



**MONTCLAIR STATE**  
UNIVERSITY

Montclair State University  
**Montclair State University Digital  
Commons**

---

Department of Psychology Faculty Scholarship  
and Creative Works

Department of Psychology

---

1-1-2018

## Disentangling How Coworkers and Supervisors Influence Employee Cyberloafing: What Normative Information are Employees Attending to?

Kevin Askew

*Montclair State University*, [askewk@montclair.edu](mailto:askewk@montclair.edu)

Alexandra Ilie

*Illinois State University*

Jeremy A. Bauer

*Valdosta State University*

Daniel Simonet

*Montclair State University*, [simonetd@mail.montclair.edu](mailto:simonetd@mail.montclair.edu)

John E. Buckner

*Louisiana Tech University*

Follow this and additional works at: <https://digitalcommons.montclair.edu/psychology-facpubs>

See next page for additional authors



Part of the [Psychology Commons](#)

---

### MSU Digital Commons Citation

Askew, Kevin; Ilie, Alexandra; Bauer, Jeremy A.; Simonet, Daniel; Buckner, John E.; and Robertson, Thomas A., "Disentangling How Coworkers and Supervisors Influence Employee Cyberloafing: What Normative Information are Employees Attending to?" (2018). *Department of Psychology Faculty Scholarship and Creative Works*. 180.

<https://digitalcommons.montclair.edu/psychology-facpubs/180>


This Article is brought to you for free and open access by the Department of Psychology at Montclair State University Digital Commons. It has been accepted for inclusion in Department of Psychology Faculty Scholarship and Creative Works by an authorized administrator of Montclair State University Digital Commons. For more information, please contact [digitalcommons@montclair.edu](mailto:digitalcommons@montclair.edu).

---

**Authors**

Kevin Askew, Alexandra Ilie, Jeremy A. Bauer, Daniel Simonet, John E. Buckner, and Thomas A. Robertson

# Disentangling How Coworkers and Supervisors Influence Employee Cyberloafing: What Normative Information Are Employees Attending To?

Journal of Leadership & Organizational Studies  
2019, Vol. 26(4) 526–544  
© The Authors 2018  
Article reuse guidelines:  
sagepub.com/journals-permissions  
DOI: 10.1177/1548051818813091  
journals.sagepub.com/home/jlo  


Kevin L. Askew<sup>1</sup>, Alexandra Ilie<sup>2</sup>, Jeremy A. Bauer<sup>3</sup>,  
Daniel V. Simonet<sup>1</sup>, John E. Buckner<sup>4</sup>, and Thomas A. Robertson<sup>1</sup>

## Abstract

Cyberloafing—the use of an electronic device at work for an activity that an immediate supervisor would not consider work-related—is now the most common way that employees waste time at work. It is well established that social norms play a role in cyberloafing, but it is unknown what specific normative information employees attend to when deciding whether or not to cyberloaf. In Study 1, we tested which of four types of normative information could underlie the observed correlation between social norms and cyberloafing. We found that both perceptions of supervisor cyberloafing and perceptions of coworker cyberloafing accounted for unique variance in cyberloafing, and also discovered some evidence that the approval of these referents also had the same effect. In Study 2, we cross-validated these results from Study 1 using a sample that was reasonably representative of the general working population—supporting the generalizability of our findings from Study 1. Furthermore, we conducted supplemental analyses (relative weights analysis and polynomial regression) to untangle nuances in how normative data relates to cyberloafing. In Study 1, we also examined the role of *actual* norms—as opposed to perceived norms—and found evidence that actual supervisor cyberloafing does influence cyberloafing through employee perceptions of supervisor cyberloafing. Overall, this investigation serves to clarify how social influence plays a role in the cyberloafing phenomenon.

## Keywords

coworkers, cyberloafing, non-work-related computing, NWRC, social norms, supervisors

Cyberloafing is the use of an electronic device at work for activities an immediate supervisor would consider nonjob related (Askew, Coovert, Vandello, Taing, & Bauer, 2011). Examples of cyberloafing include off-task behaviors, such as checking e-mail, watching videos on YouTube, and posting on Facebook (Lim & Teo, 2005). Less common computer-mediated behaviors, such as playing video games at work, also fall within the domain of cyberloafing (Lim & Teo, 2005). Cyberloafing is pervasive in most organizations (Lim & Chen, 2012). Estimates of its prevalence vary, but studies that have examined its prevalence have found that employees typically cyberloaf for about 10% of their working hours or around 50 minutes per day (Lim & Chen, 2012).

The effect of cyberloafing on task performance is still unclear, as some argue cyberloafing harms productivity through lost time (Hartijasti, 2016) while others maintain it increases productivity by providing employees a respite (Lim & Chen, 2012). Others argue the weak association is evidence cyberloafing has little impact on performance for most employees (Askew, 2012). Although there is some

evidence cyberloafing can boost job satisfaction (Canaan Messarra, Karkoulian, & McCarthy, 2011), it can also have costs to organizations through increased use of company bandwidth, cyber-security risks, and exposure to legal liabilities (Andreassen, Torsheim, & Pallesen, 2014; Sipior & Ward, 2002). Given the prevalence of cyberloafing and its potential to either benefit or harm, it is important that researchers continue to refine their understanding of the phenomenon.

Many constructs have been implicated in cyberloafing, including self-regulation (Wagner, Barnes, Lim, & Kim,

<sup>1</sup>Montclair State University, Montclair, NJ, USA

<sup>2</sup>Illinois State University, Normal, IL, USA

<sup>3</sup>Valdosta State University, Valdosta, GA, USA

<sup>4</sup>Livonia, MI, USA

## Corresponding Author:

Kevin L. Askew, Department of Psychology, Montclair State University, 1 Normal Avenue, Montclair, NJ 07043, USA.  
Email: AskewK@montclair.edu

	Actual Norms			Perception of Norms		
	Coworkers	Combined	Supervisor	Coworkers	Combined	Supervisor
Prescriptive				Lee 2005: $r = .34$ Taneja 2006: $r_{E,INT} = .53$ Taneja 2006: $r_{WB,INT} = .42$ Taneja 2015: $r_{INT} = .51^*$	Askew 2014: $r = .43$ Bett 2014: $r = .46$ Blanchard 2008: $r = .43$ Bock 2010: $r = .62$ Chun 2006: $r = .62$ Freimark 2012: $r_{INT} = .38$ Galluch 2007: $r_{INT} = .16^*$ Hussain 2016: $r = .64^*$ Li 2010: $r_{INT} = .22$ Liao 2009: $r_{INT} = .15$ Pee 2008	Lee 2005: $r = -.03$ (ns)
Combined					Debruyne 2014: $r = .37$ Debruyne 2014: $r_{EM} = .27$	
Descriptive				Liberman 2011: $r = .20$ Taneja 2006: $r_{E,INT} = .68$ Taneja 2006: $r_{WB,INT} = .68$ Taneja 2015: $r_{INT} = .58^*$	Askew 2014: $r = .49$ Sheikh 2015: $r = .36$	

**Figure 1.** Visualization of how social norms have been operationalized in the literature.

Note. Classification is based on item content when available and in-text description when item content was not available. Studies in the “combined” category used items from two different referents and/or items measuring both prescriptive and descriptive norms, or referenced norms generically (e.g., “People important to me in my office would approve of me browsing the web for personal reasons”). Bivariate correlations are shown to provide a thin slice of each study’s findings. Bivariate correlations without a subscript are the correlations between that social norm and the criterion self-reported cyberloafing. Bivariate correlations with a subscript are the correlation between that social norm and a criterion denoted by the subscript ( $r_{INT}$  = intentions to cyberloaf,  $r_{E,INT}$  = e-mail intentions,  $r_{WB,INT}$  = web browsing intentions,  $r_{EM}$  = cyberloafing measured using electronic monitoring). Pee, Woon, and Kankanhalli (2008) did not report the bivariate correlation; however, the path coefficient in their SEM was significant.  
\*Study was conducted in an educational context as opposed to a business context.

2012), organizational justice (Lim, 2002), the absence of formal sanctions and electronic monitoring (Ugrin & Pearson, 2013; Zoghbi-Manrique-de-Lara & Olivares-Mesa, 2010), cyberloafing attitudes (Chun & Bock, 2006; Liberman, Seidman, McKenna, & Buffardi, 2011), conscientiousness (Buckner, Castille, & Sheets, 2012), and normative variables (Weatherbee, 2010). Moreover, these constructs may interact in complex ways (J-Ho, Gan, & Ramayah, 2017). While the cause of cyberloafing is complex, there is evidence other people in the work environment play a role in whether another individual will cyberloaf (Betts, Setterstrom, Pearson, & Totty, 2014; Bock, Park, & Zhang, 2010; Freimark, 2012; Galluch & Thatcher, 2007; Liberman et al., 2011; Polzer-Debruyne, Stratton, & Stark, 2014; Sheikh, Atashgah, & Adibzadegan, 2015; Taneja, 2006). Evidence supporting this conclusion comes from multiple studies. First, social norms are one of the most studied and robust predictors of cyberloafing (Weatherbee, 2010), with significant effects in at least 15 different studies (e.g., Betts et al., 2014; Freimark, 2012; Hussain, Saleem, & Malik, 2016; Polzer-Debruyne et al., 2014; Sheikh et al., 2015). Second, the relationship between social norms and

cyberloafing is consistently medium to strong in magnitude (e.g., Blanchard & Henle, 2008; Taneja, Fiore, & Fischer, 2015; see Figure 1 for a summary). Finally, social norm variables account for unique variance in cyberloafing beyond other established predictors (Liberman et al., 2011; Sheikh et al., 2015), indicating their effects cannot be easily explained by third variables.

Although social norms may guide the act of cyberloafing, we still do not understand what specific normative cues employees attend to. The problem centers on the treatment of social norms in the cyberloafing literature as a unitary construct (with exceptions; e.g., Taneja, 2006), when, in fact, social norm is an umbrella term referring to a collection of normative information (Lapinski & Rimal, 2005). According to the focus theory of normative conduct, social norms can be divided into descriptive—what members of the group *commonly do*—and prescriptive—what behaviors members of the group *commonly approve of*, and the theory further states norms will influence behavior when they are salient (Cialdini, Kallgren, & Reno, 1991). The two broad types of norms can be further subdivided when different sources of information (i.e., referents) are present (Ehrhart

& Naumann, 2004). In organizational settings, coworkers and supervisors serve as particularly important referents (Ehrhart & Naumann, 2004), resulting in the existence of four distinct social norms with regard to cyberloafing: supervisor cyberloafing (descriptive supervisor norm), supervisor approval of cyberloafing (prescriptive supervisor norm), coworker cyberloafing (descriptive coworker norm), and coworker approval of cyberloafing (prescriptive coworker norm; Ehrhart & Naumann, 2004).

Our current understanding of how normative information influences cyberloafing is crude because we do not understand which social norm—or combination thereof—underpins the norm-cyberloafing effect as no study compares all four types of social norms. This is problematic for two reasons. First, theories of cyberloafing including social norms as an antecedent could be overly broad and thus lacking in theoretical clarity. It is possible a single norm (e.g., supervisor approval of cyberloafing) is driving personal computer use at work. The second reason is practical: many managers are interested in curtailing cyberloafing, and there has been great interest in developing cyberloafing countermeasures (Glassman, Prosch, & Shao, 2015). Social norms could be a potential intervention point in this regard. However, we cannot confidently develop social norms-based interventions without understanding what the intervention point should be (Schultz, Nolan, Cialdini, Goldstein, & Griskevicius, 2007).

