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Testing the Plausibility of a Series of Causal Minor Cyberloafing Models

by

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A thesis submitted in partial fulfillment
of the requirements for the degree of
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ABSTRACT

Cyberloafing is the nonsanctioned recreational use of the computers/internet during work hours. Although research is increasing, the processes related to cyberloafing are not well understood. In the current studies, I developed, tested, and evaluated a series of causal minor-cyberloafing models. In Study 1, I empirically compared four minor-cyberloafing taxonomies and selected two of these models as my working taxonomies for minor cyberloafing. In Study 2, I tested and evaluated eight causal minor-cyberloafing models using structural equation modeling techniques and various model-data fit indices. Results of Study 2 indicated that the models were not plausible, bringing into question the value of the proposed models. Despite the poor primary results, I did find a number of potentially important results in the subsequent exploratory analyses. First, I observed high correlations between minor cyberloafing and four of my exploratory variables. Second, I found that one's perception of the *descriptive* cyberloafing norms predicted minor cyberloafing above and beyond one's perception of the *injunctive* cyberloafing norms. Finally, I found that the predictors cyberloafing attitudes and perceived descriptive norms accounted for a substantial amount of variance in minor cyberloafing. I discuss the theoretical implications of the exploratory results and future directions for research in the discussion section.

Chapter One

Introduction

Roughly 300 years ago, a major shift began to occur: wage earning began to overtake farming as the dominant way people made a living (Christian, 2008). As more people became wage earners, more people began to work in organizations. Eventually, people began to systematically study work in organizations. Today, this field is known as I/O psychology.

I/O psychology consists of two subfields: (1) industrial psychology, and (2) organizational psychology. The “I-side” of the field focuses on topics such as recruitment, selection, and training; whereas the “O-side” focuses on areas such as motivation, well-being, attitudes, and the social context within the organization. In general, the I-side focuses on the management of human resources in organizations, and the O-side focuses on understanding and predicting behavior within organizational settings (Jex & Britt, 2008). In practice, however, the distinction between the I-side and the O-side is not clear cut, and many research programs span both sides.

In the last three decades, I/O psychology has developed a much better understanding of “good work behavior” and “bad work behavior”. Good work behavior, or organizational citizenship behavior, is employee behavior that contributes to the goals of the organization but is not a formal part of the job. Examples of organizational

citizenship behavior are helping a coworker with the fax machine, speaking positively about the organization to friends, and volunteering to work on Saturday. Organizational citizenship behaviors have been linked to a number of important organizational variables, such as job satisfaction, organizational commitment, and organizational justice (Dalal, 2005).

This research, however, is about *bad* work behavior; or as many I/O psychologist call it—*counterproductive work behavior*. More precisely, this concerns a special kind of counterproductive work behavior: counterproductive work behavior involving a computer and/or the internet. Many I/O psychologists refer to this kind of counterproductive behavior as *cyberloafing*.

This paper will present two studies designed to extend the field's knowledge of cyberloafing. In order to do this, it is necessary to review the appropriate literatures, so that it is clear why the two presented studies were conceived and conducted. The two appropriate literatures in this situation are the counterproductive work behavior and cyberloafing literatures. The counterproductive work behavior literature will be reviewed first, followed by the cyberloafing literature. After the literature reviews, I present the two cyberloafing studies. The ultimate goal of this paper is to develop, test, and evaluate a series of causal minor-cyberloafing models.

Chapter 2

Counterproductive Work Behavior Literature Review

Counterproductive work behavior (CWB) is behavior that harms, or has the potential to harm, the goals of an organization. Examples of CWB are stealing pens from work, making unwarranted personal phone calls, and physically assaulting a coworker. CWB has been studied under a variety of terms; some of these terms refer to a broad collection of “bad work behaviors”, and therefore can be considered more or less synonymous with the term CWB (e.g., organizational misbehavior); whereas other terms refer to a specific kinds of “bad work behavior”, and therefore can be consider specific types of CWB (e.g., violence, cyberloafing).

This section of the paper reviews the CWB literature in preparation for the two cyberloafing studies. The CWB literature is extensive, so a completely exhaustive review of the CWB is beyond the scope of this paper. Nonetheless, this review will cover the major topics and findings in the CWB literature.

