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PROBLEMATIC SOCIAL MEDIA USE AND SLEEP QUALITY AMONG UK ADULTS: A CROSS-SECTIONAL STUDY USING THE BERGEN SOCIAL MEDIA ADDICTION SCALE AND THE PITTSBURGH SLEEP QUALITY INDEX

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ABSTRACT

Background: Poor sleep quality is an escalating public health concern in the United Kingdom, and the rapid integration of social media into everyday life has raised concern about its contribution to sleep disruption. Existing evidence is conceptually and methodologically inconsistent, often relying on simple exposure-based metrics and adolescent samples. **Objective:** This study examined the association between problematic social media use and sleep quality among UK adults using validated, multidimensional instruments. **Methods:** A quantitative, cross-sectional online survey was administered to UK residents aged 18 years and older. Problematic social media use was measured with the Bergen Social Media Addiction Scale (BSMAS) and sleep quality with the Pittsburgh Sleep Quality Index (PSQI). Following data cleaning, 121 valid responses were analysed using descriptive statistics, Pearson correlation, multiple linear regression, an independent-samples t-test, and one-way ANOVA. **Results:** Problematic social media use correlated significantly with poorer sleep quality ($r = .409$, $p < .001$) and remained the strongest independent predictor of PSQI scores after adjusting for sociodemographic covariates ($\beta = .438$, $p < .001$); the regression model explained 49.8% of the variance ($R^2 = .498$). Sleep quality also varied significantly by gender, marital status, living arrangement, employment status, and night-shift work. Both instruments demonstrated good internal consistency (BSMAS $\alpha = .866$; PSQI $\alpha = .785$). **Conclusion:** Problematic social media use is a significant, modifiable correlate of poor sleep quality among UK adults. The findings support behavioural-addiction and biopsychosocial models of sleep health and point to a need for digital-wellness interventions and longitudinal research.

Keywords: Problematic Social Media Use; Sleep Quality; Behavioural Addiction; BSMAS; PSQI; UK Adults

1 INTRODUCTION

Insufficient and poor-quality sleep is widely recognised as a major public health concern in contemporary societies because of its association with adverse physical, psychological, and social outcomes. Global estimates suggest that 27–35% of adults experience poor sleep quality (Chattu et al., as cited in Public Health England, 2018), and UK-specific data indicate that roughly a third of adults report short sleep duration or poor sleep quality (NHS Digital, 2022; Public Health England, 2018). Sleep supports cognitive function, emotional regulation, and metabolic health (Cappuccio et al., 2010;

Medic et al., 2017), yet the quality of adult sleep in the UK appears to have declined alongside rapid technological and behavioural change (Public Health England, 2018; Freeman et al., 2020).

Concurrently, social media platforms have become central to daily communication and social interaction (Ofcom, 2023; Montag et al., 2021). Alongside clear benefits for connectivity and information access, concern has grown about maladaptive or excessive engagement, conceptualised within the literature as a behavioural addiction characterised by compulsive use and diminished self-control (Griffiths, 2005, 2012; Kuss & Griffiths, 2017). Much of the existing evidence linking social media use to sleep, however, relies on simple exposure measures such as frequency or duration, which conflate high but functional engagement with genuinely problematic use and have produced inconsistent findings (Kardefelt-Winther et al., 2017; Orben, 2020). Research has also concentrated disproportionately on adolescents, leaving UK-based adult evidence, particularly evidence drawing on validated multidimensional instruments, comparatively scarce (Scott & Woods, 2019; Twenge et al., 2018).

This study addressed these gaps by examining the relationship between problematic social media use and sleep quality among UK adults using the Bergen Social Media Addiction Scale (BSMAS) and the Pittsburgh Sleep Quality Index (PSQI). Specifically, the study asked: (1) what is the association between problematic social media use and sleep quality among UK adults; (2) to what extent does problematic social media use predict sleep quality after accounting for sociodemographic factors; and (3) do sociodemographic and contextual variables shape this relationship? The paper proceeds with a review of the relevant conceptual and empirical literature, before presenting the methodology, results, discussion, and conclusions of a cross-sectional survey of 121 UK adults.