Given the above gaps in the literature, the purpose of the current investigation was to disentangle the relationship between normative information and cyberloafing. In short, we hope to address the following question: How do other people in the work environment influence an individual's cyberloafing? Our first goal is to examine the unique contribution of different social norms to determine what normative information employees attend to when deciding to cyberloaf (Studies 1 and 2). Our second goal is to examine the role of actual norms—not simply perceived norms—in the cyberloafing process (Study 1).

### Types of Social Norms

Understanding how other people influence cyberloafing is facilitated when diverse norms are conceptualized as separate constructs (Lapinski & Rimal, 2005). Two distinctions are important in this respect. First, we must distinguish prescriptive norms from descriptive norms, given that the focus theory of normative conduct states that these constructs represent different sources of human motivation (Cialdini et al., 1991). Descriptive norms motivate behavior by providing evidence about what is effective or adaptive, whereas prescriptive norms motivate behavior by promising social rewards or punishment (Kallgren, Reno, & Cialdini, 2000). For example, other employees might disapprove of people cyberloafing while, at the same time,

violate this prescription by engaging in copious amounts of cyberloafing. The second distinction is the source or referent of normative information (Lapinski & Rimal, 2005). Social norms can be conceptualized as the combined opinions or behaviors of many actors but they can also be conceptualized with more precision regarding specific referents (Lapinski & Rimal, 2005). At work, research suggests coworkers and supervisors are often the most critical referents (Ehrhart & Naumann, 2004). Supervisors are important because they have the power to deliver both formal and informal punishment to employees whereas coworkers provide evidence of what behavior is adaptive and can also deliver informal social punishments (Ehrhart & Naumann, 2004). Thus, to explain organizational behavior, it is important to make a distinction between norms as they relate to coworkers versus supervisors.

The aforementioned dimensions can be crossed to create a basic taxonomy of social norms. These types of social norms correspond to what *supervisors approve of* and how *supervisors behave* regarding cyberloafing, and what *coworkers approve of* and how *coworkers behave* regarding cyberloafing. The *prescriptive supervisor* norm refers to supervisors' approval or disapproval of subordinate cyberloafing. The *prescriptive coworker* norm refers to coworkers' approval or disapproval of another coworker's cyberloafing. The *descriptive supervisor* norm is the extent to which supervisors cyberloaf, whereas the *descriptive coworker* norm is the extent to which coworkers cyberloaf. Each social norm is a potentially unique source of information that could possibly drive cyberloafing.

A final distinction is the difference between objective or *actual* social norms and subjective or *perceived* social norms (Lapinski & Rimal, 2005). Objective social norms reflect what is true about the average behavior of the group or the group's average expectations for behavior. For example, an objective descriptive supervisor norm is how many minutes per day a supervisor cyberloafs. An objective prescriptive supervisor norm is the supervisor's actual opinion on the appropriateness of his or her subordinates' cyberloafing. Subjective social norms are group members' perceptions of the actual social norms, which will vary, at least slightly, across group members (Rimal & Lapinski, 2015). According to the focus theory of normative conduct, actual norms exert their influence on behavior through perceptions of these norms when the referent is relevant and the norms are made salient (Kallgren et al., 2000).

### Social Norms and Cyberloafing

A diagram summarizing the social norm variables that are related to cyberloafing is shown in Figure 1. While some studies make distinctions between social norm variables (e.g., Taneja, 2006), most generically label diverse normative variables in terms of social norms, social factors,

and so on (e.g., Blanchard & Henle, 2008). The placement of each study in the diagram was based on item content or text descriptions when items were not available. The combined categories indicate the study operationalized social norms using items measuring at least two of the basic types of social norms (e.g., a single social norm construct was operationalized using both supervisor and coworker prescriptive items).

Extant findings suggest some form of normative information is driving cyberloafing. First, social norms are a consistent predictor of cyberloafing and have shown strong relationships with cyberloafing across diverse work environments (Betts et al., 2014; Bock et al., 2010; Freimark, 2012; Galluch & Thatcher, 2007; Liberman et al., 2011; Polzer-Debruyne et al., 2014; Sheikh et al., 2015; Taneja, 2006). Moreover, most of these observed associations have been medium to large in magnitude (Cohen, 1988). Second, social norm variables have shown incremental validity over other established predictors of cyberloafing, such as attitudes toward cyberloafing (Liberman et al., 2011), electronic monitoring (Taneja, 2006), self-efficacy to hide cyberloafing (Sheikh et al., 2015), and organizational justice (Betts et al., 2014). Thus, it is likely the observed association between social norms and cyberloafing cannot be explained by other established predictors. Third, social norms are an established cause of other withdrawal behaviors, such as lateness (Blau, 1995) and absenteeism (Harrison & Price, 2003), which increases the probability social norms may have an association with cyberloafing as well.

Additionally, there is reason to suspect employees might attend to multiple types of normative information when deciding to cyberloaf. The strongest evidence comes from research by Taneja and colleagues, which found coworker prescriptive and descriptive norms each account for unique variance in intentions to cyberloaf (Taneja, 2006; Taneja et al., 2015). Other empirical evidence indicates supervisor-related variables, such as supervisor proximity, play a role in cyberloafing (Rahimnia & Mazidi, 2015), and multiple types of social norms have shown to incrementally predict other digital behaviors, such as adoption of new technology (Karahanna, Straub, & Chervany, 1999) and use of social networking sites outside of work (Cheung, Chiu, & Lee, 2011). Finally, from a decision-making perspective, it makes sense employees would use as many relevant sources of information as possible when deciding to engage in a risky behavior.

Although evidence suggests normative information contributes to cyberloafing, there is a major gap in the literature as to what normative information employees attend (or do not attend) to. Social norms are important (Weatherbee, 2010), and we have reason to believe that employees often attend to at least two distinct sources of information (Taneja, 2006; Taneja et al., 2015). However, it is not possible to

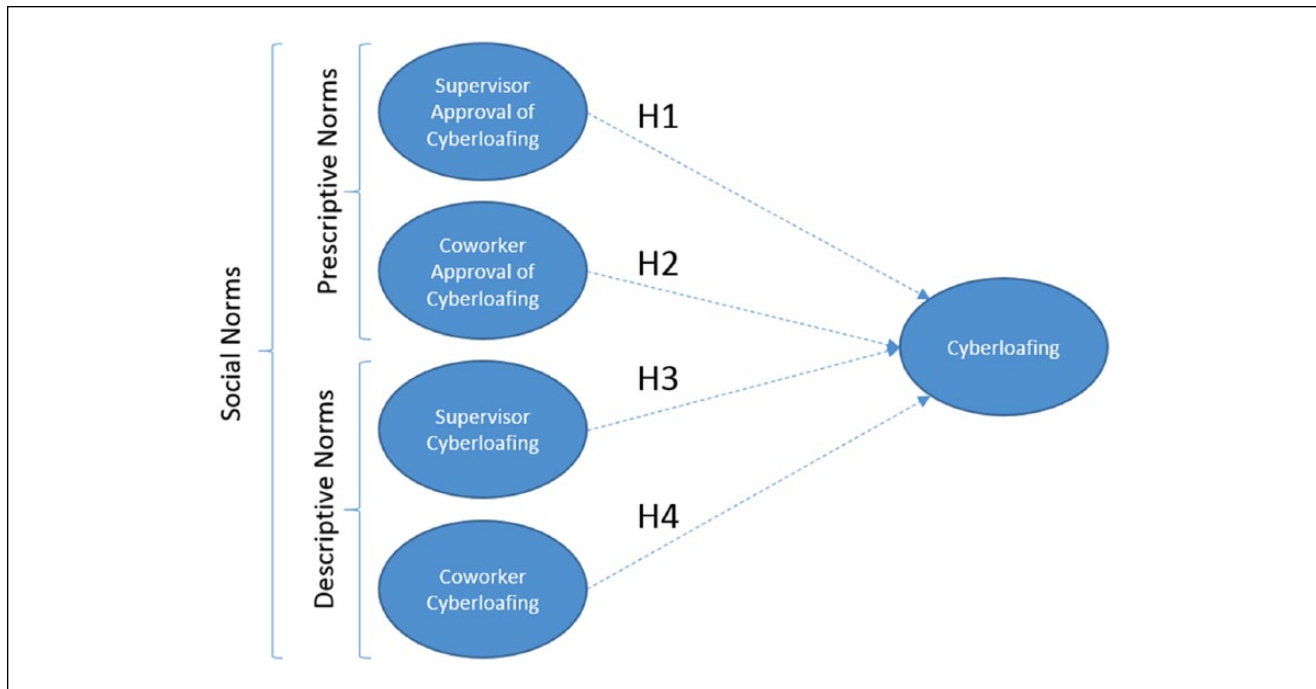
determine the sources of this information because social norms are associated with each other, creating a third variable problem, and there are no existing studies that have concurrently examined all four subjective social norms. A study simultaneously including all four types of social norm variables would be able to examine the extent to which a social norm provides nonredundant information regarding cyberloafing. While providing nonredundant information does not prove a particular social norm is a unique cause of cyberloafing, it is a necessary condition and is consistent with the notion that a particular social norm is a unique source of information for the potential cyberloafer (Cohen, Cohen, West, & Aiken, 2013).

A second major gap in the literature is whether actual social norms are a distal cause of cyberloafing as often theorized (e.g., Blanchard & Henle, 2008). We were unable to find a single study measuring actual supervisor or coworker norms of either kind. It is thus unclear the extent to which employees' perceptions of social norms are driven by actual norms versus individual differences in perception. We would expect actual cyberloafing norms to affect cyberloafing to the extent to which those norms are relevant (i.e., the extent to which a potential referent is important), known, and salient (Cialdini et al., 1991; Lapinski & Rimal, 2005).

### *The Current Investigation*

Given the above gaps, the current investigation sought to better understand how other people in the work environment influence personal computer use at work. The first goal is to empirically test what social norms provide unique information about cyberloafing, which would hint at what specific normative information might be driving cyberloafing behavior. The second goal is to test whether actual norms—specifically actual supervisor norms—are associated with cyberloafing through perceptions of these norms, as assumed by many researchers in the field (e.g., Blanchard & Henle, 2008; Liberman et al., 2011). For logistic reasons, we were not able to also examine the role of actual coworker norms.

The focus theory of normative conduct, in conjunction with a consideration of the physical and social context in which cyberloafing takes place, provides some guidance as to what social norms may play an active role in cyberloafing (Cialdini et al., 1991). However, the predictions that follow from this theory are somewhat ambiguous when applied to cyberloafing, as they depend on the assumptions that one makes about the salience of the norms, the relevancy of the different social norms, and the context in which cyberloafing occurs. As stated earlier, the focus theory of normative conduct maintains that (1) descriptive norms motivate behavior by providing information about what behaviors are adaptive and (2)



**Figure 2.** A visual representation of Hypotheses 1 to 4.

prescriptive norms motivate behavior by informing what behaviors will be socially rewarded or sanctioned (Kallgren et al., 2000). The theory also states norms are more likely to influence behavior when salient (Cialdini et al., 1991). Given supervisors have the power to deliver formal punishment and coworkers are the most similar referents to the potential cyberloafer (Ehrhart & Naumann, 2004), prescriptive supervisor and descriptive coworker norms may have the highest probability of accounting for significant incremental variance in cyberloafing. However, there are reasons to believe that the other two types of norms might incrementally predict cyberloafing as well. Namely, the prescriptive coworker norm might account for unique variance because coworkers can deliver informal social punishments to loafers (Ehrhart & Naumann, 2004). Similarly, the descriptive supervisor norm might account for unique variance in cyberloafing because it could provide salient information about what supervisors actually find acceptable regarding cyberloafing. It is also possible that both types of descriptive norms will drive cyberloafing because these norms are most salient, seeing as behaviors—as opposed to beliefs—are observable.