Conceptualizations of CWB

The conceptual definition for CWB given in this paper is behavior that harms, or has the potential to harm, the goals of the organization. This definition, while common, is not used by all CWB researchers. Other researchers have approached CWB from different perspectives, and have consequently defined CWB in slightly different ways.

Robinson and Bennett (2003) group the different conceptualizations of CWB into one of the three different categories of approaches.

The first approach identified by Robinson and Bennett (2003) is to define CWB as deviant behavior in the workplace that results from a *particular cause*. Some researchers have identified CWB as deviant behavior caused by aspects of the work environment that the organization is responsible for, and these researchers have consequently focused on organization-directed CWBs (O'Leary-Kelly, Griffin, & Glew, 1996). Other researchers have focused on interpersonal-directed CWBs caused by the mistreatment (Bies & Tripp, 1998; Skarlicki & Folger, 1997; Stuckless & Goranson, 1992). And still other researchers have focused on CWBs as a response to frustration (Spector, 1975; Spector, 1997).

The second approach identified by Robinson and Bennett (2003) is to define CWB as deviant behaviors in the workplace that are *purposely* harmful to the organization (Baron & Neuman, 1996; Giacalone & Greenberg, 1997) or individuals within the organization (Ashforth, 1994; Perlow & Latham, 1993). Including intent as a necessary component of the definition of CWB makes it clear that accidents (e.g., a waitress accidentally dropping and breaking a coffee cup) and poor task performance (e.g., not making enough widgets due to lack of widget-making-ability) are not CWB.

Finally, the third approach identified by Robinson and Bennett (2003) is to define CWB as deviant behavior in the workplace that *violates organizational norms* (Andersson & Pearson, 1999; Puffer, 1987; Vardi & Weiner, 1996). Organizational norms vary from job-to-job, and the behaviors that employees consider counterproductive

likely vary as well. Including the breaking of organizational norms as a necessary component of the definition of CWB can potentially take these differences across jobs into account, and as a result, be closer to what employees consider CWB.

In sum, researchers do not agree on an exact conceptualization of CWB.

However, although there are slight differences in the conceptualizations of CWB, the end result is that researchers are measuring much of the same thing. A number of consistent themes appear in the conceptual definitions of CWB, and examination of the CWB items from various scales shows that the sets of behaviors measured by different researchers overlap greatly (Robinson & Bennett, 2003).

Types of CWB

CWB has been useful as a broad construct for various kinds of bad behavior at work. The construct of CWB ties together a lot of different behaviors and highlights the similarity between them. However, if different components of CWB have different antecedents and consequences, a more fine-grained analysis is needed. Because this is sometimes the case, CWB researchers often distinguish between different types of CWB. This subsection highlights the common types, or distinctions, of CWB used in the literature, and places cyberloafing within these frameworks.

The most common distinction in the literature is between CWB directed towards the organization (CWB-O) and CWB directed towards individuals (CWB-I). CWB-O is counterproductive work behavior that harms the *organization*, such as stealing pens or taking an extended lunch break. CWB-I is counterproductive work behavior that harms organizational *employees or customers*, such as spreading rumors or teasing an employee.

CWB-O is hypothesized to be more strongly related to stressors stemming from the organization or job itself, such as job dissatisfaction and situational constraints; whereas, CWB-I is hypothesized to be more strongly related to stressors related to other individuals, such as interpersonal conflict (Hershcovis et al., 2007). A recent meta-analysis by Hershcovis supports these hypotheses (Hershcovis et al., 2007).

A second common taxonomy is Robinson and Bennett's (1995) taxonomy of deviant work behavior. In addition to distinguishing CWBs based on their target (i.e., CWB-O, CWB-I), Robinson and Bennett distinguish CWBs based on severity of the behavior. Thus, Robinson and Bennett's taxonomy posits that CWBs differ along two dimensions: (1) the seriousness of the behavior; and (2) the target (Robinson & Bennett, 1995). The two orthogonal dimensions divide deviant workplace behavior into four quadrants: *personal aggression* (serious-interpersonal), *property deviance* (serious-organizational), *political deviance* (minor-interpersonal), and *production deviance* (minor-organizational).

