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Cyberloafing and social desirability bias among students and employees

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ABSTRACT

This study addressed the prevalence of cyberloafing and social desirability bias among 1339 students and 996 jobholders. An online survey was administered which included a five-factor cyberloafing scale and a two-factor social desirability scale. Each measure revealed acceptable fit values in confirmatory factor analyses. Findings showed that different types of cyberloafing had different prevalence rates. Students surpassed employees and males surpassed females with regard to overall cyberloafing scores. However, different types of cyberloafing revealed different patterns in individual comparisons. Employees surpassed students in terms of the impression management component of social desirability. Cyberloafing and social desirability were positively related, which implied the need for including social desirability as a covariate in further research.

1. Introduction

Intentional and redundant use of Information and Communication Technologies (ICT) during work hours has been among the problematic trends in contemporary technology-rich environments. Referred to as cyberslacking (Block, 2001; Greengard, 2000) or cyberloafing (Lim, 2002) in different resources, such unregulated and counterproductive use is usually studied in work-based settings (Andreassen, Torsheim, & Pallesen, 2014; Garrett & Danziger, 2008; Sheikh, Atashgah, & Adibzadegan, 2015; Vitak, Crouse, & LaRose, 2011). While some researchers underlined the negative consequences of the behavior such as economic loss (Greengard, 2000) or weaker system performance due to redundant bandwidth use (Sipior & Ward, 2002), others have addressed the restorative and entertaining aspects of recreational technology use by employees (Lim & Chen, 2009; Page, 2015).

Due to constant advances in online communication opportunities and mobile technologies, the extent of cyberloafing may trend upward and emerge as a prevalent way of wasting time at work. Scholars have also begun to investigate the topic in educational settings with university instructors (Zoghbi-Manrique-de-Lara, 2012), classroom teachers (McBride, Milligan, & Nichols, 2013), university students (Taneja, Fiore, & Fischer, 2015) and high school students (Baturay & Toker, 2015). Although the topic has been investigated in employee and student populations in different fields, a comparison of the two groups with regard to the extent and types of cyberloafing is missing in the literature.

An examination of the contemporary literature reveals that the majority of cyberloafing studies have resorted to survey research. Despite its practicality and potential for revealing phenomena within massive populations, survey research is threatened by the participant's behavior. It is well known that respondents weigh potential risks and benefits related to their responses, and provide the most rational or beneficial responses within a given social context. Therefore, participants tend to respond rationally rather than sincerely in self-report surveys. Such biased respondent behaviors may trend upward in stigmatizing phenomena like social taboos (e.g. sexual preference, income), illegal behaviors (e.g. shoplifting, drug use), immoral activities (e.g. cheating on one's partner) and extreme opinions (e.g. anti-Semitism). Besides, knowledge of such phenomena by unauthorized others (e.g., family, friends, law enforcement) can render material damage, loss of reputation or even law enforcement to the respondents (Singer, 2004). Since the collection, holding and/or dissemination of data pose threats for the researcher and the researched, these topics are considered *sensitive* for all stakeholders (Lee & Renzetti, 1990).

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Research into sensitive topics are further challenged by participants' personality traits and biases (Miller, 2012; Tourangeau & Yan, 2007). One of the most common and pervasive sources of threats jeopardizing the validity and reliability of research findings is *Social Desirability Bias (SDB)* (DeVellis, 2003; Fisher & Katz, 2000; Krumpal, 2013). Several scholars from different fields such as assessment (Merydith, Prout, & Blaha, 2003), marketing (King & Bruner, 2000), psychology (Paulhus, 1986, pp. 143–165), social studies (Krumpal, 2013) and management (Arnold & Feldman, 1981) considered SDB as a threatening factor for the integrity of research.

To our knowledge, the relationship between cyberloafing behaviors and social desirability bias has rarely been investigated. Such an inquiry may help scholars to see whether cyberloafing is a sensitive topic which triggers socially desirable responses in surveys. In addition, while the issue has been studied in work-based and educational settings separately; a comparison between employees and students with standard instruments is not available yet. In this regard, the current study aims to compare students and jobholders in different companies with regard to cyberloafing and social desirability constructs in addition to the investigation of the relationship between the two. The following section justifies the current research through empirical works on the topic.

2. Theoretical background

2.1. Antecedents of cyberloafing

One of the pioneering cyberloafing studies in the literature was conducted by Lim (2002), who considered cyberloafing as a deviant and organizationally harmful behavior. Cyberloafing was defined operationally as employees' misuse of internet during office hours for either personal browsing or e-mailing. The primary source of the behavior was regarded as perceived justice among employees, who tend to engage in cyberloafing as a neutralization method to restore justice. That is, there is an ongoing exchange between employers and employees, where time and effort from employees in doing work is exchanged with financial compensation, material goods, respect and appreciation from employers. If employees question the fairness of this process and perceive their employers to be unjust in their treatment or in the allocation of outcomes, they are more likely to engage in such misconduct. This assertion was further supported by empirical studies (Blau, Yang, & Ward-Cook, 2006; Lim, 2002; de Lara, 2007). For instance, Blau et al. (2006) reported that employees cyberloafed as a reaction to perceived organizational injustice and used cyberloafing to mitigate organizational policies.

