



Impact of Digital Overload on Emotional Balance among Youth

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ABSTRACT—Continuous connectivity has made digital overload a routine condition of young adult life rather than an occasional disruption. This study examines how perceived digital overload relates to emotional balance among youth, and whether perceived stress mediates and cognitive reappraisal moderates that relationship. A cross-sectional survey was administered to 486 university students aged 18–25 years across three institutions in the National Capital Region, India. Digital overload was measured through a 15-item index covering information, communication, and system-feature overload; emotional balance was measured using the affect-balance score of the Scale of Positive and Negative Experience (SPANE-B). Perceived stress, fear of missing out (FoMO), problematic social media use, and two emotion-regulation strategies were assessed as correlates. Digital overload correlated negatively with emotional balance ($r = -.52, p < .001$) and explained an additional 14% of variance in emotional balance after demographics, screen time, and sleep duration were controlled. Perceived stress mediated 54.1% of the total effect, and cognitive reappraisal significantly buffered it ($B = 1.18, p = .004$). Participants in the highest overload tertile reported a mean affect balance near zero ($M = -0.92$), compared with clearly positive balance in the lowest tertile ($M = 6.41$). Findings indicate that the *experience* of being overloaded, rather than raw screen exposure, is the stronger correlate of emotional equilibrium, and that reappraisal-based

training may be a more feasible intervention target than blanket screen-time reduction.

KEYWORDS—digital overload, emotional balance, perceived stress, cognitive reappraisal, fear of missing out, youth well-being

INTRODUCTION

Young adults now inhabit a media environment that is persistent, portable, and interruptive. Messages, notifications, feeds, and platform features arrive without natural stopping points, and the cognitive and affective cost of managing this flow has come to be described as digital overload. The construct extends the classical idea of information overload into a networked setting where the volume of incoming content, the social obligation to respond, and the proliferation of platform features each impose separate demands.

Emotional balance — the relative predominance of pleasant over unpleasant affect in everyday experience — is a sensitive indicator of psychological functioning in this age group. It is more responsive to daily conditions than trait measures of well-being, and it captures the subjective texture of life that youth themselves report when asked about digital fatigue. Public debate has largely framed the issue as one of screen time, yet the accumulating evidence suggests that duration of use is a weak predictor of well-being once the



quality of that use is taken into account. The present study therefore shifts attention from exposure to appraisal: it asks whether the felt sense of being overloaded, and the stress that accompanies it, accounts for variation in emotional balance beyond how many hours a young person spends on a device.



REVIEW OF LITERATURE

Research on overload originated in organisational and cognitive psychology. Misra and Stokols (2012) distinguished information overload arising from the environment from that arising from digital sources, and showed that perceived overload was associated with elevated stress and diminished health outcomes independently of objective exposure. Lee, Son, and Kim (2016) extended this reasoning to social networking services, decomposing overload into information overload, communication overload, and system-feature overload, and demonstrating that each contributed to platform fatigue through a stress pathway. Reinecke et al. (2017), using a German probability sample, found that communication load and internet multitasking predicted perceived stress, which in turn predicted burnout, depression, and anxiety symptoms — with the effects most pronounced among younger respondents.

Parallel work has examined how digital engagement relates to affect among adolescents and young adults. Thomée, Härenstam, and Hagberg (2011) reported prospectively that high mobile phone use predicted sleep disturbance and depressive symptoms in young adults. Elhai et al. (2017) synthesised evidence linking problematic smartphone use to anxiety and depression psychopathology, noting that process-oriented use (feeds, browsing) was more consistently implicated than social use. Andreassen et al. (2016), in a large-scale cross-sectional study, found addictive social media use to be associated with symptoms of several psychiatric disorders, while Boer et al. (2020), across 29 countries, showed that problematic use rather than intense use was the stronger correlate of lower well-being.

The magnitude of these associations remains contested. Orben and Przybylski (2019), applying specification curve analysis to large adolescent datasets, found that digital technology use explained less than 1% of the variance in well-being. Twenge and Campbell (2018), by contrast, reported meaningful dose–response associations between screen time and lower psychological well-being among children and adolescents. Keles, McCrae, and Grealish (2020) concluded in a systematic review that the relationship between social media and adolescent distress was real but heterogeneous, with activity type and individual appraisal driving much of the variation. Vanden Abeele (2021) helped reconcile these positions by theorising digital well-being as a dynamic equilibrium between connectivity and disconnection, disturbed when demands exceed regulatory capacity.