2 LITERATURE REVIEW

2.1 Conceptualising problematic social media use

A recurring limitation of the literature is reliance on exposure-based metrics of social media use, such as frequency or time spent online, which assume a linear relationship between online time and harm while overlooking the qualitative character of engagement (Kross et al., as cited in Kardefelt-Winther et al., 2017; Orben, 2020). This reductionist approach has produced inconsistent findings across studies (Orben, 2020; Valkenburg et al., 2021). Framing problematic use through behavioural addiction theory instead emphasises compulsive engagement, diminished control, and continued use despite negative consequences (Griffiths, 2005; Montag et al., 2021), offering greater explanatory depth than exposure alone (Kuss & Griffiths, 2017). This framing remains contested: critics argue that addiction language risks pathologising ordinary digital participation in societies where social media is socially and professionally embedded, and that the absence of agreed clinical thresholds limits conceptual precision (Kardefelt-Winther et al., 2017). The BSMAS operationalises this behavioural-addiction perspective by capturing salience, tolerance, withdrawal, conflict, and relapse (Andreassen et al., 2016), and was adopted in the present study to move beyond simple exposure measurement while retaining a critical stance on interpretation.

2.2 Sleep quality as a multidimensional construct

Sleep quality is not reducible to duration; it encompasses subjective satisfaction, sleep latency, efficiency, disturbances, and daytime dysfunction, reflecting biological, psychological, and social influences (Buysse et al., 1989; Mollayeva et al., 2016). Early studies relying on single-item or duration-based measures of sleep have been criticised for obscuring these distinct dimensions and limiting comparability across studies (Buysse et al., 1989; Mollayeva et al., 2016). The PSQI addresses this limitation by combining seven component scores into a validated global index and has demonstrated good psychometric properties across clinical and non-clinical samples (Buysse et al., 1989; Carpenter & Andrykowski, 1998), making it well suited to detecting the behavioural correlates of poor sleep examined here.

2.3 Mechanisms linking social media use and sleep

Three overlapping mechanisms are proposed to explain how social media use may disrupt sleep. First, pre-sleep engagement may heighten cognitive and emotional arousal, delaying sleep onset and fragmenting sleep (Levenson et al., 2017; Woods & Scott, 2016). Second, displacement theory suggests that time spent on social media directly substitutes for sleep time, particularly when use occurs in the evening or at night (Exelmans & Van den Bulck, 2016). Third, problematic use has been linked to anxiety, depression, and rumination, which are established precursors of poor sleep, with the relationship plausibly bidirectional (Freeman et al., 2020; Orben, 2020). Fear of missing out has also been implicated as an emotional driver of compulsive, sleep-disrupting engagement (Przybylski et al., 2013).

2.4 Theoretical framework

This study drew on three complementary frameworks. Behavioural addiction theory (Griffiths, 2005) attributes sleep disruption to compulsive engagement and diminished self-regulation rather than time spent online per se, but has been criticised for potentially over-pathologising common digital behaviour (Kardefelt-Winther et al., 2017). Displacement

theory (Exelmans & Van den Bulck, 2016) offers a simpler, time-based account but has been criticised for assuming that all social media use affects sleep uniformly, regardless of its qualitative character (Orben, 2020). The biopsychosocial model (Engel, 1977) situates sleep quality at the intersection of behavioural, psychological, and social-environmental factors, and is used here to interpret both the behavioural (BSMAS) and contextual (sociodemographic) predictors of sleep quality (Medic et al., 2017).

