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Cyberloafing among Gen Z students: the role of norms, moral disengagement, multitasking self-efficacy, and psychological outcomes

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Abstract
This paper examines mobile cyberloafing, i.e. the use of phones for non-study purposes among Gen Z students, the first generation of digital natives. Drawing from research on misbehaviour and cyberloafing, we developed and tested a model with moral disengagement and subjective norms as predictors and psychological detachment and cognitive engagement as outcomes of cyberloafing. We also hypothesise that multitasking self-efficacy moderates the relationships between the antecedents and cyberloafing. Data were collected from 254 Gen Z students from a large state university in Europe. The findings show that subjective norms are negatively related to cyberloafing in class, while moral disengagement is positively related to it. In turn, cyberloafing is positively related to psychological detachment and negatively to cognitive engagement. The results also show a significant moderating effect for multitasking self-efficacy. Implications for research and practice are discussed, as well as future research opportunities.

Keywords Cyberloafing · Technology · Subjective norms · Moral disengagement · Cognitive engagement · Psychological detachment · Multitasking self-efficacy · University · Gen Z

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Introduction

The term cyberloafing was coined by Author (2002) to refer to employees' use of the internet for personal purposes during work hours. It is a growing phenomenon, one that represents the problematic use of digital technology and deserves further research attention (Turel et al., 2019). Research on this topic generally focuses on employees' misuse of the company's internet resources in the workplace (e.g. Koay, 2018; Sheikh et al., 2019), although more recently, researchers have also turned their attention to cyberloafing during class (e.g. Ellis & Bliuc, 2019; Morgan-Thomas & Dudau, 2019). Education technology has been extensively integrated into the classroom to enhance students' engagement and learning (Ellis & Bliuc, 2019; McKnight et al., 2016; Morgan-Thomas & Dudau, 2019), which creates many benefits and improves the learning experience. However, it also means greater opportunities and incentive for students to engage in non-academic internet use during class time, distracting them from the learning process and lowering their academic performance. For instance, research shows that such counterproductive use of technology in the classroom is associated with lower test scores (Wu et al., 2018a, b), impaired overall academic success (Kates et al., 2018), and smartphone addiction (Gökçearslan et al., 2018).

Examining the in-class problematic behaviours of today's students, members of Generation Z (born after 1997), is relevant for several reasons. This new generation comprises over one-third of the world's population and outnumbers Millennials (Miller & Lu, 2018). They are the "native speakers of the digital language" (Prensky, 2001) because they have grown up being exposed to digital technologies and thus tend to possess high levels of digital skills. They navigate cyberspace well and are very likely to use social media and browse the internet on a daily basis (Scott et al., 2017). Moreover, they are used to obtaining information quickly. However, their technological know-how and ability to successfully multitask have been questioned (Kirschner & van Merriënboer, 2013). It is very common for Gen Z students to bring their internet-enabled devices, such as laptops, smartphones, and tablets to classes, and they find technology in the classroom to be essential for nurturing their creativity (ACER, 2017). As such, educators need to understand the impact of such technology use on students' learning and classroom experience.

Research on cyberloafing has developed rapidly over the years, in tandem with advances in technology. One device made possible by technology, and which most people now rely on, is the smartphone. Kates et al. (2018) noted that smartphones are increasingly ubiquitous across age groups and people rely on them for work, leisure, and social connections. Indeed, they are devices that are inextricably intertwined with our lives. However, while smartphones can be useful, research shows that they can also have drawbacks. Scholars have linked smartphone usage to depression, isolation, and suicide (e.g. Kim et al., 2017). Accordingly, Sheikh et al. (2019) highlighted the need to examine the impact of smartphone usage on cyberloafing and its consequences.

Our study contributes to research on cyberloafing in several ways. To begin with, it examines the impact of mobile cyberloafing in an educational context. As smartphones are used extensively by young people, examining their impact on students' educational experience and learning outcomes is important. Further, this paper builds on and extends cyberloafing research theoretically by going beyond the stream of theories, such as the Theory of Planned Behaviour and the Theory of Reasoned Action (see Rana et al., 2019; Gerow et al., 2010), that have been traditionally applied to this topic. Instead, we draw from the theoretical framework on misbehaviour developed by Vardi and Wiener (1996) which takes into account the role of self-interest versus normative considerations in predicting misbehaviours. Additionally, in response to Usman et al.'s (2019) call to integrate moral constructs into cyberloafing models, we draw from Bandura's (2002)

social cognitive theory on moral disengagement which explains that individuals tend to cognitively separate the moral component from an otherwise unethical action in order to rationalise carrying out the activity. In other words, people tend to rationalise their unethical actions to alleviate any guilt, thus enabling them to live with the consequences of their acts. This process is known as moral disengagement (Bandura, 2002; Bandura et al., 1996; Schaefer & Bouwmeester, 2020). Extant studies have successfully examined the concept of moral disengagement in predicting online unethical behaviours, such as cyberbullying (Maftei et al., 2022; Paciello et al., 2020; Lo Cricchio et al., 2021), illegal downloading (Olivero et al., 2019), and online reviewing (Kapoor et al., 2021). We extend this stream of work by linking moral disengagement with cyberloafing (see Zhang et al., 2020). By doing so, we unravel the psychological mechanisms that underpin the role of morality in motivating individuals' misbehaviours (Fida et al., 2015).

