



## Explaining cyberloafing: The role of the theory of planned behavior



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### ABSTRACT

The Internet enables employees to be more productive than ever before, but it also allows employees a new way to escape from work—cyberloafing. In our investigation, we test the validity of the Theory of Planned Behavior as a model of cyberloafing. In Study 1, the goal is to provide an initial test of the theory. In Study 2, we cross-validate the results from Study 1 in a sample that approaches representing the general working population. Results unanimously support the main TPB model, the model accounting for 32% and 37% of the variance in cyberloafing in Studies 1 and 2, respectively. The discussion addresses both the theoretical impact and practical implications of our work.

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### 1. Introduction

Cyberloafing is a set of behaviors at work in which an employee engages in electronically-mediated activities, particularly through the use of the internet, that his or her immediate supervisor would not consider job-related (Askew, Coovert, Vandello, Taing, & Bauer, 2011; Lim, 2002). Examples of cyberloafing include watching YouTube and checking Facebook (Lim, 2002). Many cyberloafing behaviors, such as web-browsing, are familiar to most people (Lim & Teo, 2005). Other behaviors, such as playing video games at work over the internet, are rare, but are nonetheless cyberloafing (Lim & Teo, 2005). Fundamentally, cyberloafing is about wasting time at work through a computer – often times under the guise of doing actual work (Blanchard & Henle, 2008). It is this quality of cyberloafing – the ability to look like one is doing work while actually slacking off – that makes cyberloafing especially problematic for organizations (Wagner, Barnes, Lim, & Ferris, 2012). Certain employees can and do spend entire days cyberloafing (Wallace, 2004; Wallace, 2004).

Cyberloafing is important to study because it is the most common way that people waste time at work, and therefore is a

potential intervention point for increasing productivity (Naughton, Raymond, & Shulman, 1999). The focus of cyberloafing research should not be on trying to eliminate cyberloafing. Rather, the focus should be on understanding cyberloafing so that organizations can strike a balance between productivity and the needs and concerns of employees (de Lara, Tacoronte, & Ding, 2006). Being overly strict concerning internet usage at work could negatively impact employee satisfaction and perceived fairness, as well as hurt the retention of talented employees, whereas being overly lenient with regard to internet usage could have negative effects on productivity (Case & Young, 2002).

Researchers have proposed a couple different explanations of cyberloafing. Lim and her colleagues have suggested perceived justice as a major cause (Lim, 2002; Lim & Teo, 2006). People cyberloaf when they perceive that the company or its members has treated them unfairly. Cyberloafing is a way to get even, or restore justice, in this perspective (Lim, 2002). Mastrangelo and his colleagues have proposed the ABCD model of cyberloafing, which posits that cyberloafing can be understood by looking at the confluence of Access to computers, Breaks from work, Climate, and individual Differences (Mastrangelo, Everton, & Jolton, 2006).

Perhaps the theory that has garnered the most support from cyberloafing community is the ego depletion model of self-regulation (Baumeister, Muraven, & Tice, 2000; Wagner et al., 2012). In its general form, the ego depletion model of self-regulation posits that self-control is like a muscle: it fatigues with use but will recover with rest. Applied to cyberloafing, the theory states that when an employee's self-control resources are depleted, he or she engages in cyberloafing to recoup self-control resources

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(Wagner et al., 2012). The theory has been tested by three research teams, all three of which have found general support for the theory (Prasad, Lim, & Chen, 2010; Restubog et al., 2011; Wagner et al., 2012). Also consistent with theory of ego-depletion is the fact that self-regulation personality variables such as impulsivity (Everton, Mastrangelo, & Jolton, 2005), self-control (Restubog et al., 2011), and conscientiousness (Jia, 2008) have been implicated in cyberloafing.

Even though ego depletion theory has strong empirical support, the theory is unlikely to fully account for why people cyberloaf. First, the theory fails to account for non-resource draining environmental influences, such as social norms and the physical work environment, which have already been established as predictors of cyberloafing (Blanchard & Henle, 2008; Liberman, Seidman, McKenna, & Buffardi, 2011; Ozler & Polat, 2012). Second, the theory of ego depletion cannot account for why people still cyberloaf even when they are fully rested. Thus, to fully explain cyberloafing an alternative theory is needed that can address the limitations of the ego depletion model of cyberloafing.

In the present investigation, we sought to identify and test an alternative theory of cyberloafing. We examined the definition of cyberloafing and the literatures on related constructs, and concluded that the Theory of Planned Behavior (TPB) could be a valid theory of cyberloafing (Ajzen, 1985). The TPB, as applied to cyberloafing, posits that cyberloafing is caused by three distal antecedents – subjective social norms, cyberloafing attitudes, and perceived behavioral control – which are mediated through intentions to engage in cyberloafing. The main line of reasoning for identifying the TPB as a potential model was: (a) cyberloafing meets the definition of a withdrawal behavior – that is, cyberloafing reduces the amount of time an employee spends working to less than is what is expected by the organization; (b) withdrawal behaviors have been modeled successfully with the TPB, and (c) therefore, the TPB is likely to be an useful theory in understanding cyberloafing.

We tested the TPB as a model of cyberloafing in two studies. In Study 1, the goal is to provide an initial test of the theory. In Study 2, the goal is to cross-validate our results from Study 1 in a sample that approaches representing the general working population. In the section below, we expound upon the evidence for the TPB as a model of cyberloafing, and explore possible variations of the model. The discussion of variations of the model culminates in our hypotheses, which are tested in the two studies. We close with a discussion of the implications for both research and practice, as well as noting future directions.