In short, there are reasons to believe that any one of the four norms might contribute to cyberloafing but for each norm either its relevancy and/or its saliency is in question. Appropriately, we take an inductive approach with regard to our first goal as advocated by Edwin Locke and others (Locke, 2007; Spector, Rogelberg, Ryan, Schmitt, & Zedeck, 2014) and propose the following non-mutually

exclusive hypotheses. These hypotheses are also presented visually in Figure 2:

**Hypothesis 1:** Perceptions of supervisor approval of cyberloafing will incrementally predict cyberloafing above and beyond the other three norms.

**Hypothesis 2:** Perceptions of coworker approval of cyberloafing will incrementally predict cyberloafing above and beyond the other three norms.

**Hypothesis 3:** Perceptions of supervisor cyberloafing will incrementally predict cyberloafing above and beyond the other three norms.

**Hypothesis 4:** Perceptions of coworker cyberloafing will incrementally predict cyberloafing above and beyond the other three norms.

The second goal of this investigation is to test the role of actual norms in the process of cyberloafing. The focus theory of normative conduct states that actual norms influence cyberloafing through perceptions of these norms when those norms are made salient (Cialdini et al., 1991; Kallgren et al., 2000). Given that the role of actual norms as a cause of behavior is well established in the social psychology literature (Kallgren et al., 2000; Rimal & Lapinski, 2015), we expect the data to show a pattern consistent with mediation for at least one of the two types of supervisor norms. We expect that if descriptive norms are seen as providing nonredundant information about the adaptability of cyberloafing, there will be an indirect

effect of the actual descriptive supervisor norm on cyberloafing mediated through employee perceptions. And we expect that if prescriptive supervisor norms are sufficiently salient there be an indirect effect of the actual prescriptive supervisor norm on cyberloafing. Thus, we propose the following hypotheses:

**Hypothesis 5:** Perceptions of supervisor cyberloafing will mediate the relationship between actual supervisor cyberloafing and employee cyberloafing.

**Hypothesis 6:** Perceptions of supervisor approval of cyberloafing will mediate the relationship between actual supervisor approval of cyberloafing and employee cyberloafing.

We tested our hypotheses across two studies using two different methods of data collection. In Study 1, we collected data from working adults attending a university. We also had these working adults collect actual normative data from their supervisors. This procedure allowed us to test our first four hypotheses regarding the incremental validity of perceived norms, as well as our hypotheses regarding the role of actual norms. In Study 2, we examined the generalizability of our findings with regard to the first four hypotheses from Study 1 by collecting data from a more representative sample of the general working population.

## Study 1

### Method

**Participants and Procedure.** The data for Study 1 were collected as part of a larger investigation on cyberloafing. We recruited working adults from university classrooms or asked nonworking students in these courses to recruit someone in exchange for extra credit. We also asked the participants to solicit their supervisor to participate in the study. To prevent subordinates from completing the supervisor section, it was made explicit to the subordinates that receiving extra credit was contingent upon completion of the subordinate portion only. Therefore, there was no incentive for subordinates to fake a supervisor's data.

To encourage honest responding from supervisors, data collection was arranged so that subordinates did not have access to their supervisors' responses. Subordinates solicited participation from supervisors by handing them a one-page instruction sheet, which included the supervisor survey URL and a linking code. Supervisors completed the survey online, and their responses were linked to the subordinate later by the researchers using the linking codes. This approach was successful in recruiting 447 subordinates and 130 supervisors from diverse industries. The subordinate sample was 75.6% female and had an average

age of 23.75 years. No demographic data were gathered from supervisors in order to keep the supervisor survey as short as possible.

Although a subset of the subordinate data was reported in a previous study (Askew et al., 2014), the focus of that study was to test different models of cyberloafing, which contained overall social norms as one of the antecedents. The focus of the current investigation is to disentangle the influence of other people in the work environment on cyberloafing, which is a unique contribution to the literature, and these results have not been presented elsewhere. A data transparency table is provided in the appendix.

### Materials

**Cyberloafing.** Cyberloafing was measured using an extended version of Lim's (2002) cyberloafing scale (Blanchard & Henle, 2008). The extended scale contains 18 items measuring a variety of cyberloafing behaviors, such as shopping online, watching videos on sites like YouTube, and looking for employment. Participants rated the frequency that they engage in each of the 18 behaviors at work on a 6-point scale (1 = *never*, 4 = *once a day*, and 6 = *constantly*). A sample item is "Play online games." The scale demonstrated excellent internal consistency in Study 1 ( $\alpha = .92$ ).

**Perceived Descriptive Norms.** Employees' perception of the amount of cyberloafing in which their supervisor and coworkers engaged was measured using two shortened versions of Lim's (2002) cyberloafing scale with the instructions changed to ask the participant to report the frequency of their coworkers' or supervisor's behaviors at work instead of their own. Each scale contained three items measuring the following behaviors: general web-browsing, checking e-mail, and checking social networking sites like Facebook. These scales demonstrated good reliability ( $\alpha_{\text{supervisor}} = .85$  and  $\alpha_{\text{coworkers}} = .86$ ).

**Perceived Prescriptive Norms.** Employees' perception of approval or disapproval of cyberloafing from coworkers and supervisors was measured using Blanchard and Henle's (2008) social norms scales. Each scale contained three items measuring general web-browsing, checking email, and visiting social networking sites (the social networking item was added to the current investigation). Participants rated their perception of the acceptability of the behavior at work for each referent on a 5-point scale (1 = *strongly disapprove*, 5 = *strongly approve*). A sample item is "My supervisor would approve of me visiting social networking sites (Facebook, etc.)." Both subscales showed good reliability ( $\alpha_{\text{supervisor}} = .90$  and  $\alpha_{\text{coworkers}} = .91$ ).

**[Actual] Descriptive Supervisor Norm.** Supervisor cyberloafing was measured in a comparable manner to how employee



**Table 1.** Descriptive Statistics and Correlations in Study 1.

Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10	11
1. Cyberloafing	2.14	0.94	<b>.92</b>										
2. Descriptive—Comb.	3.68	1.28	.36**	<b>.85</b>									
3. Descriptive—Sup.	3.20	1.52	.28**	.88**	<b>.85</b>								
4. Descriptive—Co.	4.11	1.42	.36**	.86**	.49**	<b>.86</b>							
5. Prescriptive—Comb.	2.69	0.76	.19**	.34**	.28**	.32**	<b>.85</b>						
6. Prescriptive—Sup.	2.17	0.96	.15**	.18**	.22**	.10*	.83**	<b>.90</b>					
7. Prescriptive—Co.	3.22	0.90	.16**	.37**	.24**	.43**	.81**	.36**	<b>.91</b>				
8. Actual Descriptive—Sup.	1.81	0.75	.43**	.31**	.36**	.21*	.28**	.31**	.14	<b>.91</b>			
9. Actual Prescriptive—Sup.	2.18	0.92	.31**	.15	.16	.14	.46**	.52**	.22*	.54**	<b>.84</b>		
10. Age	23.78	6.78	-.03	-.04	.01	-.07	-.07	-.01	-.11*	-.00	.03	—	
11. Gender	1.75	0.43	-.08	-.06	-.08	.01	.01	-.05	.07	.02	.04	-.12*	—

Note.  $N = 130\text{--}428$  (not all subordinates recruited their supervisors resulting in a smaller sample size for the correlations involving one or both supervisor-rated variables). Comb. = combined; Sup. = supervisor; Co. = coworker; SD = standard deviation. Variables 1-7 and 10-11 are subordinate-rated variables. Variables 8 and 9 are supervisor-rated variables. Coefficient alphas are shown in bold.

\* $p < .05$ . \*\* $p < .01$ .

cyberloafing was measured: by having the actor of the (typically private) behavior self-report behavior under honest conditions. We refer to this as *actual* supervisor cyberloafing to distinguish it from employee perceptions of supervisor cyberloafing and because self-reporting under honest conditions is a recommended way to measure counterproductive work behaviors (Bennett & Robinson, 2000; Fox & Spector, 1999). Lim's (2002) extended 18-item scale was used, and supervisors rated the frequency with which they engaged in cyberloafing behaviors at work on a 6-point scale (1 = *never*, 4 = *once a day*, and 6 = *constantly*). A sample item is "Play online games." The scale demonstrated high internal consistency in Study 1 ( $\alpha = .91$ ).

**[Actual] Prescriptive Supervisor Norm.** Supervisor acceptance of cyberloafing was measured using Blanchard and Henle's (2008) social norms scale with the items modified to reference oneself instead of one's supervisor or coworker. Supervisors were instructed to rate the extent to which they approved of each behavior, and the instructions made it clear that they were supposed to rate their approval or disapproval of the behavior during working hours. The scale consisted of three items in total. A sample item is "I approve of my employees visiting nonjob-related websites." The scale demonstrated good internal consistency ( $\alpha = .84$ ).

## Results

Descriptive statistics and correlations among the study variables are shown in Table 1. As expected, the four subjective social norms were all significantly correlated with cyberloafing. Hotelling's  $t$  tests revealed that the two descriptive subjective norms were correlated more strongly with cyberloafing than the two prescriptive subjective norms ( $r_{DN,Sup} = .28$ ;  $r_{DN,Co} = .36$ ,  $r_{PN,Sup} = .15$ ;  $r_{PN,Co} = .16$ ).

No clear pattern emerged regarding what referent was more strongly associated with cyberloafing. There was good discriminant validity for the four basic social norms, with inter-correlations ranging from .10 to .49. Therefore, employees can distinguish among coworker expectations, coworker behavior, supervisor expectations, and supervisor behavior. Also in line with expectations, the two *actual* supervisor norms were significantly correlated with [subordinate] cyberloafing.

Next, we examined the incremental validity of the different social norm variables to test what social norms might account for unique variance in cyberloafing. If employees are consistently using a social norm as a source of information in their decision making, then that social norm should be consistently significant across multiple regression analyses. Social norms that are not consistently utilized by employees or provide redundant information should not be significant across analyses.<sup>1</sup> Results from the multiple regression analyses are shown in Table 2. As expected, in every analysis, at least two of the four basic social norms were significant—suggesting that employees are using multiple social norms as sources of information in the process of deciding whether or not to cyberloaf. Regarding Hypotheses 1 to 4—which collectively addressed the question of what social norms might drive cyberloafing—two social norms were consistent predictors of cyberloafing across analyses: descriptive coworker norms and descriptive supervisor norms. Model 5 was supported as a potentially parsimonious explanation of how social norms influence cyberloafing,  $\beta_{DN,Sup} = .11$ ,  $p < .05$ ;  $\beta_{DN,Co} = .30$ ,  $p < .01$ ;  $\beta_{PN,Sup} = .11$ ,  $p < .05$ ;  $R^2 = .15$ , based on the criteria of no nonsignificant predictors and the amount of variance accounted for in cyberloafing (Zellner, 2001). For Model 5, the descriptive coworker beta weight was significantly stronger than the prescriptive supervisor beta weight,