2.5 Research gap and rationale

Despite growing scholarly attention, the evidence base remains constrained by rudimentary exposure measures, adolescent-dominated samples, and cross-sectional designs that limit causal inference (Orben, 2020; Valkenburg et al., 2021). UK-based adult evidence using validated multidimensional instruments is particularly scarce, despite national data showing both high rates of social media engagement and substantial sleep disturbance among UK adults (Ofcom, 2023; NHS Digital, 2022). This study addressed that gap by combining the BSMAS and PSQI within a theoretically grounded, adult UK sample.

3 MATERIAL AND METHODS

3.1 Design and philosophy

This study adopted a positivist, quantitative, cross-sectional survey design, appropriate for testing hypothesised associations between measurable behavioural and health variables (Creswell & Creswell, 2018; Bryman, 2016). The cross-sectional design permitted efficient data collection at a single time point but precludes causal or temporal inference (Orben, 2020).

3.2 Participants and sampling

Participants were UK residents aged 18 years or older, proficient in English, and users of at least one social media platform; individuals with a clinically diagnosed sleep disorder unrelated to behavioural factors were excluded. A non-probability convenience sample was recruited online via social media, forums, and digital networks (Saunders et al., 2019), targeting 120–150 respondents to provide adequate power for multiple regression (Cohen et al., 2013). As shown in Figure 1, 304 responses were received via Qualtrics; after removing incomplete, ineligible, or inconsistent responses, 121 valid cases were retained for analysis.

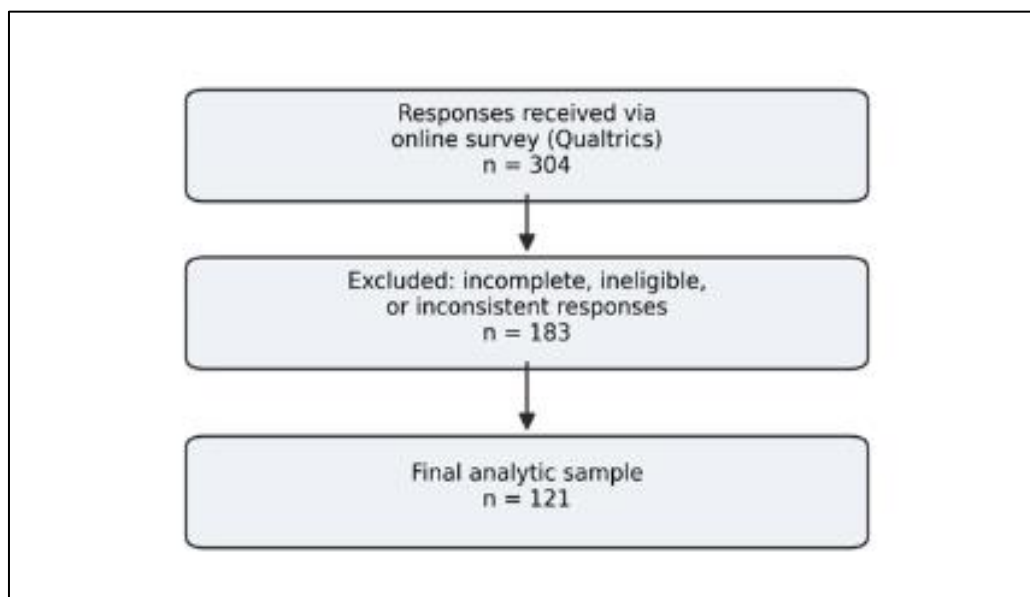


Figure 1: Participant screening and inclusion flow.

The final sample was predominantly aged 26–45 years (79.3%), with a moderate gender imbalance (60.3% male, 39.7% female) and a highly educated profile (58.7% held postgraduate qualifications). Nearly half of participants (49.6%) reported regular or occasional night-shift work, and WhatsApp was the most commonly used platform (62.8%). Full sample characteristics are summarised in Table 1.

Table 1: Sociodemographic characteristics of participants (N = 121).