Scholars have also highlighted the need for more research on the multitasking activities that students are involved in when using social media in class (Lau, 2017). This is because multitasking during class time can reduce learners' ability to focus on the class. Hence, we examine the moderating role of multitasking self-efficacy in affecting cyberloafing. This focus is interesting and important because members of Gen Z are characterised as being good at multitasking (Beall, 2016; Bowman et al., 2010). Further, studies on cyberloafing in educational settings have generally focused on traditional academic outcomes, such as grade-point averages (GPA). However, as GPA does not fully reflect and assess students' learning experience, scholars have highlighted the need to examine other subjective and psychological learning outcomes (Bellur et al., 2015), especially student engagement (e.g. Li & Lajoie, 2021; Schnitzler et al., 2020; Zhoc et al., 2020). We thus deviate from past studies that generally focus on traditional learning outcomes, such as grades, and instead this study focuses on two psychological outcomes of cyberloafing: (1) cognitive engagement, which has previously been found to affect academic achievements (Lei et al., 2018), and (2) psychological detachment, which has been relatively underexplored in a university setting.

Finally, this study provides insights into the cyberloafing behaviours of Gen Z, the earliest generation of digital natives. While much is known about their predecessors, the Millennials (Bergman et al., 2011; Kuron et al., 2015), academic evidence is sparse when it comes to understanding Gen Z's attitudes and behaviours in their formative years at university. Filling this gap in the literature is important, as researchers noted that Gen Z will transform the university space (Rickes, 2016), as their learning preferences and expectations are different from those of previous generations (Rue, 2018; Schwieger & Ladwig, 2018).

To sum up, the purpose of this paper is to address the calls of cyberloafing scholars and extend our understanding of the impact of mobile cyberloafing among Gen Z students by considering both the drivers and outcomes of such behaviour. Premised on Vardi and Wiener's (1996) misbehaviour framework, we developed and tested a model of cyberloafing among university students. Specifically, we posit that moral disengagement and subjective norms jointly predict cyberloafing and that multitasking self-efficacy moderates these relationships. We also examine two important outcomes which are related to students' performance in class, specifically psychological detachment and cognitive engagement (Lei et al., 2018; Morgan-Thomas & Dudau, 2019).

An overview of cyberloafing in education

To provide a better understanding of the phenomenon, this section documents the existing studies of cyberloafing attitudes, intentions, and behaviours among students. While research has primarily investigated cyberloafing in the workplace (e.g. Agarwal & Avey,

2020; Lim et al., 2020), cyberloafing in an educational context has received much less attention from scholars. More investigation in this area is needed for two reasons. The first is students' lack of awareness of the negative impact of cyberloafing (Feldmann, 2001; Tindell & Bohlander, 2012). Students might not even consider phone use in class to be impolite, distracting, or problematic. Indeed, only 69% of students perceived the use of a phone during class as uncivil compared to 99% of faculty members. Similarly, while 85% of faculty viewed using the internet during class as uncivil, only 50% of students believed this to be the case (Rowland & Srisukho, 2009). The second reason is the pervasiveness of this behaviour at universities and the potential negative implications for the workplace. Namely, students engage in more cyberloafing than employees and also engage in different types of cyberloafing (Akbulut et al., 2017). In the following paragraphs, we outline the existing antecedents, academic outcomes, other negative outcomes, and the more recent positive outcomes.

Research focusing on the *antecedents* of cyberloafing generally relied on the Theory of Planned Behaviour. In a study of undergraduate and postgraduate students in Britain, Rana et al. (2019) found that apathy towards course materials, distraction by others, and lack of attention predicted people's attitudes towards and intention to cyberloaf. Premised on the same theory, Gerow et al. (2010) showed that cognitive absorption and social norms as well as multitasking predicted intentions to cyberloaf. Research from a Malaysian higher education setting found that class engagement was negatively associated with cyberloafing attitudes, perceived behavioural control and prescriptive norms were positively related to cyberloafing intentions, while descriptive norms did not have a significant relationship (Soh et al., 2018). Habits were also established as a factor driving cyberloafing behaviour (Soh et al., 2018). Galluch and Thatcher (2011) found that effort (i.e. the belief that using the internet is free of effort), performance expectancy (i.e. the belief that the internet will enhance one's performance), and perceived opportunities drove acceptable use of the internet, while social norms (i.e. the social pressure to engage in particular behaviour) and perceived threats (i.e. the perception of punishment) facilitated cyberloafing intentions (Galluch & Thatcher, 2011).