Lim's cyberloafing classification as e-mailing versus browsing was based on available web technologies. In this regard, Blanchard and Henle (2008) revisited the construct, administered a survey to employed graduate business students, and classified cyberloafing as either minor or serious. While the former involved actions like personal e-mailing, browsing news or sports sites, and online shopping; the latter referred to behaviors like online gambling, surfing adult sites, using chat rooms and reading blogs. The study revealed that employees' perceptions of their coworkers' norms were related to minor cyberloafing, but not related to serious cyberloafing. The researchers' classification of cyberloafing as minor and major is plausible in many instances. On the other hand, the prevalence of each cyberloafing behavior during work hours should be investigated to find out which behavior is more counterproductive for a specific organization. In addition, constant advances in emerging online communication opportunities require updating the contents of the cyberloafing behaviors.

In this regard, Akbulut, Dursun, Dönmez, and Şahin (2016) maintained that current cyberloafing scales should be updated and extended beyond browsing and e-mailing. Upon unsuccessful validation of a popular cyberloafing scale with different samples, researchers proposed a new five-dimensional cyberloafing construct as sharing (e.g., posting content, chatting), shopping (e.g., online shopping, auctioning), real-time updating (e.g., tweeting), accessing online content (e.g., downloading music and videos) and gaming/gambling (e.g., betting, gaming online). The structure was piloted with 471 undergraduate students, explained 70.44 percent of the total variance and confirmed with both undergraduates and social networkers. Similar to the previous works by Lim (2002) and Blanchard and Henle (2008), the authors suggested that there were different types of cyberloafing which occurred at different rates. In addition, males and females differed with regard to individual types of cyberloafing.

Wagner, Barnes, Lim, and Ferris (2012) used the ego depletion model of self-regulation to explain the behavior. The idea is that sustaining self-control and restraining impulses depend on a limited but renewable resource, which is just like a muscle (Baumeister, Muraven, & Tice, 2000). While this resource gets tired when used, it recovers with rest (Askew et al., 2014). Cyberloafing is just a way of recovering this muscle-like self-control mechanism. On the other hand, the model cannot explain situations where individuals conduct cyberloafing even when they are fully rested (Askew et al., 2014).

Thus, additional theoretical frameworks were tested such as the Theory of Planned Behavior (Ajzen & Fishbein, 1985). Scholars who adopt this theoretical framework needed to address the role of subjective social norms, attitudes and perceived behavior control (Ajzen, 1985). In addition, the influence of these antecedents is mediated by the intention to engage in cyberloafing. That is, it is posited that the influence of subjective social norms (e.g., perceptions regarding others' cyberloafing behaviors), attitudes towards personal computer use at work and perceived behavioral control is mediated by the formation of intentions to engage in cyberloafing. Accordingly, formation of intentions to cyberloaf lead directly to actual cyberloafing. Such a framework has been validated through recent cyberloafing studies (e.g., Askew et al., 2014; Sheikh et al., 2015).

The Theory of Interpersonal Behavior (Triandis, 1977) was also tested in a recent study in order to account for the emotions involved in the cyberloafing behavior (Moody & Siponen, 2013). Such an approach required new variables to consider such as emotional factors (i.e., feelings), habits (i.e., previous occurrences of the same behavior) and social influence (Moody & Siponen, 2013). The particular rationale is that unregulated Internet use at work is a social behavior that is learned in a context through observation of such behaviors among other employees.

Further studies underlined the importance of additional antecedents such as job attitudes and organizational environment (Liberman, Seidman, McKenna, & Buffardi, 2011), personality traits (O'Neill, Hambley, & Bercovich, 2014; O'Neill, Hambley, & Chatellier, 2014); job burnout (Aghaz & Sheikh, 2016), self-control and organizational justice (Restubog et al., 2011). Most of these studies have been conducted in work-based settings. Since educational institutions and work-based environments are likely to have different organizational characteristics, a comparison of student and employee cyberloafing may be contributive to our understanding of the construct.