Characteristic	n	%	Characteristic	n	%
Age group			Living arrangement		
18–25	6	5.0	Living alone	41	33.9
26–35	66	54.5	With partner/spouse	46	38.0
36–45	30	24.8	With family	19	15.7
46 and above	19	15.7	Shared accommodation	15	12.4
Gender			Night-shift status		
Male	73	60.3	Yes (regular/occasional)	60	49.6
Female	48	39.7	No	61	50.4
Employment status			Education level		
Full-time	48	39.7	Postgraduate degree	71	58.7
Self-employed	26	21.5	Undergraduate degree	27	22.3
Student	25	20.7	GCSE / A-level or below	23	19.0
Part-time / unemployed / retired	22	18.1	Primary platform: WhatsApp	76	62.8

3.3 Measures

Problematic social media use was assessed with the six-item BSMAS, which captures salience, mood modification, tolerance, withdrawal, conflict, and relapse on a Likert scale; item scores are summed to produce a total score, with higher scores indicating more problematic use (Andreassen et al., 2016). Sleep quality was assessed with the PSQI, which combines seven component scores (subjective quality, latency, duration, habitual efficiency, disturbances, use of sleep medication, and daytime dysfunction) into a global score ranging from 0–21, with higher scores indicating poorer sleep quality (Buysse et al., 1989). Sociodemographic and contextual variables (age, gender, employment status, region, occupation, living arrangement, night-shift status, area of residence, education, household size, marital status, and primary platform) were collected as covariates.

3.4 Procedure and data preparation

The questionnaire was hosted on Qualtrics and comprised a sociodemographic section followed by the BSMAS and PSQI. Participants provided informed consent after reviewing a participant information sheet before proceeding. Data were exported to SPSS, where incomplete or ineligible responses were removed; PSQI time-based items were standardised into numerical form, gender was coded as a binary variable for group comparison, and primary-platform responses were harmonised into consistent categories. BSMAS and PSQI scores were computed according to their established scoring protocols (Andreassen et al., 2016; Buysse et al., 1989).

3.5 Data analysis

Analyses proceeded in stages: descriptive and frequency statistics summarised sample characteristics; Cronbach's alpha assessed internal consistency; Pearson correlation examined the association between BSMAS and PSQI scores; multiple linear regression examined the predictive contribution of problematic social media use after adjusting for sociodemographic covariates, with regression assumptions (normality, linearity, homoscedasticity) checked beforehand (Field, 2018); an independent-samples t-test compared PSQI scores by gender; and one-way ANOVA compared PSQI scores across sociodemographic subgroups. Statistical significance was set at $p < .05$.

3.6 Ethical considerations

Ethical approval was obtained from the Sheffield Hallam University Research Ethics Committee prior to data collection. Participation was voluntary and anonymous, informed consent was obtained before survey access, and participants were informed of their right to withdraw. Data were stored and processed in accordance with the General Data Protection Regulation, and participants were signposted to relevant support given the (minimal) possibility of psychological discomfort from reflecting on sleep or social media habits.

4 RESULTS

4.1 Reliability of study instruments

Both instruments demonstrated adequate to excellent internal consistency (Table 2). The BSMAS showed excellent reliability ($\alpha = .866$), consistent with its original validation (Andreassen et al., 2016), and the PSQI showed acceptable reliability ($\alpha = .785$), consistent with prior research (Buysse et al., 1989; Mollayeva et al., 2016).

Table 2: Internal consistency of the BSMAS and PSQI.

Scale	Items	Cronbach's α	Interpretation
Bergen Social Media Addiction Scale (BSMAS)	6	0.866	Excellent
Pittsburgh Sleep Quality Index (PSQI)	7 components	0.785	Acceptable

4.2 Descriptive statistics

Participants reported a moderate average level of problematic social media use (BSMAS $M = 14.12$, $SD = 5.70$, range 6–30) and, on average, suboptimal sleep quality (PSQI $M = 4.75$, $SD = 3.31$, range 1–16), with considerable variability across the sample (Table 3).