## 2. Hypothesis development

### 2.1. The theory of planned behavior

The Theory of Planned Behavior posits that behavior is caused by three main antecedents: subjective social norms, attitudes, and perceived behavioral control (Ajzen, 1985). The theory also posits that the influence of these three antecedents is mediated by the formation of intentions to engage in the behavior (Ajzen, 1985). Thus, applied to cyberloafing, the theory posits that perceptions of referent others' cyberloafing behaviors, attitudes towards personal computer use at work, and perceived behavioral control in regards to cyberloafing contribute or inhibit to the formation of intentions to cyberloaf. Further, for people who form intentions to cyberloaf, their intentions lead directly to actual cyberloafing.

The TPB has shown to be a valid model for predicting behaviors conceptually similar to cyberloafing (Henle, Reeve, & Pitts, 2010; Pelling & White, 2009). For example, cyberloafing can be considered a type of withdrawal behavior – behaviors that reduce the

amount of time an employee spends working to less than what is expected by the organization (Spector et al., 2006) – and withdrawal behaviors (e.g., lateness, absenteeism, extended breaks) have been accurately modeled by the TPB (Brouwer et al., 2009; Henle et al., 2010). Likewise, technology-related behaviors such as instant messaging use (Lu, Zhou, & Wang, 2009), technology adoption (Mathieson, 1991), and use of social networking sites (Pelling & White, 2009) have all been successfully modeled with the TPB. Given that behaviors similar to cyberloafing have been explained by the TPB, we expect that cyberloafing can be understood within a TPB framework as well.

In addition to the theoretical evidence, empirical evidence for the TPB as a valid model of cyberloafing also exists. Attitudes have been found to correlate with cyberloafing (Liberman et al., 2011), a construct close to perceived behavioral control (i.e., the ability to hide cyberloafing) has been found to relate to cyberloafing (Askew, Coovert, Taing, Ilie, & Bauer, 2012), and social norms are arguably the best known predictor of cyberloafing (Askew, Vandello, & Coovert, 2010; Blanchard & Henle, 2008; Restubog et al., 2011). Thus, there is empirical evidence in the extant literature that converges with the theoretical evidence for the TPB as a valid model of cyberloafing.

### 2.2. Theoretical considerations

The TPB posits that one of the antecedents of behavior is perceived behavioral control, a variable conceptually close to the construct of self-efficacy (Ajzen, 2011). In regards to cyberloafing, one way to conceptualize perceived behavioral control is the person's self-efficacy to navigate to their favorite websites at work. In theory, this skill depends on three factors: the ability to navigate to desired website by typing in the URL or navigating to the website via a search engine (i.e., Google), the presence or lack of website-blocking technologies at work, and the ability to circumvent blocking technologies if they exist by using a proxy server or some other means. We call this overall skill, which is determined non-linearly by the three factors above, "website access self-efficacy". Website access self-efficacy has not been examined by cyberloafing researchers to date but a related construct, company monitoring, has, and has been found to have only a modest relationship with cyberloafing (Henle, Kohut, & Booth, 2009; Mastrangelo et al., 2006).

Another way to conceptualize perceived behavioral control is an employee's self-efficacy to engage in cyberloafing behavior without "getting caught". The perceived ability to hide cyberloafing refers to how well an employee can hide his or her computer activity from their coworkers and supervisors (Askew et al., 2011). Employees who are high on the ability to hide cyberloafing might have some or all of the following conditions: (a) their computer screens are not easily visible to coworkers or supervisors, (b) they can hear or see people approaching their work station, (c) they work in isolation or (d) their computer activity is not monitored. In contrast to website access self-efficacy, the ability to hide cyberloafing has been established as a predictor of cyberloafing (Askew et al., 2011; Askew et al., 2012). As such, we consider the ability to hide cyberloafing to be the stronger candidate for the perceived behavioral control variable.

A second conceptual issue concerning the TPB that needs to be addressed is subjective norms. There are two broad types of norms: what referent others say is acceptable behavior (prescriptive norms), and what referent others actually do (descriptive norms) (Cialdini, Reno, & Kallgren, 1990; Park & Smith, 2007). In regards to cyberloafing, prescriptive norms would be the extent that coworkers and supervisors would approve of the employee cyberloafing and descriptive norms would be the extent to which coworkers and supervisors themselves cyberloaf (Askew et al., 2010). Both types of subjective norms have been implicated in cyberloafing

(Askew et al., 2010; Blanchard & Henle, 2008; Restubog et al., 2011). Studies that have examined both norms in conjunction have found that *descriptive* norms account for a larger amount of unique variance in cyberloafing than *prescriptive* norms (Askew et al., 2010). Given the greater predictive power of descriptive norms over prescriptive norms, we consider *descriptive* norms to be the stronger candidate for the subjective norms variable.

### 2.3. Hypotheses

Having discussed the details of the TPB, we now present our main model of cyberloafing, possible alternative models, and hypotheses derived from these models. The main model that will be tested is a TPB model with the ability to hide cyberloafing and descriptive norms as the perceived behavioral control and subjective norms variables, respectively. The alternative models will incorporate prescriptive norms and/or website access self-efficacy. The four models are shown in Fig. 1.

The first hypothesis will examine the main assumption that led to the identification of the TPB as a potential model of cyberloafing – the assumption that cyberloafing is a type of withdrawal behavior. If cyberloafing is a withdrawal behavior, it should correlate with other withdrawal behaviors such as absenteeism, lateness, leaving early, and taking extended breaks. Thus, **Hypothesis 1** is:

**H1.** Cyberloafing will correlate positively with overall withdrawal. Cyberloafing will also correlate positively with the specific withdrawal behaviors absenteeism, lateness, leaving early, and taking extended breaks.