Regardless of the selected theoretical framework or instruments used, gender has been a significant predictor of cyberloafing. Since work status benefits do differ with regard to gender (Blau & Kahn, 2000), since men tend to spend more time on personal-interest activities than women (Bianchi, Milkie, Sayer, & Robinson, 2000), and since women face more pressure to sustain the balance

between the work and family life (Gambles, Lewis, & Rapoport, 2006), such differences are considered natural (Garrett & Danziger, 2008). Males often exceeded females with regard to cyberloafing (Baturay & Toker, 2015; Karaoglan-Yılmaz, Yılmaz, Öztürk, Sezer, & Karademir, 2015). Such a difference was observed particularly in terms of leisure-related surfing rather than non-work-related Internet communication (Garrett & Danziger, 2008). Similarly, recent investigations revealed that gender was a significant variable of interest, but its influence on cyberloafing varied with regard to the unique type of cyberloafing (Akbulut et al., 2016). That is, male dominance was visible in terms of gaming and gambling, but trivial in other types of cyberloafing. In addition, the influence of gender varied according to different data collection environments and target populations (e.g., pencil-and-paper surveys with students vs. web surveys with social networkers). Thus, investigating the gender influence for different cyberloafing types and in different contexts looks plausible in the current study.

In addition to gender comparisons, another focus of the current research is the comparison of students and employees. As indicated in the introduction, the topic has been proposed and primarily investigated in work-based settings through employee responses. Due to recent technology integration endeavors in educational settings, the topic is catching attention from education scholars as well. Mobile devices and notebooks have become significant components of contemporary instructional activities. However, their unregulated or off-task use is considered distractive and intrusive to instructional effectiveness in recent works (Awwad, Ayesh, & Awwad, 2013; Junco, 2012; Ragan, Jennings, Massey, & Doolittle, 2014). In this regard, in addition to work-based settings, cyberloafing seems to be counterproductive in instructional settings as well. However, a comparison between the two groups with regard to the extent or type of cyberloafing is missing.

Cyberloafing precautions are likely to differ in these two settings as well. While employers adopt several countermeasures to address cyberloafing such as blocking specific websites, providing reminders to reduce misuse (Glassman, Prosch, & Shao, 2015), or enforcing sanctions (Ugrin & Pearson, 2013), such precautions are less common in classroom settings where mobile devices are almost uncontrollable. Since individual differences, believes and ethical orientations of people may lead them to react differently to unregulated internet use measures (Alder, Schminke, Noel, & Kuenzi, 2008), a difference between student and employee population can be expected.

2.2. Social desirability bias (SDB)

In social science research, while the methodological focus is largely on the psychometric features of the data collection tools, little attention is paid to participants as a potential source of the measurement error (Castro, 2013). One of the constructs to address this issue is social desirability bias (SDB). King and Bruner (2000) defined SDB as individual's pervasive tendency to project themselves in the most favorable way relative to prevailing social norms. Hence, it can be conceptualized as respondents' temporary strategies to maintain socially favorable positive self-presentations in self-reports (Krumpal, 2013). That is, items conforming to social norms are perceived socially desirable. Conversely, items probing deviations from social norms are considered intrusive and socially undesirable. Respondents tend to admit and over-report socially desirable behavior, whereas reject and under-report socially undesirable ones (Dickson, 1997). In this regard, researchers need to be aware of SDB threats while interpreting their findings in self-report contexts.

Respondents' confidentiality concerns are expected to be a major source of social desirability bias. Singer (2004) discusses four sources of respondents' confidentiality concerns. The first one is a researcher-generated one, where researchers do not attend required rigor (e.g., leaving data unencrypted, leaving survey forms unattended) to identifying research data. Another source of confidentiality threat is the law enforcement, where researcher is obliged to share identifying research data by subpoena. The third source of confidentiality concerns is illegal intrusion to research data, where third parties gain access to data through hacking information systems. The last source of the threat is the possibility of statistical disclosure, where individuals are identified through cross tabulating survey data from different sources or by their outlier properties (e.g., single, male, education scholar, aged 45). Even though the likelihood of a confidentiality breach through these aspects is rather small, these factors are known to influence participants perceived risks and reduce research participation on sensitive topics (Singer, Mathiowetz, & Couper, 1993; Singer, Van Hoewyk, & Neugebauer, 2003).

Social desirability is not a unidimensional construct (Paulhus, 1986, pp. 143–165). The most common classification includes two dimensions as self-deception and impression management. While the former refers to the conscious tendency to see oneself in a favorable manner, the latter involves the conscious presentation of the self, such as deliberately falsifying test responses to create a favorable impression. Self-deception is a relatively consistent personal trait, which may not be considered as contaminant as the impression management in confounding research data (Zerbe & Paulhus, 1987). Previous work with target groups similar to the current context supported this argument, and revealed significant and negative correlations between problematic internet behaviors (e.g., cyberbullying) and impression management (e.g., Dönmez & Akbulut, 2016; Doane, Kelley, Chiang, & ve Padilla, 2013). Accordingly, cyberloafing is regarded as a deviant and harmful behavior (Lim, 2002), which may have a relationship with impression management.

