

Article

Digital Engagement and Loneliness in Higher Education: The Mediating Role of Emotional Exhaustion

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Abstract: Digital platforms, online communication and algorithmically mediated interaction are becoming more prominent in contemporary higher education. These technologies increase communication, learning and participation, but can also increase emotional exhaustion and loneliness for university students. The aim of this study was to explore the link between digital engagement, emotional exhaustion and loneliness among students at the University of Surrey. Grounded in digital sociology, the study analysed whether emotional exhaustion mediates the relationship between digital engagement and loneliness within a digitally intensive university environment. The study used a quantitative cross sectional survey design and data were collected from 500 students aged 18–30 years. The research instrument consisted of structured Likert scale items that were adapted from existing scales and prior research to assess digital engagement and emotional exhaustion and loneliness. Descriptive statistics, reliability analysis, Pearson correlation, multiple regression and mediation analysis were used to analyse the data. Results indicated that respondents' digital engagement was relatively high and their levels of emotional exhaustion and loneliness were moderate. Emotional exhaustion and loneliness were positively and significantly related to digital engagement. Emotional exhaustion also had a strong positive impact on feelings of loneliness. The results of mediation analysis also showed that the relationship between digital engagement and loneliness was partially mediated by emotional exhaustion, which indicates that digital engagement may have an indirect effect on loneliness through emotional exhaustion as well as a direct effect. The study makes a contribution to digital sociology and the study of higher education, as it demonstrates that digital connectivity is not always a sign of social connectedness. The results emphasize the importance of a digital well-being strategy in universities, which should include emotional exhaustion, online pressure, and the quality of social relationships.

Keywords: *Digital engagement, emotional exhaustion, loneliness, university students, digital sociology.*

Introduction

The current digital societies are engulfed in a paradoxical situation: people continue to be constantly connected using digital technologies, but they express the feeling of loneliness, emotional fatigue and disconnection. The structure of social interaction in everyday life has been altered by the growth of social media, mobile communication technologies, and algorithmically driven environments, especially for young adults, who are one of the most digitally integrated groups in today's society. Increased opportunities for communication, participation and self-expression that digital technologies provide could also increase emotional stress, interpersonal relationships, and diminish quality social ties, however, (Castells, 2010; Turkle, 2011). Page | 121

In digital sociology, technology is not considered a neutral communication resource, but rather is a socially embedded structure that influences identity formation, emotional interaction, belonging and daily social practices (Lupton, 2015). Digital platforms are playing an increasing role in shaping the way people build their relationship, present themselves, look for recognition, and have intimacy. Social connectedness in digitally mediated environments can therefore be quantitatively increased and qualitatively decreased. Turkle (2011) refers to this as being “alone together” because people interact virtually constantly but miss out on emotional depth in real-life relationships. In a similar way, Han (2017) asserts that the current digital culture is responsible for psychological exhaustion due to constant exposure, hyper communication and continuous visibility.

Loneliness has thus emerged as a very prominent topic in current sociological and psychological studies. Today, it is known not as physical isolation, but as a personal sense of inadequate meaningful social relationships (Cacioppo & Patrick, 2008). People can have large online social networks, and feel emotionally disconnected and lack social connectedness in their offline lives, particularly in highly digitalised societies. Empirical research has associated heavy digital media use with social comparisons, FOMO, emotional dependency and diminished psychological health amongst the youth (Odgers & Jensen, 2020; Twenge et al., 2018). Emotional exhaustion is also now becoming linked to digitally saturated lives with an abundance of notifications, cognitive overload, emotional performances, and expectations of being on call at all times. In a European context, Hylkilä et al. (2023) also found that problematic social media use among young adults was associated with depressive symptoms, fear of missing out and unmet belonging needs. While their study took place in Finland, the

results are relevant to the European context and offer evidence of problematic digital engagement that could be linked to emotional and social vulnerability in young adults.

The United Kingdom higher education context is relevant to the discussion of these dynamics as digital technologies are integral to students' academic, social and everyday lives. The current evidence from British higher education institutions further reinforces the concerns about student mental health and the need to explore the phenomenon of emotional exhaustion and loneliness in the context of university (Sanders, 2025). This renders the University of Surrey a suitable empirical context to examine the interplay between digital engagement, emotional exhaustion and loneliness among university students.