Affect regulation offers a mechanism for that variation. Gross and John (2003) established that habitual cognitive reappraisal is associated with greater positive and less negative affect, while expressive suppression shows the reverse pattern. Hollenstein and Colasante (2024) argued that adolescents increasingly enact emotion regulation *through* digital media, so that the same device functions as both a source of demand and a regulatory tool; Scott et al. (2024) found in daily-diary data that using technology to feel better produced short-term relief but limited recovery for those with prior emotional problems. Fear of missing out has been identified as an affective driver sustaining engagement despite fatigue (Przybylski et al., 2013; Alt, 2015).

Evidence from India remains comparatively thin. Vaghasiya et al. (2023) found problematic smartphone use in 12.5% and problematic social media use in 11.9% of school-going adolescents, with use exceeding four hours daily as the principal correlate. What has not been established in this setting is whether perceived overload carries explanatory weight over and above exposure, and whether regulatory strategy conditions its effect. The present study addresses that gap.

Objectives and Hypotheses

The study set out to (a) assess levels of digital overload and emotional balance among youth, (b) test whether digital overload predicts emotional balance after controlling for demographics, screen time, and sleep duration, (c) examine perceived stress as a mediator, and (d) test cognitive reappraisal as a moderator.

H1: Digital overload is negatively associated with emotional balance.

H2: Digital overload explains variance in emotional balance beyond screen time and sleep duration.

H3: Perceived stress mediates the overload–emotional balance relationship.

H4: Cognitive reappraisal moderates the relationship, weakening it at higher levels.

METHODOLOGY

Research design. A cross-sectional, correlational survey design was adopted, with self-report measures administered at a single time point.

Participants and sampling. Stratified random sampling was used across three universities in the National Capital Region of India, stratified by institution and year of study. Of 540 students approached, 512 responded (94.8%) and 486 provided complete, valid responses after screening for straight-lining and incomplete consent. Participants were aged 18–25 years ($M = 20.8$, $SD = 2.1$); 251 (51.6%) identified as female and 235 (48.4%) as male.

Measures. Digital overload was assessed with a 15-item index adapted from the ICT overload framework (Lee et al., 2016), comprising information overload, communication overload, and system-feature overload subscales rated on a 5-point Likert scale. Emotional balance was measured using the Scale of Positive and Negative Experience (Diener et al., 2010); the affect-balance score (SPANE-B) ranges from –24 to +24. Perceived stress was measured with the 10-item Perceived Stress Scale (Cohen et al., 1983; range 0–40). Emotion regulation was assessed with the Emotion Regulation Questionnaire (Gross & John, 2003). FoMO was measured with the 10-item scale of Przybylski et al. (2013), and problematic social media use with the Bergen Social Media Addiction Scale (Andreassen et al., 2016). Self-reported average daily screen time, daily notification volume, and average nightly sleep duration were also recorded.

Procedure. Data were collected over six weeks through supervised classroom administration. Institutional ethics approval and written informed consent were obtained; participation was voluntary, anonymous, and uncompensated.

Data analysis. Analyses comprised descriptive statistics, Cronbach's alpha, Pearson correlations, four-step hierarchical multiple regression, bootstrapped mediation (5,000 resamples), moderated regression with mean-centred predictors and simple-slopes probing, and one-way ANOVA across overload tertiles. Assumptions of normality, linearity, homoscedasticity, and multicollinearity (all VIF < 2.4) were satisfied. Alpha was set at .05.



RESULTS

Table 1. Sample profile (N = 486)

Characteristic	Category	n	%
Gender	Female	251	51.6
	Male	235	48.4
Age group	18–20 years	219	45.1
	21–23 years	188	38.7
	24–25 years	79	16.2
Residence	Family home	268	55.1
	Hostel / PG	218	44.9
Daily screen time	Up to 4 hours	97	20.0
	4–7 hours	224	46.1
	Above 7 hours	165	33.9

Mean daily screen time was 6.4 hours ($SD = 2.1$), mean daily notification volume was 118 ($SD = 47$), and mean nightly sleep duration was 6.3 hours ($SD = 1.1$).