Gender is a significant predictor of impression management where females' tendency to create a favorable impression tends to be higher than that of males (Dönmez & Akbulut, 2016). Accordingly, gender differences in terms of ethical decision-making are generally attenuated when such social desirability constructs are included in the analysis (Dalton & Ortegren, 2011; O'Fallon & Butterfield, 2005). The literature explains such gender differences in social desirability through the patterns of traditional and nontraditional gender role socialization (Davies, 2001). In this regard, impression management was considered as a plausible covariate in current gender comparisons.

In brief, while social desirability and cyberloafing have been studied in the literature separately, the relationship between the two has rarely been investigated as cyberloafing is a relatively new concept. In addition, both issues have been studied in work and education settings separately whereas a thorough comparison between the two groups is not available. Finally, the influence of gender on both variables has been justified in the previous literature, which required us to consider it as a significant background variable. Thus, the current study aimed to investigate:

1. The prevalence of cyberloafing types across students and employees,
2. Gender differences with regard to cyberloafing types,
3. Prevalence of social desirability constructs across students and employees,
4. Gender differences with regard to social desirability types,
5. The relationship between cyberloafing and social desirability.

3. Methods and procedures

3.1. Participants

Participants of the study were Turkish respondents to an online survey. Their current status (i.e., employee or student) was addressed through multiple validation questions. Respondents who were both students and employees were not considered. A total of 996 jobholders in different companies and 1339 students were included in the dataset. Employees' mean age was 31.25 (*SD*: 8.08) whereas students' mean age was 19.03 (*SD*: 3.85). Employees' daily internet usage (*M*: 5.03 h; *SD*: 1.72) was significantly higher than that of students (*M*: 4.67 h; SD: 1.75) ($p < 0.05$). Their perceived internet competency was almost equal (Employees: 3.81/5; students: 3.79/5). Of all students, 375 (28%) were high school students, whereas others were university students (*f*: 964; 72%). The majority of employees were university graduates (*f*: 902; 90.6%). Besides, male dominance was observed in both groups (>90%) due to the nature of the online data collection context.

3.2. Data collection tools

3.2.1. Cyberloafing scale

A recent five-factor cyberloafing scale by Akbulut et al. (2016) was used to address the frequency of contemporary cyberloafing behaviors during lectures and working hours. The scale was developed in a 5-point Likert form where the frequency of cyberloafing ranged from 1 (never) to 5 (a great extent). In order to reduce the response bias, the term 'cyberloafing' was not used explicitly in either scale instructions or items. The original scale was developed with 471 undergraduate students followed by confirmations with 215 undergraduate students and 515 social network users. Factors of the scale involved nine items for sharing (e.g., posting content, chatting, leaving comments), seven items for shopping (e.g., online shopping, auctioning, banking), five items for real-time updating (e.g., tweeting, retweeting), five items for accessing online content (e.g., downloading music, videos and applications) and four items for gaming/gambling (e.g., betting online, gaming online). As the scale was developed to address student cyberloafing during lectures, the current implementation to address employee cyberloafing during working hours should be validated as well. In this regard, random and large-enough samples (n: 200) were extracted from both students and employees to conduct confirmatory factor analyses, which are summarized in Table 1. In addition to acceptable fit values indicated in the table, the internal consistency coefficients of the factors were plausible: 0.87 for sharing, 0.88 for shopping, 0.93 for real-time updating, 0.87 for accessing online content and 0.74 for gaming/gambling (DeVellis, 2012; Pallant, 2011). The internal consistency coefficient for the whole scale was 0.92.

3.2.2. Social desirability scale

A two-dimensional scale developed by Akın (2010) was used to address the social desirability. This 5-point Likert scale was developed through both exploratory and confirmatory factor analyses with 851 undergraduate students at three different public universities in Turkey (i.e., Sakarya University, Marmara University, and Anadolu University). Factors of the scale were self-deception (13 items) and impression management (16 items). Items ranged from 1 (not appropriate at all) to 5 (completely appropriate), where higher scores indicated a higher degree of social desirability. In the current study, the factor structure of the scale was confirmed with a random sample of 200 employees and 200 students as summarized in Table 1. Internal consistency coefficients were 0.84 for self-deception and 0.88 for impression management.

3.3. Data collection

The data collection tool was administered online. Online surveys help researchers to retrieve more robust and focused data (Baltar & Brunet, 2012). Besides, as some individuals in formal school or work settings may not be active information technology users, they are not within the scope of the current cyberloafing research. Web surveys are also feasible in terms of the speed of data collection and elimination of missing data (Avcıoğlu, 2014). Furthermore, previous research has shown that people may exhibit lower social desirability when they respond to an online rather than a paper-based questionnaire (Joinson, 1999). That is, as the electronic media involves fewer social cues and allows people to have a sense of privacy, respondents are less inhibited in their responses (Avcıoğlu, 2014; Sproull & Kiesler, 1991).