Although the relationship between digital life, emotional exhaustion and loneliness in very digitalised European societies is gaining momentum in the literature of digital media and psychological wellbeing, there are significant sociological research gaps. Existing research has tended to focus on the impact of screen time, adolescents or mental health outcomes, and few studies have examined emotional exhaustion as a sociological process that connects digital engagement to loneliness. Furthermore, there is a lack of quantitative sociological studies on these connections in the context of UK. In this study, the connection between digital engagement, emotional exhaustion and loneliness is explored among students at the University of Surrey.

Problem

This study is concerned with a lack of sociological awareness of the possible detrimental effects of intensive digital engagement on emotional exhaustion and loneliness among young adults in highly connected societies, the central problem. While digital platforms offer users ways to communicate, participate and express themselves, they can also lead to social comparison, emotional overload, fragmented interaction and a constant need to be available online (Han, 2017; Turkle, 2011). This paradox invites a relevant sociological reflection: does connectedness beget meaningful social connectedness?

This question is especially pertinent in the UK context, as young adults live in a social environment that is highly digitalised and in which online interaction is a central feature of education, work, leisure and interpersonal interaction. Accordingly, this study explores the relationships between digital

engagement and loneliness among students at the University of Surrey and the role of emotional exhaustion between these variables.

Objectives

The purpose of this study is to investigate the connection between digital engagement, emotional exhaustion and loneliness among students at the University of Surrey. Specifically, the study aims at exploring the relationship between digital engagement and loneliness, the association between digital engagement and emotional exhaustion, the influence of emotional exhaustion on perceived loneliness and whether emotional exhaustion mediates between digital engagement and loneliness.

Questions

1. What is the relationship between digital engagement and loneliness among students at the University of Surrey?
2. To what extent is digital engagement associated with emotional exhaustion among students at the University of Surrey?
3. Does emotional exhaustion significantly influence perceived loneliness?
4. Does emotional exhaustion mediate the relationship between digital engagement and loneliness?

Hypotheses

H1: Digital engagement has a statistically significant positive relationship with loneliness among students at the University of Surrey.

H2: Digital engagement has a statistically significant positive relationship with emotional exhaustion.

H3: Emotional exhaustion has a statistically significant positive effect on loneliness.

H4: Emotional exhaustion mediates the relationship between digital engagement and loneliness.

Literature Review

Digital Life and Youth Social Relations

Digital technologies have affected the organization of social interaction in modern societies. People's social relationships, social networks and daily lives are mediated by the use of social media, smartphones and algorithm-based recommendations. This shift is especially noticeable in the behaviors of young adults, whose educational, emotional, recreational and identity related practices have increasingly become digitalized (Castells, 2010).

Digital technologies are not only technical communication tools, but also social tools from the viewpoint of digital sociology. Instead they are embedded social infrastructures that re-order interactions, emotional expression, belonging and self-presentation (Lupton 2015). Platform-based communication has changed the temporal and spatial aspects of social life by facilitating constant connectivity, 24-hour availability and instant communication. But more digital communication does not necessarily lead to more and deeper social relations. Rather, online engagement can foster a divided focus, shallow involvement and diminished emotional connection (Turkle, 2011).

This transformation can be understood in terms of the network society concept used by Castells (2010). Interpersonal interaction is now gradually taking place in networked societies in a digitally organised way of communication. These networks increase the possibilities of connection but also compromise solid forms of social attachment and collective belonging. Turkle (2011) makes a similar point that digital communication may foster more distant types of communication—communication that may feel lacking in face-to-face interactions while being omnipresent. This implies that the study of digital life needs to go beyond just a technological context and explore how digital contexts influence emotional and interpersonal experiences.

Research in recent years has also shown a link between digital interaction and well-being and perceived social integration among youth. According to Odgers and Jensen (2020), digital environments can provide opportunities and also issues, such as social support, social comparisons, cyberbullying and emotional dependency. In addition, there are associations between heavy digital media use and decreased psychological well-being that have been reported across younger generations (Twenge et al., 2018). These results suggest that digital life is an important sociological landscape in which young adults live and feel connected, compared, belonging, and vulnerable.