Depending on the severity of the behavior, cyberloafing can be considered either production deviance (minor-organizational) or property deviance (serious-organizational) [Blanchard & Henle, 2008; Blau et al., 2006]. Cyberloafing can be considered production deviance when an employee engages in relatively minor behaviors, such as sending a personal email at work. Cyberloafing can be considered property deviance when an employee engages in more serious behaviors, such as sharing proprietary company information at work. Parallel to findings in the counterproductive work behavior literature, researchers have found that minor cyberloafing behaviors are fairly

common, whereas serious cyberloafing behaviors are rare (Blanchard & Henle, 2008; Blau et al., 2004; Lim & Teo, 2005; Mastrangelo et al., 2006).

A third taxonomy is offered by Spector and his colleagues (Spector et al., 2006). Spector and his colleagues had subject matter experts sort CWB items into different categories, and found evidence for five types of CWB: (1) *abuse* [e.g., harassing a co-worker], (2) *production deviance* [e.g., purposely working inefficiently], (3) *sabotage* [e.g., destroying company property], (4) *theft* [stealing pens], and (5) *withdrawal* [e.g., taking an extended lunch break]. Spector et al. (2006) demonstrated the utility of this taxonomy by showing that the different types of CWB differentially correlated with boredom, job satisfaction, and anger. Furthermore, Spector and his colleagues showed that these distinctions would be obscured if their CWB types were combined into CWB-O and CWB-I.

In sum, CWB can be broken down into a number of different types, depending on how fine-grained an analysis one desires. The better recognized taxonomies are described above. The next two sections break away from the conceptualizations of CWB and discuss the empirical findings of the CWB literature, specifically the antecedents and consequences of CWB.

Antecedents of CWB

Given the prevalence and costs of CWB to organizations, it is not surprisingly that a lot of research has been done on the antecedents of CWB. This subsection will summarize the findings on the antecedents of CWB. To aid in the summarization, trends

identified by Robinson and Bennett (2003) in their seminal work, *The Past, Present, and Future of Workplace Deviance Research*, will be used.

The first trend identified by Robinson and Bennett is to treat CWB as a *reaction to experiences at work*. Researchers who take this perspective typically focus on CWB as an emotional response to either frustration, perceived injustice, lack of control, or threats to one's status. Spector and his colleagues, for example, have provided convincing evidence that CWB is often a result of an emotional response to frustrating job stressors (Fox & Spector, 1999; Fox, Spector, & Miles, 2001; Spector, 1997). Other researchers have examined CWB as a response to perceived injustices in the workplace, and have found that perceived injustice is related to a number of CWBs, including aggression (Folger & Baron, 1996; O'Leary-Kelly, Griffin, & Glue, 1996; Skarlicki & Folger, 1997), theft (Greenberg, 1990; Greenberg, 1993) interpersonal deviance (Burroughs, 2001) and sabotage (Ambrose, Seabright, & Schminke, 2001). Still other researchers have examined CWB as an emotional response to shame (Tangney et al., 1996) or feelings of powerlessness (Ambrose, Seabright, Schminke, 2001; DiBattista, 1991; Perlow & Latham, 1993).

A second trend identified by Robinson and Bennett is to treat CWB as a reflection of *one's personality*. In this view, CWB is the result of employees having certain personality traits. Personality traits that have been shown to predict CWB include: dispositional aggressiveness (Sablinski, Mitchell, James, & McIntyre, 2001), negative affect (Spector & O'Connell, 1994), trait anger (Deffenbacher, 1992; Fox & Spector, 1999) and low conscientiousness (Lee, Ashton, & Shin, 2001). The personality profile of

high-extraversion-low-agreeableness has also been found to predict CWB (Lee, Ashton, & Shin, 2001).

The final trend identified by Robinson and Bennett (2003) is to treat CWBs as an *adaptation to the social context*. Social norms, in particular, have been found to be important. For example, Robinson and O'Leary-Kelly (1998) found that the extent to which one's coworkers engages in antisocial behavior was the best predictor of workplace antisocial behavior, and social norms have been found to strongly predict cyberloafing (Blanchard & Henle, 2008). Other researchers have looked at CWBs as a learned behavior that is reinforced in certain environments (O'Leary-Kelly, Griffin, & Glew, 1996).