**Table 2.** Multiple Regression Analyses in Study 1.

Predictors	<i>b</i>	95% CI	$\beta$	<i>R</i> <sup>2</sup>
<b>Model 1</b>				
Descriptive—Supervisor	.08	[.02, .15]	.12*	.14**
Descriptive—Coworkers	.20	[.13, .27]	.30**	
<b>Model 2</b>				
Prescriptive—Supervisor	.11	[.01, .20]	.11*	.04**
Prescriptive—Coworkers	.13	[.03, .24]	.13*	
<b>Model 3</b>				
Descriptive—Supervisor	.16	[.10, .22]	.25**	.09**
Prescriptive—Coworkers	.11	[.01, .21]	.11*	
<b>Model 4</b>				
Descriptive—Coworkers	.23	[.17, .29]	.34**	.14**
Prescriptive—Supervisor	.11	[.03, .20]	.12*	
<b>Model 5</b>				
Descriptive—Supervisor	.07	[.01, .13]	.11*	.15**
Descriptive—Coworkers	.20	[.13, .27]	.30**	
Prescriptive—Supervisors	.11	[.01, .20]	.11*	
<b>Model 6</b>				
Descriptive—Supervisor	.08	[.02, .15]	.13*	.14**
Descriptive—Coworkers	.20	[.12, .27]	.29**	
Prescriptive—Coworkers	.01	[-.10, .11]	.01	
<b>Model 7</b>				
Descriptive—Supervisor	.15	[.09, .21]	.24**	.09**
Prescriptive—Supervisor	.08	[-.02, .18]	.08	
Prescriptive—Coworkers	.09	[-.02, .19]	.09 <sup>†</sup>	
<b>Model 8</b>				
Descriptive—Coworkers	.24	[.17, .30]	.36**	.14**
Prescriptive—Supervisor	.13	[.03, .22]	.13**	
Prescriptive—Coworkers	-.04	[-.15, .07]	-.04	
<b>Model 9</b>				
Descriptive—Supervisor	.07	[.01, .13]	.11*	.15**
Descriptive—Coworkers	.21	[.13, .28]	.31**	
Prescriptive—Supervisors	.12	[.02, .21]	.12*	
Prescriptive—Coworkers	-.04	[-.15, .08]	-.04	
<b>Model 10</b>				
Actual Descriptive—Supervisor	.43	[.21, .64]	.36**	.19**
Actual Prescriptive—Supervisor	.11	[-.06, .29]	.12	

Note. CI = confidence interval.  
<sup>†</sup>*p* < .10. \**p* < .05. \*\**p* < .01.

*t*(405) = 2.66, *p* < .05, and the descriptive supervisor beta weight, *t*(405) = 2.10, *p* < .05. The difference between the beta weights for descriptive supervisor and prescriptive supervisor norms was not significant, *t*(402) = .03, ns. To confirm the incremental validity of each predictor in Model 5, we conducted three hierarchical regressions which are shown in supplemental material A (available in the online version of the article). The hierarchical regressions confirmed that all three variables in Model 5 accounted for a significant amount of additional variance as judged by the change in *R*<sup>2</sup> statistic.

We conducted two supplemental analyses to further address Hypotheses 1 to 4. First, we conducted a relative

weights analysis (Johnson, 2000). By running a RWA we can examine each predictor’s relative importance considering both the predictor’s direct effect on the criterion and the predictor’s effect when combined with other predictors examined (Johnson & LeBreton, 2004). As shown in Table 3, the results agree with the main analysis. Descriptive coworker norm accounted for the most explained variance in cyberloafing (58.6%), followed by the descriptive supervisor norm (26.4%), the prescriptive supervisor norm (9.2%) and then the prescriptive coworker norm (5.8%). One insight from the relative weights analysis was how close the relative contribution of the two prescriptive norms were despite the difference in pattern of significance in the main analyses.

Second, given congruence between what is said (prescriptive) and done (descriptive) may lead to stronger normative sway, we tested if agreement between norm types influences cyberloafing using polynomial regression analyses with response surface plots (Edwards & Parry, 1993; Shanock, Baran, Gentry, Pattison, & Heggstad, 2010).<sup>2</sup> Polynomial regression yield regression coefficients for two linear terms (i.e., prescriptive and descriptive norms), their interaction, and two quadratic terms (i.e., squares of prescriptive and descriptive norms) and relates them to a dependent variable (e.g., cyberloafing). The coefficients (*b*<sub>1</sub> to *b*<sub>5</sub>) are translated into four surface values (*a*<sub>1</sub> to *a*<sub>4</sub>) describing whether different relationships between the predictor variables are related to the outcome by defining the response surface (RS) plane of a three-dimensional plot. RS plots have, numerically, a line of congruence (LOC: *X* = *Y*) and a line of incongruence (LOIC: *X* = -*Y*), which are derived by fully crossing the numeric levels of two continuous predictors variables *X* and *Y*. The LOC is defined by a linear slope (*a*<sub>1</sub>) and a curvature (*a*<sub>2</sub>); similarly, the LOIC is defined by a linear slops (*a*<sub>3</sub>) and a curvature (*a*<sub>4</sub>). Thus, the LOC and LOIC provide insight into how incongruence and congruence between the sources of norms are related to cyberloafing, which is plotted on the *z*-axis (see Shanock et al., 2010, for tutorial and interpretations of surface values). Analyses were carried out in R using the *RSA* package using predictors centered on their scale midpoints (Schönbrodt, 2016). Several nested and nonnested polynomial regression models (e.g., full, rising ridge) were compared using the corrected Akaike Information Criteria (AICc) that balances model complexity with predictive accuracy. The parameters and plots are presented in Table 4 and Figure 3. The congruence hypothesis, which posits *maximal* outcomes occur for congruent predictor combinations, was rejected along multiple criteria (Humberg, Nestler, & Back, 2018). In all cases, either the first principle axis is rotated away from the line of congruence, the *a*<sub>4</sub> parameter was nonsignificant, or *a*<sub>3</sub> was significantly different from zero. Model comparisons suggests the simplest, best fitting model was

**Table 3.** Relative Weight Analysis Study I.

	Predictor (norms)			
	Descriptive supervisor	Descriptive coworker	Prescriptive supervisor	Prescriptive coworker
RRW	.04	.09	.01	.01
Rescaled RW	26.4%	58.6%	9.2%	5.8%

Note.  $R^2$  for the model = .15. RRW = raw relative weights. Rescaled RW = computed by dividing RRW by  $R^2$  in order to find the percentage of criterion variance attributable to each predictor.

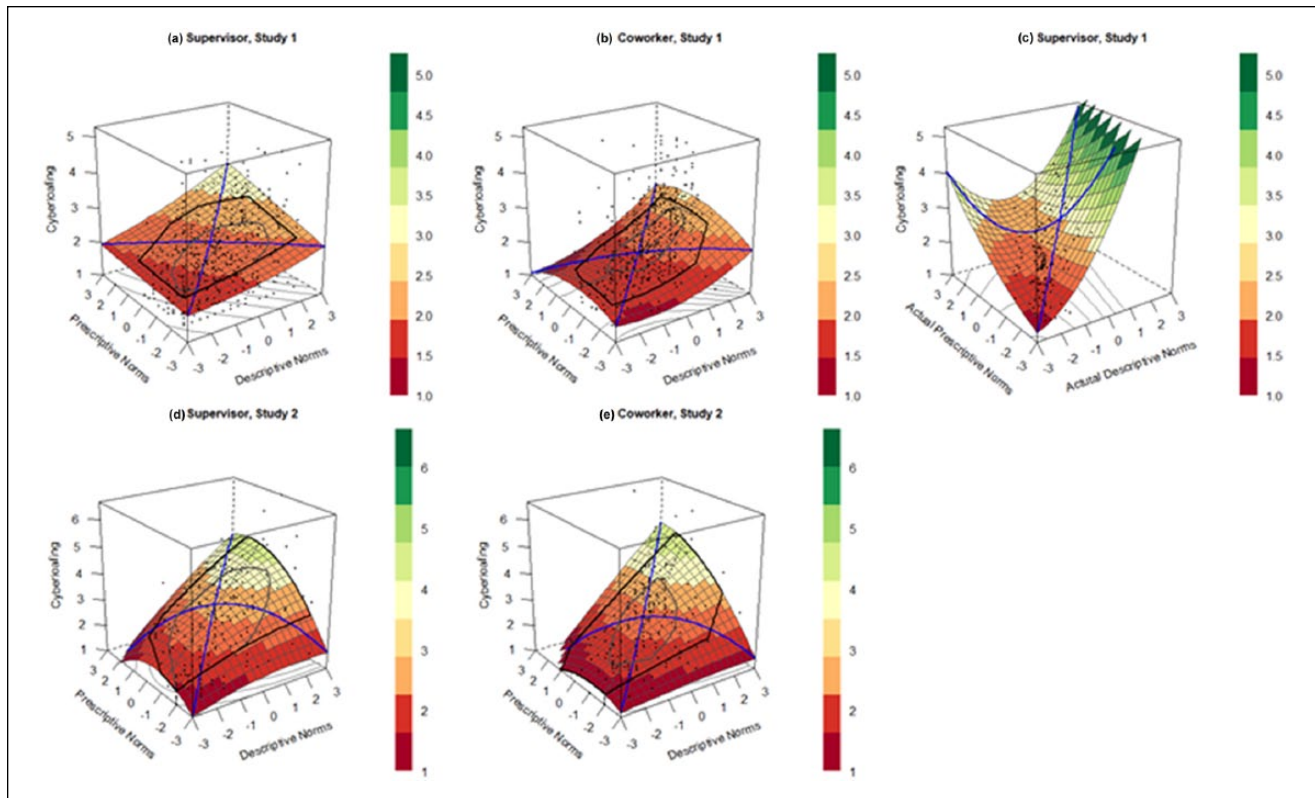
**Table 4.** Study I Polynomial Regression Coefficients ( $b_1$  to  $b_5$ ) and Response Surface Results (First Principal Axis and  $a_1$  to  $a_4$ ) for Descriptive and Prescriptive Norms in Predicting Cyberloafing.

Source	Polynomial regression coefficients					$p$	$R^2$	Position of first principal axis		Shape of surface along lines			
	$b$							$p_{10}$	$p_{11}$	LOC		LOIC	
	$D_{b1}$	$P_{b2}$	$D^2_{b3}$	$DP_{b4}$	$P^2_{b5}$					$a_1$	$a_2$	$a_3$	$a_4$
Sup Norms	.18**	.11	.01	.02	.00	<.001	.09	-.36	.62	.29**	.04	.07	-.01
Co Norms	.21**	.01	.04	.02	-.05	<.001	.14	-.16	.13** <sup>a</sup>	.22**	.02	.20**	-.03
Actual Sup	.77**	-.12	.19	-.20	.04	<.001	.20	12.40	-.50** <sup>a</sup>	.64**	.03	.89**	.42

Note. Unstandardized beta weights reported.  $N$  ranged from 129 (actual supervisor behavior) to 422 (coworkers norms).  $D$  = descriptive norms;  $P$  = prescriptive norms; LOC = line of congruence; LOIC = line of incongruence.

<sup>a</sup>The 95% confidence interval of  $p_{11}$  excludes 1.

\* $p < .05$ . \*\* $p < .01$ .



**Figure 3.** Response surface plots for all polynomial analyses.

Note. The first row of figures (a, b, and c) are from Sample 1 and the second row of figures (d, e) are from Sample 2. The legends correspond to the amount of cyberloafing. The line of congruence ( $Y = X$ ) extends from the bottom corner where to the upper back corner. The line of incongruence ( $Y = -X$ ) extends from the left to right side of the plane. A bagplot projected onto the surface depicts actual data, with 50% included within the inner circle and 100% of the points within the outer circle.

**Table 5.** Mediation Analyses Following Preacher and Hayes (2004).

Analysis	B	Boot SE	LL CI	UL CI	R <sup>2</sup>
Descriptive	.14*	.05	.06	.55	.27
Prescriptive	.03	.05	-.06	.12	.10

Note. The predictor in both analyses was the actual norm, the mediator was employee perceptions of that norm, and the criterion was cyberloafing. SE = standard error; LL = lower limit; UL = upper limit; CI = confidence interval.