Table 3: Descriptive statistics for BSMAS and PSQI scores.

Variable	N	Min-Max	M	SD
PSQI global score	121	1–16	4.75	3.31
BSMAS total score	121	6–30	14.12	5.70

4.3 Correlation between problematic social media use and sleep quality

A Pearson correlation revealed a statistically significant, moderate positive association between BSMAS and PSQI scores, $r = .409$, $p < .001$ (Table 4), indicating that more problematic social media use was associated with poorer sleep quality and providing support for Hypothesis 1.

Table 4: Pearson correlations between BSMAS and PSQI scores.

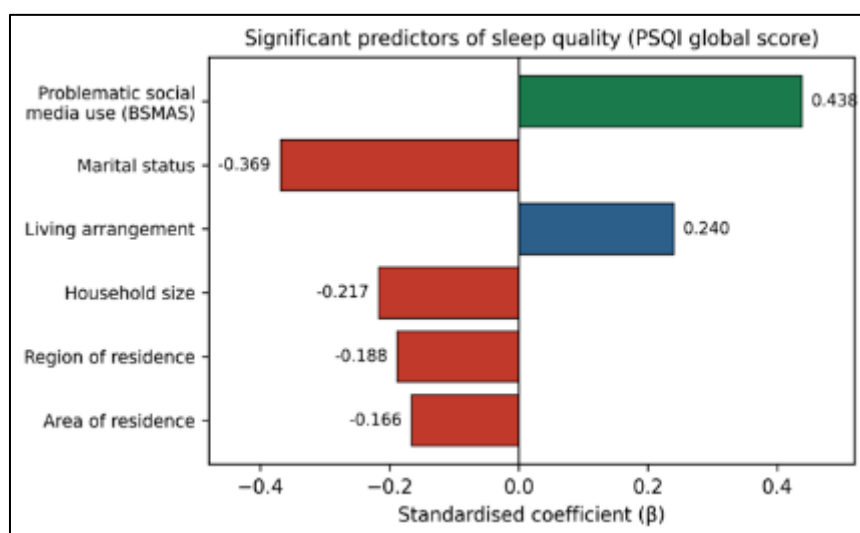
Variable	1. BSMAS total	2. PSQI global
1. BSMAS total score	0	0.409**
2. PSQI global score	0.409**	0

4.4 Multiple regression analysis

Multiple linear regression tested whether problematic social media use predicted sleep quality after adjusting for sociodemographic covariates (Table 5). The overall model was statistically significant, $F(13, 107) = 8.178$, $p < .001$, explaining 49.8% of the variance in PSQI scores ($R^2 = .498$; adjusted $R^2 = .437$). Problematic social media use was the strongest independent predictor ($B = 0.254$, $\beta = .438$, $p < .001$), such that each one-point increase in BSMAS score was associated with a 0.254-point increase in PSQI score, indicating poorer sleep. This effect remained significant after adjustment, supporting Hypothesis 2. Marital status ($\beta = -.369$, $p < .001$), living arrangement ($\beta = .240$, $p = .002$), household size ($\beta = -.217$, $p = .016$), region of residence ($\beta = -.188$, $p = .016$), and area of residence ($\beta = -.166$, $p = .040$) were also significant predictors (Figure 2), whereas age, gender, employment status, occupation, night-shift status, education level, and primary platform were not significant in the adjusted model.

Table 5: Multiple linear regression predicting sleep quality (PSQI global score).

