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Cyberloafing behaviors among university students: Their relationships with positive and negative affect

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Abstract

With the technological advances, the use of digital devices, such as laptops, tablets, or smartphones in the educational setting has become prevalent among young people. Accordingly, there has been an increased concern among scholars on students' in-class Internet use for personal purposes; namely, 'cyberloafing'. Considerable research has demonstrated the adverse effects of in-class Internet use on students' learning environment and academic performance. The present study particularly investigates the relationship between cyberloafing behaviors and positive and negative affect among university students. It examines five different online activities including sharing, shopping, real-time updating, accessing online content, and gaming/gambling separately to gain greater insight into students' cyberloafing behaviors. The sample consisted of 267 undergraduate students who filled out questionnaires measuring cyberloafing behaviors, positive and negative affect, and demographical information including the use of the Internet and mobile technologies. The initial analyses showed that male students had higher scores in shopping, accessing online content, and gaming/gambling than females. The latent variable analysis revealed that among different activities of cyberloafing, accessing online content and gaming/gambling were positively correlated with positive affect, while sharing was positively associated with negative affect among students. The findings emphasize the importance of evaluating cyberloafing as a part of students' psychological well-being rather than a variable merely related to academic achievement. The findings of the study also enlighten researchers and educators in developing appropriate policies and interventions to manage misuse of the Internet in class.

Keywords Cyberloafing · Internet use · Positive affect · Negative affect · University students

With the availability of mobile technologies and online communication opportunities, personal use of the Internet for non-work related purposes has increased in the work setting. Accordingly, scholars have introduced the terms 'cyberloafing' (Lim, 2002) and 'cyberslacking' (Garrett & Danziger, 2008b) as a form of workplace production deviance, and conducted considerable research on the antecedents, consequences, and management of cyberloafing at work setting (see Mercado et al., 2017; Metin Orta & Güngör, 2018; Sampat & Basu, 2017 for a review). While some of them lay stress upon the detrimental consequences of cyberloafing, such as uncompleted work and diminished productivity among employees (Lim & Chen, 2012), others address its benefits on individuals' well-being, such as better coping with personal problems, job stress, increased creativity, performance, productivity and job satisfaction (Akar & Coskun, 2020; Lim & Chen, 2012; Özkalp & Yıldız, 2018).

The use of high-tech digital devices like laptops, tablets, or smartphones has also become prevalent among young people of the most recent generation (Carbonell et al., 2018), also known as the "wired generation" (Barnes, 2009). The portability and ubiquity of smartphones allow teens and adults to have access to the Internet anywhere and anytime (Jeong et al., 2019). According to the results of the Bradford Networks 2013 survey, 89% of the students in the USA and the UK universities and 44% of elementary and high school students are allowed to use smartphones (O'Bannon et al., 2017). A previous study investigating the frequency of Internet use among university students revealed that most of the young adults (54%) use the Internet for more than 10 h a week, indicating an addictive behavior pattern (Hacıoğlu Deniz & Karakaş Geyik, 2015). Given the increased prevalence of Internet use among young adults in the two last

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decades (Carbonell et al., 2018), problematic Internet use has become a concern among scholars.

Previous research has revealed that Internet use has detrimental consequences on students' learning environment and academic performance (Junco, 2012; le Roux & Parry, 2017; Mendoza et al., 2018; Ravizza et al., 2014). Besides, several studies have demonstrated that students' Internet use and their psychological well-being are related (e.g. Barry et al., 2017; Becker et al., 2013; Kross et al., 2013). For instance, Becker et al. (2013) showed that in-class Internet use is associated with lower emotional well-being indicated by more symptoms of depression and higher social anxiety. Yet, the literature on the affective consequences of in-class Internet use is rather limited. Likewise, scholars addressing cyberloafing at educational setting, defined as the students' voluntary use of the Internet during class time for non-class related purposes (Gerow et al., 2010), have mainly investigated the antecedents and consequences of, and individual differences in cyberloafing (e.g. Akbulut et al, 2016, 2017; Akgün, 2020; Demirtepe-Saygılı & Metin-Orta, 2021; Durak, 2020; Saritepeci, 2020; Wu et al., 2018; Zhou et al., 2021). However, cyberloafing has rarely been investigated with affect (e.g., in the work setting; Lim & Chen, 2012; Moody & Siponen, 2013).

In this regard, the present study adds to extend knowledge about cyberloafing in a higher educational setting by investigating the relationship between cyberloafing, positive affect (PA), and negative affect (NA) among university students. In general, the term affect includes both emotions (more intense, short term, and broad psychological process to triggers) and moods (less intense, longer, and without a necessary trigger) (Pekrun & Stephens, 2012). PA represents personal pleasure, including enthusiasm, interest, and joy, while NA represents personal distress, including fear, hostility, and guilt (Watson & Tellegen, 1985). Watson and Tellegen (1985) conceptualized PA and NA as orthogonal factors, that is, even though their names imply being opposite, they are independent of each other. For instance, females reported higher levels of NA and lower levels of PA than males in a nonclinical sample (Crewford & Henry, 2004). Considerable research has shown that there are strong links between emotions and well-being (e.g. Lennard et al., 2019). For example, NA is related to worse health-related outcomes, such as stress (Clark & Watson, 1986) and poor adjustment (Coifman et al., 2016), while PA is related to more health-enhancing behaviors (Nylocks et al., 2019). Furthermore, both PA and NA are related to life satisfaction and well-being of university students across cultures (Kormi-Nouri et al., 2013). Given this, it becomes important to identify the factors that promote positive emotions as well as those that minimize negative emotions among young adults. In this vein, the examination of cyberloafing activities in relation to students' emotions might contribute to the promotion of their psychological well-being. Such an inquiry might also help researchers and educators to understand the underlying motivations of misuse of the Internet in class.