Focusing on *academic outcomes*, the second stream of research provides evidence that cyberloafing has a negative impact on the learning process and students' academic performance. A recent meta-analysis found that phone use during lectures was negatively correlated with students' academic success ($r = -0.16$) (Kates et al., 2018). In an experimental study on business school students in Brazil, Felisoni and Godoi (2018) established that time spent on the phone was significantly and negatively correlated with academic performance. More specifically, every 100 min students spent using their phones per day led to a 6.3 point decrease in their position in the school ranking (between 0 and 100). However, when only phone usage during lectures was considered, the effect was doubled (Felisoni & Godoi, 2018). The use of phones and texting has also been found to lead to a lower GPA. Lepp et al. (2014) found that mobile usage was positively related to anxiety among undergraduate students from a public university in the USA. Moreover, in a study among Taiwanese students, daily phone calls and texting were correlated with self-reported academic difficulties (Hong et al., 2012). Finally, a study on in-class and out-of-class cyberloafing activities conducted in China revealed that cyberloafing served as a form of distraction and decreased student performance (Wu et al., 2018a, b).

The third research stream investigated *other outcomes* of cyberloafing in the classroom. Hayashi and Blessington (2018) found that students who frequently engaged in texting during lectures were more impulsive while making decisions. The use of social media (i.e. Facebook) and texting during lectures were also related to a lower GPA (Junco & Cotten,

2012), while cyberloafing was found to affect smartphone addiction among university students (Gökçearslan et al., 2018). A recent review reported that checking phones in the classroom is distracting (due to ringing and vibrating) and impairs students' ability to take notes and recall information (Chen & Yan, 2016). Another study (Hembrooke & Gay, 2003) compared students who were allowed to use digital devices during a lecture and those who were not. While both groups listened to the same lecture, students who used digital devices reported lower memory test scores.

However, with technology being increasingly integrated into the learning process, scholars have started to acknowledge that cyberloafing in the classroom can yield benefits. Recent studies have started to focus on the *positive consequences* of cyberloafing, showing that it is a strategy for coping with boredom (Pindek et al., 2018) and stress (Andel et al., 2019). Indeed, scholars also show that cyberloafing, especially in the form of browsing, has a positive impact on employees' emotions (Author et al., 2012a). Taken together, these studies provide some evidence of the beneficial effects of cyberloafing for individuals.

Conceptual model and hypotheses

Our research is premised on Vardi and Wiener's (1996) misbehaviour framework (Vardi & Wiener, 1996), which suggests that misbehaviour stems from a normative force (external pressures) and instrumental force (internal motivations), with these two forces working in parallel. Normative pressures, when consistent with the interests of a reference group, will deactivate misbehaviours that either benefit the individual or are harmful to others. On the other hand, individuals' instrumental interests motivate individuals to engage in misbehaviours to advance their self-interests (Vardi & Wiener, 1996). Accordingly, we introduce subjective norms as a normative force guiding individual behaviour (i.e. the individual's expectations of what referent others believe about a certain behaviour) (Taneja et al., 2015). In line with the framework, we incorporate moral disengagement to unravel the cognitive mechanisms that separate our internal moral standards from our actions (Moore, 2015). The parallel workings of moral disengagement and subjective norms on intentions have been shown to significantly predict illegal downloading (Olivero et al., 2019). In a similar vein, we predict that subjective norms and moral disengagement will predict mobile cyberloafing in the classroom. In turn, mobile cyberloafing will affect students' psychological detachment, i.e. ceasing to think about the class and no longer actively following the lecture (Sonnentag & Fritz, 2007), and cognitive engagement, i.e. involvement in an activity (Kahu, 2013). The research model is presented in Fig. 1.

By examining these proxied, psychological consequences of mobile cyberloafing in class, the present study expands the outcomes that have traditionally been linked with cyberloafing in previous studies, such as grades. We also examine one individual characteristic, multitasking self-efficacy, as a moderating factor. Including this variable is especially relevant for the younger generation, as this group of students generally believes they can pay attention to multiple things at the same time during lectures (Bowman et al., 2010). In the following sections, we provide the rationale for each of the proposed hypotheses.

Subjective norms

Subjective norms refer to a student's perception of whether important reference groups view cyberloafing during class time as socially acceptable and their motivation to comply

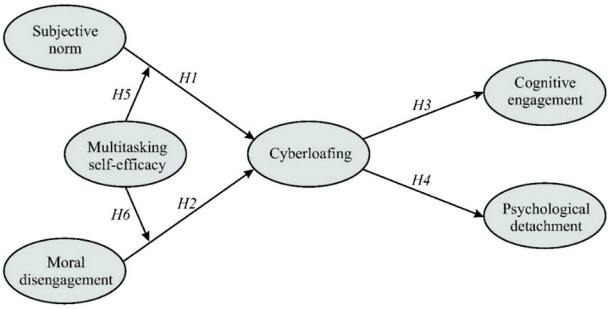

Fig. 1 Conceptual model of cyberloafing

with such views (Taneja et al., 2015). In line with Vardi and Wiener's (1996) framework, in our research model, such norms represent the normative force behind students' class behaviour. Individuals often take cues from the environment to behave in an appropriate manner (Gerow et al., 2010). When students perceive cyberloafing during lessons as socially acceptable, they are more likely to cyberloaf without being concerned about violating group norms (Askew et al., 2014; Galluch & Thatcher, 2011). Similarly, a meta-analytic study of cyberloafing at work reported that those who perceived cyberloafing to be normal and prevalent were themselves more likely to engage in this behaviour (Mercado et al., 2017). In general, peers constitute an important reference group for students. The need to be accepted by one's peers is important for young people (Sasson & Mesch, 2014), and young individuals are influenced by their peers when it comes to engaging in problematic online behaviours (Zhou et al., 2019). Thus, if more students believed that cyberloafing is not acceptable, it would be less prevalent. Accordingly, we posit that:

H1. Subjective norms are negatively related to cyberloafing.