In sum, a number of different antecedents for CWB have been identified. These antecedents can be grouped together based on whether they are situational-based, personality-based, or adaptation-based. The final subsection of the CWB literature review deals with the consequences of CWB.

Consequences of CWB

The consequences of CWB can be grouped into two broad categories: consequences for the organization, and consequences for the employees. To date, most of the research in this area has focused on the consequences of CWB for the organization, with most of that research focusing on the cost of specific CWB behaviors. Not surprisingly, the consistent finding is that CWB is expensive; the annual costs of CWB to the organization range from \$4.2 billion for violence (Bensimon, 1997) to \$200 billion for theft (Buss, 1993).

The literature on the consequences of CWB for the employees has primarily focused on the effects of abusive supervision. Not surprisingly, abusive supervision is associated with a number of negative outcomes for the victim, including negative personal (cognitive, physical), interpersonal (aggressive behaviors, interpersonal conflict), professional (job satisfaction, turnover), and organizational functioning (productivity, commitment) [Keashly & Jagatic, 2003]. Researchers have described abusive supervision as having two effects: (a) “a spiraling effect”, where the abused employee withdraws as a response to the supervisor’s abuse, which leads to decreased task performance, which elicits even greater abuse from the supervisor (Ashforth, 1994); and (b) “a spillover effect”, where the negative effect of abusive supervision spills-over into the victim’s home life, affecting the victim’s friends and family as well (Ashforth, 1994).

In sum, CWB has high direct and indirect costs to the organization. The long term consequences of CWB for the victims are mostly unknown. However, abusive supervision is known to have a number of detrimental effects on the victim.

CWB Concluding Statement

The previous section gave an overview of the CWB literature. The review discussed the different conceptualizations of CWB, CWB taxonomies, and the antecedents and consequences of CWB. The next section reviews the cyberloafing literature. To aid in this review, the cyberloafing literature will be broken down by the three common topics found in the cyberloafing literature: (1) the taxonomy of

cyberloafing, (2) the antecedents of cyberloafing, and (3) the prevalence and consequences of cyberloafing.

Chapter 3

Cyberloafing Literature Review

Cyberloafing is the misuse of computers and/or the internet during work hours (Lim, 2002). In other words, cyberloafing is when one is suppose to be working, but really, he or she is engaged in another activity, such as: chatting on Instant Messenger, checking Facebook, or watching videos on Youtube. Some cyberloafing behaviors can be considered relatively harmless, especially if done in moderation (e.g., checking sports scores, writing personal emails). Other cyberloafing behaviors, however, are more of a problem because the behaviors are either time consuming (e.g., planning a vacation online), place the organization at risk of litigation (e.g., downloading copyrighted material), or are directly harmful to the goals of the organization (e.g., sharing proprietary company information).

Taxonomy of Cyberloafing

The primary focus of cyberloafing literature has been identifying the taxonomy of cyberloafing. One of the first cyberloafing taxonomies was proposed by Lim in 2002. Lim's taxonomy states that cyberloafing consists of two factors: (1) web-browsing, and (2) emailing. The web-browsing factor refers to reading general news sites (e.g., CNN.com), shopping online (e.g., amazon.com) and any other non-email activities that involve a web-browser. The email factor refers to checking and sending non-work

related emails. Lim's taxonomy was supported by a confirmatory factor analysis in a later study (Lim & Teo, 2005).

Lim defined cyberloafing as the misuse of the internet during office hours (Lim, 2002). However, there are many types of behaviors that meet Lim's conceptual definition of cyberloafing that are not captured by the two factors Lim proposed. For example, moonlighting (using the internet to gain additional income), posting messages, downloading non-work related information, using chatrooms, and playing games online all fit Lim's conceptual definition of cyberloafing, but are not covered by Lim's cyberloafing factors or the items in Lim's scale.