In addition to above reasons, it is quite difficult to collect employee data through face-to-face administration. Official permissions from different affiliations along with managerial consents are needed for each company, which requires a heavy bureaucratic burden. Thus, a popular business simulation game on Facebook (i.e., *Capitalism*) with more than 500.000 active users was preferred for online data collection due to its convenience as the owner of the application let researchers conduct empirical studies in their context.

Announcements were made on the homepage of the application to call potential respondents. The links had specific prompts to invite active students and employees, who were directed to the survey pages. Participants were asked to indicate their frequency of cyberloafing behaviors during lectures (for students) and during office hours (employees). In addition, both groups responded to the social desirability scale.

A recent investigation in a similar target group revealed that bonus and no-bonus administrations revealed similar prevalence rates (Dönmez & Akbulut, 2016). Besides, provision of external awards tend to increase the response rate (Bosnjak & Tuten, 2003). Thus, the completion of the questionnaire was awarded with bonus

Table 1
Evaluation of the confirmatory factor analyses across samples.

Fit criteria	Cyberloafing (Students)	Cyberloafing (Employees)	SDRB (Students)	SDRB (Employees)	Ideal	Reference
Sample size	200	200	200	200	item n x 5	Kass and Tinsley (1979)
					100	Tanaka, Panter, Winborne, and Huba (1990)
$\chi 2/d$	889.02/394 = 2.26	878.07/394 = 2.23	807.43/376 = 2.15	816.82/376 = 2.17	2.5	Kline (2011)
RMSEA	0.079	0.078	0.076	0.077	0.08	Hooper, Coughlan, and Mullen (2008)
SRMR	0.091	0.106	0.07	0.073	0.10	Worthington and Whittaker (2006)
NNFI	0.92	0.95	0.94	0.93	0.90	Schumacker and Lomax (1996)
CFI	0.93	0.95	0.94	0.94	0.90	Hu and Bentler (1999)
GFI	0.76	0.77	0.78	0.77	0.90	Hooper et al. (2008)
AGFI	0.72	0.73	0.75	0.74	0.90	Schumacker and Lomax (1996)

points in the application to increase the response rate. The data collection was realized in February 2016 and lasted ten days.

3.4. Data analysis

Parametric tests were conducted through IBM SPSS Statistics 24. Besides, LISREL 9.01 was used for confirmatory factor analysis. Followed by the provision of descriptive statistics, two- and three-factor mixed-design analyses of variance (ANOVA) and mixed-design analyses of covariance (ANCOVA) were used to conduct relevant comparisons. Before the comparison analyses, skewness and kurtosis values were checked. As they were within the range of +1 and −1, normality assumptions were retained (Huck, 2012). After significant probability values, eta squared indices were provided to indicate the magnitude of effect size. Finally, relationships among continuous variables were summarized through Pearson correlation coefficients.

4. Findings

Students from high schools or universities did not differ in terms of self-deception ($p > 0.97$) or impression management ($p > 0.77$). Cyberloafing average of undergraduate students ($M = 2.93$; SD: 0.72) was slightly higher than that of high school students ($M = 2.62$; SD: 0.65) with a small effect size ($t_{1337} = 7.077$; $p < 0.05$; eta squared = 0.036). Then, three-factor mixed-design ANOVAs were conducted on dependent variables to see the interaction effect of gender by status (male-female vs. student-employee), which were not statistically significant (Cyberloafing $F_{1,2331} = 0.142$; $p = 0.71$; SDB $F_{1,2331} = 2.427$; $p = 0.12$). Thus, individual two-way ANOVAs were conducted for participant status and gender separately.

4.1. Cyberloafing with regard to participant status

Descriptive statistics of cyberloafing types with regard to participant status are provided in Table 2. A two-factor mixed-design ANOVA was conducted to examine five cyberloafing types with regard to participant status (student vs. employee). The main effect for status ($F_{1,2333} = 9.637$; $p < 0.002$; eta squared = 0.004), the main effect for cyberloafing type ($F_{4,2330} = 1082.214$; $p < 0.001$; eta squared = 0.317) and the interaction effect was statistically significant ($F_{4,2330} = 64.293$; $p < 0.001$; eta squared = 0.027). More specifically, the overall cyberloafing scores of students ($M = 2.84$; $SD = 0.72$) was significantly higher than that of employees ($M = 2.75$; $SD = 0.71$) with a small effect size. In addition, the prevalence of each cyberloafing type differed with a large effect size. That is, the least prevalent one was real-time updating ($M = 2.18$; $SD = 1.19$), followed by shopping ($M = 2.49$; $SD = 1.01$), gaming ($M = 2.66$; $SD = 1.01$), sharing ($M = 3.16$; $SD = 0.76$) and accessing online content ($M = 3.53$; $SD = 1.01$) successively. The interaction effect with a small effect size suggested that each cyberloafing type varied according to participants' status. More specifically, the two groups were similar in terms of sharing ($p = 0.88$). While employees outperformed students with regard to shopping; students outperformed employees in terms of real-time updating, gaming and accessing online content ($p < 0.001$), where all comparisons revealed small effect size indices. Inclusion of impression management as a covariate did not change probability values and effect size indices considerably.