The second set of hypotheses focus on testing predictions derived from our main model of cyberloafing – a TPB model consisting of the variables descriptive norms, the ability to hide cyberloafing, and cyberloafing attitudes. We will test the following predictions derived from the main model:

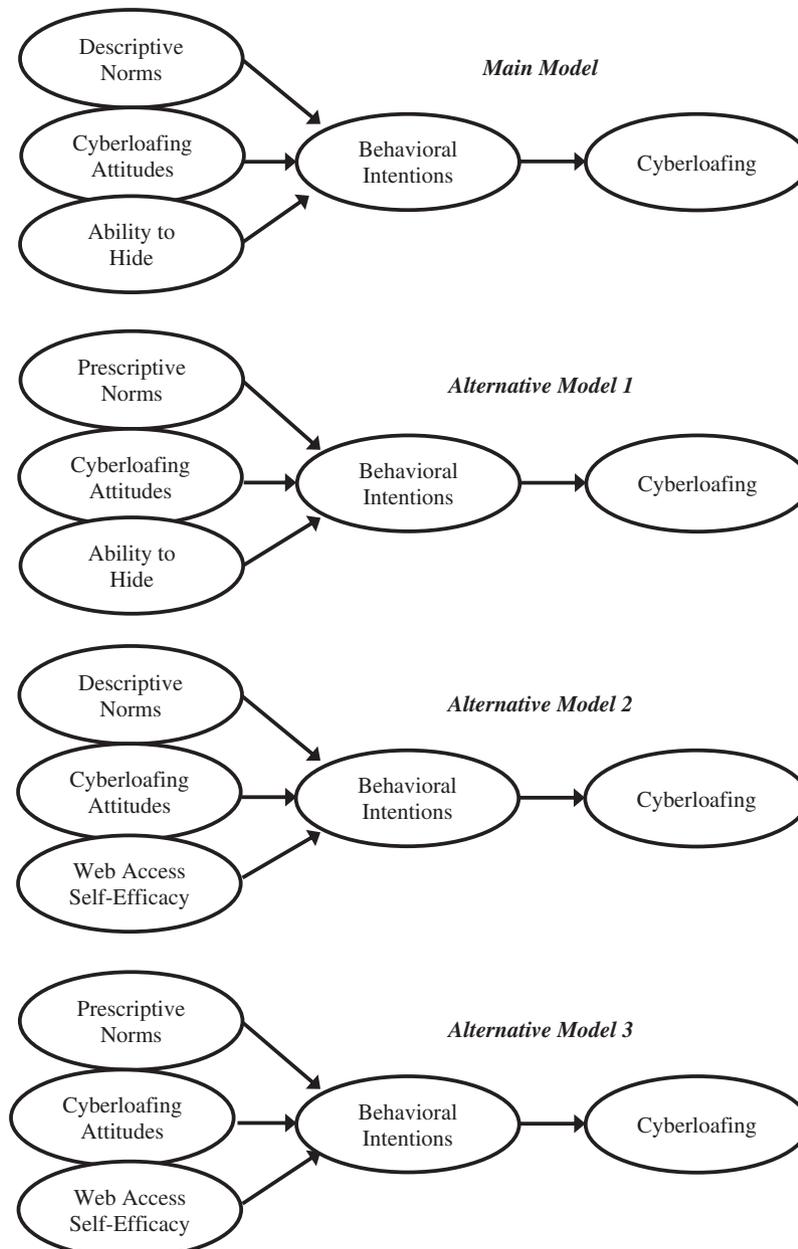


Fig. 1. Main and alternative models predicting cyberloafing.

**Table 1**  
Study one – descriptive statistics, correlations, and reliabilities.

Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Cyberloafing	2.14	.94	<b>.92</b>														
2. Descriptive norms	3.68	1.28	.36**	<b>.85</b>													
3. Prescriptive norms	2.69	.76	.19**	.34**	<b>.85</b>												
4. Cyberloafing attitudes	4.92	1.50	.41**	.26**	.26**	<b>.87</b>											
5. Ability to hide	3.59	1.72	.41**	.23**	.09	.25**	<b>.92</b>										
6. Web access self-efficacy	4.05	1.85	.18**	.15**	.14**	.15**	.32**	<b>.86</b>									
7. Behavioral intentions	4.99	1.40	.53**	.44**	.29**	.51**	.29**	.19**	<b>.79</b>								
8. Withdrawal	1.67	.59	.28**	.17**	.00	.14**	.12**	-.04	.22**	<b>.65</b>							
9. Lateness	1.86	.93	.17**	.15**	.08	.14**	-.01	.01	.18**	.69**	-						
10. Absenteeism	1.52	.64	.16**	.07	-.13*	.04	.08	-.05	.11*	.61**	.20**	-					
11. Extended break	1.83	.97	.20**	.15**	-.07	.07	.09	-.09	.14**	.78**	.33**	.37**	-				
12. Leaving early	1.46	.79	.25**	.09	.10*	.14**	.17**	.01	.17**	.71**	.31**	.31**	.40**	-			
13. Conscientiousness	3.95	.60	-.01	.00	-.08	-.06	.01	.01	-.06	-.28**	-.22**	-.12*	-.20**	-.23**	-		
14. Gender	1.75	.43	-.08	-.06	.01	-.01	-.07	-.01	.00	-.11*	-.08	.03	-.09	-.13**	.02	-	
15. Age	23.78	6.78	-.03	-.04	-.07	.04	-.06	-.19*	-.07	.05	.03	.04	.03	.04	.04	-.12*	-

Note: Reliabilities bolded in the diagonal. Gender coded male = 1, female = 2.

N = 432.

\*  $p < .05$ .

\*\*  $p < .01$ .

**H2.** Descriptive norms, cyberloafing attitudes, and the ability to hide cyberloafing will predict cyberloafing incremental to each other.

**H3.** Descriptive norms, cyberloafing attitudes, and the ability to hide cyberloafing will predict intentions incremental to each other.

**H4.** Intentions will predict cyberloafing incremental to descriptive norms, cyberloafing attitudes, and the ability to hide cyberloafing.