The conceptualization and antecedents of cyberloafing behaviors

Cyberloafing was first defined as the use of the Internet for personal purposes at work (Lim, 2002). Scholars have conceptualized it as one of the forms of counterproductive behaviors and proposed a wide range of activities that can be considered as cyberloafing. For instance, Lim (2002) argued that it involves *browsing* (i.e., surfing non-work sites) and *emailing* activities (i.e., checking, sending, or receiving personal e-mails). Blanchard and Henle (2008) suggested cyberloafing activities be classified as *minor* (i.e., personal emailing, surfing news or sports sites, online shopping, auctions) and *serious* (i.e., online gambling, surfing adult websites, participating in chat rooms, downloading music illegally). More recently, scholars have updated the contents of cyberloafing behaviors following new advances in emerging online communication opportunities, and focused on web-based activities, such as blogging, watching online videos, and using social network sites in their studies (Akbulut et al., 2016, 2017; Baturay & Toker, 2015; Karaoğlan-Yılmaz et al., 2015). For instance, Akbulut and his colleagues (2016) have developed a measure of cyberloafing by adding items for social networking that tap dimensions of sharing, shopping, real-time updating, accessing online content, and gaming/gambling. Sharing includes posting messages, photos, and videos, chatting, and writing comments on social network sites; shopping includes visiting shopping sites and banking; real-time updating includes tweeting and retweeting; accessing online content includes downloading applications and watching videos; and gaming/gambling includes online gaming and betting.

Empirical research among undergraduate students and social networkers has supported these five dimensions of cyberloafing (Akbulut et al., 2016, 2017). That is, considering the psychosocial correlates of cyberloafing dimensions, researchers found that sharing, accessing online content, real-time updating, shopping, and gaming/gambling are positively correlated with social desirability subscales (i.e., self-deception and impression-management subscales; Akbulut et al., 2017), and social media addiction subscales (i.e., functional deterioration, control difficulty and deprivation, and social isolation; Turan et al., 2020). Furthermore, different activities show different prevalence rates among students and employees (Akbulut et al., 2017; Koay, 2018). These five dimensions are also examined in relation to various demographic factors (i.e., grade level, grade point average, gender, socioeconomic status, number of applications used,

time spent on social networks; Dursun et al., 2018). The aforementioned studies overall indicate that cyberloafing is not a unidimensional construct; in contrast, it covers a wide range of behaviors. Therefore, the current study addresses each dimension, while examining the affective correlates of cyberloafing behaviors.

Several theoretical frameworks have been proposed to understand cyberloafing. For instance, Lim (2002) proposed that the lack of perceived justice in organizations might facilitate cyberloafing behaviors among employees. When individuals perceive unfair treatment at work, they may rationalize their misconduct (Lim, 2002). Furthermore, drawing upon Baumeister's ego-depletion model of self-regulation (Baumeister et al., 2000), Wagner and his colleagues (Wagner et al., 2012) proposed that the availability of self-regulatory resources affects the likelihood of individuals to engage in cyberloafing behaviors. It was particularly argued that when self-control resources are depleted, individuals are more likely to engage in cyberloafing (Wagner et al., 2012).

Applying the Theory of Planned Behavior (Fishbein & Ajzen, 1975) to cyberloafing, Askew and his colleagues proposed that subjective social norms, attitudes, and perceived behavioral control explain why people cyberloaf (Askew et al., 2014). Supporting this notion, researchers showed that subjective descriptive norms, cyberloafing attitudes, and the ability to hide cyberloafing are related to employees' cyberloafing intentions and behaviors (Askew et al., 2014; Sheikh et al., 2015). Similarly, applying an extended model based on the Theory of Interpersonal Behavior by Triandis (1977), researchers showed that affect, attitude, perceived consequences, and social factors are associated with employees' cyberloafing intentions and behaviors (Huma et al., 2017; Moody & Siponen, 2013). Moreover, habit, facilitating conditions, and cyberloafing intentions lead to cyberloafing behaviors at work.

Cyberloafing behaviors in educational settings

Given the ease of access to digital devices, such as smartphones in educational settings, the use of the Internet for personal purposes has also become prevalent among students. They usually engage in web-based activities on popular social media sites and access other applications during class time (Bjornsen & Archer, 2015; Whiting & Williams, 2013). Some scholars emphasize the positive impact of using digital devices in class, such as increased participation, interaction with the instructor, and active learning (Barak et al., 2006; George et al., 2013; Karataş, 2018; Kong & Song, 2015; Stephens et al., 2012), while others underline its negative impact on students' concentration, attention, comprehension, and recall of the course material (Mendoza et al., 2018; Sana et al., 2013), academic satisfaction (Wurst et al., 2008) and performance (le Roux & Parry, 2017; Ravizza et al., 2014; Sana et al., 2013). A possible explanation for these relations might be the multitasking nature of in-class Internet use (Aagard, 2015). In general, multitasking refers to "divided attention and non-sequential task switching for ill-defined tasks" and leads to less awareness, ineffective decision-making, and impairment of behaviors (Junco, 2012, p. 2237). Accordingly, it can be argued that similar to the work setting, in-class Internet use in an educational setting may cause overload and distraction among students (Junco, 2012; Lam & Tong, 2012; Mendoza et al., 2018; Sana et al., 2013); thus, be counterproductive.

Considerable research has documented several demographic variables including grade, gender, grade point average, and Internet usage in relation to cyberloafing behaviors in educational settings (Coskun & Gokcearslan, 2019; Durak, 2020; Saritepeci, 2020). For instance, scholars have demonstrated that advanced-expert users and students with a higher experience of the Internet (e.g., more than 9 years) tend to cyberloaf more than novice users and those with lower experience (Baturay & Toker, 2015; Durak, 2020). Likewise, frequent users and students in higher grades (e.g., those in 10^{th}-12^{th} grades) tend to cyberloaf more than less frequent users and those in lower grades (Baturay & Toker, 2015; Durak, 2020; Karaoğlan-Yılmaz et al., 2015; Saritepeci, 2020). It is particularly argued that advanced-expert users have more information and experience related to Internet use, experienced users are aware of diverse Internet opportunities and loafing activities, and frequent users spend more time on Internet; thus, they tend to cyberloaf more (Baturay & Toker, 2015). Furthermore, students in higher grades have greater confidence, comfort, and familiarity with the instructors and their teaching styles; thus, they are more involved in cyberloafing.