To address this issue, two teams of researchers independently created new scales with items covering more of the cyberloafing construct. Blau and his colleagues (Blau, Yang, & Ward-Cook, 2004) created a new measure by extending Lim's cyberloafing scale to cover more of Lim's conceptual definition of cyberloafing. Examples of some of the items added by Blau et al. are, "Chat with other people with instant messenger", and "Play online games". When the data were factor analyzed, Lim's original items loaded onto a web-browsing factor and email factor, and Blau et al.'s additional items loaded onto a third factor, which Blau and his colleagues called "Interactive Cyberloafing". Blau et al. describe interactive cyberloafing as a type of cyberloafing that involves more dynamic responding, either with other humans (e.g., instant messenger) or with software (e.g., online games). Thus, Blau's research team proposed that cyberloafing consisted of three factors: (1) web-browsing, (2) e-mailing, and (3) interactive. Blau et al.'s three-factor solution was replicated on a validation sample.

Mahatanankoon and his colleagues (2004) were the second research team to address the criterion deficiency of Lim's original scale. Instead of extending Lim's original cyberloafing scale, like Blau and his colleagues did, Mahatanankoon et al., created a new scale from scratch. To develop their scale, Mahatanankoon and his team had MBA students generate a list of various cyberloafing behaviors. The list was examined by the researchers for clarity and redundancy, and, after pilot testing, eventually condensed into a final pool of 11 statements. After further testing, the data were factor-analyzed, and a three-factor solution emerged. Factor 1 consisted of items related to shopping and purchasing goods online (e.g., conducting personal on-line shopping); factor 2 consisted of items related to seeking and viewing information on the internet (e.g., researching personal hobbies); and factor 3 consisted of items related to personal communication (e.g., using personal web-based e-mail, such as hotmail, yahoo, etc.). Based on item content, Mahatanankoon et al. named these factors: (1) e-commerce, (2) information research, and (3) personal communication, respectively. Mahatanankoon et al.'s three-factor solution was later replicated on a validation sample.

A fourth cyberloafing taxonomy was proposed by Blanchard and Henle (2008). Blanchard and Henle agreed with other researchers that cyberloafing is a multifaceted construct. However, Blanchard and Henle believed the distinction between minor cyberloafing behaviors (e.g., viewing a CNN webpage) and serious cyberloafing behaviors (e.g., viewing adult-oriented websites) was important, and criticized past taxonomies for not making this distinction. Blanchard and Henle argued that the distinction between minor and serious cyberloafing is critical because minor cyberloafing and serious cyberloafing are likely to have different antecedents and relations with other

variables. Blanchard and Henle added additional items to Lim's original scale, and factor analyzed the subsequent data: A two-factor solution consistent with Blanchard and Henle's theorizing emerged. Blanchard and Henle therefore proposed that cyberloafing consists of two broad factors: (1) minor cyberloafing, and (2) serious cyberloafing.

Finally, yet another cyberloafing taxonomy was proposed by Mastrangelo and his research team (Mastrangelo et al., 2006). Mastrangelo and his colleagues, similar to Mahatanankoon's research group, developed their own scale instead of extending Lim's cyberloafing scale. Mastrangelo and colleagues' cyberloafing scale asks participants to rate the frequency, on a 7-point scale (1= *never did this or not in the past 6 months*; 7= *almost constantly*), of an extensive list of 40 cyberloafing behaviors.

Mastrangelo et al. (2006) conducted a factor analysis on the responses to their scale, and argued for a two-factor solution consisting of the factors: (1) nonproductive computer use, and (2) counterproductive computer use. *Nonproductive* computer use occurs when an employee uses the computer during work hours for activities that are unproductive, but are not potentially destructive to the organization (e.g., reading a news website). *Counterproductive* computer use occurs when an employee engages in behavior that could conflict with the company's goals (e.g., sending proprietary company information to a third party) [Mastrangelo, Everton, & Jolton, 2006].

To summarize, a major focus of the nascent cyberloafing literature has been identifying a taxonomy of cyberloafing. Numerous cyberloafing taxonomies have been proposed. Some taxonomies classify a broad range of cyberloafing behaviors (e.g., Blanchard & Henle's taxonomy, Mastrangelo et al.'s taxonomy); other taxonomies

classify the more common, minor forms of cyberloafing (e.g., Lim's taxonomy, Blau et al.'s taxonomy, Mahatanankoon et al.'s taxonomy).

Cyberloafing Antecedents

A second focus of the cyberloafing literature has been identifying antecedents of cyberloafing. The goal of this section is to briefly review the known antecedents of cyberloafing. To help summarize, the antecedents will be grouped based on whether they are personality-based, situation-based, or based on some non-personality individual difference variable.