\* $p < .05$ . \*\* $p < .01$ .

a simple main effect for both the descriptive coworker norm (AICc = 7896.47, Adjusted  $R^2 = .131$ ) and actual descriptive supervisor norm (AICc = 1619.64, Adjusted  $R^2 = .212$ ) but a linear additive or rising ridge model for follower perceptions of descriptive and prescriptive supervisory norms (AICc = 8071.86, Adjusted  $R^2 = .083$ ). The latter finding suggests a joint increase in perceptions of what a supervisor says and does leads to greater cyberloafing such that high/high combinations of supervisory norms has a larger effect compared to a low/low combination. We note there were also positive  $a_3$  effects for coworker and actual supervisory behavior which suggests direction of dissimilarity may affect cyberloafing such that effects are stronger when descriptive norms were higher than prescriptive norms and vice versa.

Finally, we tested Hypotheses 5 and 6, which collectively state that actual supervisor norms influence cyberloafing through subordinate perceptions of these norms. To test our mediation hypotheses, we used Preacher and Hayes' (2004) method for testing mediation. While Baron and Kenny's (1986) method is historically popular, it has been criticized by statisticians and methodologists for being an indirect test for mediation (Hayes, 2009; MacKinnon & Fairchild, 2009). Preacher and Hayes' (2004) method tests for mediation directly by estimating the indirect effect and testing the difference from zero. A significant indirect effect is evidence of mediation. Table 5 presents the results of the mediation analyses. As shown in the table, the results supported Hypothesis 5, as the indirect effect of actual descriptive supervisor norms on cyberloafing was significant,  $B = .14$ ,  $SE = .05$ ,  $R^2 = .27$ , suggesting that actual descriptive supervisor norms might influence cyberloafing through subordinate perception of this norm. In contrast, the mediation analyses were not supportive of Hypothesis 6, as we found no evidence that subordinate perceptions of prescriptive supervisor norms mediated the influence of actual prescriptive supervisor norms.

## Discussion

The results of Study 1 confirm the expectation that employees use multiple sources of normative information in the process of deciding to cyberloaf. Results from multiple regressions and relative weights analysis suggest employees pay particular attention to descriptive norms,

but there is also evidence that employees pay attention to prescriptive norms, as the most parsimonious model in the main analysis was Model 5 (i.e., the model comprising both coworker/supervisor descriptive norms and prescriptive supervisor norms). Supplementary response surface analyses confirm this effect, suggesting cyberloafing is greatest when followers think supervisors both encourage and engage in such behaviors and is also more likely when descriptive norms were greater than prescriptive norms rather than vice versa. We also found evidence consistent with actual descriptive norms as a distal cause of cyberloafing, the effect of which is mediated by employee perceptions of these norms. Interestingly, we found no evidence for the theory that actual prescriptive norms are a distal cause of cyberloafing, the effect of which is mediated through employee perceptions.

A limitation of Study 1 is that we used a sample of students who were employed, which was biased because participants were young relative to the general working population and could be different in other ways from the general population as well. Accordingly, in Study 2, we sought to test the generalizability of our findings by examining a more representative sample of individuals in the general working population who use computers at work.

## Study 2

### Method

**Participants and Procedure.** In order to obtain a more representative sample of the general working population, we recruited participants from the downtown area of a major southeastern city using the same procedure as Askew et al. (2014). In particular, the researcher approached potential participants and invited them to participate in a research study. Individuals who agreed to participate were asked if they were currently employed and had access to a computer with Internet connection at work. Only people who responded affirmatively to both questions were allowed to participate in the study and handed the survey. We were successful in recruiting a total of 220 employees (56.7% male) from a variety of industries, such as telecommunications, law, insurance, government, information technology, real estate, civil engineering, transportation, health care, investment banking, economics, publishing, sales, personal care, and the power industry. Participants' age was approximately normally distributed, with the mean age falling within the boundaries of 36 and 45 years.

### Measures

The same measures used in Study 1 were used in Study 2.

### Results

The bivariate correlations and reliabilities for Study 2 are shown in Table 6. Similar to Study 1, all four of the basic

**Table 6.** Descriptive Statistics and Correlations in Study 2.

Variable	Mean	SD	1	2	3	4	5	6	7	8	9
1. Cyberloafing	2.61	1.10	<b>.91</b>								
2. Descriptive—Comb.	3.71	1.46	<b>.68**</b>	<b>.93</b>							
3. Descriptive—Sup.	3.44	1.68	<b>.63**</b>	<b>.94**</b>	<b>.97</b>						
4. Descriptive—Co.	3.97	1.48	<b>.65**</b>	<b>.92**</b>	<b>.73**</b>	<b>.93</b>					
5. Prescriptive—Comb.	2.59	1.04	<b>.51**</b>	<b>.53**</b>	<b>.47**</b>	<b>.52**</b>	<b>.88</b>				
6. Prescriptive—Sup.	2.30	1.17	<b>.41**</b>	<b>.47**</b>	<b>.44**</b>	<b>.43**</b>	<b>.90**</b>	<b>.93</b>			
7. Prescriptive—Co.	2.86	1.15	<b>.50**</b>	<b>.49**</b>	<b>.40**</b>	<b>.52**</b>	<b>.90**</b>	<b>.61**</b>	<b>.90</b>		
8. Age	3.16	1.27	<b>-.37**</b>	<b>-.21**</b>	<b>-.21**</b>	<b>-.21**</b>	<b>-.10</b>	<b>-.04</b>	<b>-.13</b>	<b>—</b>	
9. Gender	1.40	0.49	<b>.04</b>	<b>.02</b>	<b>.03</b>	<b>-.00</b>	<b>-.03</b>	<b>-.04</b>	<b>-.00</b>	<b>-.18*</b>	<b>—</b>

Note.  $N = 220$ . Comb. = combined; Sup. = supervisor; Co. = coworker; SD = standard deviation. Coefficient alphas are shown in bold.

\* $p < .05$ . \*\* $p < .01$ .

social norms were correlated with cyberloafing. In addition, the results of Hotelling's  $t$  tests found the same pattern of results as in Study 1, such that descriptive social norms were significantly more strongly correlated with cyberloafing than prescriptive norms, and no pattern emerged regarding what referent more strongly related to cyberloafing.

The results of the multiple regression analyses for Study 2 are shown in Table 7. The results were largely consistent with the results from Study 1. Descriptive norms for both referents were significant in all analyses in which they were included. Interestingly, and not entirely consistent with Study 1, the prescriptive coworker norm was also significant across all analyses. Regarding the most parsimonious model, there were two models that received support based on the criteria of no nonsignificant predictors and the amount of variance accounted for in cyberloafing (Zellner, 2001). Specifically, Model 5—the same model that was found to be the most parsimonious explanation of cyberloafing in Study 1—was again supported,  $\beta_{DN,Sup} = .29$ ,  $p < .01$ ;  $\beta_{DN,Co} = .37$ ,  $p < .01$ ;  $\beta_{PN,Sup} = .18$ ,  $p < .01$ ;  $R^2 = .51$ . A comparison of the magnitude of the beta weights did not find any significant differences. In addition, Model 6, which contained the two descriptive norms and the prescriptive coworker norm, also received support,  $\beta_{DN,Sup} = .32$ ,  $p < .01$ ;  $\beta_{DN,Co} = .29$ ,  $p < .01$ ;  $\beta_{PN,Co} = .24$ ,  $p < .01$ ;  $R^2 = .52$ . No significant differences among the three norm beta weights were found in Model 6 either. Hierarchical regression analyses for both Models 5 and 6 confirmed that each predictor accounted for significant additional variance in cyberloafing (see supplemental material A; available in the online version of the article). These findings suggest that in the general working population, employee cyberloafing might be influenced by the two descriptive norms and a prescriptive norm—with evidence favoring the prescriptive *coworker* norm over the prescriptive *supervisor* norm, given the more consistent significance of the coworker norm coefficient across analyses.

**Table 7.** Multiple Regression Analyses in Study 2.

Predictors	$b$	95% CI	$\beta$	$R^2$
<b>Model 1</b>				
Descriptive—Supervisor	.22	[.12, .32]	<b>.34**</b>	<b>.48**</b>
Descriptive—Coworkers	.30	[.19, .41]	<b>.41**</b>	
<b>Model 2</b>				
Prescriptive—Supervisor	.16	[.02, .30]	<b>.17*</b>	<b>.27**</b>
Prescriptive—Coworkers	.38	[.24, .52]	<b>.40**</b>	
<b>Model 3</b>				
Descriptive—Supervisor	.33	[.26, .41]	<b>.50**</b>	<b>.49**</b>
Prescriptive—Coworkers	.31	[.20, .42]	<b>.32**</b>	
<b>Model 4</b>				
Descriptive—Coworkers	.41	[.33, .50]	<b>.56**</b>	<b>.46**</b>
Prescriptive—Supervisor	.19	[.08, .30]	<b>.20**</b>	
<b>Model 5</b>				
Descriptive—Supervisor	.19	[.09, .29]	<b>.29**</b>	<b>.51**</b>
Descriptive—Coworkers	.27	[.16, .38]	<b>.37**</b>	
Prescriptive—Supervisors	.17	[.06, .28]	<b>.18**</b>	
<b>Model 6</b>				
Descriptive—Supervisor	.21	[.12, .31]	<b>.32**</b>	<b>.52**</b>
Descriptive—Coworkers	.21	[.10, .33]	<b>.29**</b>	
Prescriptive—Coworkers	.23	[.12, .34]	<b>.24**</b>	
<b>Model 7</b>				
Descriptive—Supervisor	.32	[.24, .40]	<b>.49**</b>	<b>.49**</b>
Prescriptive—Supervisor	.07	[-.06, .20]	<b>.08</b>	
Prescriptive—Coworkers	.27	[.14, .39]	<b>.28**</b>	
<b>Model 8</b>				
Descriptive—Coworkers	.38	[.29, .46]	<b>.51**</b>	<b>.47**</b>
Prescriptive—Supervisor	.12	[-.01, .24]	<b>.13<sup>†</sup></b>	
Prescriptive—Coworkers	.15	[.02, .28]	<b>.16*</b>	
<b>Model 9</b>				
Descriptive—Supervisor	.20	[.10, .30]	<b>.31**</b>	<b>.53**</b>
Descriptive—Coworkers	.21	[.10, .33]	<b>.29**</b>	
Prescriptive—Supervisors	.08	[-.05, .20]	<b>.08</b>	
Prescriptive—Coworkers	.19	[.06, .32]	<b>.20**</b>	

Note. CI = confidence interval.

<sup>†</sup> $p < .10$ . \* $p < .05$ . \*\* $p < .01$ .

**Table 8.** Relative Weight Analysis Study 2.

	Predictor (norms)			
	Descriptive supervisor	Descriptive coworker	Prescriptive supervisor	Prescriptive coworker
RRW	.18	.18	.05	.10
Rescaled RW	36%	35.3%	9.5%	19.2%

Note.  $R^2$  for the model = .51. RRW = raw relative weights. Rescaled RW = computed by dividing RRW by  $R^2$  in order to find the percentage of criterion variance attributable to each predictor.

**Table 9.** Study 2 Polynomial Regression Coefficients ( $b_1$  to  $b_5$ ) and Response Surface Results (First Principal Axis and  $a_1$  to  $a_4$ ) for Norms in Predicting Cyberloafing.