**H5.** The predictive power of the three antecedents – descriptive norms, cyberloafing attitudes, and ability to hide cyberloafing – to predict cyberloafing will be reduced when intentions is included as predictor in the regression model.

The third set of hypotheses focus on testing alternative models of cyberloafing – TPB models with subjective prescriptive norms and/or website access self-efficacy. Note that these alternative models are not mutually exclusive to each other or the main TPB model. To aid in presentation, we grouped predictions from each alternative model into single hypotheses.

**H6.** Prescriptive norms, cyberloafing attitudes, and the ability to hide cyberloafing will predict cyberloafing incremental to each other. Regression mediation analyses will support intentions as the mediator.

**H7.** Descriptive norms, cyberloafing attitudes, and website access self-efficacy will predict cyberloafing incremental to each other. Regression mediation analyses will support intentions as the mediator.

**H8.** Prescriptive norms, cyberloafing attitudes, and website access self-efficacy will predict cyberloafing incremental to each other. Regression mediation analyses will support intentions as the mediator.<sup>4</sup>

<sup>4</sup> We chose to use regression analyses to test our models over SEM techniques following the recommendation from the APA Task Force on Statistical Inference to use simpler analyses over complex ones when possible (i.e., the “minimally sufficient analysis”) (Wilkinson, 1999).

## 3. Study 1

### 3.1. Method

#### 3.1.1. Sample and procedure

For our initial test of the theory, we used a sample consisting of both student and non-student employees. Student employees were recruited via college classrooms and offered extra credit for their participation. Non-student employees were recruited via the snowballing method. To qualify for the study, participants had to indicate that they worked at a job that involved working with a computer. To prevent participants who did not meet this requirement from participating, a research questionnaire of equal length was provided as an alternative. In total, 429 employees participated in the study (72.70% female,  $M_{age} = 23.78$ , Caucasian = 53.20%, African American = 15.10%, Asian = 3.80%, Other = 23.90%).

#### 3.1.2. Measures

Below each of the measures used in Studies 1 and 2 are described. The reliabilities for each scale in Study 1 are presented in Table 1, and the reliabilities for each scale in Study 2 are presented in Table 3. The items for each of the measures used in Studies 1 and 2 can be found in Appendix A.

**3.1.2.1. Cyberloafing.** Cyberloafing was measured using an extended 19-item version of Lim’s (2002) cyberloafing scale (Blanchard & Henle, 2008; Lim, 2002). Participants rated the frequency they engaged in a list of cyberloafing behaviors on a 6-point scale (1 = Never, 4 = Once a day, 6 = Constantly).

**3.1.2.2. Subjective social norms.** Subjective prescriptive norms were measured using Blanchard and Henle’s (2008) social norms scale. Participants were asked to rate the extent that their supervisors and coworkers would approve of them engaging in non-work related emailing and web-browsing. Subjective descriptive norms were measured using a similar scale derived from Blanchard and Henle’s scale (Askew et al., 2010), which asks participants to rate the extent to which their supervisors or coworkers engage in non-work related activities online.

**3.1.2.3. Cyberloafing attitudes and intentions.** Attitudes and intentions were measured using scales developed for this study based

on an article by Ajzen (2002), “Constructing a TPB Questionnaire: Conceptual and Methodological Considerations”. For both attitudes and intentions items are rated on a seven-point scale. The attitudes scale consists of four items asking participants to rate the extent to which they think cyberloafing is valuable, enjoyable, beneficial, and good. The intentions scale consists of six items asking participants to rate their intentions to engage in six common cyberloafing behaviors (e.g., web-browsing, sending email) in the coming month.

**3.1.2.4. Perceived ability to hide cyberloafing.** The perceived ability to hide cyberloafing was measured using Askew et al.’s (2011). Ability to Hide Cyberloafing scale. Participants rated the extent to which they can get away with cyberloafing on a seven-point scale. An example item is: “I COULD hide what I do on my work computer from other employees”.

**3.1.2.5. Website access self-efficacy.** Website access self-efficacy was measured using a three item scale developed for this study. Since all employees with computers are effectively capable of navigating to a website, the scale focused on perceived behavioral control based on whether the company blocks the websites they want to visit and their ability to circumnavigate this obstacle. An example item is: “I can get to any website I want to at work”.

**3.1.2.6. Withdrawal.** Withdrawal was measured using four items from Spector et al.’s (2006) CWB checklist. Participants were asked to rate the frequency in which they engaged in four withdrawal behaviors (absence, lateness, leaving early, and extended breaks) on a 5-point scale (1 = Never, 5 = Every Day).

### 3.2. Results

Bivariate correlations are shown in Table 1. Supporting Hypothesis 1, cyberloafing was significantly correlated with all withdrawal behaviors and overall withdrawal ( $r = .28, p < .01$ ). All six of the predictors of cyberloafing posited by the TPB were significantly correlated with cyberloafing. The strongest predictors of cyberloafing in this study were intentions ( $r = .53, p < .01$ ), ability to hide cyberloafing ( $r = .41, p < .01$ ), attitudes ( $r = .41, p < .01$ ), and descriptive norms ( $r = .36, p < .01$ ). Age and gender were not significantly correlated with cyberloafing.

Regression analyses are shown in Table 2. The second set of hypotheses (H2–5) tested our main model of cyberloafing – the TPB model with subjective descriptive norms, cyberloafing attitudes, and the ability to hide cyberloafing as predictors of cyberloafing. Hypothesis 2 was supported; the three antecedents predicted cyberloafing incremental to each other ( $\beta_{d.norms} = .24, p < .01$ ;  $\beta_{attitudes} = .28, p < .01$ ;  $\beta_{ATHC} = .28, p < .01$ ), accounting for almost a third of the variance in cyberloafing ( $R^2 = .32, p < .01$ ). Hypotheses examining intentions as the mediator were examined based on Baron and Kenny’s (1986) criteria, and were also supported: The three antecedents predicted intentions incremental to each other (H3); intentions predicted cyberloafing incremental to the three antecedents (H4); and including intentions in the regression model with cyberloafing as the criterion reduced the predictive power of the three antecedents (H5). Though the predictive power of the three antecedents of cyberloafing was reduced they remained significant when behavioral intentions were entered, suggesting partial mediation. In sum, our main model of cyberloafing consisting of the TPB variables descriptive norms, attitudes, and ability to hide cyberloafing was completely supported in Study 1.