Moral disengagement

People generally refrain from misbehaving because they have internalised societal standards of conduct and gauge their own behaviour against these. However, moral disengagement mechanisms may act to override these self-regulatory processes (Treviño & Nelson, 2010). Consequently, by disengaging from one's own moral standards, one can more easily justify misbehaviour (Egan et al., 2015). Moral disengagement is the process of making otherwise problematic conduct personally acceptable by persuading oneself about its appropriateness (Shu et al., 2011). In our research model, moral disengagement serves as the motivating force behind one's behaviour (Vardi & Wiener, 1996). Introducing moral disengagement as an antecedent to cyberloafing helps to explain this misbehaviour in class by showing that students who display greater moral disengagement are more likely to cyberloaf because they have convinced themselves that this is an acceptable conduct. Indeed, Author (2002) found that employees engaged in cyberloafing when they were able to morally disengage through invoking the metaphor of the ledger as a neutralisation technique, while Zhang et al. (2020) reported that employee moral disengagement positively influenced cyberloafing. In line with this, we hypothesise:

H2. Moral disengagement is positively related to cyberloafing.

Cognitive engagement

Research explains that class engagement plays an important role in the learning process (e.g. Kahu, 2013; Shernof et al., 2017). Cognitive engagement is a psycho-social process comprising behavioural, cognitive, and emotional elements (Kahu, 2013). Cognitive engagement involves thoughtfulness and a willingness to make the effort necessary to comprehend complex ideas and master difficult skills (Fredricks et al., 2004; Rotgans et al., 2018). We argue that cognitive engagement reflects a positive attitude towards studying and learning. While cognitively engaged, students develop learning goals and invest effort in actual learning. Cyberloafing behaviours during class time will distract students from the lecture being delivered, making them less absorbed in and dedicated to the learning process. Researchers have found negative relationships between cyberloafing and engagement in both workplace and school settings (O'Neill et al., 2014; Taneja et al., 2015). Therefore, we hypothesise the following:

H3. Cyberloafing is negatively related to cognitive engagement.

Psychological detachment in class

The concept of psychological detachment is typically applied to the work context. It refers to an individual's experience of being mentally absent from work and not thinking about the task at hand (Sonnentag, 2012). This is particularly relevant when the work demands are high (Sonnentag et al., 2010). In an academic setting, psychological detachment encapsulates students' experience of being mentally absent from activities in the classroom and learning experience. In other words, we aimed to capture detachment, while students are physically in class. This is important, because mentally switching off in class negatively impacts the learning process. While engaged in cyberloafing during a lecture, students are performing non-class-related activities, thereby detracting from their ability to be fully immersed in class discussion and activities. Preoccupied with online activities, students can momentarily forget what is going on in the classroom, making them mentally absent and psychologically removed from the learning process. Hence, we posit the following hypothesis:

H4. Cyberloafing is positively related to psychological detachment.

Moderating role of multitasking self-efficacy

Multitasking, "the engagement in more than one task within a given period of time" (Lau, 2017, p. 287), predicts cyberloafing (Gerow et al., 2010). Studies reveal that multitasking increases distractions and lowers performance, although this still does not discourage people from doing it (Brooks, 2015). Brooks (2015) found that multitasking computer self-efficacy was a significant moderator in the relationship between social media use and task performance. We also propose a moderating role of multitasking self-efficacy between the two antecedents (i.e. moral disengagement and subjective norms) and cyberloafing. In general, the less students morally disengage and the more their peers exert a positive influence on them, the less likely they will misbehave (Kwak & Bandura, 1998 in Bandura, 1999). However, if students believe they can successfully multitask, i.e. do several things at

once (in this case, cyberloaf and focus during class time), these relationships may change. Individuals who believe they are capable of multitasking effectively may be better at performing several tasks simultaneously (Sanbonmatsu et al., 2013), possibly reinforcing their moral disengagement and making them less influenced by others. While the belief that others disapprove of cyberloafing can diminish actual cyberloafing behaviour, the presence of multitasking self-efficacy could weaken this link. Conversely, the link between moral disengagement and cyberloafing will be stronger for those with higher multitasking self-efficacy. Therefore, we hypothesise:

H5. Multitasking self-efficacy weakens the relationship between subjective norms and cyberloafing.
H6. Multitasking self-efficacy strengthens the relationship between moral disengagement and cyberloafing.

Method

Sample and procedure

The respondents for this study consist of Gen Z students from a European university, that is regularly listed among world rankings like the Academic Ranking of World Universities (the "Shanghai List"), the Center for World University Rankings, and the Times Higher Education World University Rankings. This university is over 100 years old and has approximately 40,000 undergraduate and postgraduate students. Full-time undergraduate students were approached by research assistants and invited to participate in the study. Prior to this, research assistants were instructed on the data collection protocol by the authors. Research participation was voluntary, and respondents were not required to disclose any personal information at any point, thus ensuring anonymity. Students did not obtain any course credits for participating in this study. A total of 254 responses comprise the sample for the present study, with 44% of the sample being males and with an average age of 22.67 years (SD = 1.82). The average grade thus far in their studies is 8.26/10.00 (SD = 0.73). Approximately 31% of students in the sample were in their first year, 35% second year, and 34% third year. As for their academic background, 65% of students were from social sciences, 33% from natural/technical sciences, and 2% from the arts academies.