Scholars also revealed that students' perception of the psycho-social environment of a class, such as student cohesiveness, teacher support, increased involvement in activities, task orientation, and cooperation as well as students' attitudes toward courses and learning strategies are related to cyberloafing behaviors (Yılmaz & Yurdugül, 2018). Furthermore, students' attitudes toward cyberloafing, subjective and descriptive norms, and perceived behavioral control are linked to students' intentions to cyberloaf in class (Rana et al., 2019; Taneja et al., 2015). Researchers also showed that student consumerism (perceiving learning as a service to purchase), escapism (desire to escape from the class due to disinterest), and lack of attention are positively correlated with students' attitudes toward cyberloafing whereas cyberloafing anxiety and distraction by others' cyberloafing behaviors are negatively correlated with these attitudes (Taneja et al., 2015). Similar to Taneja et al. (2015), it was observed that students' lack of attention and apathy towards

course material are positively, while distraction by others is negatively correlated with attitudes toward cyberloafing (Rana et al., 2019). Escapism is positively, while the perceived threat is negatively associated with students' intentions to cyberloaf (Rana et al., 2019). In a related vein, three aspects of academic flow including absorption, intrinsic motivation, and enjoyment are negatively associated with cyberloafing behaviors (Yuwanto, 2018). That is, when students have a higher ability to concentrate on the activity (absorption), higher internal drive to do the activity (intrinsic motivation), and higher positive affect or comfort (enjoyment) in the class, they tend to cyberloaf less. Besides, Hedonistic-Stimulation value orientation is positively associated with students' cyberloafing attitudes and behavior, and cyberloafing attitudes and time spent on the Internet mediate the relationship between value-orientation and cyberloafing behaviors (Metin-Orta & Demirutku, 2020). In a recent study, academic stressors were found to be negatively associated with cyberloafing behaviors among college students (Zhou et al., 2021). Furthermore, trait self-control moderates this relationship. Hence, the aforementioned research indicates that there are several psycho-social factors that lead students to engage in cyberloafing.

On the other hand, some of the scholars addressed prevalence rates of cyberloafing activities. They demonstrated that high school students cyberloaf mostly for socialization purposes, followed by purposes of news follow up and personal business (Baturay & Toker, 2015; Toker & Baturay, 2021). Likewise, university students mostly report socialization purposes as the underlying reason for using the Internet, followed by playing games and surfing (Hacıoğlu Deniz & Karakaş Geyik, 2015). Supporting these findings, other researchers revealed a higher prevalence of sharing (activities related to Facebook) and real-time updating (activities related to Twitter) among university students than other cyberloafing activities (Akbulut et al., 2016). As compared to employees who cyberloaf more for shopping purposes, students cyberloaf more for real-time updating, gaming, and accessing online content (Akbulut et al., 2017).

The previous research focusing on cyberloafing also examined gender differences. In particular, the studies reported a higher prevalence of cyberloafing among men than women in a work setting (Garrett & Danziger, 2008a, 2008b; Lim & Chen, 2012). Also, men perceived that cyberloafing has a positive impact on their work, while women perceived that it interferes with their work (Lim & Chen, 2012). It is argued that men's greater competence and comfort with the Internet use, their greater ability to apply information to specific work goals, and to derive more pleasure from engaging in such activities as compared to women may lead to these differences in cyberloafing (Lim & Chen, 2012). Similar to adult samples, cyberloafing is also found to be common among male students as compared to females (Akbulut et al., 2017; Baturay & Toker, 2015; Karaoğlan-Yılmaz et al., 2015; Metin-Orta & Demirutku, 2020; Saritepeci, 2020). Furthermore, the prior studies investigating gender differences in cyberloafing activities yielded that as compared to women, men tend to engage more in personal leisure-related activities, such as looking up information of personal interest, online shopping, and gaming/gambling than (Akbulut et al., 2016, 2017; Dursun et al., 2018; Garrett & Danziger, 2008b). Interestingly, male students engage in cyberloafing more for personal business, and news follow-up; but equally engage in cyberloafing for socialization purposes with females (Baturay & Toker, 2015; Kalaycı, 2010). However, some scholars did not reveal any gender difference in cyberloafing behaviors (e. g., Durak, 2020; Durak & Saritepeci, 2019; Ugrin et al., 2008). Due to these mixed findings in the aforementioned research, the current study also investigates cyberloafing behaviors in relation to several demographic variables including grade, cumulative grade point average, time spent on the Internet, and gender.

Internet use and cyberloafing behaviors in relation to positive and negative affect

In general, emotions constitute an important part of psychological well-being, which in turn influence students' performance. From an educational point of view, the emotions of students are important since learning is a subjective experience that may include various emotional aspects. Freshmen students reported excitement and shock in a new environment to adapt, while students from later years reported confidence or a lack of confidence related to learning or a sense of belonging to their university (Christie et al., 2008). Emotions particularly related to academic activities, such as anxiety (Pekrun & Stephens, 2010), enjoyment, and boredom (Pekrun et al., 2002) are more frequently reported by students.

Classical theories including emotion formed its link with behaviors. From a cognitive-behavioral perspective (Beck, 1976; Ellis, 1962), cognitions, emotions, and behaviors are interrelated with each other (Beck, 1976), and behaviors have their emotional consequences (Ellis, 1962). Yet, a couple of studies have addressed Internet use from a cognitive-behavioral perspective, such as the one focusing on pathological Internet use (e.g., Davis, 2001) or another (Gamez-Guadix et al., 2013) proposing emotion regulation and cognitive factors (i.e. preference for online social interaction) as contributors to problematic Internet use. Studies were conducted to form links between Internet use and some emotional consequences. As a part of consumer behavior, online shopping was investigated from a cognitive and emotional perspective by Liu et al. (2020). They found

that people have hedonistic expectations for online shopping related to the emotions of excitement, enjoyment, and flow. Online gaming has also an emotional component. It was revealed that escapism is a motivating factor for online gaming (Zu et al., 2012). Thus, different aspects of the Internet use are related to both positive and negative emotions.