The third set of hypotheses (H6–8) focused on testing alternative models, TPB models including prescriptive norms and/or website self-efficacy as predictors. Some support was found for all the models, as they shared similar predictions with the main model.

**Table 2**  
Study one – multiple regression analyses.

Criterion/predictor	b	95% CI	$\beta$	R <sup>2</sup>
<i>Main model</i>				
<b>H2: Cyberloafing</b>				
Cyberloafing attitudes	.17	.12–.23	.28**	.32**
Ability to hide	.15	.11–.20	.28**	
Descriptive norms	.18	.12–.24	.24**	
<b>H3: Behavioral Intentions</b>				
Cyberloafing attitudes	.38	.30–.45	.41**	.38**
Descriptive norms	.33	.25–.42	.31**	
Ability to hide	.10	.03–.16	.12**	
<b>H4–5: Cyberloafing</b>				
Behavioral intentions	.22	.16–.29	.33**	.39**
Ability to hide	.13	.09–.17	.24**	
Descriptive norms	.11	.04–.17	.14**	
Cyberloafing attitudes	.09	.03–.15	.14**	
<i>Alternative Model 1</i>				
<b>H6: Cyberloafing</b>				
Cyberloafing attitudes	.20	.14–.25	.32**	.28**
Ability to hide	.17	.13–.22	.32**	
Prescriptive norms	.10	–.00 to .20	.08	
<b>H6: Behavioral Intentions</b>				
Cyberloafing attitudes	.41	.33–.49	.44**	.32**
Prescriptive norms	.29	.14–.44	.16**	
Ability to hide	.13	.07–.20	.16**	
<b>H6: Cyberloafing</b>				
Behavioral intentions	.26	.19–.32	.38**	.38**
Ability to hide	.14	.10–.18	.26**	
Cyberloafing attitudes	.09	.03–.15	.15**	
Prescriptive norms	.03	–.07 to .12	.02	
<i>Alternative Model 2</i>				
<b>H7: Cyberloafing</b>				
Cyberloafing attitudes	.20	.15–.26	.32**	.25**
Descriptive norms	.21	.14–.27	.28**	
Web access self-efficacy	.04	–.00 to .08	.08	
<b>H7: Behavioral Intentions</b>				
Cyberloafing attitudes	.40	.32–.47	.43**	.38**
Descriptive norms	.34	.26–.43	.32**	
Web access self-efficacy	.06	.00–.12	.08	
<b>H7: Cyberloafing</b>				
Behavioral intentions	.24	.18–.31	.36**	.34**
Descriptive norms	.12	.06–.19	.17**	
Cyberloafing attitudes	.11	.05–.16	.17**	
Web access self-efficacy	.03	–.02 to .07	.05	
<i>Alternative Model 3</i>				
<b>H8: Cyberloafing</b>				
Cyberloafing attitudes	.23	.18–.29	.38**	.19**
Web access self-efficacy	.05	.01–.10	.11*	
Prescriptive norms	.10	–.01 to .21	.08	
<b>H8: Behavioral Intentions</b>				
Cyberloafing attitudes	.44	.36–.51	.47**	.31**
Prescriptive norms	.27	.12–.42	.15**	
Web access self-efficacy	.07	.01–.13	.09*	
<b>H8: Cyberloafing</b>				
Behavioral intentions	.29	.22–.35	.43**	.32**
Cyberloafing attitudes	.11	.05–.17	.18**	
Web access self-efficacy	.03	–.01 to .08	.07	
Prescriptive norms	.02	–.09 to .12	.02	

\*  $p < .05$ .

\*\*  $p < .01$ .

However, none of the alternative models received complete support, which was the case for the main model. Prescriptive norms did not predict cyberloafing significantly in any of the regression models with cyberloafing as a criterion; and models involving the website access self-efficacy variable had only two significant predictors when cyberloafing was the criterion. Thus, only partial support was found for Hypotheses 6–8.

## 4. Study 2

### 4.1. Method

#### 4.1.1. Sample and procedure

Participants were recruited in the downtown area of a major U.S. metropolitan city. The first author and/or trained research assistants approached people on the sidewalk who were walking alone and appeared to not be in a hurry (the walking-alone criterion was employed to avoid non-independent observations that would result from two workers in the same work-group completing the survey). The script used when approaching potential participants was: “Excuse me. I’m a student and I’m working on a study. Would you mind filling out a short 1-page survey?” Those who agreed to participate were asked a follow-up question to ensure they were currently employed in a position that involves working with computers with Internet access; those who declined our invitation to participate were politely thanked for their consideration. The participants would then fill out the survey in the street while the first author or a research assistant waited at a moderate distance (about 40–50 feet) to allow the participant to feel a sense of privacy. After the participant completed the survey, we collected the survey and thanked him or her. This procedure allowed us to collect data from participants in a wide-range of industries (e.g., legal, government, medical, non-profit, banking, communications, real estate, healthcare). The participation rate was about 20%. In total, 202 employees were surveyed. 54.7% of the sample was male, and age was approximately normally distributed (see Fig. 2 for a distribution of age).