Source	Polynomial regression coefficients					$p$	$R^2$	Position of first principal axis		Shape of surface along lines			
	B							$p_{10}$	$p_{11}$	LOC		LOIC	
	$D_{b1}$	$P_{b2}$	$D^2_{b3}$	$DP_{b4}$	$P^2_{b5}$					$a_1$	$a_2$	$a_3$	$a_4$
Sup Norms	.41**	.15*	-.03	.10*	-.13**	<.001	.48	-.07	.42 <sup>a</sup>	.56**	-.05	.25**	-.25**
Co Norms	.43**	.19**	-.01	.13**	-.09	<.001	.50	-.25	.57	.62**	.04	.25**	-.22**

Note. Unstandardized beta weights reported.  $N$  ranged from 189 to 201.  $D$  = descriptive norms;  $P$  = prescriptive norms; LOC = line of congruence; LOIC = line of incongruence.

<sup>a</sup>The 95% confidence interval of  $p_{11}$  excludes 1.

\* $p < .05$ . \*\* $p < .01$ .

The same supplemental analyses as Sample 1 were run to further investigate the first four hypotheses. We again used relative weights analysis to examine the contributions of all the norms in the prediction of cyberloafing by taking into account both the direct effect of the norms on cyberloafing and the effect when combined with the other norms. As shown in Table 8, the results agree with the main analysis. The descriptive supervisor norm and the descriptive coworker norm each accounted for approximately the same amount of explained variance (36% and 35.3%, respectively) followed by the prescriptive coworker norm (19.2%), and then the prescriptive supervisor norm (9.5%). The results of the relative weights analysis also seem to support the notion that prescriptive coworker norm was relatively more important than the prescriptive supervisor norm.

Additionally, the same response surface analyses and modeling strategy as sample 1 were run to explore the joint impact of norm types on cyberloafing (see Table 9 and Figure 3 for results). In contrast to Study 1, the best solution for supervisor norms was a rotated and shifted rising ridge model ( $AICc = 4052.18$ , Adjusted  $R^2 = .47$ ), which is a variant on the basic squared difference model but with predictor main effects (rise) and a shifted and rotated ridge so optimal levels of similarity are not needed at numerical equality. Similarly, coworker norms were best modeled as either just an interaction model

( $AICc = 4142.18$ , Adjusted  $R^2 = .49$ ) or full polynomial ( $AICc = 4142.43$ , Adjusted  $R^2 = .50$ ). Figures 3d and 3e are both concave and resemble a shifted rising ridge, with the first principal axis only slightly displaced clockwise from the line of congruence. Overall, these surfaces depict three basic effects. First, there is some evidence for a similarity effect that cyberloafing is higher when descriptive and prescriptive norms are similar to one another than when they differ, as indicated by the downward slope on the surface of either side of the line of congruence. This can be interpreted as cyberloafing being lowest (highest) when there are large (small) discrepancies between norm levels. However, this must be qualified by significant linear effects ( $a_3$ ) and rotated axis that suggest (a) employees are more likely to cyberloaf when descriptive norms are greater than prescriptive norms and (b) the optimal match does not exist when both norms have the exact same score. Two, and similar to Study 1 for supervisors, cyberloafing is highest when both norms are higher rather than lower as indicated by the positive slope along the line of congruence. Finally, a significant interaction effect can be visualized for coworkers (nonsignificant for supervisors) in which the effect of either norm tends to be amplified by high levels of the other. Thus, employees are more sensitized or attuned to the other form of normative information when the rules are clear (prescriptive, hence they are more swayed by what others do) or everyone is already deviant (descriptive, hence are more swayed by the rules).

## Discussion

Overall, the results of Study 2 largely replicated those of Study 1. Employees in both samples appeared to attend primarily to what others in the work environment are *doing*, as evidenced by the fact that both descriptive norms were significant predictors of cyberloafing in all analyses in which they were included. In addition, the results of Study 2 were consistent with Study 1 in that we found prescriptive social norms to play a role in cyberloafing, although what prescriptive norm is most relevant varied between the two studies. Namely, employees in Study 1 indicated that they were oriented toward their *supervisor's* expectations regarding cyberloafing, whereas employees in Study 2 indicated that they were oriented toward their *coworkers'* expectations for personal computer use. Finally, response surface analyses suggest further nuance to the interplay of norms on cyberloafing. What others are *doing* in the workplace tend to have greater effects on cyberloafing when matched by others' approval, but descriptive norms had stronger effects when higher than prescriptive as opposed to the other way around. Furthermore, the norms interacted such that the effect of one norm on cyberloafing was stronger when the other norm was also high. Collectively, this suggests the salience of both norms may come in to sharper focus when they are aligned or extreme with higher levels of descriptive norms motivating behavior when slight discrepancies are present.

Some of these disparate results could be attributable to the distinct populations from which we sampled. Participants in Study 1 were employed students who were relatively young and possibly at the earlier stages of their careers. In contrast, participants in Study 2 were sampled from the general working population and, on average, presumably further along in their career. Thus, a possible explanation for the different findings regarding prescriptive norms is that when people are employed in positions that are typical of early careers, they are oriented toward their supervisors, who often have a great amount of authority over them. As people advance in their careers, their jobs become more interdependent with their coworkers, and, in turn, coworkers' expectations become more influential. However, it is not possible to confirm this explanation with the current data, as age does not correspond directly to career stage, and we did not measure career stage, work experience, or any other closely related variables.

## General Discussion

This investigation made considerable progress in bridging two important gaps in the literature regarding the manner in which social norms influence cyberloafing. The first gap that was addressed was uncovering the normative information that employees attend to when deciding whether or not to cyberloaf. The second gap that was addressed was

demonstrating the role of actual, not simply perceived, norms in the cyberloafing process. When we examined the incremental validity of the four types of social norms in Studies 1 and 2, results revealed that employees attend to multiple types of social norms and that they pay particular attention to the amount of cyberloafing in which their coworkers and supervisors engage when deciding whether or not to cyberloaf. There was also evidence that employees consider the expectations of others in the work environment. The results from Study 1 supported the notion that actual descriptive supervisor norms act as a distal cause of cyberloafing, the effect of which is mediated through subordinate perceptions of this norm. Results were less clear for the role of actual prescriptive supervisor norms since mediation analyses did not result in a significant indirect effect.

Before conducting our studies, we speculated on what combination of social norms would account for the incremental variance in cyberloafing. Although predictions from the focus theory of normative conduct as applied to cyberloafing are somewhat ambiguous—as it depends on the assumptions that one makes regarding the environment in which cyberloafing typically occurs—we presented a few speculated explanations as to why different norms or combinations of norms might contribute to cyberloafing. Returning to these explanations post hoc, the interpretation of the theory that best matches the current pattern of findings is that descriptive norms contribute the most to cyberloafing because they are the most salient. The opinions of others in the work environment with regards to cyberloafing might not be readily available, so employees look to what others in the environment are *doing* for evidence of what is adaptive behavior. The response surface analyses bring this point into sharper focus. In both samples, the significant  $a_3$  implies a form of norm conflict whereby one form takes precedence over another. Across studies there appears to be a higher likelihood to cyberloaf when descriptive norms are greater than prescriptive norms. This suggests less dissonance in cyberloafing when violating prescriptive rules because everyone else is doing it as opposed to doing it when the rules are permissive but colleagues do not engage. Furthermore, significant  $a_4$  effects in Study 2 suggests very large discrepancies between normative information is eventually associated with lower cyberloafing. This suggests large conflicts in norms may send mixed messages that lead employees to err on the side of caution when deciding to cyberloaf. Collectively, this suggests descriptive norms beat out prescriptive norms in the face of discrepancy but, at a certain point, large gaps lead to ambiguity in appropriate behavior.

## Contributions

The current investigation makes four important contributions to theory and practice. First, this investigation is the

first, of which we are aware, to examine the influence of *actual* cyberloafing norms as opposed to simply perceptions of social norms. Consistent with the focus theory of normative conduct, we found evidence that descriptive norms influence behavior through employees' perceptions of these norms. This finding provides empirical support to an implicit assumption in the literature and suggests that models of cyberloafing that include subjective descriptive norms could be extended to include actual norms as an immediately distal antecedent. Interestingly, we did not find the same support for the posited process involving prescriptive norms, which potentially challenges the conventional assumption of the driving force behind perceptions of prescriptive norms. However, it is important to note that absence of evidence is not evidence of absence. This study does not refute the theory that actual prescriptive norms influence prescriptive norms, but it does highlight the need to look further into this assumption. This is especially true since it is conceivable that prescriptive norms regarding cyberloafing are hard for employees to infer.

Second, the current investigation provides conceptual clarity to one of the most robust predictors of cyberloafing (Weatherbee, 2010). By examining the incremental validity of four types of social norms, we were able to determine what norms provide unique information about cyberloafing—a condition consistent with that norm as a cause of cyberloafing. Furthermore, using relative weights analysis, we were able to examine the relative contribution of each norm. Both analyses show that employees are primarily oriented toward the cyberloafing behavior of both their supervisor and coworkers. These findings provide empirical justification, missing up until this point, for combining cyberloafing descriptive norms across referents in cyberloafing theories. We also found evidence that employees consider their perceptions of others' approval of cyberloafing; however, the referent might vary by position. We speculate that people early in their career may be more oriented toward their supervisors' opinions, whereas people later in their careers might be more oriented toward their coworkers' opinions. Whatever the reason for the discrepant finding across the two samples, it argues *against* combining prescriptive norms across referents.

Third, this investigation is the first we are aware of to examine the notion of norm congruence with regards to cyberloafing. There was evidence norm alignment brings additional focus to the norms, resulting in high/high combinations having a larger effect on cyberloafing than low/low combinations. Moreover, we found that when discrepancies exist between social norms, more cyberloafing is likely to occur when the descriptive norm is higher rather than the reverse—that is descriptive norms beat prescriptive norms when there is mild-to-moderate normative conflict. However, at a certain point large discrepancies in norms lead to employees to engage in a play-it-safe strategy as the

mixed messages lead to ambiguity to the appropriateness of the behavior. These congruency effects add an additional layer of nuance to our understanding of how social norms contribute to cyberloafing and further underscores the importance of measuring social norms at the referent level in addition to the prescriptive and descriptive level. They also suggest that current theories of cyberloafing, which postulate simple main effects for social norms, might not sufficiently capture the complex process of normative influence.

The fourth contribution of this investigation is that it identifies normative intervention points for decreasing cyberloafing. Managers and organizational leaders interested in curtailing cyberloafing should direct their efforts to reducing the perception of others' cyberloafing while making sure this perception is congruent with the prescriptive messages they deliver. Given the current findings, at least two interventions seem like possible approaches. First, there could be an educational effort targeted at the supervisor. Supervisors could be educated on how their cyberloafing potentially influences their coworkers, and the supervisors' desktop could be arranged in such a way to model the organization's desired level of cyberloafing. However, this approach would only work in situations where the manager is motivated and does not engage in undesirable amounts of cyberloafing. A second approach is to target employees' perceptions of other coworkers' cyberloafing habits. In practice, this could involve an electronic monitoring system—which is already used by many organizations (American Management Association, 2007)—to provide feedback to *high* cyberloafers in the form of a comparison with normative information from their peers. Normative information interventions have a rich history in the social psychology literature from which practitioners could draw (e.g., Donaldson, Graham, & Hansen, 1994; Larimer & Neighbors, 2003; Schultz, Juran, & Boudreau, 1999), and normative information has also been shown to increase task performance (Mitchell, Rothman, & Liden, 1985). This lends credibility to the notion that such an approach would work with cyberloafing as well.

### *Limitations and Future Directions*

The current investigation has some limitations that should be acknowledged. First, the data were cross-sectional, which limits our ability to make causal inferences. Although we found evidence that is consistent with descriptive supervisor and coworker norms as unique causes of cyberloafing, it is possible that these relationships are recursive in nature. It is also possible that there is no causal relationship between these norms and cyberloafing and that the observed relationships are caused by some unseen third variable.