Both higher-order and lower-order personality characteristics have been found to predict cyberloafing. Wyatt and Phillips (2005) have implicated low agreeableness and high extraversion in cyberloafing, and other researchers have observed significant correlations between conscientiousness and cyberloafing (Everton, Mastrangelo, & Jolton, 2005). Lower order personality characteristics, such as impulsivity (Davis, Flett, & Besser, 2002; Everton et al., 2005), sensation seeking (Everton et al., 2005), external locus of control (Blanchard & Henle, 2008), and trait procrastination (Davis, Flett, & Besser, 2002) have also been implicated in cyberloafing.

A number of non-personality individual differences variables have also been found to predict cyberloafing. Not surprisingly, individual difference variables that predict general computer-use often predict cyberloafing as well. For example, age (De Lara, 2007; Everton, Mastrangelo, & Jolton, 2005; Garrett & Danziger, 2008) time spent on the internet at home (Blanchard & Henle, 2008), "internet skill" (Blanchard & Henle,

2008), and gender (Mastrangelo, Everton, and Jolton, 2006; Everton et al., 2005; Mastrangelo et al., 2006) have all been implicated in cyberloafing.

Finally, a few situational variables have been found to predict cyberloafing. Social norms have been one of the strongest predictors of cyberloafing (Blanchard & Henle, 2008). Other variables, such as employee status (Garrett & Danziger, 2008), job autonomy (Garrett & Danziger, 2008), job type (Garrett & Danziger, 2008), and one's connection speed at work compared to at home (Mastrangelo, et al., 2006) have also been implicated in cyberloafing.

In sum, a number of different antecedents for cyberloafing have been identified. These antecedents can be grouped together depending on whether they are personality-based, situation-based, or non-personality individual-difference based. Generally, variables that predict computer-use also predict cyberloafing.

Prevalence and Consequences

The third major focus of the cyberloafing literature has been estimating the prevalence of cyberloafing and determining the consequences of cyberloafing. Numerous estimates of the prevalence of cyberloafing have been made, and although the estimates vary substantially, they all converge on the idea that cyberloafing is widespread. In a study by Vault.com, an online analyst firm, 37% of employees admitted to surfing constantly at work, and an additional 32% of employees admitted to surfing the internet a few times a day. Greenfield and Davis (2002) estimate the average employee spends three hours per week cyberloafing, whereas Mills, Hu, Beldona, and Clay (2001) estimate the average employee spends two and a half hours per day cyberloafing.

Surfwatch software paints an even grimmer picture, estimating that almost one third of American workers' time on the internet is spent "cheating the boss out of real work" (Naughton, Raymond, & Shulman, 1999). Indeed, Malachowski (2005) found that cyberloafing is now the most common way employees waste time at work.

The rise in cyberloafing has not gone unnoticed by organizations. Findings from a survey by Telemate.Net indicated that 83% of surveyed companies were concerned with employees misusing the internet at work, and over 70% of companies indicated that cyberloafing results in real costs to their companies (Business Wire, 2002). Estimates for the cost of cyberloafing vary substantially, but those for United States businesses as a whole are usually in the billions of dollars per year (e.g., Foster, 2001; Naughton et al., 1999).

In addition to productivity loss, cyberloafing can cause the organization legal problems in cases where employees download copyrighted material and view or send offensive electronic material (Lichtash, 2004; Mills, et al., 2001; Panko & Beh, 2002; Scheuermann & Langford, 1997). Furthermore, bandwidth intensive cyberloafing can bog down computer resources and degrade system performance (Sipior & Ward, 2002). Many organizations have responded to cyberloafing by implementing internet monitoring systems (American Management Association, 2001). However, studies looking at the effectiveness of internet monitoring systems to reduce cyberloafing have found mixed results (Galletta & Polak, 2003; Lee, Lee, & Kim, 2004).

In sum, estimates of the prevalence and cost of cyberloafing differ substantially, but they all converge on the idea that cyberloafing is widespread and expensive to the organization.