4.2. Cyberloafing with regard to gender

Descriptive statistics of cyberloafing types according to gender are provided in Table 3. A two-factor mixed-design ANOVA was conducted to examine five cyberloafing types with regard to gender. The main effect for gender ($F_{1,2333} = 4.591$; $p = 0.032$; eta squared = 0.002), the main effect for cyberloafing type ($F_{4,2330} = 273.666$; $p < 0.001$; eta squared = 0.105) and the interaction effect was statistically significant ($F_{4,2330} = 17.858$; $p < 0.001$; eta squared = 0.008). More specifically, the analysis revealed that overall cyberloafing scores of males ($M = 2.81$; $SD = 0.72$) were significantly higher than that of females ($M = 2.68$; $SD = 0.60$) with a small effect size. In order to see the source of this difference, the interaction effect was examined. The analysis revealed that males and females were similar in terms of all cyberloafing types except for gaming/gambling, where males outperformed females with a small effect size ($p < 0.001$; eta squared = 0.023). The effect size and the significance level did not change after SDB was included as a covariate in the analysis.

4.3. Social desirability with regard to participant status

Descriptive statistics of SDB scales according to participant status are provided in Table 4. A two-way mixed-design ANOVA was used to investigate cyberloafing scores with regard to status. While the main effect for SDB ($F_{1,2333} = 0.160$; $p = 0.69$) was not significant; the main effect for status ($F_{1,2333} = 9.187$; $p = 0.0025$; eta squared = 0.004) and the interaction effect was statistically significant ($F_{1,2333} = 16.910$; $p < 0.001$; eta squared = 0.007). That is, impression management and self-deception averages were similar in the entire sample. However, overall SDB scores of employees ($M = 3.57$; $SD = 0.68$) were significantly higher than that of students ($M = 3.48$; $SD = 0.66$) with a small effect size. To see the

Table 2
Descriptive statistics of cyberloafing types with regard to participant status.

Cyberloafing type	Status	n	Mean	SD
Sharing	Employee	996	3,16	0,77
	Student	1339	3,16	0,75
	Total	2335	3,16	0,76
Shopping	Employee	996	2,67	0,95
	Student	1339	2,36	1,02
	Total	2335	2,49	1,01
Real-time updating	Employee	996	2,03	1,14
	Student	1339	2,28	1,21
	Total	2335	2,18	1,19
Accessing online content	Employee	996	3,33	0,99
	Student	1339	3,67	0,99
	Total	2335	3,53	1,01
Gaming/Gambling	Employee	996	2,55	1,02
	Student	1339	2,73	1,00
	Total	2335	2,66	1,01

Table 3
Descriptive statistics of cyberloafing types with regard to gender.

Cyberloafing type	Gender	n	Mean	SD
Sharing	Female	147	3,17	0,69
	Male	2188	3,16	0,77
	Total	2335	3,16	0,76
Shopping	Female	147	2,48	0,97
	Male	2188	2,50	1,01
	Total	2335	2,49	1,01
Real-time updating	Female	147	2,23	1,11
	Male	2188	2,17	1,19
	Total	2335	2,18	1,19
Accessing online content	Female	147	3,44	1,00
	Male	2188	3,53	1,01
	Total	2335	3,53	1,01
Gaming/Gambling	Female	147	2,07	0,94
	Male	2188	2,70	1,01
	Total	2335	2,66	1,01

Table 4
Descriptive statistics of social desirability bias with regard to participant status.

Social desirability construct	Status	n	Mean	SD
Self-deception	Employee	996	3,54	0,66
	Student	1339	3,50	0,66
	Total	2335	3,52	0,66
Impression management	Employee	996	3,59	0,78
	Student	1339	3,46	0,75
	Total	2335	3,52	0,77

source of this interaction effect, simple main effect analyses were conducted, which revealed that students and employees were similar in terms of self-deception ($p = 0.15$), whereas employees outperformed students in terms of impression management ($p < 0.001$; eta squared = 0.007).

4.4. Social desirability with regard to gender

Descriptive statistics pertaining to SDB by gender are provided in Table 5. A two-factor mixed-design ANOVA revealed that males and females did not differ in overall SDB scores ($F_{1,2333} = 0.499$; $p = 0.48$). However, the interaction effect was statistically significant with a small effect size ($F_{1,2333} = 11.284$; $p < 0.001$; eta squared = 0.005). This suggested that individual SDB types might have differed across genders. While males had higher self-deception scores ($p = 0.55$) and females had higher impression management scores ($p = 0.08$); these differences were not statistically significant.