Elevated Use of Social Media and Loneliness. High levels of Social Media use and loneliness.

One of the main issues of study in digital societies has become loneliness. It was no longer considered as an objective social isolation but as a subjective sense of lack of adequate quality or significance of social relationships (Cacioppo & Patrick, 2008). Loneliness can happen even though someone has a big online network and interacts with others online regularly, in digitally mediated societies.

It is not clear whether there is a link between social media and loneliness. There is evidence that heavy use of social media can exacerbate loneliness via social comparisons, fear of missing out, emotional dependency and poorer offline social bonds. Hunt et al. (2018) have reported that restrictions on social

media use improved loneliness and depressive symptoms among university students. In a similar study, Primack et al (2017) found that increased social media use correlated with increased social isolation perception among young adults.

One of the major reasons is the difference between the number and quality of the social interactions. Digital technology can lead to more frequent touch and less emotional connection. Interactions that are performative, distractive and repetitive can feel connected but be ineffective in terms of emotional support (Turkle, 2011). In this regard, digitally mediated interaction may be a way of increasing social exposure, without addressing the needs for intimacy and belonging.

However, there is no evidence to suggest that social media is intrinsically harmful from the literature. Digital communication can also enhance social support, when used to maintain close relationships, engage in meaningful communication or when used to assist those who are geographically or socially isolated (Verduyn et al., 2017). Thus, a direct link between digital engagement and loneliness should be studied by taking into account mediating factors and contextual conditions.

Coping with emotional exhaustion in digital environments.

Emotional exhaustion is now more germane to a study of digital life. Of course, emotional exhaustion is a term used in the context of burn-out studies, but it has a broader definition, and means, in general, psychological exhaustion, emotional fatigue, overload of thinking or emotion and diminished emotional resources brought about by the demands of extended periods (Maslach & Jackson, 1981). However, these needs are not only at work but are at play in the digital environments of everyday life in digitally saturated societies. But these demands are not limited to the workplace, they also occur in the digital environments of everyday life in digitally saturated societies.

Digital spaces offer users constant streams of information, constant notifications, social comparisons, pressure and expectations of “always-on” opportunities to be seen. According to Han (2017) modern society is hyper communication, self-monitoring and performance driven. This can lead to emotional fatigue in individuals due to constant exposure, comparison and cognitive stimulation under these conditions.

Such an association has been supported by empirical studies. Dhir, et al., (2018) determined that compulsive social media use is correlated with social media fatigue, anxiety and psychological distress. Additionally, the results indicate that overconsumption of social media content can produce fatigue and withdrawal responses, as demonstrated by Bright et al. (2015). Emotional exhaustion could thus be a

significant mechanism by which digital engagement relates to other aspects of emotional and social well-being.

This mechanism is especially relevant during the comprehension of loneliness. People feeling emotionally depleted might limit social engagement, isolate from engaging with people, and view communication as challenging instead of helpful. This decreases emotional resources and may make it more difficult to maintain social relationships, leading to feelings of isolation and disconnection.

The UK Higher Education Context

The UK higher education context is relevant to the study of the relationship between digital engagement, emotional exhaustion and loneliness among university students. British universities are a key setting in which to examine the emotional impact of digitally mediated interaction, as digital technologies are integral to students' academic, social and everyday lives. It is an advanced digital society, with high digitalisation levels in the European society, backed by high quality digital infrastructure, high broadband coverage, and a high level of institutional digitalisation. Digital communication is a core component of the everyday life in the UK, especially among youth, in education, work, leisure, and interpersonal relations (Office for National Statistics, 2024). The results indicate that digital life in UK cannot just be considered in terms of access and use but also as a socially embedded space which can influence emotional regulation, belonging and perceived social competency.

Although youth health and well-being have become a growing concern in UK, there is limited quantitative sociological research available to look at emotional exhaustion as a mediator between digital engagement and loneliness. This is particularly significant in societies such as the highly digitalized societies in which technological connectivity is becoming a major part of daily social interaction.