Table 2. Descriptive statistics and internal consistency

Variable	Range	M	SD	α
Digital overload (total)	1–5	3.42	0.71	.89
— Information overload	1–5	3.51	0.78	.83
— Communication overload	1–5	3.47	0.81	.81
— System-feature overload	1–5	3.28	0.76	.79
Perceived stress (PSS-10)	0–40	21.7	6.3	.84
Fear of missing out	1–5	3.06	0.83	.85
Problematic social media use	1–5	2.98	0.79	.82
Cognitive reappraisal	1–7	4.62	1.03	.81
Expressive suppression	1–7	4.11	1.12	.76
Emotional balance (SPANE-B)	–24 to +24	2.84	7.92	.88 / .85

Table 3. Pearson correlations (N = 486)

	1	2	3	4	5	6	7
1. Digital overload	—						
2. Perceived stress	.58*	—					
3. FoMO	.49*	.44*	—				
4. Problematic SM use	.54*	.47*	.56*	—			
5. Cognitive reappraisal	-.14**	-.29**	-.18**	-.16**	—		
6. Expressive suppression	.23*	.31*	.20*	.22*	-.11*	—	
7. Emotional balance	-.52**	-.61**	-.38**	-.44**	.35**	-.21**	—
8. Daily screen time	.41*	.33*	.36*	.48*	-.08	.12*	-.29**

Note. * $p < .05$, ** $p < .01$.

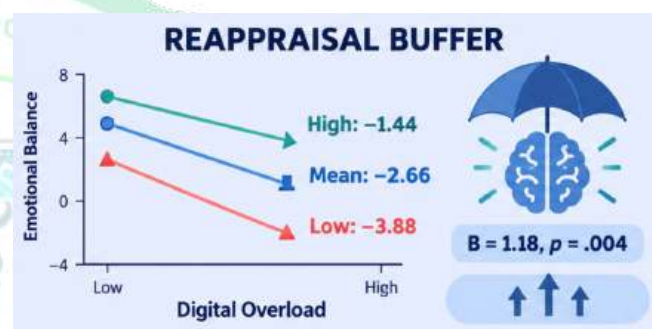
Hierarchical regression. Demographics explained 4% of variance in emotional balance, $F(3, 482) = 6.70$, $p < .001$. Adding screen time and sleep duration raised R^2 to .17 ($\Delta R^2 = .13$, $F(2, 480) = 37.59$, $p < .001$). Digital overload added a further 14% ($\Delta R^2 = .14$, $F(1, 479) = 97.19$, $p < .001$), supporting H2. Regulatory and affective variables added 16% ($\Delta R^2 = .16$, $F(4, 475) = 35.85$, $p < .001$). The final model explained 47% of variance, $F(10, 475) = 42.11$, $p < .001$.

Table 4. Final-step regression predicting emotional balance

Predictor	B	SE	β	t	p
Age	0.11	0.15	.03	0.73	.466

Gender (female = 1)	-1.11	0.56	-.07	-1.98	.048
Residence (hostel = 1)	-0.79	0.57	-.05	-1.39	.166
Daily screen time	-0.23	0.16	-.06	-1.44	.151
Sleep duration	0.79	0.27	.11	2.93	.004
Digital overload	-2.34	0.48	-.21	-4.88	<.001
Perceived stress	-0.43	0.05	-.34	-8.60	<.001
Fear of missing out	-1.15	0.38	-.12	-3.03	.003
Cognitive reappraisal	1.46	0.33	.19	4.42	<.001
Expressive suppression	-0.64	0.28	-.09	-2.29	.021

Note. $R^2 = .47$, adjusted $R^2 = .46$.



Screen time, significant at Step 2, ceased to be significant once digital overload and perceived stress entered the model — indicating that exposure operated largely through appraisal.