Considerable research investigating the effects of social networking on psychological well-being have documented consistent associations between prolonged use of the social networking sites (SNSs) and higher levels of depression, various phobias including fear of missing out and nomophobia, and lower levels of self-esteem and subjective well-being (see Metin-Orta & Çelik-Örücü, 2019 for a review). For instance, an empirical study revealed that long-term use of online social networking (i.e., Facebook use) is related to decreased life satisfaction and worse affective well-being (Kross et al., 2013). Similarly, the time spent on social networking is positively correlated with depression among high school students (Pantic et al., 2012) and young adults (Rosen et al., 2013). In particular, scholars proposed that when people spend more time on SNSs, they tend to perceive others as happier and having better lives than themselves (Chou & Edge, 2012). Likewise, social media use was related to increases in negative affect, which was explained by social comparison (Wirtz et al., 2021). Similarly, passive social network use, i.e. following but not posting on social media sites, was related to lower levels of positive emotions (Cheng & Nhan, 2021). Based on the aforementioned findings, it might be argued that students would feel worse when they check their friends' profiles or posts especially when they are in the class.

Considering cyberloafing as a problematic Internet use (Kim & Byrne, 2011) that is common among young individuals, the current study adopts a cognitive-behavioral perspective and examines the emotional correlates of cyberloafing behaviors among university students. Indeed, adolescence and young adulthood period are open to the risks associated with Internet use, such as cyberbullying, online risk-taking behaviors (Pujazon-Zazik & Park, 2010), smartphone addiction (Gökçearslan et al., 2016), and texting dependency (Ferraro, 2018). Therefore, this study might provide important implications in terms of finding ways of managing cyberloafing and promoting young adults' mental health.

As stated previously, only a few studies are addressing the emotional correlates of cyberloafing, which mainly focus on employers' affect in the work setting (e.g., Huma et al., 2017; Lim & Chen, 2012; Moody & Siponen, 2013). In one of these studies, scholars revealed that different types of online activities are related to different emotional outcomes in the work setting (Lim & Chen, 2012). That is, browsing was positively related to PA, while emailing was positively related to NA. Furthermore, it was proposed that at unpleasant times during work, cyberloafing in terms of browsing acts as a distraction, which in turn may increase PA (Simmers et al., 2008). In line with it, scholars have also focused on the underlying motivations of Internet/smartphone use among students in learning settings outside of the classroom (e.g., Fu et al., 2020). In particular, they proposed that decreasing negative emotions, such as boredom and increasing positive emotions are important motivations for students to engage in nonwork-related technology use while studying (Barry et al., 2015; Calderwood et al., 2014). Supporting this, students reported that they feel more relaxed and happy after engaging in media multitasking (Fan et al., 2016). Based on these findings, it might be argued that students would experience more positive emotions and less negative emotions having engaged in cyberloafing activities. Specifically, it was expected that specific cyberloafing behaviors (i.e., shopping, real-time updating, accessing online content, gaming/gambling, and sharing) relate to PA and NA. Accordingly, the following research hypotheses were proposed (See Fig. 1):

Hypothesis 1a: Shopping positively relates to PA.
Hypothesis 1b: Shopping negatively relates to NA.
Hypothesis 2a: Real-time updating positively relates to PA.
Hypothesis 2b: Real-time updating negatively relates to NA.
Hypothesis 3a: Accessing online content positively relates to PA.
Hypothesis 3b: Accessing online content negatively relates to NA.
Hypothesis 4a: Gaming/gambling positively relates to PA.
Hypothesis 4b: Gaming/gambling negatively relates to NA.
Hypothesis 5a: Sharing negatively relates to PA.
Hypothesis 5b: Sharing positively relates to NA.

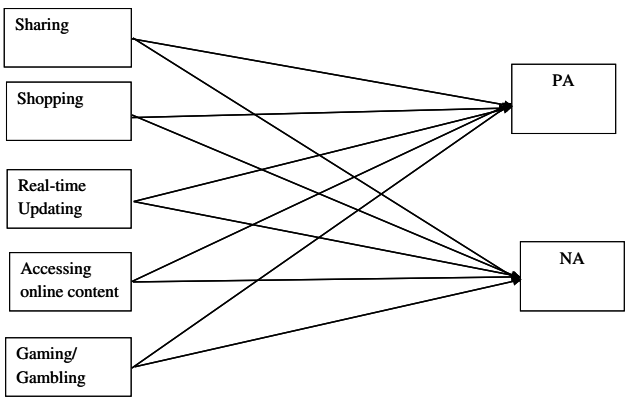

Fig. 1 The Proposed Model

Method

Participants and Procedure

The sample consisted of 267 undergraduates (172 females, 94 males, 1 not reported) with a mean age of 21.38 ($SD = 2.08$, ranging between 17 and 29). Most of the students were from the faculty of Arts and Sciences ($n = 168$), followed by Business and Administration ($n = 76$), and Engineering ($n = 20$) in two universities in Ankara, Turkey (3 students did not report their faculties). The sample consisted of 93 freshmen, 61 sophomores, 62 juniors, and 51 seniors. Most of the students had a cumulative grade point of average (CGPA) between 2.00 and 2.50 over 4.00 ($n = 65$), followed by lower than 2.00 ($n = 61$), between 2.50–3.00 ($n = 50$), between 3.00–3.50 ($n = 34$), and between 3.50–4.00 ($n = 22$), while 13.1% of the students ($n = 35$) had no calculated CGPA as they were at the middle of their first semesters. Considering the total time that participants spend daily on the Internet or mobile technology, it was revealed that 18.7 percent spend less than 2 h ($n = 50$) a day, 55.8% spend 2–4 h ($n = 149$), and 25.5% spend more than 4 h a day ($n = 68$) on the Internet. The Internet applications they use in their daily lives were as follows: WhatsApp 93.3% ($n = 249$), YouTube 92.9% ($n = 248$), Instagram 76.4% ($n = 204$), Snapchat 50.9% ($n = 136$), Facebook 47.2% ($n = 126$), and Twitter 38.2% ($n = 102$).