Predictor	B	SE	β	t	p
Constant	11.153	3.321	0	3.358	.001
BSMAS total score	0.254	0.048	0.438	5.345	<.001
Age	0.560	0.355	0.163	1.577	.118
Gender	0.423	0.531	0.063	0.796	.428
Employment status	0.175	0.233	0.070	0.751	.455
Region of residence	-0.769	0.315	-0.188	-2.442	.016
Living arrangement	0.796	0.254	0.240	3.138	.002
Occupation	0.219	0.134	0.156	1.639	.104
Night-shift status	-0.744	0.395	-0.159	-1.881	.063
Area of residence	-1.007	0.484	-0.166	-2.082	.040
Marital status	-1.543	0.446	-0.369	-3.460	<.001
Education level	-0.158	0.285	-0.054	-0.555	.580
Household size	-0.713	0.292	-0.217	-2.440	.016
Main social media platform	0.015	0.254	0.004	0.060	.953
Model summary: $R = .706$, $R^2 = .498$, Adjusted $R^2 = .437$, $F(13,107) = 8.178$, $p < .001$					

**Figure 2: Standardised regression coefficients (β) for significant predictors of sleep quality.**

4.5 Gender differences in sleep quality

An independent-samples t-test showed a statistically significant gender difference in PSQI scores, $t(119) = -3.454$, $p < .001$ (Table 6). Female participants reported markedly poorer sleep quality ($M = 5.98$, $SD = 4.06$) than male participants ($M = 3.95$, $SD = 2.42$), a mean difference of approximately 2.03 points.

Table 6: Independent-samples t-test comparing sleep quality by gender.

Gender	N	M	SD	t (df=119)
Male	73	3.95	2.42	-3.454, $p < .001$
Female	48	5.98	4.06	

4.6 Group differences in sleep quality (ANOVA)

One-way ANOVA (Table 7) showed that sleep quality varied significantly across age group, employment status, occupation, living arrangement, marital status, night-shift status, education level, household size, and primary social media platform, but not across region or area of residence. The largest effects were observed for living arrangement ($\eta^2 = .325$), marital status ($\eta^2 = .233$), and employment status ($\eta^2 = .222$), indicating that social and occupational context accounted for a substantial share of variance in sleep quality alongside problematic social media use.

Table 7: One-way ANOVA results for sleep quality across sociodemographic groups.

Grouping variable	F	df	p	η^2
Age group	3.570	(5,115)	0.005**	0.134
Employment status	6.577	(5,115)	<0.001***	0.222
Region of residence	0.675	(3,117)	0.569	0.017
Occupation	2.257	(7,113)	0.035*	0.123
Living arrangement	18.751	(3,117)	<0.001***	0.325
Marital status	8.826	(4,116)	<0.001***	0.233
Night-shift status	3.754	(2,118)	0.026*	0.060
Area of residence	2.713	(2,118)	0.070	0.044
Education level	2.541	(4,116)	0.043*	0.081
Household size	4.895	(3,117)	0.003**	0.112
Main social media platform	2.396	(5,115)	0.042*	0.094

5 DISCUSSION

5.1 Problematic social media use and sleep quality

Consistent with Hypothesis 1, problematic social media use was significantly and moderately correlated with poorer sleep quality ($r = .409$), a strength consistent with Cohen's (1988) benchmarks. This moderate, rather than strong, association underscores that problematic engagement is a meaningful but non-deterministic contributor to sleep disruption, in contrast to reductionist accounts based purely on exposure duration (Kardefelt-Winther et al., 2017; Orben, 2020). That a behaviourally grounded measure such as the BSMAS produced a robust, theoretically coherent association suggests that inconsistencies in prior literature may partly reflect differences in how social media use has been operationalised, rather than the absence of any genuine relationship (Orben & Przybylski, 2019).

5.2 The predictive role of problematic use

Supporting Hypothesis 2, problematic social media use remained the strongest independent predictor of sleep quality after adjustment for sociodemographic covariates ($\beta = .438$), and the overall model explained nearly half of the variance in PSQI scores. This pattern aligns closely with behavioural addiction theory, which attributes sleep disruption to compulsive checking, emotional over-investment, and difficulty disengaging from digital platforms, particularly around bedtime (Griffiths, 2005; Kuss & Griffiths, 2017; Przybylski et al., 2013). The persistence of this effect after adjustment suggests that displacement theory alone, which emphasises time substitution, does not fully account for the observed relationship; the qualitative, compulsive character of engagement appears at least as important as its duration (Exelmans & Van den Bulck, 2016).