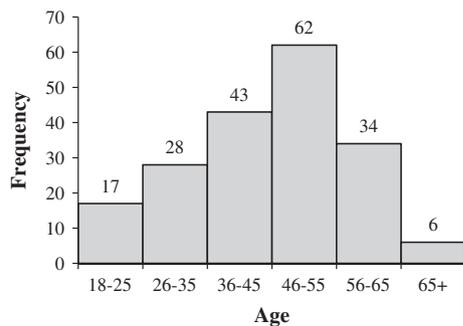


Fig. 2. Distribution of participant age in Study 2.

### 4.1.2. Measures

The same measures used in Study 1 were used in Study 2. To keep the survey on a single page and therefore more attractive to potential participants, we shortened the cyberloafing scale to seven items based on factor loadings and item content.

### 4.2. Results

Study 2 bivariate correlations are shown in Table 3. All withdrawal behaviors were significantly correlated with cyberloafing, supporting Hypothesis 1. As expected, all TPB predictors were significantly related to cyberloafing. Compared to the patterns of relationships in Study 1, the relationships among the variables were higher. The relationships between cyberloafing and its predictors followed a similar rank-order as the observed magnitudes in Study 1, with the exception of the ability to hide cyberloafing having a relatively lower rank order in Study 2. This is perhaps due to the fact that Study 2 likely had more employees from higher levels in their organizations, employees who have more power, who may have relatively less need to hide their cyberloafing (Vitik, Crouse, & LaRose, 2011).

Study 2 regression results are shown in Table 4. The second set of hypotheses (H2–5) focused on testing our main model of cyberloafing – the TPB model with descriptive norms and the ability to hide cyberloafing as predictors of cyberloafing. Again, Hypotheses 2–5 were supported. The three variables predicted cyberloafing incremental to each other ( $\beta_{d,norms} = .25, p < .01$ ;  $\beta_{attitudes} = .35, p < .01$ ;  $\beta_{ATHC} = .16, p < .01$ ) and all mediation analyses were consistent with intentions as the mediator. Descriptive norms, cyberloafing attitudes, and the ability to hide cyberloafing accounted for 37% of the variance in cyberloafing, even higher than the 32% of variance accounted for in Study 1. Thus, using a sample more representative of the general working population, Study 2 cross-validates and replicates the findings of Study 1.

The third set of hypotheses (H5–7) tested alternative TPB models – models including the prescriptive norms and/or website access self-efficacy. All three alternative models were supported by regression analyses with cyberloafing as the criterion, but not with behavioral intentions as the criterion. Thus, for all three models, there was support for the predictors as distal causes of cyberloafing, but some analyses were inconsistent with intentions as the mediator. This is in contrast to our main model, in which all hypotheses were supported. In sum, partial support was found for Hypotheses 6–8.

Table 3  
Study two – descriptive statistics, correlations, and reliabilities.

Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Cyberloafing	2.18	.99	<b>.76</b>												
2. Descriptive norms	3.16	1.48	.49**	<b>.92</b>											
3. Prescriptive norms	2.40	1.00	.43**	.52**	<b>.90</b>										
4. Cyberloafing attitudes	4.14	2.08	.52**	.51**	.47**	<b>.91</b>									
5. Ability to hide	3.46	1.88	.36**	.31**	.31**	.36**	<b>.89</b>								
6. Web access self-efficacy	3.70	1.56	.23**	.13	.16	.11	.17*	<b>.48</b>							
7. Behavioral intentions	2.73	1.07	.53**	.55**	.48**	.60**	.36**	.01	<b>.75</b>						
8. Withdrawal	1.64	.59	.31**	.37**	.22**	.28**	.30**	.04	.27**	<b>.73</b>					
9. Absenteeism	1.51	.57	.24**	.19**	.06	.27**	.30**	-.01	.20**	.67**	-				
10. Extended break	1.76	.80	.21**	.31**	.20**	.18**	.24**	.06	.13	.88**	.42**	-			
11. Leaving early	1.65	.80	.31**	.38**	.25**	.23**	.22**	.06	.31**	.86**	.36**	.65**	-		
12. Gender	1.47	.56	-.12	-.08	-.10	-.17*	-.14	-.07	-.15	-.21**	-.07	-.21**	-.21**	-	
13. Age	3.45	1.28	-.14*	.00	.04	-.02	.02	.05	-.02	.05	-.02	.04	.09	-.16*	-

Note: Reliabilities bolded in the diagonal. Gender coded male = 1, female = 2.

N = 200.

\*  $p < .05$ .

\*\*  $p < .01$ .