Measures

This research used well-established scales to measure the focal constructs. Unless otherwise indicated, the survey items used a 5-point Likert scale with the anchors: 1 = strongly disagree and 5 = strongly agree.

Cyberloafing in class This construct was measured with seven items assessing students' phone use during class time (Bellur et al., 2015), i.e. mobile cyberloafing. We focused on smartphones instead of laptop computers, as the use of the latter during class is fairly uncommon among the target population in this country. Specifically, participants reported the frequency with which they used their phones to access Facebook, text, engage in chats,

and search the internet for information unrelated to class. Items were scored on a 5-point scale from 1 = never to 5 = very frequently. The Cronbach's alpha for this scale is 0.83.

Moral disengagement Four items developed by Shu et al. (2011) were used to assess moral disengagement. A sample item is "Sometimes getting ahead of the curve is more important than adhering to rules". The Cronbach's alpha for this scale is 0.74.

Subjective norms Subjective norms were assessed with a four-item scale by Roos and Hahn (2019). A sample item is: "Most people who are important to me think that I should not cyberloaf". The Cronbach's alpha for this scale is 0.68.

Cognitive engagement Four items from the Higher Education Student Engagement Scale (i.e. HESES) were used to assess cognitive engagement (Zhoc et al., 2019). Sample items include "I get a lot of satisfaction from studying" and "I enjoy the intellectual challenge of courses studying". The Cronbach's alpha for this scale is 0.87.

Psychological detachment Four items developed by Sonnentag and Fritz (2007) were used to assess this variable, adapted to suit the classroom context. Students were asked to think about the times during lectures/lab sessions when they use their phones during class and then evaluate how often they experience different things. Items were scored on a 5-point scale from 1 = never to 5 = very frequently. A sample item is: "I don't think at all about the contents of the lecture/exercise session". The Cronbach's alpha for this scale is 0.86.

Multitasking self-efficacy We assessed this variable with four items (Bellur et al., 2015). A sample item is: "I can easily understand and comprehend material presented in class while I am texting". The Cronbach's alpha for this scale is 0.73.

Results

Table 1 presents the descriptive statistics and correlations among the variables.

Structural equation modelling was used to test the hypotheses. We estimated the effects using a more recent approach, the latent moderated structural equation model, which allows the modelling of the latent interactions between variables which are measured with continuous indicators. This was done using Mplus (7.4.) (Muthén & Muthén, 1998–2015). Structural equation modelling begins by estimating the measurement model in order to evaluate the extent to which the model fits the data. In the next step, the structural model is estimated to analyse the strength of the relationships among the constructs. The latent interaction modelling used in the present study is superior to other approaches, because it uses raw data of the moderating factor to estimate the effect and not a product term between the antecedent and moderator (Klein & Moosbrugger, 2000).

First, we performed confirmatory factor analysis (CFA) to establish the validity and reliability of the scales. We checked the factor loadings and their significance levels for each construct independently and dropped one indicator of the subjective norm construct and one of the cyberloafing in class construct due to their low loadings. The proposed six-factor solution yielded a good fit with the data: ($\chi 2[260] = 445.757$ ($p = 0.000$); $CFI = 0.919$; $TLI = 0.906$; $RMSEA = 0.053$; $SRMR = 0.059$). RMSEA and SRMR were well below the

Table 1 Descriptive statistics and correlations

	Variable	Mean	S.D	1	2	3	4	5
1	Class cyberloafing	2.68	0.78	1				
2	Subjective norm	2.56	0.77	−0.17**	1			
3	Moral disengagement	2.70	0.91	0.24**	−0.14*	1		
4	Cognitive engagement	3.37	0.94	−0.20**	0.02	−0.15*	1	
5	Psychological detachment	3.19	0.98	0.31**	−0.08	0.21**	−0.20**	
6	Multitasking self-efficacy	3.03	0.83	−0.03	−0.24**	−0.05	−0.01	−0.21**

$N = 254$. Coefficient alphas are on the diagonal in parentheses. $^{*}p < 0.05$, $^{**}p < 0.01$

0.08 threshold, while CFI and TLI were above the required 0.9 values (Hu & Bentler, 1998; Kline, 2016). Factor loadings were all significant and ranged between 0.516 and 0.793 for cyberloafing in class, 0.673 and 0.880 for psychological detachment, 0.509 and 0.827 for multitasking self-efficacy, 0.507 and 0.818 for subjective norms, 0.716 and 0.846 for cognitive engagement, and 0.457 and 0.718 for moral disengagement. The model testing demonstrated that the proposed six-factor model outperformed alternative, more parsimonious models. For example, the 1-factor model exhibited a poor fit ($\chi 2[275] = 1814.894$ ($p = 0.000$); $CFI = 0.325$; $TLI = 0.263$; $RMSEA = 0.148$; $SRMR = 0.136$) as did a 4-factor model, whereby we collapsed the two antecedents into one factor and the two outcomes into another ($\chi 2[269] = 1140.479$ ($p = 0.000$); $CFI = 0.618$; $TLI = 0.574$; $RMSEA = 0.113$; $SRMR = 0.121$). The latter, aside from the bi-variate correlations, demonstrates that the antecedents are distinct constructs, as are the two outcomes.