4.5. The relationship between cyberloafing and social desirability

The correlation matrix provided in Table 6 reveals that all cyberloafing types were positively correlated with both self-deception and impression management. The correlations pertaining to self-deception were relatively higher. On the other hand, it should be noted that all coefficients were small, but statistically significant probably due to large sample size.

5. Conclusive remarks

5.1. Discussion and theoretical implications

One of the contributions of the current study is that data collection tools addressing cyberloafing and social desirability are valid for both employee and student samples. Findings further indicate that the factor structures, which were originally developed through face-to-face administrations, are valid for online administrations. Comparison of the online and pencil-and-paper surveys either suggested the psychometric equivalence of the two (Brock, Barry, Lawrence, Dey, & Rolffs, 2012; Hedman et al., 2010) or maintained that online versions may not always measure as effectively as conventional ones (Denniston et al., 2010). In this regard, it seems that the current measures are valid for both online and face-to-face administrations. Thus, additional comparisons or structural equations can be proposed through using current measures.

Table 5
Descriptive statistics of social desirability bias with regard to gender.

Social desirability construct	Gender	n	Mean	SD
Self-deception	Female	147	3,49	0,65
	Male	2188	3,52	0,66
	Total	2335	3,52	0,66
Impression management	Female	147	3,63	0,70
	Male	2188	3,51	0,77
	Total	2335	3,52	0,77

Similar to the previous literature, findings revealed that different types of cyberloafing demonstrated different prevalence rates (Akbulut et al., 2016; Blanchard & Henle, 2008; Lim, 2002). Thus, cyberloafing should not be treated as a unidimensional construct. The same inference looks valid for the social desirability as well. The unidimensional treatment of these constructs may mislead further researchers as both participant status (employee vs. student) and gender tend to be important predictors of different cyberloafing and social desirability constructs. Another implication of the results regarding prevalence of cyberloafing among employees and students is the evident need for redefinition of the construct. Even though Turkish school networks are limited to white-listed educational websites (social networks, shopping sites and gambling sites are not accessible through school networks), students reported considerable cyberlofing rates across all dimensions. This finding is replicated within employees' data where similar organizational regulations and limitations do exist. This fact suggests that employees and students use their own devices and data networks during lecture or work hours. Since these actions are still disturbing and counterproductive, it is plausible to consider them as cyberloafing. Therefore, scholars should avoid relatively older definitions of cyberloafing which considers it as the misuse of institutional Internet.

The small relationship between social desirability and cyberloafing may imply that cyberloafing is not considered as a serious deviant behavior confounded by social desirability. Even though cyberloafing is considered a deviant and organizationally harmful workplace misbehavior in the literature (Robinson & Bennett, 1995), its relationship with impression management was trivial in the current research. One of the reasons for this might be participants' perceptions regarding the appropriateness and seriousness of the behavior. Lim (2002) categorizes cyberloafing as a production deviance class, which is relatively a minor but organizationally harmful misdemeanor. Though current survey items involved misbehaviors, participants may have felt that their productivity or learning were not entangled. Moreover, cyberloafing may have emerged as a naturalization technique to organizational injustice (Sykes & Matza, 1957). That is, employees' and students' justifications to workplace misbehaviors might be on stage in an attempt to keep moral and upright the self-image.

Another explanation for the small but positive relationship between SDB and cyberloafing could be the anonymity in current online surveys. Previous work suggested that respondents tend to represent lower social desirability scores on online surveys compared to conventional ones (Lim & Teo, 2005; Lim, 2002). As electronic communication can filter much of the personal cues, augmented perception of anonymity may have resulted in higher quality data. Similarly, Joinson (1999) maintains that respondents report lower social desirability and higher self-esteem when they are anonymous rather than non-anonymous.

In terms of cyberloafing, employees had higher scores in shopping-related items, which was probably due to their socio-economic advantage. On the other hand, means pertaining to real-time updating, gaming and accessing online content were higher for students. This situation can be explained through the perceived prosecution risk and the existence of cyberloafing countermeasures. A recent large scale study on digital piracy revealed that perceived social, financial or performance risks were not influential in ceasing unethical and problematic downloading behaviors (Akbulut, 2014) whereas the prosecution risk was influential. Control mechanisms and such prosecution risks are likely to be higher in work settings, which might have reduced the likelihood of

Table 6
Correlations among the variables of the study.