Theoretical Framework

Theoretically this study builds on the concept of digital sociology, which explores the ways in which digital technologies are transforming social interactions, emotional experience, identity and everyday life. Digital platforms are, in this sense, not neutral communicative spaces, but are rather embedded in their social context, structuring interaction, affiliation, self-presentation, and emotional regulation (Lupton, 2015).

The study is based on three complementary theoretical frameworks, the network society theory of Castells, analysis of technologically mediated isolation of Turkle, and the notion of the burnout society of Han. Castells (2010) suggests that today's society is organized around the networks of communication, the social life is networked, and interpersonal relations and social participation are mediated by a flow of digital information. This viewpoint contributes to the understanding of young adults' social lives and their constant presence within digital connectivity.

Turkle's (2011) research offers a second theory basis by theorizing the paradox of digital communication. People can feel more connected to technology and feel less connected in their relationships and less face-to-face. This concept of “alone together” is very relevant to this study, as it describes the way digital interaction can go hand in hand with feeling lonely and socially disconnected. Building on this, Han's (2017) theory of the burnout society further reinforces the theory because it offers a conceptual understanding of how the constant requirement to communicate, to be visible and perform oneself can lead to emotional exhaustion. Young adults, in the digital age, are constantly targeted by notifications, constant social comparison, and algorithmic content and expectations of constant availability. These conditions can lead to cognitive overload, emotional fatigue and psychological fatigue.

Combined, these viewpoints offer an integrated sociological perspective that could be used to explore the association between digital engagement and emotional exhaustion and loneliness. The aim of this study is to conceptualise emotional exhaustion as a mediation mechanism that might explain how intensive contact with digital media can lead to loneliness among students at the University of Surrey.

Research Gap

While there is existing research on social media use and loneliness and psychological well-being, there are a number of gaps. Firstly, the majority of the literature has focused on adolescents, screen time or overall mental health outcomes and comparatively little has been written about young adults as a social group in highly digitalised societies. Second, much research on digital media is psychological or behavioural in its focus, with little accounts of the sociological processes by which digital environments are reshaping emotional practices and feelings of social belonging.

Third, the link between digital engagement and loneliness is mediated by emotional exhaustion that has been insufficiently explored. Previous research generally focuses on the direct links between social media and wellbeing, while a more detailed description of the emotional pathways by which digital

connectivity could lead to social disconnection are less common. This narrows the scope of understanding about the possible connection between persistent digital interaction and loneliness.

Lastly, although UK has a highly developed digital infrastructure and concerns around youth loneliness and emotional vulnerability, there is a limited amount of quantitative sociological research undertaken on these relationships. In this study, the aim was to fill these gaps that exist at the empirical and theoretical levels and to investigate the relationship between digital engagement and emotional exhaustion and loneliness in UK youth.

Conceptual Framework

This research presents a mediation model with digital engagement as the independent variable, emotional exhaustion as the mediating variable and loneliness as the dependent variable. The model proposes that digital engagement can have a direct effect on loneliness, and that this engagement can also be related to emotional exhaustion and that this exhaustion can lead to a greater sense of social disconnection.

The independent variable is digital engagement. The mediated variable is emotional exhaustion. Youth loneliness is the dependent variable. The control variables are gender, age, educational level, employment status and average daily hours of social media use.

Significance

This research is relevant to on-going sociological discussions about the emotional and social impact of being online in hyper-connected societies. It is a theoretical elaboration of digital sociology, but is also an attempt to bring in emotional exhaustion in the study of digital engagement and loneliness. It also adds to the study of the sociology of emotions by exploring the relationship between digitally mediated spaces and emotional exhaustion, social integration and felt loneliness.

The study is empirical and offers quantitative data from a highly digitalised European society of UK, which gives an important background to the study of the paradox of technological connectivity and emotional disconnection. This study is more interested in young adults and relates emotional exhaustion as a main mechanism to explain the phenomena.

The results could help inform policy makers, schools, mental health providers, and youth groups about the emotional dangers of digitally immersed lifestyles, on a practical basis. The study might also contribute to the design of interventions that help to minimize emotional exhaustion and enhance meaningful social connections and youth well-being in today's digital societies.