Cyberloafing Concluding Statement

Although research on cyberloafing is increasing, cyberloafing is still not well understood. One glaring short-coming of the cyberloafing literature is the dearth of empirical studies testing causal models of cyberloafing. To make progress, cyberloafing researchers need to move beyond descriptive studies—which have focused on the taxonomy, antecedents, and prevalence of cyberloafing—and start empirically testing causal models.

Chapter 4

Goals of the Master's Thesis

The goal of the present studies was to develop, test, and evaluate a series of causal *minor*-cyberloafing models. The review of the cyberloafing literature showed that many studies have examined the taxonomy, antecedents, and prevalence of cyberloafing, but that few studies have empirically tested causal cyberloafing models. I conducted the present studies to begin to fill this gap in the cyberloafing literature.

The purpose of Study 1 was to select a working taxonomy of minor cyberloafing for use in the models. This was accomplished by deriving factor-models based on four taxonomies, comparing the model-data fit of the four factor-models, and selecting the taxonomy with the best fitting factor-model. Study 1 was necessary because multiple cyberloafing taxonomies are used in the cyberloafing literature, and there was previously no empirical or theoretical reason to favor one of the taxonomies over the others.

In Study 2, a series of causal minor-cyberloafing models was tested and evaluated. This was accomplished using structural equation modeling (SEM) and various model-data fit indices. Study 2's data was cross-sectional, so it is *not* possible to determine if any of the causal models are correct (i.e., causation cannot be determined). However, SEM does allow one to determine if the causal models are *plausible*.

Chapter 5

Study 1

The goal of Study 1 was to select a working minor-cyberloafing taxonomy. The four taxonomies examined in Study 1 are: (a) Lim's [2002] taxonomy, (b) Blau et al.'s [2004] taxonomy, (c) Mahatanankoon et al.'s [2004] taxonomy, (d) and a general 1-factor taxonomy. Blanchard and Henle's (2008) and Mastrangelo et al.'s (2006) taxonomies are not investigated in this study because these taxonomies classify extreme behaviors (e.g., using work computers to traffic illicit drugs)—in addition to more common behaviors—and are therefore not taxonomies of *minor* cyberloafing.

Method

Participants. Participants were university students gathered from SONA, an electronic system designed to manage and schedule studies. Participants were pre-screened based on their answers to two questions: (1) “Do you have a job that involves working with a computer?” and (2) “Do the computer(s) you use at work have internet access?” Four-hundred one men and women answered “yes” to both questions and were therefore eligible for this study.

Materials. Participants completed three minor cyberloafing scales and two exploratory measures. The three minor cyberloafing scales were, (a) Blanchard and Henle's [2008] minor cyberloafing scale, (b) Mahatanankoon et al.'s [2004] cyberloafing

scale, and (c) Mastrangelo et al.'s [2006] nonproductive cyberloafing scale. These scales were chosen based on their frequency in the literature, and their use of separate validation studies. Although there is much overlap in item content across the different cyberloafing scales, each scale also measures unique behaviors (e.g., Mastrangelo et al.'s scale is the only scale to measure cyberloafing behaviors related to building websites; Mahatanankoon et al.'s scale is the only scale to measure the sending of e-cards). An analysis containing a comprehensive set of cyberloafing behaviors is desirable so the entire minor cyberloafing domain can be represented.

Blanchard and Henle's scale. Blanchard and Henle's (2008) minor cyberloafing scale consists of 9 items. The lead-in question is, "How often do you engage in each activity during work hours?" Participants rate the frequency of the behaviors on a four-point scale, from *hardly ever (once every few months or less)* to *frequently (at least once a day)*. An example item is "Checked online personals". Coefficient alpha was .85 in Study 1.

Mahatanankoon et al.'s scale. Mahatanankoon et al.'s (2004) cyberloafing scale consists of 11 items. The lead-in question is, "How often do you perform these activities at work?" Participants rate the frequency of the behaviors on a five-point scale, from *never* to *always*. An example item is "Researching any products or services related to personal interests." In Study 1, coefficient alpha was .77, .85, and .60 for the e-commerce, information research, and communication subscales, respectively.

Mastrangelo et al.'s scale. Mastrangelo's (2006) nonproductive cyberloafing scale consists of 15 items. The lead-in question is, "Have you done these at work?"