After ethics committee approval, the convenience sample of students filled out a questionnaire consisting of scales assessing cyberloafing behaviors, PA and NA, and demographical information form including internet or mobile technology usage. The students filled out the questionnaire voluntarily approximately for 20 min and received extra credit for their participation. Data was collected in 2019, which was before the common use of online education due to the COVID-19 pandemic.

Materials

Cyberloafing scale Participants' degree of cyberloafing behaviors in class was assessed by a 30-item cyberloafing scale developed by Akbulut and his colleagues (2016). The scale consists of five factors: sharing (9 items; i.e. "*I share content on social networks*"), shopping (7 items, i.e. "*I visit online shops for used products*"), real-time updating (5 items, i.e. "*I read tweets*"), accessing online content (5 items, i.e. "*I watch videos online*") and gaming/gambling (4 items, i.e. "*I play online games*"). Respondents reported the frequency of each behavior that they engage in the class context in general by using a 5-point scale (1 "*never*" to 5 "*always*"). Following the confirmatory factor analysis (CFA) and removal of three items, a total score for cyberloafing was calculated with the remaining items. Furthermore, separate scores were generated by averaging 8 items for sharing, 7 items for shopping, 3 items for real-time updating, 5 items for accessing online content, and 4 items for gaming/gambling. Higher scores indicate greater cyberloafing behaviors in class. The scale showed adequate psychometric properties in the Turkish sample with internal consistency coefficients of 0.93 for the total scale, 0.93 for sharing, 0.88 for shopping, 0.94 for real-time updating, 0.94 for accessing online content, and 0.81 for gaming/gambling (Akbulut et al., 2016). In the present study, the internal consistency coefficients calculated with the remaining items were 0.94 for the total scale, 0.91 for sharing subscale, 0.83 for shopping subscale, 0.77 for real-time updating subscale, 0.92 for accessing online content subscale, and 0.83 for the gaming/gambling subscale.

Positive and Negative Affect Schedule (PANAS) Emotions associated with cyberloafing in the class were measured by PANAS. The scale was developed by Watson et al. (1988) and adapted to Turkish by Gençöz (2000). It consists of 10 PA items (e.g. interested, excited) and 10 NA items (e.g. distressed, upset). Cronbach's alpha coefficients were reported as 0.83 and 0.86 for PA and NA, respectively for the Turkish version (Gençöz, 2000). The participants were asked to rate the extent to which they experience each affective state after engaging in cyberloafing in class on a 5-point scale (1 "*not at all*" to 5 "*too much*"). Following the confirmatory factor analysis and removal of three items in NA subscale, the internal consistency coefficients were calculated as 0.79 for NA and 0.91 for PA in the present study.

Demographic information form Participants reported demographic information including age, gender, department, grade level, CGPA, and the Internet or mobile technology usage. Participants' Internet or mobile technology usage was assessed by total time spent daily on the Internet, the number of Internet applications (i.e. Facebook, Twitter, Instagram, etc.), and the number of technology tools (i.e. laptop, tablet, smartphone).

Data analysis

For preliminary analyses, SPSS version 21.0 (IBM Corp., 2012) was used. To test the study hypotheses, the two-stage approach suggested by Anderson and Gerbing (1988) was employed. The first step of this approach involves testing a measurement model via confirmatory factor analysis (CFA) and the second step involves

testing structural models. In this approach, the measurement model specifies the relations between the observed variables (indicators) to their posited underlying (latent) variables, and the structural model specifies the causal relationships among the latent variables (Anderson & Gerbing, 1988). In the measurement model, 9 items in the cyberloafing scale were indicators of the sharing variable, 7 items were indicators of the shopping variable, 5 items were indicators of the real-time updating variable, 5 items were indicators of accessing online content, and 4 items were indicators of gaming/gambling variable. Besides,10 items of PANAS were indicators of PA, and the other 10 items were indicators of NA variable. In the structural model, the relationships of five cyberloafing dimensions with PA and NA were tested.

The analysis with measurement and structural models was performed with AMOS 17 (Arbuckle, 2008) using the maximum likelihood estimation method. The goodness of fit of the models was assessed by applying the following indices: The Chi-square (χ^2), goodness of fit index, the χ^2/degrees of freedom ratio, the Root-mean-square-error of approximation (RMSEA), the Goodness-of-fit index (GFI), the Comparative fit index (CFI), and Tucker Lewis Index (TLI). Values below 0.08 for RMSEA and values larger than 0.90 for CFI and 0.95 for GFI and TLI indicate a good fit (Kline, 2005).

Results

Preliminary analyses

Missing cases constituted less than 5% of the data. Thus, they were replaced with their means, as suggested by Graham (2009). Then, descriptive statistics and correlations among study variables were analyzed. As shown in Table 1, cyberloafing behaviors were positively correlated with PA, and time spent on the Internet or mobile technology, while negatively correlated with CGPA. However, they were not significantly correlated with NA, age, and grade level. Furthermore, PA was positively correlated with shopping, accessing, and gaming; however, it was not correlated with updating, sharing, age, grade, CGPA, and time spent on the Internet or mobile technology. NA was positively correlated with sharing, while being negatively correlated with CGPA. However, it was not correlated with updating, shopping, accessing, gaming, age, grade, and time spent on the Internet or mobile technology.