Next, we tested the structural model and the relationships among the latent variables. As standard model fit indices are unavailable for latent interaction models, the model is evaluated based on the information criteria: Loglikelihood Value = −8781.112, free parameters = 86; Akaike Information Criterion (AIC) = 177,734.223.

The results of the hypotheses testing are shown in Fig. 2 and Table 2. Subjective norms are negatively related to cyberloafing in the classroom (H1: $\beta = -0.18$, $p < 0.05$). As posited in H2, moral disengagement is positively related to cyberloafing in the classroom ($\beta = 0.28$, $p < 0.05$). In line with H3, the findings suggest that cyberloafing is negatively related to students' cognitive engagement ($\beta = -0.26$, $p < 0.05$). Consistent with H4, our findings indicate that students who cyberloaf during class time are more likely to feel psychologically detached from the class ($\beta = 0.34$, $p < 0.05$).

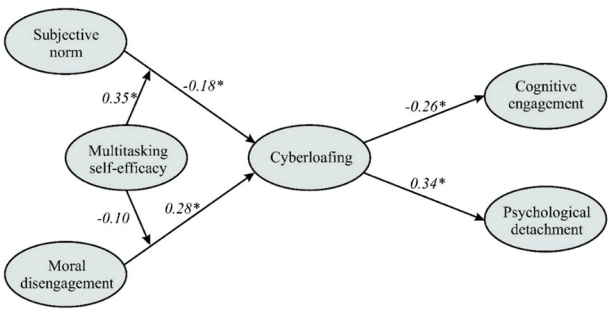

Fig. 2 Structural model. Note: *$p < .05$; unstandardised coefficients are reported

Table 2 Results of the hypotheses testing

Hypothesis	Regression coefficient	*t*-value (*p*-value)
Subjective norm ➔ cyberloafing	−0.18	−2.145 (0.032)
Moral disengagement ➔ cyberloafing	0.28	3.392 (0.001)
Cyberloafing ➔ cognitive engagement	−0.26	−3.474 (0.001)
Cyberloafing ➔ psychological detachment	0.34	5.037 (0.000)
Multitasking self-efficacy (MOD) subjective norm	0.35	1.986 (0.047)
Multitasking self-efficacy (MOD) moral disengagement	−0.10	−0.577 (0.564)

Unstandardised coefficients are reported

Turning now to the last two hypotheses, our findings show that multitasking self-efficacy significantly moderates the subjective norm–cyberloafing link (H5: $\beta = 0.35$, $p < 0.05$), but did not significantly moderate the relationship between moral disengagement and cyberloafing during class time (H6). To further explore the significant latent interaction effect, we estimated the simple slopes (Aiken & West, 1991). Specifically, we used values of 1 SD above the mean to represent high levels of multitasking self-efficacy, the mean value to represent medium levels of multitasking self-efficacy, and 1 SD below the mean to represent low levels of multitasking self-efficacy. The results demonstrate that the slopes for low (gradient = −0.31, $t = -2.70$, $p = 0.007$, CI [−0.53; −0.10]) and medium (gradient = −0.16, $t = -1.966$, $p = 0.049$, CI [−0.31, −0.00]) values of multitasking self-efficacy are significantly different from zero. Specifically, at low levels of multitasking self-efficacy, the relationship between subjective norms and class cyberloafing is more negative than at medium levels of multitasking self-efficacy. At high levels of multitasking self-efficacy, the slope becomes non-significant.

Discussion

Having grown up in a digital world with access to social media, smartphones, tablets, and other IT devices, members of Gen Z (Schroth, 2019) interact with technology both in and out of the classroom. Moreover, the availability of smartphones allows students to engage in non-class-related online activities. Our findings show that subjective norms are negatively related to cyberloafing in class (H1), while moral disengagement is positively related to cyberloafing (H2). The negative relationship between subjective norms and classroom cyberloafing corroborates research done previously in other contexts (Askew et al., 2014; Pelling & White, 2009) and suggests that significant others play an important role in discouraging misbehaviour in class. The inclusion of a morally charged construct in the model builds on and extends previous works that examine cyberloafing through the lens of moral frameworks. Specifically, this study extends recent work which examined moral disengagement as a predictor of a variety of misbehaviours (e.g. distracting behaviours and skipping class) (Hsu & Pan, 2018).