Methodology

Research Design

The study used a quantitative cross-sectional survey design to explore the relationships between digital engagement, emotional exhaustion and loneliness among students at the University of Surrey. The study was quantitative in nature because it aimed to test hypothesized relationships among measurable variables and to determine statistically significant patterns within a specified population. The cross-sectional design enabled data to be gathered at one time, which was appropriate for measuring associations between digital engagement, emotional exhaustion and loneliness.

The study was informed by a positivist research orientation, as it relied on structured measurement, standardised data collection and statistical analysis. This method allowed the study to investigate if digital engagement was significantly related to loneliness and if emotional exhaustion mediated this relationship.

Research Sample

The sample comprised 500 students aged 18–30 years enrolled at the University of Surrey. This age group was chosen because young adults are one of the most digitally engaged population groups and are heavy users of social media platforms, smartphones and online communication technologies. They were also theoretically relevant to the study as prior studies have associated heavy use of digital media among younger generations with social comparison and emotional stress and loneliness (Twenge et al., 2018).

A stratified purposive sampling strategy was used to improve representation across gender, educational level and employment status. Stratification was appropriate as the target population was socially heterogeneous and the use of demographic strata minimized sampling bias and enhanced sample representativeness. The participants were recruited from university mailing lists, social media, online student communities and youth-oriented online forums in UK.

The participants had to be between 18 and 30 years old, enrolled at the University of Surrey at the time of data collection, using digital platforms or social media regularly, and have given voluntary informed consent to take part in the study. The demographic distribution indicates that more than half of the respondents were female, and less than half were male. The majority of respondents were undergraduate students, with almost half indicating they were full-time students.

Table 1
Demographic Characteristics of the Sample

Variable	Category	Frequency	Percentage
Gender	Female	271	54.2
	Male	218	43.6
	Other / Prefer not to say	11	2.2
Educational level	Undergraduate	307	61.4
	Postgraduate	124	24.8
	Other	69	13.8
Employment status	Full-time student	231	46.2
	Employed	192	38.4
	Unemployed / Outside labour market	77	15.4
Daily social media use	Less than 3 hours	126	25.2
	3–6 hours	284	56.8
	More than 6 hours	90	18.0

Research Instrument

The data was gathered with a structured self-administered online questionnaire that measured digital engagement, emotional exhaustion and loneliness among students at the University of Surrey. The questionnaire was developed in English to enhance accessibility and reduce language bias in responding.

The instrument consisted of four sections. The first section collected demographic and background information, including gender, age, educational level, employment status and average daily hours of social media use. These variables were used as control variables in the statistical analysis.

The second section was digital engagement. This construct measured the frequency of social media usage, the level of online interaction, dependence on digital communication and the level of integration of digital technologies into social life. The items were adapted from previous research on social media use and digital engagement (Verduyn et al., 2017).

The third section was emotional exhaustion related to digital life. This construct assessed emotional fatigue, cognitive overload, mental exhaustion resulting from online interaction and perceived digital burnout. The items were adapted from Maslach Burnout framework and from previous studies on social media fatigue and digital exhaustion (Dhir et al., 2018; Maslach & Jackson, 1981).

Loneliness and perceived social disconnection were assessed in the fourth section. This construct measured emotional loneliness, social isolation, lack of meaningful interpersonal connection and perceived lack of social relationships. The items were modified from the UCLA Loneliness Scale (Russell, 1996).

Each substantive item was rated on a 5-point Likert scale from 1 = strongly disagree to 5 = strongly agree. Scores were higher for greater digital engagement, emotional exhaustion and loneliness.

The questionnaire was pre-tested by experts in sociology, digital sociology, psychology and quantitative research methods for content validity. The expert review focused on clarity, relevance, conceptual coverage and congruence of the study variables and measurement items. The instrument was revised prior to final administration.

Prior to the main data collection, a pilot study was conducted with about 30 eligible participants. The pilot study evaluated the clarity of the items, consistency of the responses, and the technical functioning of the online questionnaire. Cronbach's alpha was used to determine the internal consistency reliability. A coefficient of .70 or higher was deemed acceptable, and a coefficient of .80 or higher was considered to be good reliability (Hair et al., 2019). Construct validity was also evaluated by exploratory factor analysis to see if the items loaded as they were supposed to on the dimensions.