Besides, gender differences in study variables were analyzed by independent samples t-test. The results showed that there were significant gender differences in cyberloafing behaviors [$t(264) = -5.36$, $p < 0.001$, Cohen's $d = 0.66$] and PA [$t(264) = -3.82$, $p < 0.001$, Cohen's $d = 0.49$], but not in NA [$t(264) = -1.04$, $p = 0.30$, Cohen's $d = 0.12$]. Accordingly, males had higher scores on cyberloafing ($M = 2.23$,

Table 1 Descriptive Statistics and Correlations among Study Variables

	1	2	3	4	5	6	7	8	9	10	11	12
1.Age	21.38 2.08											
2.Grade	.68***	-										
3. CGPA	-.28***	-.08	-									
4.Time spent	-.10	-.13*	.03	-								
5. PA	-.03	-.10	-.007	.06	2.34 .93							
6. NA	-.009	.007	-.13*	-.02	-.11	1.87 .77						
7. Cyberloafing	-.02	.01	-.13*	.32***	.25***	.11	1.93 .72					
8. Sharing	-.02	.03	-.14*	.34***	.12	.13*	.85***	2.32 .85				
9. Shopping	.10	.13*	-.09	.21**	.25***	.10	.83***	.59***	1.66 .71			
10. Updating	-.06	-.06	.002	.17**	-.01	.05	.46***	.44***	.22***	1.69 .99		
11. Accessing	-.04	-.03	-.11	.26***	.28***	.04	.87***	.61***	.70***	.21**	2.16 1.32	
12. Gaming	-.09	-.10	-.16*	.21**	.29***	.09	.71***	.44***	.58***	.16**	.61***	1.53 .87

Notes. *p < .05, **p < .01, ***p < .001. Means and standard deviations are presented in the diagonal

$SD = 0.82$) than females ($M = 1.76$, $SD = 0.61$). In addition, males had higher PA scores than females ($M_{males} = 2.62$, $SD = 0.88$; $M_{females} = 2.19$, $SD = 0.90$).

Considering cyberloafing dimensions, females and males differ significantly in term of shopping [$t(264) = -5.19$, $p < 0.001$, Cohen's $d = 0.63$], accessing [$t(264) = -5.34$, $p < 0.001$, Cohen's $d = 0.67$], and gaming [$t(264) = -8.86$, $p < 0.001$, Cohen's $d = 1.01$], but did not differ in terms of sharing [$t(264) = -1.64$, $p = 0.10$, Cohen's $d = 0.21$] and updating [$t(264) = -1.15$, p = 0.25, Cohen's $d = 0.15$]. Males had higher scores on shopping ($M_{males} = 1.94$, $SD = 0.82$; $M_{females} = 1.49$, $SD = 0.59$), accessing ($M_{males} = 2.72$, $SD = 1.40$; $M_{females} = 1.85$, $SD = 1.18$), and gaming ($M_{males} = 2.09$, $SD = 1.12$; $M_{females} = 1.22$, $SD = 0.47$) than females.

Hypotheses testing

Measurement model A series of CFA was performed to check the validity of the study variables. First, CFA was performed for cyberloafing items. Sharing was measured by 9 items, shopping was measured by 7 items, real-time updating was measured by 5 items, accessing online content was measured by 5 items, and gaming/gambling was measured by 4 items. The fit indices for cyberloafing items initially did not suggest a good fit to the data, [$X^2(395) = 1215$, $X^2/df = 3$, $p < 0.001$, RMSEA = 0.09, GFI = 0.77, CFI = 0.85, TLI = 0.83]. Two items in real-time updating ('I post tweets', 'I comment on trending topics') had lower loadings (below 0.40), and the modification indices suggested one item in sharing ('I watch shared videos') to be loaded on four dimensions. Thus, three items were removed from the scale, and CFA was conducted with the remaining 27 items. The final measurement model provided a better fit to the data [$X^2(314) = 725.34$, $X^2/df = 2.31$, $p < 0.001$, RMSEA = 0.07, GFI = 0.83, CFI = 0.92, TLI = 0.91]. All the remaining items (8 items in sharing, 7 items in shopping, 3 items in real-time updating, 5 items in accessing online content, and 4 items in gambling) loaded on the appropriate dimension, ranging from 0.44 to 0.94. These five subscales of cyberloafing were used in the structural model.

Second, CFA was performed for PA and NA items. The fit indices for this scale initially did not suggest a good fit to the data, [$X^2(169) = 687.72$, $X^2/df = 4.06$, $p < 0.001$, RMSEA = 0.10, GFI = 0.78, CFI = 0.78, TLI = 0.75]. Three items in NA had lower loadings (below 0.40) and modification indices suggested these items be loaded on PA. Thus, these three items ('hostile', 'jittery', "irritable') were removed from the scale, and CFA was conducted with the remaining items. The final measurement model provided a better fit to the data [$X^2(118) = 303.77$, $X^2/df = 2.57$, $p < 0.001$, RMSEA = 0.07, GFI = 0.88, CFI = 0.91, TLI = 0.89]. All the remaining items (7 items in NA and 10 items in PA) loaded on the appropriate dimension, ranging from 0.41 to 0.83. These two subscales were used in the structural model.

Structural model The hypothesized model proposing relationships between five dimensions of cyberloafing and two dimensions of affectivity was tested in a structural model, and the results of the initial model showed a poor fit to the data [X^2 (1) = 5.17, $X^2/df = 5.17$, $p = 0.02$, RMSEA = 0.12, GFI = 0.99, CFI = 0.99, TLI = 0.84]. The investigation of the structural path parameters indicated that three out of ten possible paths from cyberloafing dimensions to affectivity were significant. That is, the path from sharing to NA, the path from accessing to PA, and the path from gaming/gambling to PA were significant. However, the paths from shopping and updating to PA and NA, the paths from accessing and gaming/gambling to NA, and the path from sharing to PA were not significant. The model was then modified by deleting these insignificant paths, as suggested by Byrne (2010), and was re-estimated. The revised model yielded a better fit to data [X^2 (8) = 12.10, $X^2/df = 1.51$, $p = 0.15$, RMSEA = 0.04, GFI = 0.99, CFI = 0.99, TLI = 0.98].