Contextual variables are possible candidates for third variables in this study since they could have influenced both



social norms and employee cyberloafing. Organizational culture, for example, is a broad construct that contains norms as a component (Armstrong, 2009). The other components are values, beliefs, attitudes, and assumptions. These components influence behavior directly and indirectly through each other (Armstrong, 2009), so it is possible that a different component of culture drove the observed relationships between social norms and cyberloafing in these studies. The presence or absence of a formal Internet usage policy is another potential third variable because it is plausible that prescriptions from the organization could have influenced employee perceptions and employee personal computer use. Finally, organizational climate and subgroups norms were also unaccounted for and could have affected our results.

The third variable hypothesis is weakened because both descriptive supervisor and coworker norms incrementally predicted cyberloafing. Therefore, such a third variable would need to have unique relationships with each descriptive norm or there would have to be two distinct third variables, one for each social norm, to account for the observed results. Nonetheless, further research should investigate the effect of social norms while measuring and statistically controlling for potential third variables like organizational culture, organizational climate, the presence or absence of a formal Internet usage policy, and subgroup norms. Studies with stronger designs, such as laboratory simulations where coworkers' and supervisors' behaviors are manipulated, could also help to establish causation (Cook, Campbell, and Shadish, 2002).

A second limitation is that cyberloafing was measured using self-report instruments instead of measuring cyberloafing directly. Therefore, the precision with which we measured cyberloafing depends on the extent to which people can remember their past cyberloafing and are willing to report it accurately. It was not possible to electronically record the cyberloafing behaviors of all the employees in our investigation, given the hundreds of organizations from which we sampled; therefore, we used an established cyberloafing scale instead (Blanchard & Henle, 2008; Lim, 2002). However, self-report measures are only problematic if they change the observed covariance matrix. If the rank order of participants was *relatively* preserved, this limitation should not affect our conclusions. Recent evidence also supports the use of self-report cyberloafing, as Polzer-Debruyne et al. (2014) measured cyberloafing using both self-report and electronic monitoring and found the same pattern of relationships with other study variables.

A third limitation is that the social norms scales were deficient in the range of cyberloafing activities that they covered. The four perceived norms scales covered only three common cyberloafing activities: general web-browsing, checking e-mail, and visiting social networking sites. The deficiency in activities creates a generalization issue such

that it is unclear whether descriptive norms and prescriptive norms of both types would show the same associations with cyberloafing for activities that are less common. One interesting possibility is that descriptive norms could be more influential for common observable activities than prescriptive norms, whereas for less common behaviors where the base-rate of observation of those behaviors are low, employees might utilize their perceived estimation of the prescriptive norms instead. In support of this, we would hypothesize that an employee interested in watching pornography at work (an uncommon cyberloafing behavior) would probably still not do so because they are aware of the expectations of their coworkers and supervisors. Likewise, a foreign expatriate living in the United States who is interested in following their home country's election results via an updating webpage (another uncommon cyberloafing behavior), probably would feel comfortable doing so—not because they have seen another person engage in this very specific activity—but because they are using their subjective estimation of the prescriptive norms to inform whether they should engage in the behavior. A future investigation should investigate the generalizability of these findings by measuring social norms constructs using a more complete list of activities.

A fourth limitation is that we were not able to measure actual coworker norms. Consequently, we were not able to test the hypothesized causal chain for coworker norms—that actual norms influence cyberloafing through employee perceptions—like we were able to with supervisor norms. We believe the results of the other analyses inform what we would likely find had we been able to measure actual coworker norms. The supervisor descriptive causal chain was supported by mediation analyses, and descriptive coworker perceptions were significant in all the subjective norms analyses. Therefore, we expect that the hypothesized causal chain would be supported for at least the descriptive coworker norms. Nonetheless, future studies should examine the role of actual coworker norms empirically.

An additional limitation is that we did not measure norm salience in either study. The investigation was inductive and found a pattern of results that were consistent with the focus theory of normative conduct. However, because we did not measure salience, we were unable to probe whether the results found were due to descriptive norms being more salient than prescriptive norms as speculated. A future study should measure the salience of the four types of social norms in addition to measuring the four norms, so that the explanation offered here can be formally tested. Alternatively, a laboratory study in participants are given a work-related task and norms and norm-saliency are manipulated could also establish saliency as moderator.

A sixth limitation is that we were unable to make firm conclusions regarding the role of actual prescriptive supervisor norms. We did not find evidence that actual supervisor

prescriptions influence cyberloafing through subordinate perceptions in Study 1. It is unclear if we obtained this null result because actual prescriptive social norms are not a distal cause of cyberloafing or because we lacked sufficient power owing to the smaller effect of prescriptive norms and the relatively small number of supervisors ( $n = 130$ ). Given that studies in other areas have shown that actual prescriptive norms influence behavior through perceptions, we believe that the issue of limited statistical power is a possibility. However, it is also possible that actual prescription cyberloafing norms are not salient enough to influence prescriptive norm perceptions. A future study with a larger sample size of supervisors should try to tease apart these two explanations.

Finally, the results of the multiple regression analyses provided slightly different conclusions across the two studies regarding the specific prescriptive norm or norms to which employees are attending. Therefore, while we can make conclusions about descriptive norms, it is too early to make firm conclusions regarding what prescriptive norms contribute to cyberloafing except to say that there is evidence that prescriptive norms do play a role in cyberloafing. We speculated that the different results for prescriptive norms across the two studies was due to the second sample having more work experience and being further along in their careers than the first sample and cited the age of the two samples as indirect evidence of this. However, it is important to emphasize that age is a poor proxy for work experience and career stage, and because we did not measure many demographic variables further investigation into sample differences was not possible. As a consequence, the proposed explanation for the differences in results across the two samples is highly speculative and should be viewed with suspicion. Future studies should examine the role of prescriptive social norms with job moderators, such as power distance and coworker interdependency. They should also include more demographic variables to both obtain a better understanding of the sampled groups and to investigate the role demographic variables might play in cyberloafing.

### Summary and Conclusion

In this investigation, we aimed to fill two critical gaps in the cyberloafing literature—an understanding of which social norms contribute unique information about cyberloafing and an understanding of the role of actual norms—to better understand how normative information plays a role in cyberloafing. Results from the two studies unambiguously show that descriptive norms provide unique information on cyberloafing. We also found some evidence that prescriptive norms have a role in cyberloafing, and employees take into account norm congruence. With regards to the role of actual norms, we found some evidence consistent with actual descriptive norms as a distal cause of cyberloafing,

the effect of which was mediated through perceptions of these norms in Study 1. Interestingly, we did not find the same corresponding evidence for prescriptive norms in the same study.

In short, this investigation took an important and large step toward disentangling how other people in the work environment influence cyberloafing. Our findings provide conceptual clarity to one of the most studied predictors of cyberloafing, which can provide guidance to practitioners interested in curtailing cyberloafing through norms-based interventions. The next step is to expand upon the current findings by conducting further investigations that measure all four norms, as well as potential moderators, such as norm saliency, career position and work-group interdependency. In the same investigations, there should also be an attempt to understand how congruency between norms interfaces with these moderators. Additional studies measuring actual norms are also needed.

## Appendix

Data Transparency Table.

Variables in the data set	Askew et al. (2014)	Study I (current investigation)
Cyberloafing	X	X
Attitudes	X	
Self-Efficacy to Hide CL	X	
Web Access Self-Efficacy	X	
Descriptive Norm—Overall	X	
Descriptive Norm—Supervisor		X
Descriptive Norm—Coworker		X
Prescriptive Norm—Overall	X	
Prescriptive Norm—Supervisor		X
Prescriptive Norm—Coworker		X
Behavioral Intentions	X	
Withdrawal	X	
Lateness	X	
Absenteeism	X	
Extended Break	X	
Leaving Early	X	
Actual Descriptive Supervisor		X
Actual Prescriptive Supervisor		X
Electronic Monitoring		X
Gender	X	X
Age	X	X

Note. No variables are shared between Study 2 and any other published article.

### Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

## Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

## Notes

1. We ran the multiple regression analyses with and without electronic monitoring as a covariate to examine whether electronic monitoring could explain our findings—an explanation that we developed post hoc. The results were virtually identical across both sets of analyses in both Studies 1 and 2. For the purpose of conciseness, we only present the multiple regression analyses *without* electronic monitoring as a covariate.
2. We wish to thank an anonymous reviewer for offering this suggestion.

## Supplemental Material

The online supplementary material is available at <http://journals.sagepub.com/doi/suppl/10.1177/1548051818813091>.

## References

- American Management Association. (2007). *2007 Electronic Monitoring & Surveillance Survey* [Data file]. Retrieved from <http://www.plattgroupinc.com/jun08/2007ElectronicMonitoringSurveillanceSurvey.pdf>
- Andreassen, C. S., Torsheim, T., & Pallesen, S. (2014). Predictors of use of social network sites at work: A specific type of cyberloafing. *Journal of Computer-Mediated Communication, 19*, 906-921.
- Armstrong, M. (2009). *Armstrong's Handbook Of human resource Management practice 11th edition*. (Chapter 22, 383-400).
- Askew, K. (2012). *The relationship between cyberloafing and task performance and an examination of the theory of planned behavior as a model of cyberloafing* (Unpublished doctoral dissertation). University of South Florida, Tampa.
- Askew, K., Buckner, J. E., Taing, M. U., Ilie, A., Bauer, J. A., & Covert, M. D. (2014). Explaining cyberloafing: The role of the theory of planned behavior. *Computers in Human Behavior, 36*, 510-519.
- Askew, K., Covert, M. D., Vandello, J. A., Taing, M. U., & Bauer, J. A. (2011). *Work environment factors predict cyberloafing*. Poster presented at the Annual Meeting of the American Psychological Society, Washington, DC.
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*, 1173-1182.
- Bennett, R. J., & Robinson, S. L. (2000). Development of a measure of workplace deviance. *Journal of Applied Psychology, 85*, 349-360. doi:10.1037/0021-9010.85.3.349
- Betts, T. K., Setterstrom, A. J., Pearson, J. M., & Totty, S. (2014). Explaining cyberloafing through a theoretical integration of theory of interpersonal behavior and theory of organizational justice. *Journal of Organizational and End User Computing, 26*, 23-42. doi:10.4018/joeuc.2014100102
- Blanchard, A. L., & Henle, C. A. (2008). Correlates of different forms of cyberloafing: The role of norms and external locus of control. *Computers in Human Behavior, 24*, 1067-1084. doi:10.1016/j.chb.2007.03.008
- Blau, G. (1995). Influence of group lateness on individual lateness: A cross-level examination. *Academy of Management Journal, 38*, 1483-1496.
- Bock, G. W., Park, S. C., & Zhang, Y. (2010). Why employees do non-work-related computing in the workplace. *Journal of Computer Information Systems, 50*, 150-163.
- Buckner, J. E., Castille, C. M., & Sheets, T. L. (2012). The five factor model of personality and employees' excessive use of technology. *Computers in Human Behavior, 28*, 1947-1953. doi:10.1016/j.chb.2012.05.014
- Canaan Messarra, L., Karkoulian, S., & McCarthy, R. (2011). To restrict or not to restrict personal Internet usage on the job. *Education, Business and Society: Contemporary Middle Eastern Issues, 4*, 253-266.
- Cheung, C. M., Chiu, P. Y., & Lee, M. K. (2011). Online social networks: Why do students use Facebook? *Computers in Human Behavior, 27*, 1337-1343. doi:10.1016/j.chb.2010.07.028
- Chun, Z. Y., & Bock, G. W. (2006, July). *Why employees do non-work-related computing: An investigation of factors affecting NWRC in a workplace*. Paper presented at the Pacific Asia Conference on Information Systems (PACIS), Kuala Lumpur, Malaysia.
- Cialdini, R. B., Kallgren, C. A., & Reno, R. R. (1991). A focus theory of normative conduct: A theoretical refinement and reevaluation of the role of norms in human behavior. *Advances in Experimental Social Psychology, 24*, 201-234.
- Cohen, J. (1988). *Statistical power analyses for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum.
- Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2013). *Applied multiple regression/correlation analysis for the behavioral sciences*. New York, NY: Routledge.
- Cook, T. D., Campbell, D. T., & Shadish, W. (2002). *Experimental and quasi-experimental designs for generalized causal inference*. Boston: Houghton Mifflin.
- Donaldson, S. I., Graham, J. W., & Hansen, W. B. (1994). Testing the generalizability of intervening mechanism theories: Understanding the effects of adolescent drug use prevention interventions. *Journal of Behavioral Medicine, 17*, 195-216.
- Edwards, J. R., & Parry, M. E. (1993). On the use of polynomial regression equations as an alternative to difference scores in organizational research. *Academy of Management Journal, 36*(6), 1577-1613.
- Ehrhart, M. G., & Naumann, S. E. (2004). Organizational citizenship behavior in work groups: A group norms approach. *Journal of Applied Psychology, 89*, 960-974. doi:10.1037/0021-9010.89.6.960
- Fox, S., & Spector, P. E. (1999). A model of work frustration-aggression. *Journal of Organizational Behavior, 20*, 915-931.
- Freimark, M. (2012). *The role of organizational citizenship behavior and organizational justice on intention to cyberloaf through a general deterrence theory lens* (Unpublished doctoral dissertation). Southern Illinois University, Carbondale.
- Galluch, P. S., & Thatcher, J. B. (2007). Maladaptive vs. adaptive use of internet applications in the classroom: A test of competing models. In *Proceedings of the 2007 Southern*