The internal consistency reliability of the study scales was determined by Cronbach's alpha coefficients. The results showed that all scales had an acceptable to good reliability.

Table 2

Reliability Analysis of the Study Scales

Scale	Number of Items	Cronbach's Alpha	Reliability Level
Digital engagement	6	.86	Good
Emotional exhaustion	5	.89	Good
Loneliness	6	.84	Good

The Cronbach's alpha for the digital engagement scale was .86, which was good reliability. The Cronbach's alpha for the emotional exhaustion scale was .89 and for the loneliness scale was .84. All values were above the recommended value of .70, so the scales were deemed reliable for further analysis.

Data Collection Procedures

The data were gathered electronically using an online survey platform. A survey link with an information sheet, informed consent statement and the questionnaire was provided to the participants. Participation was voluntary, anonymous and confidential.

The online data collection method was suitable for the target population, as they were digitally active and geographically spread throughout UK. Data was collected for four to six weeks.

Data Analysis

All data were analysed with IBM SPSS Statistics. The analysis began with data screening to identify missing values, outliers and violations of statistical assumptions. The demographic characteristics and primary study variables of the participants were summarised using descriptive statistics such as means, standard deviations, frequencies and percentages.

Cronbach's alpha was used to determine the reliability of each multi-item scale. Pearson correlation analysis was used to examine bivariate associations between digital engagement, emotional exhaustion and loneliness. Multiple regression analysis was then conducted to assess the predictive relationships among the study variables while controlling for gender, age, educational level, employment status and average daily hours of social media use.

To explore the mediation effect of emotional exhaustion between digital engagement and loneliness, mediation analysis was performed. The significance level used was .05.

Ethical Considerations

The study adhered to the ethical principles of social science research. Participants were informed about the purpose of the study, the voluntary nature of participation, their right to withdraw before submitting the questionnaire and the anonymous handling of their responses.

No personal information was collected that could be identified. All data were used only for academic research and were kept securely. Participants gave informed consent electronically prior to completing the questionnaire. The study complied with ethical principles concerning privacy, confidentiality, voluntary participation and responsible data management.

Results

This section provides statistical results on the links between digital engagement, emotional exhaustion and loneliness among students at the University of Surrey. The analysis conducted is demographic profile of the respondents, descriptive statistics, reliability analysis, correlation analysis, regression analysis, mediation analysis and hypothesis testing.

Descriptive Statistics

Descriptive statistics were computed to explore the overall levels of digital engagement, emotional exhaustion and loneliness. The findings show that respondents had relatively high levels of digital engagement, and moderate levels of emotional exhaustion and loneliness.

Table 3

Descriptive Statistics of the Main Study Variables

Variable	Mean	Standard Deviation	Level
Digital engagement	3.87	0.74	High
Emotional exhaustion	3.41	0.81	Moderate
Loneliness	3.28	0.77	Moderate

The mean score for digital engagement was relatively high (Mean = 3.87, Standard Deviation = 0.74), indicating that participants were very engaged in digitally mediated communication and interaction. Emotional exhaustion had a moderate mean score (Mean = 3.41, Standard Deviation = 0.81) and loneliness also had a moderate mean score (Mean = 3.28, Standard Deviation = 0.77).

Correlation Analysis

Pearson correlation analysis was used to explore the relationships between digital engagement, emotional exhaustion and loneliness. The results show significant positive relationships among all three main variables.

Table 4

The Pearson Correlations among the Main Study Variables are presented in the table below

Variable	Digital Engagement	Emotional Exhaustion	Loneliness
Digital engagement	1		
Emotional exhaustion	.51***	1	
Loneliness	.42***	.58***	1

Note. *** $p < .001$.

The findings show that there is a statistically significant positive correlation between digital engagement and loneliness ($r = .42$, $p < .001$). Digital engagement was also positively correlated with emotional exhaustion ($r = .51$, $p < .001$). In addition, emotional exhaustion was positively associated with loneliness ($r = .58$, $p < .001$). The results support the proposed relationships between the variables, to some extent.