As shown in Fig. 2, PA was positively correlated with both accessing online content and gaming/gambling dimensions. Consistent with *Hypothesis 3a*, individuals who accessed online content more during class hours also tended to experience more PA. Furthermore, supporting *Hypothesis 4a*, individuals who had higher scores on the gaming/gambling dimension had higher scores on PA. However, the associations of PA with shopping (*Hypothesis 1a*), real-time updating (*Hypothesis 2a*), and sharing (*Hypothesis 5a*) were not supported. The findings, on the other hand, showed that NA was positively correlated with sharing. In line with *Hypothesis 5b,* individuals who checked their friends' posts and profiles, tag and chat with them, and write comments on social network sites tended to experience more NA.

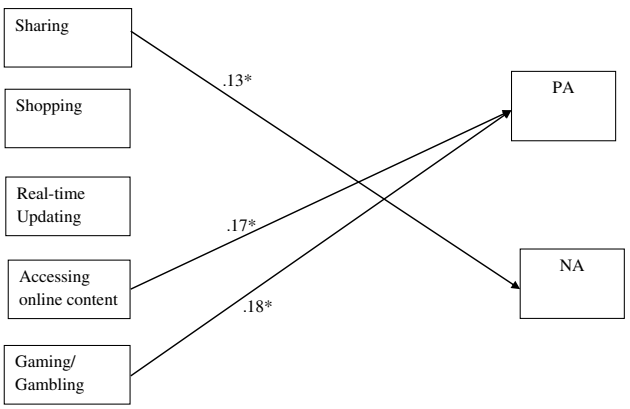

Fig. 2 Results of the Path Analysis. Note: Lines represent significant relations of the proposed model. Numbers are standard estimates (β) of the hypothesized relations. * $p < .05$

However, the associations of NA with shopping (*Hypothesis 1b*), real-time updating (*Hypothesis 2b*), accessing (*Hypothesis 3b*), and gaming/gambling (*Hypothesis 4b*) were not confirmed with the findings.

Discussion

The current study examines the relationship between cyberloafing behaviors, PA and NA among university students. The findings of the study are in line with previous research showing that different cyberloafing behaviors have different emotional consequences in work settings (Anandarajan & Simmers, 2005; Lim & Chen, 2012). Supporting the findings of the previous work (Fan et al., 2016), it was revealed that in-class Internet use, particularly, accessing online content (*Hypothesis 3a*) including activities, such as downloading music, videos or applications, and listening to music or watching videos online, and playing games (*Hypothesis 4a*) were associated with higher levels of PA, but not associated with lower levels of NA (*Hypothesis 3b and Hypothesis 4b)*. However, these activities can be regarded as a way to get rid of boredom or to feel enjoyment. As emotions including anxiety (Pekrun et al., 2002), anger, shame, and boredom (Pekrun & Stephens, 2012) are highly prevalent among students in the educational setting, and young individuals are highly motivated to use the Internet or smartphones to decrease boredom and increase positive emotions while studying (Barry et al., 2015; Calderwood et al., 2014; Fu et al., 2020), the students might have used accessing and gaming to alleviate negative emotions they experience during class. Therefore, engaging in online activities, such as watching videos and playing games in the learning setting might be associated with feeling better especially when the student is uninterested or inattentive with the course. Similarly, it was argued that surfing the web might distract individuals; thus, increase PA especially during stressful times at work (Anandarajan & Simmers, 2005).

Supporting *Hypothesis 5b*, the findings also revealed that the sharing dimension, including activities, such as checking friends' posts and profiles, sharing content on social networks, chatting with friends, watching shared videos, was related to higher levels of NA. Prior research also supports the negative emotional consequences of cyberloafing such that cyberloafing in the form of email was related to NA (Lim & Chen, 2012). Similarly, in a prior study, it was found that cyberloafing contributed to work stress (Özkalp & Yıldız, 2018). Besides, the finding concerning NA is not unexpected since considerable research has shown that spending more time on SNSs is associated with lower levels of life satisfaction and worse affective well-being (Cheng & Nhan, 2021; Kross et al., 2013). Furthermore, the previous studies demonstrated that prolonged SNS use is linked to higher levels of depression (Pantic et al., 2012; Rosen et al., 2013). For instance, researchers revealed that individuals who spend more time on Facebook; in particular, those who have unfamiliar friends on SNSs tend to perceive others as happier and having better lives than themselves (Chou & Edge, 2012). Moreover, it is proposed that when making judgments about others in SNSs, these individuals tend to use more availability heuristic; thus, making more stable and internal attributions about others (Chou & Edge, 2012). Hence, these distorted perceptions might make people more vulnerable to develop depression (Pantic et al., 2012).

The findings revealed no significant relationships of PA and NA with real-time updating (*Hypothesis 2a & 2b*) and shopping dimensions (*Hypothesis 1a & 1b*). Real-time updating items include activities related to Twitter use. When the rate of Twitter use among the participants is examined, it can be suggested that more than half of the students do not use Twitter in their daily lives. Thus, a possible explanation for real-time updating may be a lower rate of Twitter use among participants. For the shopping dimension, there may be a similar mechanism. Although it was not asked directly to the participants, according to the findings of Akbulut and colleagues (2017) students use online shopping less than workers. Thus, it can be suggested that students engage in cyberloafing behaviors consistent with their online daily activities.