**Table 4**  
Study two – multiple regression analyses.

Criterion/predictor	b	95% CI	$\beta$	R <sup>2</sup>
<i>Main model</i>				
<b>H2: Cyberloafing</b>				.37**
Cyberloafing attitudes	.17	.10–.24	.35**	
Descriptive norms	.17	.07–.27	.25**	
Ability to hide	.09	.02–.16	.16*	
<b>H3: Behavioral Intentions</b>				.44**
Cyberloafing attitudes	.19	.12–.26	.37**	
Descriptive norms	.22	.12–.32	.31**	
Ability to hide	.08	.00–.15	.13*	
<b>H4–5: Cyberloafing</b>				.41**
Behavioral intentions	.25	.10–.41	.27**	
Cyberloafing attitudes	.12	.04–.20	.25**	
Descriptive norms	.11	.00–.21	.16*	
Ability to hide	.07	.00–.14	.14*	
<i>Alternative Model 1</i>				
<b>H6: Cyberloafing</b>				.33**
Cyberloafing attitudes	.18	.11–.25	.37**	
Prescriptive norms	.19	.05–.33	.19**	
Ability to hide	.09	.02–.16	.17*	
<b>H6: Behavioral Intentions</b>				.41**
Cyberloafing attitudes	.23	.16–.30	.45**	
Prescriptive norms	.25	.10–.40	.22*	
Ability to hide	.06	–.01 to .14	.11	
<b>H6: Cyberloafing</b>				.37**
Behavioral intentions	.25	.10–.39	.27**	
Cyberloafing attitudes	.13	.05–.20	.27**	
Ability to hide	.08	.00–.15	.14*	
Prescriptive norms	.09	–.06 to .24	.09	
<i>Alternative Model 2</i>				
<b>H7: Cyberloafing</b>				.36**
Cyberloafing attitudes	.19	.12–.26	.38**	
Descriptive Norms	.18	.08–.27	.26**	
Web access self-efficacy	.09	.01–.18	.17*	
<b>H7: Behavioral Intentions</b>				.43**
Cyberloafing attitudes	.21	.14–.28	.42**	
Descriptive norms	.24	.14–.35	.34**	
Web access self-efficacy	–.05	–.13 to .04	–.07	
<b>H7: Cyberloafing</b>				.42**
Behavioral intentions	.29	.14–.45	.31**	
Cyberloafing attitudes	.13	.05–.20	.26**	
Web access self-efficacy	.10	.02–.18	.15*	
Descriptive norms	.10	.00–.21	.15	
<i>Alternative Model 3</i>				
<b>H8: Cyberloafing</b>				.33**
Cyberloafing attitudes	.20	.13–.26	.41**	
Prescriptive norms	.20	.06–.34	.20**	
Web access self-efficacy	.11	.03–.18	.17**	
<b>H8: Behavioral Intentions</b>				.41**
Cyberloafing attitudes	.25	.18–.31	.48**	
prescriptive norms	.29	.14–.44	.26**	
Web access self-efficacy	–.06	–.14 to .03	–.08	
<b>H8: Cyberloafing</b>				.38**
Behavioral intentions	.29	.14–.43	.32**	
Cyberloafing attitudes	.13	.06–.20	.28**	
Web access self-efficacy	.11	.03–.19	.17**	
Prescriptive norms	.09	–.06 to .23	.08	

\*  $p < .05$ .

\*\*  $p < .01$ .

## 5. Discussion

In this investigation, we tested the TPB as a model of cyberloafing. In Study 1, we conducted an initial test of the theory. In Study 2, we attempted to replicate our findings using a sample that is fairly representative of the general working population. Results unanimously supported our main model and partially supported

the alternative models. All three predictors of the main model – descriptive norms, attitudes, and the ability to hide cyberloafing – were found to predict cyberloafing above and beyond the other predictors in both studies. The three predictors accounted for 32% and 37% of the variance in cyberloafing in Studies 1 and 2, respectively. Thus, results support the validity of the main TPB model as a model of cyberloafing.

### 5.1. Contributions to the literature

Our investigation makes three substantial contributions to the theoretical side of understanding cyberloafing. First we identified, tested, and supported a theory of cyberloafing that can address the short-comings of the Ego Depletion Model of Cyberloafing (Wagner et al., 2012). Thus, we believe we have contributed a second major theory of cyberloafing to the cyberloafing literature. The cyberloafing TPB can explain why people cyberloaf when they are fully-rested, and incorporates one of the most robust known predictors of cyberloafing, social norms (Askew et al., 2010; Blanchard & Henle, 2008; Restubog et al., 2011). The theory is also part of a larger framework, and thus cyberloafing researchers now have a long history from which to draw (Ajzen, 2005).

Second, our investigation places cyberloafing into the wider counterproductive work behavior literature. We found that cyberloafing met the definition of withdrawal behavior (it is a behavior that reduces the amount of time working to less than is expect by the organization) (Spector et al., 2006). Further, we found empirical links between cyberloafing and withdrawal behaviors (absenteeism, lateness, extended breaks, leaving early, and a composite withdrawal variable). As such, we conclude that cyberloafing appears to be a type of withdrawal behavior. If this is supported with future research, then it places cyberloafing as a lower-order construct of counterproductive work behavior.

Our third contribution to the literature is the different perspective of cyberloafing that arises when considering the nature of two constructs in the model: social norms and the ability to hide cyberloafing. Collectively, these two variables suggest that people are motivated to cyberloaf but avoid doing so to the extent that they believe it would be socially disapproved of and the extent to which they would get caught for doing it. This perspective of cyberloafing is exactly opposite of the current dominant self-control perspective of cyberloafing. From the self-control perspective, employees are *trying to work* but may lack self-control (or become depleted of their self-control resources) (Prasad et al., 2010; Restubog et al., 2011). In the perspective adopted here, employees are *trying to cyberloaf* and only work to the extent they have to. We believe our theory complements the current dominant perspective and helps provide an understanding of cyberloafing across a wider set of circumstances.

### 5.2. Implications for practice

The current investigation also makes two substantial contributions to organizational practice in regards to cyberloafing. First, the present situation is that there are many decision makers in organizations who are concern about cyberloafing (Scheuermann & Langford, 1997; Stewart, 2000) but are apprehensive to use heavy-handed practices such as restricting all computer use or monitoring all internet traffic (de Lara et al., 2006). These decision makers are in a difficult situation because the high frequency in which cyberloafing occurs (Harris Interactive., 2006; Wallace, P., 2004; Wallace, P.M., 2004) means that there is high potential for loss of productivity – if indeed cyberloafing reduces productivity (Stewart, 2000). Our model, and more specifically, the ability to hide cyberloafing, suggests a non-harmful way to reduce cyberloafing: structure the work environment in a way that increases the

transparency of computer-mediated activities. Orienting computer screens so that they face hallways instead of walls, setting up cubicles in ways that do not allow the employee to see people approaching their work station, and not isolating workers are three things organizational decision makers can do to reduce cyberloafing without being too heavy-handed. In all likelihood, having such transparency will lead to a reduction of copious amounts of cyberloafing, while still allowing employees to engage in some of the online activities they find enjoyable (Askew et al., 2011).