Turning now to the psychological consequences of individual misbehaviour, our research reveals that classroom cyberloafing is negatively related to cognitive engagement (H3). This implies that students are unable to fully engage in class discussions and

activities. Consequently, this affects the amount of knowledge and skills they derive from the class and the quality of their learning experience. Moreover, we found that cyberloafing is positively related to psychological detachment during class (H4), suggesting that students who cyberloaf in class are more likely to "switch off" during class. To the best of our knowledge, psychological detachment has not been previously studied in the cyberloafing context. Finally, our findings suggest the relevance of multitasking self-efficacy as a moderating factor (H5). Specifically, we found that when multitasking self-efficacy was medium (compared to low), the negative relationship between subjective norms and cyberloafing was attenuated. Subjective norms appear to have the most powerful effect on cyberloafing behaviours for students with the lowest beliefs in their multitasking self-efficacy. In other words, when students believe that they can engage in multitasking successfully, the impact of what referent others believe (i.e. subjective norms) becomes weaker. A noteworthy finding is that at high levels of multitasking self-efficacy, the relationship between subjective norms and cyberloafing becomes negligible. In other words, when multitasking self-efficacy is high, engagement in cyberloafing is highest, regardless of the strength of subjective norms. This suggests that multitasking self-efficacy overrides the impact of other contextual factors (i.e. subjective norms) in motivating mobile cyberloafing. This finding is interesting, as it highlights the salience of multitasking self-efficacy in driving students' misbehaviours in the classroom.

While multitasking self-efficacy significantly moderates the subjective norm–cyberloafing relationship, it does not significantly moderate the moral disengagement-cyberloafing relationship (H6) (Fig. 3). This raises questions related to the salience of a morality-centric variable (i.e. moral disengagement) over more general individual characteristics (i.e. multitasking self-efficacy). We thereby provide a more nuanced understanding of the causes of misbehaviour and complement studies that shed light on the negative effects of multitasking, which is particularly associated with younger generations, including Gen Z (Bowman et al., 2010). While earlier studies examined multitasking self-efficacy as a predictor in this context (e.g. Gerow et al., 2010), our study explored its moderating role.

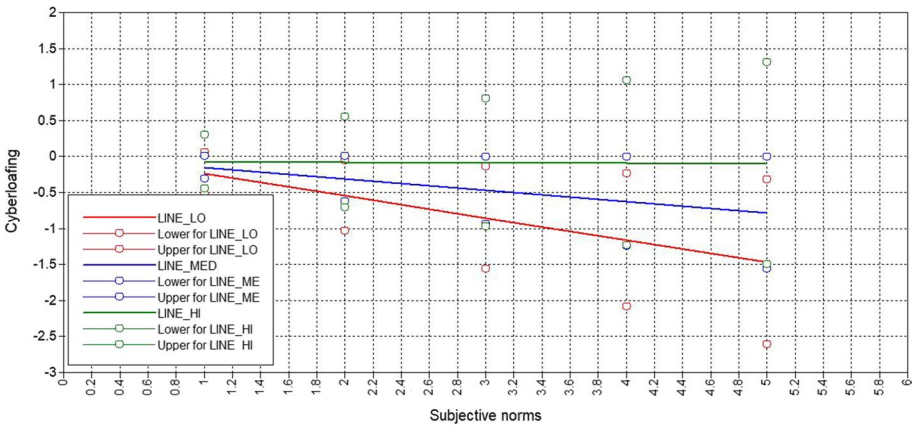

Fig. 3 The moderating effect of multitasking self-efficacy in the subjective norm–class cyberloafing relationship

Practical implications

The study has several practical implications. First, subjective norms are important for deterring cyberloafing during class time. However, just as codes of ethics cannot be brought to life by simply posting them on a school's webpage (Authors, 2014), the norm of not using phones during class for non-study purposes cannot be enforced solely by displaying posters around the school indicating that phones and laptops are prohibited. Faculty and school leaders need to enforce such policies if they are to be effective (Tindell & Bohlander, 2012), such as early on in university studies. During orientation week, instructors can emphasise the "no phone policy in class" to first year students. Subsequently, instructors can discuss the policy on the use of phones or laptops for non-study purposes with students and explain why the use of these devices is banned during class. It should be noted that faculty serve as role models and should themselves thus refrain from using their phones during class time.

Second, self-regulatory processes must be activated to prevent moral disengagement. Students can be trained to increase their self-regulatory strength through self-initiated monitoring. They can download applications to help them keep track of their online activities, mobile, and internet use during class (Duckworth et al., 2018), especially to help them work on their focus time (Reisenwitz, 2019). Based on students' own accounts, as described in classes conducted by the authors, students are often unconsciously tempted to reach for their phones while listening to a lecture and view this behaviour as beyond their control. Being mindful of their actions, putting their phone away after reaching for it, or planning to leave the phone in their bags for the entire duration of the class could help develop self-control. Alternatively, Bandura (1999) suggests that appropriate social safeguards against misbehaviour need to be put in place to discourage moral disengagement, stressing the importance of monitoring and negative sanctions.

Third, our study suggests that in part, multitasking self-efficacy indirectly facilitates cyberloafing. This makes it important to educate members of Gen Z about the downsides of perceived multitasking self-efficacy through workshops and interactive discussions. Students could also practice mindfulness during class (Duckworth et al., 2018) so that they are aware of how multitasking can distract them from their studies.