Considering demographic variables, males tended to cyberloaf more than females, similar to previous research (Akbulut et al., 2017; Baturay & Toker, 2015; Garrett & Danziger, 2008a, 2008b; Karaoğlan-Yılmaz et al., 2015; Lim & Chen, 2012; Metin-Orta & Demirutku, 2020; Saritepeci, 2020). Among five cyberloafing dimensions, male students had higher scores in shopping, accessing online content, and gaming/gambling as compared to females. This finding is in line with past research showing gender differences in cyberloafing activities (Akbulut et al., 2016, 2017; Baturay & Toker, 2015; Dursun et al., 2018; Garrett & Danziger, 2008b; Kalaycı, 2010). That is, male students, engage more in leisure-related personal activities, such as shopping, gaming/gambling, and accessing online content (Akbulut et al., 2016, 2017; Baturay & Toker, 2015; Dursun et al., 2018). However, males and females did not differ in terms of real-time updating (i.e. reading and posting tweets) and sharing. Similarly, some scholars (Baturay & Toker, 2015; Kalaycı, 2010) yielded that cyberloafing for socialization purposes is equally engaged among male and female students. The frequent engagement of cyberloafing for socialization was explained by the collectivistic characteristic of Turkey (Hofstede et al., 2010). That is, being a part of a social group is more emphasized; thus, young people may spend more time on the Internet for socialization purposes (Baturay & Toker, 2015).

Converging with previous research among students (Akgün, 2020; Baturay & Toker, 2015; Durak, 2020; Karaoğlan-Yılmaz et al., 2015; Metin-Orta & Demirutku, 2020), cyberloafing behaviors were positively correlated with time spent on the Internet or mobile technology. Similarly, in previous studies among employees, habitual computer use at the workplace and high level of Internet usage skills were positively associated with cyberloafing (Durak & Saritepeci, 2019; Garrett & Danziger, 2008a; Vitak et al., 2011). This finding is expected since individuals have more opportunities to cyberloaf when they spend more time on the Internet (Baturay & Toker, 2015).

Practical implications

University provides a learning environment in which the students have subjective experiences of identity development, which can sometimes be emotionally demanding (Christie et al., 2008). At present, smartphones and the Internet accompany this process, especially considering the need for online education during the COVID-19 pandemic (Onyema et al., 2020). Therefore, it is important to understand the mechanism and the consequences of different aspects of Internet use, such as cyberloafing. There are three important implications of the current findings. First, the long term effects of NA in relation to cyberloafing can be problematic for the students' well-being and academic achievement. It was revealed that pathological Internet use is related to loneliness (Jia et al., 2018). Moreover, anxiety and boredom are related to school dropout intentions (Respondek et al., 2017). Besides, considering cyberloafing as multitasking, it may result in overload and distraction which in turn influences academic achievement (Gerow et al., 2010; Junco, 2012).

Second, as a result of increased PA related to cyberloafing, the students may engage in cyberloafing more frequently, which turns into a learning process. Reinforcing cyberloafing by increasing PA can be considered as a potential mechanism for the development of addiction. For instance, prior research has shown that cyberloafing is positively related to students' tendencies to have smartphone addiction (Gökçearslan et al., 2016). In another study, internet addiction was found to be positively related to negative emotional states, and negatively related to positive emotional states (Longstreet et al., 2019), indicating detrimental emotional consequences of excessive Internet use. Therefore, preventive interventions for addiction are needed to address the risks associated with cyberloafing.

Third, the current findings also provide practical implications in terms of effective learning in educational settings. The management of cyberloafing in class is difficult due to the availability of mobile devices and ease of access to the internet. Instead of banning technology, finding ways of minimizing technology's adverse impacts, while maximizing its effective learning outcomes may provide a better solution for misuse of the Internet in class (Taneja et al., 2015). In this regard, it is essential for researchers and educators to develop preventive interventions on healthy Internet use habits, emotion regulation strategies, and to find ways of transforming potential negative outcomes into positive effective learning (Baturay & Toker, 2015; Karaoğlan-Yılmaz et al., 2015; Rana et al., 2019; Taneja et al., 2015).

Limitations and avenues for future research

The study has several limitations. First, the sample consists of university students; thus, restricts the generalizability of the findings to broader populations. Second, the cross-sectional nature of the study does not permit the interpretation of causal relationships. Experimental studies are needed to decide whether cyberloafing activities result in PA/NA or vice versa. Future studies may also investigate changes in students' affect after engaging in cyberloafing through measurements at different time points. Although the current study tried to measure the reported emotions related to cyberloafing, the antecedents of cyberloafing may also play an important role. Future studies should investigate emotional antecedents and consequences of cyberloafing as well as its long term effects. Third, cognitive-behavioral theory places importance on the cognitive part of this process (Beck, 1976). There may be cognitive mediators of the relationship between cyberloafing behaviors and emotional consequences. For example, people's cognitive styles are important for their attitudes towards tasks (Cacioppo & Petty, 1982). Maio and Esses (2001) found that a high need for affect, i.e. a tendency to approach emotion-inducing situations, is related to a need for cognition as well as having extreme attitudes. Similarly, it was revealed that people's motivations to seek out emotional or cognitive information are related to their perceptions of others' warmth and competence (Aquino et al., 2016). Thus, motivations to engage in cyberloafing behaviors may be related to the need for emotion and cognition. Fourth, this study does not focus on the motivational factors of cyberloafing behavior. Scholars may explore course-related (i.e. in-class activities, type of course material) and individual-related antecedents of cyberloafing (i.e. values, concern for others) in their future research (e.g.,Yılmaz & Yurdugül, 2018; Yuwanto, 2018). Lastly, the data was collected in class, which increases the possibility of social desirability bias, that is an underreport of cyberloafing behaviors. In future research, scholars may use online surveys to reduce this bias (Akbulut et al., 2017).

Conclusion

The current study explains the relationship between cyberloafing behaviors and affect in the higher educational setting. It particularly highlights which cyberloafing dimensions are

related to PA and NA. Therefore, it contributes to the extant literature in terms of understanding the emotional correlates of in-class Internet use. Given the high prevalence of Internet use among students, it is of great need to investigate cyberloafing in educational settings.

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Data availability The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

Declarations

Conflict of interest The authors declare that they have no conflict of interest.

Ethical approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent Informed consent was obtained from all individual participants included in the study.

Ethical standards All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. The study was approved by Atilim University Human Research Ethics Committee. The reference number: 59394181–604.01.01–5132.

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