The second contribution to practice from this investigation comes from the fact that TPB is a framework that has already been used extensively to change behaviors. For example, the TPB has been used to promote effective job search behaviors (Ryn & Vinokur, 1992), discourage car use (Bamberg, Ajzen, & Schmidt, 2003), limit sugar intake (Beale & Manstead, 1991), conserve energy (Harland, Staats, & Wilke, 1999) and reduce drug-use (Armitage, Armitage, Conner, Loach, & Willetts, 1999). At the moment, caution should be used in applying TPB interventions to the reduction of cyberloafing, simply because we do not understand the consequences of cyberloafing in organizations very well (Askew et al., 2012). However, once we do understand the consequences of cyberloafing – and what cyberloafing behaviors we want to encourage, discourage and tolerate – we have a valid theory to serve as the basis for interventions (Ajzen, 2011).

### 5.3. Limitations and future directions

The current studies have a number of limitations. First, the data are all cross-sectional, limiting our ability to make causal inferences. In our studies, we found relationships that are consistent with the posited causal model, but it is possible that the directions of causation are reversed or reciprocal. For example, perhaps cyberloafing attitudes do not cause cyberloafing, but rather people develop attitudes to justify their cyberloafing. This limitation is somewhat mitigated by the fact that the TPB antecedents have been shown to be causal in other domains (Ajzen, 2011), and the fact that TPB interventions have been successful in changing behaviors (Ajzen, 2011). Nonetheless, future studies should use a longitudinal design to help establish the temporal precedent of the exogenous variables.

A second limitation is that the results of the studies might not generalize to all work populations. Our sample in Study 2, while higher on the representative continuum, is no doubt not a fully representative sample of people who use a computer at work. Even if the sample was perfectly representative of the *general* working population, our results still might not generalize to *specific* working populations. For example, in companies with high levels of nepotism, organizational justice could be the major driver of cyberloafing (Ahmadi, Bagheri, Ebrahimi, Rokni, & Kahreh, 2011). The generalizability of our results are boosted greatly by the consistency across two very different samples, but nevertheless future studies using a variety of populations will be necessary to ultimately examine the generalizability of the results.

Third, we used a cyberloafing scale to measure cyberloafing instead of directly recording cyberloafing behavior. Thus, the precision in which we measured cyberloafing depends on people's willingness and ability to recall their cyberloafing behavior in a typical work week. It was not possible for us to measure cyberloafing directly in all of the various organizations sampled here. Thus, we had to resort to using an established cyberloafing scale (Lim, 2002). However, the use of a scale over directly measuring behavior is only problematic to the extent that the use of the scale results in different covariances among the constructs than the use of a direct measure. As long as the rank order of cyberloafers was

relatively preserved, this limitation should not have influenced our results.

A fourth limitation is that our study does not address the consequences of cyberloafing. This precludes us from making strong recommendations in which to give organizational decision makers tasked with setting internet usage policies. Nonetheless, our studies provide a means to influence cyberloafing once the consequences of different cyberloafing behaviors are better understood. Future research should investigate the consequences of cyberloafing. After that, research should focus on testing internet usage policies, and the results of those studies should be used to inform practice.

### 5.4. Summary and conclusion

In this investigation, we aimed to fill a critical theoretical gap in the cyberloafing literature – to understand why people cyberloaf when they are fully rested – and to provide and test a theory of cyberloafing. From the literature we identified a potential theory of cyberloafing and tested that theory in two studies. Results from the two studies unanimously supported the TPB as a theory of cyberloafing. Specifically, we found evidence that cyberloafing is a withdrawal behavior, and that the three predictors – subjective descriptive norms, cyberloafing attitudes, and perceived ability to hide cyberloafing – predict cyberloafing above and beyond each other. We also examined other possible variations of the theory, helping pin down the exact nature of the theory as it relates to cyberloafing.

In short, we have provided evidence for the second major theory of cyberloafing. The first major theory, the ego depletion model of cyberloafing, explains why people cyberloaf when they are motivated to get work done (Baumeister et al., 2000; Wagner et al., 2012). The present theory explains why people cyberloaf when they are not drained of self-control resources. The next step for cyberloafing researchers is to pin down the consequences of cyberloafing in actual organizations. After that, research should focus on testing internet usage policies and the results of those studies should be used to inform practice.

## Appendix A. Scales and items used

### Descriptive norms

*How often do your COWORKERS do each of the following things during work hours?*

- Visit non-job related websites.
- Check non-work related email.
- Visit social networking sites (Facebook, etc.).

*How often do your SUPERVISORS do each of the following things during work hours?*

- Visit non-job related websites.
- Check non-work related email.
- Visit social networking sites (Facebook, etc.).

### Prescriptive norms

*My coworkers would approve of me...*

- ...visiting non-job related websites.
- ...sending/receiving non-work related emails.
- ...visiting social networking sites (Facebook, etc).

*My supervisors would approve of me...*

- ...visiting non-job related websites.
- ...sending/receiving non-work related emails.
- ...visiting social networking sites (Facebook, etc).

(continued on next page)

### Behavioral intentions

- I intend to shop online while at work at least once in the forthcoming month.
- I will use my phone for personal reasons while at work at least once in the forthcoming month.
- I will send at least a few text messages while at work in the forthcoming month.
- I intend to send a non-work related email at least once in the forthcoming month.
- I plan to browse non-work related websites at work at least a few times in the forthcoming month.
- I plan to use a social networking site (ex. Facebook) while at work at least once in the forthcoming month.

### Cyberloafing attitudes

For me, using the internet at work for personal reasons is...

- Worthless/valuable
- Unenjoyable/enjoyable
- Harmful/beneficial
- Bad/good

### Ability to hide cyberloafing

- I COULD hide what I do on my work computer from other employees
- I COULD pretend to be working on my computer and people would never know
- I COULD hide my computer activity if I wanted to

### Website access self-efficacy

- My favorite websites are blocked at work.
- My company blocks access to certain sites.
- I can get to any website I want to at work.

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