Mediation. Digital overload predicted perceived stress ($a = 5.14$, $SE = 0.33$, $\beta = .58$, $p < .001$), and perceived stress predicted emotional balance controlling for overload ($b = -0.61$, $SE = 0.06$, $\beta = -.49$, $p < .001$). The total effect of overload on emotional balance was $c = -5.80$ ($\beta = -.52$), reducing to a direct effect of $c' = -2.66$ ($\beta = -.24$) with the mediator included. The bootstrapped indirect effect was -3.14 , 95% CI $[-4.02, -2.31]$, accounting for 54.1% of the total effect. H3 was supported.

Moderation. The Digital Overload $\times$ Cognitive Reappraisal interaction was significant, $B = 1.18$, $SE = 0.41$, $p = .004$, $\Delta R^2 = .013$. Simple slopes showed the overload–emotional balance relationship was steepest at low reappraisal (-1 SD: $B = -3.88$, $p < .001$), intermediate at the mean ($B = -2.66$, $p < .001$), and attenuated at high reappraisal ($+1$ SD: $B = -1.44$, $p = .012$). H4 was supported.

Table 5. Emotional balance across digital overload tertiles



Tertile	Overload range	n	SPANE-B (M)	SD	PSS-10 (M)
Low	≤ 3.07	162	6.41	7.12	17.2
Moderate	3.08–3.73	162	3.02	7.35	21.6
High	≥ 3.74	162	−0.92	7.86	26.3

One-way ANOVA confirmed significant differences, $F(2, 483) = 39.62$, $p < .001$, $\eta^2 = .141$. Games-Howell post-hoc comparisons showed all three tertiles differed significantly ($p < .001$).



DISCUSSION

The results support a demand–appraisal account of digital overload. The strongest single predictor of emotional balance was not how long participants spent on devices but how stressed they felt by the flow of digital demands. Once perceived stress and overload were modelled, screen time lost significance — a pattern consistent with Orben and Przybylski's (2019) demonstration that raw exposure metrics carry limited explanatory power, and with Vanden Abeele's (2021) argument that well-being depends on the fit between connectivity demands and regulatory capacity rather than on volume.

The mediation result locates the mechanism. More than half the association between overload and emotional balance ran through perceived stress, echoing Reinecke et al. (2017) and Lee et al. (2016), both of which positioned stress as the conduit between communication load and downstream impairment. The significant independent contribution of FoMO suggests a second, motivational pathway: participants who feared exclusion sustained engagement even when it was depleting, consistent with Przybylski et al. (2013) and Alt (2015).

The moderation finding carries the clearest practical implication. Cognitive reappraisal did not eliminate the association, but it reduced its steepness by roughly 63% between low and high reappraisers. This aligns with Gross

and John's (2003) foundational evidence and with Hollenstein and Colasante's (2024) contention that the regulatory repertoire a young person brings to the device matters as much as the device itself. It also suggests why blanket restriction may disappoint: without regulatory capacity, reduced exposure leaves the underlying appraisal unchanged.

The tertile comparison gives the effect practical meaning. Participants in the lowest overload tertile reported clearly positive affect balance, while those in the highest reported balance indistinguishable from zero — the point at which unpleasant and pleasant experience are in equal measure. Given a mean daily notification load of 118, this describes a large minority of youth living at emotional break-even.

IMPLICATIONS

Universities and counselling services should consider reappraisal-based modules within digital-literacy programming rather than screen-time caps alone. Notification architecture deserves specific attention: batching and default-off settings reduce communication and system-feature overload without reducing access. Screening tools for student wellness should include perceived overload alongside usage duration, since the two are only moderately correlated ($r = .41$) and the former carries the greater predictive weight.

LIMITATIONS

The cross-sectional design precludes causal inference; reverse causation, in which low emotional balance heightens perceived overload, remains plausible. Self-reported screen time is known to correlate imperfectly with logged use. The sample was drawn from urban university students in a single region, limiting generalisability to non-student and rural youth. Common-method variance may have inflated some associations, though the significant interaction effect is less susceptible to this bias. Longitudinal and experience-sampling designs are recommended.

CONCLUSION

Digital overload is meaningfully associated with reduced emotional balance among youth, and this association operates substantially through perceived stress rather than through exposure duration. Cognitive reappraisal buffers the effect. Interventions that build appraisal and regulation capacity — and platform design that lowers communication and feature demands — are likely to protect emotional equilibrium more effectively than exposure limits imposed alone.

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