	Sharing	Shopping	Real-time updating	Accessing online content	Gaming/Gambling	Self-deception
Sharing	–					
Shopping	0.443***	–				
Real-time updating	0.413***	0.451***	–			
Accessing online content	0.538***	0.328***	0.261***	–		
Gaming/Gambling	0.385***	0.413***	0.373***	0.424***	–	
Self-deception	0.347***	0.208***	0.139***	0.258***	0.180***	–
Impression management	0.276***	0.157***	0.086***	0.143***	0.064**	,748***

Correlation is significant at the *** 0.001 or ** 0.01 level (2-tailed).

cyberloafing for employees. Accordingly, recent empirical work reveals that technical and legal precautions are influential in ceasing the behavior or improving awareness. These studies have been primarily conducted with employees, and revealed the benefits of blocking websites in the black list, using reminder mechanisms to reduce the behavior (Glassman et al., 2015), implementing security systems to monitor Internet activities or employing sanctions on individuals who caught cyberloafing (Ugrin & Pearson, 2013).

Personal communications with the managers in different organizations further implied that employees are kept quite active in work-based settings, which might have prevented them from cyberloafing. On the other hand, such an intense daily program and control mechanisms may not be applicable to classroom settings. Thus, if students are kept active during class hours, there will probably be fewer chances of unregulated ICT use.

Employee and student differences were obvious in terms of impression management as well. This may imply a higher degree of social influence in work-based settings. The degree of impression management might also lead employees to underreport their cyberloafing activities. However, this argument is not fully supported in the current research, since including impression management as a covariate did not change the probability values and effect size indices to a considerable extent.

Previous findings in similar research contexts revealed that males and females were similar in terms of self-deception whereas females had higher impression management scores than males (Dönmez & Akbulut , 2016). Gender difference in terms of impression management is an expected finding in such a developing country where gender roles and community pressure are felt at an intense level. However, current findings pertaining to an online survey setting revealed a similar, but relatively less significant finding. Anonymous responding and sustaining confidentiality might be one of the reasons of this finding. Additionally, one may claim that when the target populations, variables of interest and degree of survey administration confidentiality change, gender differences may vary as well. These arguments require further research on new variables of interest and survey modalities.

Males and females were similar in terms cyberloafing types except for gaming/gambling, where males outperformed females. This was an expected finding, which was quite similar to the findings of a previous empirical study (Akbulut et al., 2016). However, the effect size and the significance level did not change a lot after the social desirability was included as a covariate in the analysis, which refutes previous findings observed in cyberbullying research (Dönmez & Akbulut, 2016). Thus, the contribution of social desirability as a covariate seems somewhat trivial in cyberloafing when compared to more problematic behaviors like cyberbullying.

5.2. Practical implications

As the current scale was validated across two new samples, it is plausible to use it in both educational and work-based settings to investigate the extent of different cyberloafing types. Besides, investigating the prevalence rates may help employers and instructors to understand the social norms pertaining to cyberloafing in their unique settings.

Investigating students' perceptions regarding the quality and nature of instructional activities along with employees' perceptions regarding organizational justice could be useful to understand the reasons of counterproductive Internet use behaviors. Such an investigation may be used to eliminate cyberloafing on one hand, and to increase organizational and instructional effectiveness on the other.

Cyberloafing prevalence rates across high school and undergraduate students, and across employees look parallel with the degree of access to emerging mobile technologies. Thus, potential technical countermeasures may be useful to a certain extent as it is not possible to limit the use of emerging mobile technologies. Such countermeasures are even more difficult to employ in educational settings. Thus, proper awareness raising interventions may be quite useful to eliminate further unregulated and unproductive use of emerging information and communication technologies.

5.3. Limitations and suggestions for further research

Since stronger assurance of confidentiality is likely to elicit higher response rates or better response quality (Singer, 2004), the current research was conducted through a web survey where participant anonymity was sustained. The degree of social desirability bias may change when face-to-face administrations in formal settings are realized. In addition, since all measures of the current study were self-report, there was always the possibility for inconsistent responding (Akbulut, 2015). This limitation could be eliminated in further research through validating current self-report measures with other measures.

Perceived risks pertaining to cyberloafing and appropriateness of the behavior should be studied in further studies to understand the relationship between social desirability and cyberloafing. In addition, employing countermeasures to prevent cyberloafing may alter the prevalence of cyberloafing as well as the degree of awareness regarding the behavior. Thus, reasons of cyberloafing should be addressed in further studies particularly in research contexts with different degrees of employee and student control.

Another interesting area of study could be the job types or characteristics of in-class activities leading to higher degrees of cyberloafing. Such a differentiation was not realized in the current study. For instance, knowledge workers or white collars may have higher chances of accessing online communication tools during office hours. Similarly, large-class lectures may be more likely to induce cyberloafing particularly when students are relatively passive. Thus, studying the characteristics of the cyberloafing contexts along with the reasons and prevalence of cyberloafing can be a plausible step for further research.

Finally, gender was considered as a significant predictor of both cyberloafing and socially desirable responding. However, the current sample was overwhelmingly male due to the nature of the data collection environment, which was a Facebook application. While both parametric and nonparametric tests revealed similar findings with regard to gender comparison, implications should still be considered as suggestive rather than definitive. Administering the current scales in different contexts with larger female populations is needed to validate the current research findings.

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