5.3 Contextual and sociodemographic influences

Sleep quality was also shaped by living arrangement, marital status, household size, and residential context, echoing biopsychosocial accounts that situate sleep within wider social and environmental circumstances rather than individual behaviour alone (Engel, 1977; Medic et al., 2017; Grandner, 2017). Shared or crowded living situations may introduce noise, reduced privacy, or irregular routines that independently affect sleep (Medic et al., 2017), while marital status may proxy for emotional support or caregiving demands. The significant gender difference, with women reporting poorer sleep than men, is consistent with prior evidence of heightened female vulnerability to sleep disturbance, plausibly related to psychosocial and physiological factors (Levenson et al., 2017; Woods & Scott, 2016). Age, gender, employment status, occupation, and education were not significant independent predictors once other variables were

included, which may reflect the sample's relatively narrow demographic profile (predominantly younger, highly educated adults) rather than a genuine absence of effect (Field, 2018).

5.4 Implications for public health practice and policy

These findings suggest that public health responses to poor sleep should extend beyond generic screen-time reduction advice to target the compulsive and emotionally driven features of problematic social media engagement, such as pre-sleep checking behaviour and difficulty disengaging (Exelmans & Van den Bulck, 2016). Digital-wellness interventions, including structured use guidelines and bedtime disengagement strategies, may be a useful complement to broader sleep-hygiene programmes (NHS Digital, 2022). At the same time, the significant contribution of living arrangement, household size, and shift work indicates that interventions and policy should also address structural and environmental determinants of sleep, including housing conditions and shift-work scheduling (Wickwire et al., 2017), rather than framing sleep health as solely a matter of individual digital behaviour.

6 CONCLUSION AND RECOMMENDATIONS

This study found that problematic social media use, measured with a validated behavioural-addiction instrument, is significantly and independently associated with poorer sleep quality among UK adults, even after accounting for a broad range of sociodemographic and contextual factors. The findings extend a literature dominated by adolescent samples and simple exposure metrics by providing UK-specific, adult-focused evidence grounded in validated multidimensional measures, and by demonstrating that behavioural addiction theory offers a more complete account of the social-media-sleep relationship than displacement theory alone. The results also reaffirm that sleep quality is best understood through a biopsychosocial lens, shaped jointly by digital behaviour and by social and environmental context such as living arrangement, marital status, and shift work.

Several limitations qualify these conclusions. The cross-sectional design precludes causal or directional inference, so the identified associations may be bidirectional. Convenience sampling and online recruitment likely produced a sample skewed toward younger, highly educated, digitally engaged adults, limiting generalisability to the wider UK adult population. All measures were self-reported and therefore susceptible to recall and social-desirability bias, and the relatively large number of predictors relative to sample size raises some risk of model overfitting ($R^2 = .498$). Psychological covariates such as anxiety, depression, and stress, which plausibly influence both social media use and sleep, were not measured.

Future research should prioritise longitudinal designs capable of establishing temporal precedence between problematic social media use and sleep disturbance, and should recruit larger, more demographically representative UK samples to strengthen generalisability and enable more detailed subgroup analysis. Incorporating psychological covariates, such as anxiety, depression, loneliness, and fear of missing out, would help clarify underlying mechanisms (Przybylski et al., 2013), while qualitative or mixed-methods approaches could illuminate the lived experience of problematic engagement and its perceived effects on sleep. Finally, intervention studies evaluating digital-hygiene programmes and structured disengagement strategies are needed to determine whether modifying problematic social media use can causally improve sleep outcomes among UK adults.

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