Regression Analysis

Multiple regression analysis was used to determine if digital engagement was a significant predictor of loneliness when controlling for gender, age, education level, and employment status and average hours of social media use per day.

Table 5

Multiple Regression predicting Loneliness

Predictor	Beta	t-value	p-value
Gender	.06	1.42	.156
Age	-.04	-1.03	.304
Educational level	-.03	-0.82	.413
Employment status	.08	1.91	.057
Daily social media use	.21	5.18	< .001
Digital engagement	.31	7.42	< .001

The regression model was statistically significant, explaining 34% of the variance in loneliness. Digital engagement was a strong positive predictor of loneliness (Beta = .31, $p < .001$), suggesting that greater digital engagement was related to greater loneliness in students at the University of Surrey.

A second regression analysis was performed to test the significance of digital engagement predicting emotional exhaustion.

Table 6

Multiple Regression predicting Emotional Exhaustion

Predictor	Beta	t-value	p-value
Gender	.09	2.11	.035
Age	-.05	-1.21	.227
Educational level	-.02	-0.46	.646
Employment status	.07	1.74	.083
Daily social media use	.24	6.03	< .001
Digital engagement	.47	10.86	< .001

Model summary: $F(6, 493) = 36.17$, $p < .001$, $R^2 = .41$.

The model was statistically significant and accounted for 41% of the variance in emotional exhaustion. Digital engagement was a significant predictor of emotional exhaustion (Beta = .47, $p < .001$), meaning that the higher the digital engagement, the more emotional exhaustion. Mediation Analysis To explore the mediation effect of emotional exhaustion between digital engagement and loneliness, mediation analysis was performed. The results show that the indirect effect is statistically significant.

Table 7
Mediation Analysis of Emotional Exhaustion

Path	Effect	Standard Error	95% Confidence Interval	p-value
Digital engagement → Emotional exhaustion	.47	.04	[.39, .55]	< .001
Emotional exhaustion → Loneliness	.38	.05	[.29, .47]	< .001
Direct effect: Digital engagement → Loneliness	.19	.06	[.08, .30]	.002
Indirect effect through emotional exhaustion	.18	.04	[.11, .26]	< .001

The indirect effect of digital engagement on loneliness via emotional exhaustion was statistically significant (indirect effect = .18, Standard Error = .04, 95% Confidence Interval [.11, .26]). The mediation effect was deemed to be significant as the confidence interval did not contain zero. After emotional exhaustion was included in the model, the direct effect of digital engagement on loneliness remained significant but decreased, indicating partial mediation.

Hypothesis Testing

Table 8
shows the results of the hypothesis testing

Hypothesis	Statement	Result
H1	Digital engagement has a statistically significant positive relationship with loneliness.	Supported
H2	Digital engagement has a statistically significant positive relationship with emotional exhaustion.	Supported
H3	Emotional exhaustion has a statistically significant positive effect on loneliness.	Supported
H4	Emotional exhaustion mediates the relationship between digital engagement and loneliness.	Supported

The findings in Table 8 show that all hypotheses were supported by the findings. Digital engagement was positively associated with loneliness and emotional exhaustion. Emotional exhaustion also had a significant positive effect on loneliness and partially mediated the relationship between digital engagement and loneliness.

Discussions

The aim of this study was to explore the association between digital engagement, emotional exhaustion and loneliness in students at the University of Surrey. The results showed that digital engagement was positively related to emotional exhaustion and emotional exhaustion was also significantly related to loneliness and partially mediated the relationship between digital engagement and perceived social disconnection. The results confirm the hypothesis that digitally mediated social environments can enhance connectivity at the same time as they can lead to emotional stress and reduced social belonging.

The findings showed that there was a strong positive correlation between digital engagement and loneliness. This is in line with earlier studies indicating that heavy social media use and digitally saturated lifestyles can lead to social comparison and to a decrease in emotional intimacy and interaction (Primack et al., 2017; Twenge et al., 2018). While digital technologies offer greater opportunities for communication, the results indicate that greater online interaction does not necessarily lead to meaningful social connectedness. Rather, digitally mediated interaction can create a paradoxical situation in which people are very connected, but feel emotionally disconnected.