Fourth, students may be unaware of the impact of their cyberloafing on the learning process. Specifically, our research highlights the negative effects of cyberloafing on cognitive engagement in class. Aside from taking a draconian approach by completely banning cyberloafing in the classroom, the faculty could adopt a less aggressive and more experimental approach. For instance, Foster (2008) conducted an experiment by asking her students to put their phones on silent mode and place them in a basket in front of the class. At the end of the class, students discussed the good and bad aspects of this practice. Analysis showed that the students actually did well in the class and admitted liking the class more (Foster, 2008). Such an approach is more inclusive and less intrusive, and students seem to respond more favourably.

Finally, our study suggests that cyberloafing was positively related with psychological detachment during class time, thereby affecting the learning process. However, we note that research on recovery shows that being psychologically detached from work has a beneficial effect, as it allows individuals to rest and recover. In a similar vein, being psychologically detached during class time can help students replenish their energy and reconnect with the class discussion/activities once they have rested. Controlled breaks and brief detachment periods could thus be introduced in classrooms to overcome the problems of poor concentration, mind-wandering, and low attention span during class time (Mrazek et al., 2017; Wammes et al., 2016).

Limitations, future research directions, and conclusions

The generalisability of our study is hindered by several limitations. First, the data were collected from students from the same university and country. As educational practices and policies vary across different universities and cultures, future research should examine the cyberloafing behaviours of students from different cultures. Second, our data are self-reported and may be prone to social desirability bias (Arnold & Feldman, 1981). Since cyberloafing is generally seen to be counterproductive, students might under-report their cyberloafing behaviour. Future research could use more objective measures, like Google search data (Author et al., 2012b) and web-filtering information (Glassman et al., 2015). Third, researchers could also employ various strategies such as laboratory experiments, the experience sampling method, or qualitative interviews. Finally, as multitasking self-efficacy was not a significant factor in our study, future research could explore other individual characteristics relevant for this context. One area for future research is to explore the moral aspects of the self, such as self-conscious moral orientation as a moderator. Another would be to reconceptualise the model by incorporating moral disengagement as a moderating variable.

In summary, the theoretical and practical implications of our research are relevant because our work coincides with a time in which technology is increasingly being deployed and used for instructional, educational, and learning purposes. Accordingly, the awareness of the impact of cyberloafing on the learning process will help Gen Z students, researchers, and educators minimise the potential drawbacks of this behaviour.

Declarations

Conflict of interest The authors declare no competing interests.

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1. Psychological contracts, school/workplace characteristics facilitating student/employee thriving, engagement, work-family interface, (un)ethical behaviors.

Most relevant publications in the field of Psychology of Education:

1. Culiberg, B., Mihelič, K.K. (2020). The impact of mindfulness and perceived importance of peer reporting on students' response to peers' academic dishonesty. *Ethics & behavior*. *30*(5), 385–399. ISSN 1050–8422. 10.1080/10508422.2019.1628644.
2. Mihelič, K.K., Culiberg, B. (2019). Reaping the fruits of another's labor: the role of moral meaningfulness, mindfulness, and motivation in social loafing. *Journal of business ethics*. *160*(3), 713–727. ISSN 0167–4544. 10.1007/s10551-018-3933-z.
3. Mihelič, K.K., Aleksić, D. (2017). "Dear employer, let me introduce myself": flow, satisfaction with work-life balance and millennials' creativity. *Creativity research journal*. *29*(4), 397—408. ISSN 1040–0419. 10.1080/10400419.2017.1376503.
4. Sitar, A.S., Černe, M., Aleksić, D., Mihelić, K.K. (2016). Individual learning styles and creativity. *Creativity research journal, 28*(3), 334–341. ISSN 1040–0419. 10.1080/10400419.2016.1195651.
5. Mihelič, K.K., Culiberg, B. (2014). Turning a blind eye: a study of peer reporting in a business school setting. *Ethics & behavior*. *24*(5), 364–381. ISSN 1050–8422. 10.1080/10508422.2013.854170.

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Current themes of research:

Impact of IT on work.

Most relevant publications in the field of Psychology of Education:

1. Soh, P.C.H., Koay, K.Y., & Lim, V.K.G. (2018). Understanding cyber loafing by students through the lens of an extended theory of planned behavior. *First Monday, 23*(6).
2. Rajah, R., & Lim, V.K.G. (2018) Cyberloafing in the Realm of IoPTS: Examining Individual Neutralization and Organizational Citizenship Behavior. Chapter in Simmers, C.A., & Anandarajan, M. (Eds.) The Internet of People, Things and Services: Workplace Transformations. *Routledge*. pp. 67–88.

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Current themes of research:

Student (un)ethical behavior.

Most relevant publications in the field of Psychology of Education:

1. Culiberg, B., Mihelič, K.K. (2020). The impact of mindfulness and perceived importance of peer reporting on students' response to peers' academic dishonesty. *Ethics & behavior, 30*(5), 385–399. ISSN 1050–8422. 10.1080/10508422.2019.1628644.
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3. MIHELIČ, K.K., Culiberg, B. (2014). Turning a blind eye: a study of peer reporting in a business school setting. *Ethics & behavior,24*(5), 364–381. ISSN 1050–8422. 10.1080/10508422.2013.854170.