADHD symptom severity ($\beta = .71$, $p < .001$), accounting for approximately half of the variance in self-reported ADHD symptoms. Collinearity diagnostics indicated acceptable tolerance and VIF values, supporting the stability of the regression model.

Table 4 presents regression coefficients, and Table 5 presents collinearity diagnostics.

Table 4:
Hierarchical multiple regression predicting ADHD total score (N = 300)

Predictor	B	SE B	β	t	p
Step 1					
Age group	-0.83	1.53	-.03	-0.54	.589
Gender	1.15	1.29	.05	0.89	.373
Year of study	0.49	0.59	.05	0.84	.401

Step 2

Excessive social media use	0.40	0.09	.37	4.53	<.001
Daily social media hours	1.95	0.44	.37	4.45	<.001

Note. Step 1: $R^2 = .006$, $F(3, 296) = 0.57$, $p = .634$.
Step 2: $R^2 = .510$, $\Delta R^2 = .505$, $\Delta F(2, 294) = 151.55$, $p < .001$.

Table 5
Collinearity diagnostics for the final regression model

Predictor	Tolerance	VIF
Age group	.999	1.00
Gender	.990	1.01
Year of study	.993	1.01
Excessive social media use	.248	4.03
Daily social media hours	.248	4.04

Note. VIF values < 10 indicate no multicollinearity concerns.

Discussion

The present study investigated the relationships between excessive social media use, daily social media exposure, and attention-deficit/hyperactivity disorder (ADHD) symptomatology among emerging adults enrolled at a public university in Pakistan. Consistent with the study objectives, the findings revealed that both excessive social media use and greater daily time spent on social media were significantly and positively associated with ADHD symptom severity. These relationships were observed at both the bivariate and multivariate levels and were particularly pronounced for inattentive symptoms. Furthermore, hierarchical regression analyses indicated that excessive social media use and daily social media engagement independently predicted ADHD symptoms even after controlling demographic variables. Together, these factors accounted for a substantial proportion of variance in symptom severity. Overall, the findings provide compelling cross-cultural evidence suggesting that dysregulated social media engagement is closely linked to attentional difficulties during emerging adulthood.

Descriptive findings indicated high social media engagement, with participants reporting an average of approximately six hours of daily use, consistent with prior research (Thorell et al., 2025). ADHD symptoms showed substantial variability, supporting dimensional conceptualization (Faraone et al., 2021). Correlational analyses revealed moderate-to-strong positive associations between excessive social media use, daily usage, and ADHD symptom

severity, aligning with recent meta-analytic evidence (Ding et al., 2025; Lin et al., 2024). Overall, the findings support a dimensional approach and indicate that problematic social media use is similarly associated with attentional difficulties across genders (Halkett & Hinshaw, 2024). Similarly, Compensatory Internet Use Theory posits that individuals may use social media to cope with stress and negative effects. Emerging adults with attentional difficulties may therefore rely on social media for distraction and emotional regulation, a pattern supported by recent evidence (Thorell et al., 2025).

Limitations and Future Directions

This study is limited by its cross-sectional design, reliance on self-report measures, and single-university sample, which restrict causal inference and generalizability. Future research should adopt longitudinal designs, incorporate objective measures of digital use, and utilize more diverse samples. Examining platform-specific features and usage motives may further clarify underlying mechanisms.

Conclusion

The findings indicate that excessive and prolonged social media use is significantly associated with ADHD symptom severity, particularly inattention, among emerging adults. These results underscore the relevance of digital behavior in understanding attentional functioning and support the integration of social media use into ADHD assessment and intervention frameworks.

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