The results also showed that there was a strong positive association between digital engagement and emotional exhaustion. This finding aligns with past research that has found a correlation between digital communication overload and emotional fatigue, cognitive overload, and social media fatigue (Bright et al., 2015; Dhir et al., 2018). In a highly digitalised world, young adults are constantly inundated with notifications, performance expectations online, algorithmically created content and expectations of availability. These circumstances can aggravate emotional depletion and decrease psychological recovery from digital interaction.

Also, emotional exhaustion was a strong predictor of loneliness. This discovery implies that emotional fatigue could reduce people's ability to sustain emotionally meaningful relationships and raise their social disconnection. Those who are emotionally exhausted might become socially withdrawn, may decrease emotional involvement in interpersonal relations, and may view communication as psychologically challenging instead of supportive. This discovery resonates with Han's (2017) view that today's digital culture can lead to emotional exhaustion and a diminished sense of interpersonal experience.

The study revealed that emotional exhaustion was a mediator between the two variables. The mediation analysis showed that a partial mediation effect occurred between digital engagement and loneliness through emotional exhaustion. This discovery adds to the literature by demonstrating that digital engagement can impact loneliness not just directly but also indirectly via emotional processes linked to digitally saturated lifestyles. The result thus builds upon previous research by identifying emotional exhaustion as an important sociological mechanism connecting digital life and perceived social isolation.

The results also validate the theoretical model of the study. The network society theory of Castells (2010) can be used to understand how the social life is taking place in a new way, through digitally

mediated communication networks that change interpersonal relationships and social participation. The findings are also consistent with Turkle's (2011) idea of being "alone together," as participants indicated feeling lonely in spite of their digital connection. Additionally, Han's (2017) theory of the burnout society offers a valuable explanation of the link between intensive digital engagement and emotional exhaustion.

The results are further reinforced by the UK. UK is one of the most technologically advanced societies in Europe, with high levels of digital integration and robust welfare institutions. The results, however, indicate that high technology infrastructure does not necessarily mean that emotional vulnerability and loneliness are absent among young adults. This further emphasizes the need to understand digital well-being in a way that goes beyond access to technology and connectivity, but also includes emotional and social aspects of digital life. The study has some drawbacks. The first is that the cross-sectional design does not allow for causal relationships to be established between variables. Secondly, the study was based on self-report data, which could be subject to response bias and/or interpretation bias. Third, the study was conducted among students at the University of Surrey, which might restrict the generalisability of the results to other countries or other age groups.

Longitudinal designs could be used to explore the changes in digital engagement, emotional exhaustion, and loneliness over time in future research. A comparative study of different cultural or technological contexts can also help to gain a better understanding of the impact of digital societies on emotional well-being. Moreover, other mediating or moderating factors like self-esteem, social support, digital dependency or online identity performance could be explored in future research.

The results suggest that digital engagement is linked to emotional exhaustion and loneliness in students at the University of Surrey in general. The emotional exhaustion emerged as an important mechanism that connected digitally mediated interaction with perceived social disconnection. These results add to the field of digital sociology by emphasizing the emotional impact of living in a highly connected society.

Conclusion

The aim of this study was to explore the connection between digital engagement, emotional exhaustion and loneliness among students at the University of Surrey from a digital sociology perspective. The results indicated that digital engagement was positively correlated with emotional exhaustion and

loneliness, and emotional exhaustion was significant in the mediation of the relationship between digital engagement and perceived social disconnection.

The study also adds to the ongoing debates in the social sciences by showing that digital connectivity does not always lead to meaningful social connectedness. Rather, technologically mediated environments could simultaneously increase communication possibilities and emotional fatigue and feelings of loneliness. Emotional exhaustion became a significant pathway by which digitally saturated modes of interaction might be associated with emotional vulnerability among young adults.

The results also indicate that digital well-being should not only be considered in terms of access to technologies and digital participation, but also in relation to emotional and relational implications of digitally mediated social life. The emotional aspects of digital communication are likely to be an increasingly significant field of sociological study as modern society becomes more reliant on digital communication.

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