- Association for Information Systems Conference*. Retrieved from <https://aisel.aisnet.org/sais2007/5/>
- Glassman, J., Prosch, M., & Shao, B. B. (2015). To monitor or not to monitor: Effectiveness of a cyberloafing countermeasure. *Information & Management, 52*, 170-182.
- Harrison, D. A., & Price, K. H. (2003). Context and consistency in absenteeism: Studying social and dispositional influences across multiple settings. *Human Resource Management Review, 13*, 203-225.
- Hartijasti, Y. (2016). Is serious internet deviance a problem in Indonesian workplace? *Asian Journal of Information and Communications, 8*(2), 96-107.
- Hayes, A. F. (2009). Beyond Baron and Kenny: Statistical mediation analysis in the new millennium. *Communication Monographs, 76*, 408-420. doi:10.1080/03637750903310360
- Humberg, S., Nestler, S., & Back, M. D. (2018). Response Surface Analysis in personality and social psychology: Checklist and clarifications for the case of congruence hypotheses. *Social Psychological and Personality Science, 19*(48550618757600).
- Hussain, S., Saleem, F., & Malik, M. I. (2016). Cyberloafing behavior at work. *Abasyn University Journal of Social Sciences, 9*, 409-425.
- J-Ho, S. C., Gan, P. L., & Ramayah, T. (2017). A review of the theories in cyberloafing studies. *Advanced Science Letters, 23*, 9174-9176.
- Johnson, J. W. (2000). A Heuristic method for estimating the relative weight of predictor variables in multiple regression. *Multivariate Behavioral Research, 35*, 1-19.
- Johnson, J. W., & LeBreton, J. M. (2004). History and use of relative importance indices in organizational research. *Organizational Research Methods, 7*, 238-257.
- Kallgren, C. A., Reno, R. R., & Cialdini, R. B. (2000). A focus theory of normative conduct: When norms do and do not affect behavior. *Personality and Social Psychology Bulletin, 26*, 1002-1012.
- Karahanna, E., Straub, D. W., & Chervany, N. L. (1999). Information technology adoption across time: A cross-sectional comparison of pre-adoption and post-adoption beliefs. *MIS Quarterly, 23*, 183-213. doi:10.2307/249751
- Lapinski, M. K., & Rimal, R. N. (2005). An explication of social norms. *Communication Theory, 15*, 127-147.
- Larimer, M. E., & Neighbors, C. (2003). Normative misperception and the impact of descriptive and injunctive norms on college student gambling. *Psychology of Addictive Behaviors, 17*, 235-243. doi:10.1037/0893-164X.17.3.235
- Lee, O. K., Lim, K. H., & Wong, W. M. (2005, January). *Why employees do non-work-related computing: An exploratory investigation through multiple theoretical perspectives*. Paper presented at the 38th Annual Hawaii International Conference on System Sciences, Big Island, HI. doi:10.1109/HICSS.2005.698
- Li, H., Zhang, J., & Sarathy, R. (2010). Understanding compliance with internet use policy from the perspective of rational choice theory. *Decision Support Systems, 48*, 635-645. doi:10.1016/j.dss.2009.12.005
- Liao, Q., Gurung, A., Luo, X., & Li, L. (2009). Workplace management and employee misuse: Does punishment matter? *Journal of Computer Information Systems, 50*(2), 49-59.
- Liberman, B., Seidman, G., McKenna, K. Y., & Buffardi, L. E. (2011). Employee job attitudes and organizational characteristics as predictors of cyberloafing. *Computers in Human Behavior, 27*, 2192-2199. doi:10.1016/j.chb.2011.06.015
- Lim, V. K. (2002). The IT way of loafing on the job: Cyberloafing, neutralizing and organizational justice. *Journal of Organizational Behavior, 23*, 675-694. doi:10.1002/job.161
- Lim, V. K., & Chen, D. J. (2012). Cyberloafing at the workplace: Gain or drain on work? *Behaviour & Information Technology, 31*, 343-353.
- Lim, V. K., & Teo, T. S. (2005). Prevalence, perceived seriousness, justification and regulation of cyberloafing in Singapore: An exploratory study. *Information & Management, 42*, 1081-1093.
- Locke, E. A. (2007). The case for inductive theory building. *Journal of Management, 33*, 867-890.
- MacKinnon, D. P., & Fairchild, A. J. (2009). Current directions in mediation analysis. *Current Directions in Psychological Science, 18*(1), 16-20. doi:10.1111%2Fj.1467-8721.2009.01598.x
- Mitchell, T. R., Rothman, M., & Liden, R. C. (1985). Effects of normative information on task performance. *Journal of Applied Psychology, 70*(1), 48-55. doi:10.1037/0021-9010.70.1.48
- Pee, L. G., Woon, I. M., & Kankanalli, A. (2008). Explaining non-work-related computing in the workplace: A comparison of alternative models. *Information & Management, 45*, 120130. doi:10.1016/j.im.2008.01.004
- Polzer-Debruyne, A. M., Stratton, M. T., & Stark, G. (2014). Personal web use in the workplace: Why does it persist in a context of strict security and monitoring? *International Journal of Business Administration, 5*(3), 1-18.
- Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, & Computers, 36*, 717-731.
- Rahimnia, F., & Mazidi, A. R. (2015). Functions of control mechanisms in mitigating workplace loafing; evidence from an Islamic society. *Computers in Human Behavior, 48*, 671-681. doi:10.1016/j.chb.2015.02.035
- Rimal, R. N., & Lapinski, M. K. (2015). A re-explication of social norms, ten years later. *Communication Theory, 25*, 393-409.
- Schönbrodt, F. D. (2016). *RSA: An R package for response surface analysis* (version 0.9. 10).
- Schultz, K. L., Juran, D. C., & Boudreau, J. W. (1999). The effects of low inventory on the development of productivity norms. *Management Science, 45*, 1664-1678.
- Schultz, P. W., Nolan, J. M., Cialdini, R. B., Goldstein, N. J., & Griskevicius, V. (2007). The constructive, destructive, and reconstructive power of social norms. *Psychological Science, 18*, 429-434.
- Shanock, L. R., Baran, B. E., Gentry, W. A., Pattison, S. C., & Heggstad, E. D. (2010). Polynomial regression with response surface analysis: A powerful approach for examining moderation and overcoming limitations of difference scores. *Journal of Business and Psychology, 25*, 543-554.

- Sheikh, A., Atashgah, M. S., & Adibzadegan, M. (2015). The antecedents of cyberloafing: A case study in an Iranian copper industry. *Computers in Human Behavior, 51*, 172-179. doi:10.1016/j.chb.2015.04.042
- Sipior, J. C., & Ward, B. T. (2002). A strategic response to the broad spectrum of Internet abuse. *Information Systems Management, 19*, 71-79.
- Spector, P. E., Rogelberg, S. G., Ryan, A. M., Schmitt, N., & Zedeck, S. (2014). Moving the pendulum back to the middle: Reflections on and introduction to the inductive research special issue of Journal of Business and Psychology. *Journal of Business and Psychology, 29*, 499-502.
- Taneja, A. (2006). *Determinants of adverse usage of information systems assets: A study of antecedents of IS exploit in organizations* (Unpublished doctoral dissertation). University of Texas, Arlington.
- Taneja, A., Fiore, V., & Fischer, B. (2015). Cyber-slacking in the classroom: Potential for digital distraction in the new age. *Computers & Education, 82*, 141-151. doi:10.1016/j.compedu.2014.11.009
- Ugrin, J. C., & Pearson, J. M. (2013). The effects of sanctions and stigmas on cyberloafing. *Computers in Human Behavior, 29*, 812-820. doi:10.1016/j.chb.2012.11.005
- Wagner, D. T., Barnes, C. M., Lim, V. K., & Ferris, D. L. (2012). Lost sleep and cyberloafing: Evidence from the laboratory and a daylight saving time quasi-experiment. *Journal of Applied Psychology, 97*, 1068-1076. doi:10.1037/a0027557
- Weatherbee, T. G. (2010). Counterproductive use of technology at work: Information & communications technologies and cyberdeviancy. *Human Resource Management Review, 20*(1), 35-44. doi:10.1016/j.hrmr.2009.03.012
- Zellner, A. (2001). Keep it sophisticatedly simple. In H. Keuzenkamp & M. McAleer (Eds.), *Simplicity, inference, and modelling: keeping it sophisticatedly simple* (pp. 242-262). Cambridge, England: Cambridge University Press.
- Zoghbi-Manrique-de-Lara, P., & Olivares-Mesa, A. (2010). Bringing cyber loafers back on the right track. *Industrial Management & Data Systems, 110*, 1038-1053.

### Author Biographies

**Kevin L. Askew**, PhD, is an assistant professor of Psychology at Montclair State University. His primary research interests include cyberloafing, technology and human behavior at work, and counterproductive work behaviors.

**Alexandra Ilie**, PhD, is an associate professor of Psychology at Illinois State University. Her research interests include counterproductive work behaviors, occupational health psychology, and individual differences in the workplace.

**Jeremy A. Bauer**, PhD, is an assistant professor currently serving as the program coordinator of the Industrial/Organizational Psychology program at Valdosta State University. His research interests include workplace health and safety, extra-task behaviors, organizational justice, and organizational feedback.

**Daniel V. Simonet**, PhD, is an assistant professor of Psychology at Montclair State University. His primary research interests include individual differences, empowerment, and emotions at work.

**John E. Buckner**, PhD, is vice president of OD & Assessment at AlizPartners, a leading, global professional services and interim management firm. His primary research interests include personality, assessment, leadership, decision-making, and technology use at work.

**Thomas A. Robertson**, MA, is currently a compensation analyst at Verizon. His primary research interests include motivation, self-efficacy, and leadership at work.