Participants rate the frequency of the behaviors on a seven-point scale, from *not in the past 6 months* to *almost constantly*. An example item is “Used the Internet while at work to visit sweepstakes sites that award prizes (iwon.com, etc.).” Coefficient alpha was .83 in Study 1.

Exploratory scales. Two exploratory scales were included: Blanchard and Henle’s (2008) serious cyberloafing scale and Mastrangelo et al.’s (2006) counterproductive cyberloafing scale. These scales were included to examine the relations among the serious cyberloafing scale, the counterproductive cyberloafing scale, and the minor cyberloafing scales.

Procedure. Participants completed the cyberloafing scales as part of mass testing in SONA. Participants had to complete all the scales in mass-testing before they were allowed to sign up for a study. Since the cyberloafing scales were similar in content, participant boredom and response tendencies were a concern. To partially mitigate this concern, cyberloafing scales from different research teams were separated by at least two non-cyberloafing scales. Ideally, the presentation order of the cyberloafing scales should be controlled for. However, in mass-testing it is not possible to alter the order of the scales for different participants. I assumed participants would be most attentive at the beginning of mass-testing and least attentive at the end of mass-testing, so I arranged the cyberloafing scales from longest to shortest. Thus, all participants completed the cyberloafing scales in the following order: (1) Mastrangelo et al.’s scales, (2) Blanchard and Henle’s scales, (3) Mahatanankoon et al.’s scale, with at least two non-cyberloafing scales between each set of cyberloafing items.

Analysis. Four different confirmatory factor models for minor cyberloafing were tested and compared for fit using LISREL. The factor models tested were: (a) a 1-factor general minor cyberloafing model, (b) a 2-factor model based on Lim's [2002] taxonomy, (c) a 3-factor model based on Mahatanankoon et al.'s [2004] taxonomy, and (d) a 3-factor model based on Blau et al.'s [2004] taxonomy. The final factor structure for each taxonomy was arrived at with the same procedure: (1) Factor loadings were hypothesized based on previous factor loadings and item content; (2) a model based on the hypothesized structure was run; (3) non-significant paths were eliminated one-by-one based on theoretical considerations first and t-values second. Once all factor loadings were significant, the model was considered finished and ready to be compared against the other factor models. Models were compared using incremental fit statistics (i.e., TLI, NFI, CFI, GFI), discrepancy-based fit statistics (i.e., RMSEA, SRMR), and the EVCI statistic.

Results

Item means were lower in the current sample than samples reported in the literature (e.g., Blanchard & Henle, 2008; Mastrangelo et al., 2006). Perhaps the students in the current sample had jobs with lower autonomy and lower status—conditions that have been found to result in less cyberloafing (Garrett & Danziger, 2008)—than previous samples. Generally, students in the current sample indicated that they rarely engage in most of the cyberloafing behaviors.

Model-data fit. Table 1 shows a comparison of the model-data fit of the different factor-models. Two items had nonsignificant factor loadings across all analyses: “Played

computer games against your computer while at work” and “Downloaded computer programs/applications (NOT job related)”. Consistent with protocol, final fit statistics were calculated without these items.

Table 1

Model-Data Fit Statistics for the Minor Cyberloafing Factor-Models

Model	χ^2_{exact}	df	p_{exact}	RMSEA	ECVI	TLI	CFI	GFI
General	2,777.44	495	<.01	.12	9.01	.88	.89	.66
Lim	2,471.46	494	<.01	.11	7.92	.89	.90	.69
Mahat	2,421.92	492	<.01	.11	7.90	.90	.90	.69
Blau	3,535.61	492	<.01	.12	10.13	.85	.86	.64

Note. GFI = Goodness of Fit Index

The General 1-Factor Model. The General 1-Factor Model posits that there is one overall minor cyberloafing factor. The General 1-Factor model did not fit the data well, $\chi^2(495) = 2777.44$, $p < .05$. Incremental fit indices were below the recommended .90 cut-off value (TLI = .88, NFI = .86, CFI = .89, GFI = .66) and the RMSEA was higher than the recommended .08 cut-off value (RMSEA = .12). An adequate fit value was observed for SRMR statistic (SRMR = .08), but overall the results suggest that the General 1-Factor Model is not an appropriate model for minor cyberloafing.

Lim’s 2-Factor Model. Lim’s 2-Factor Model posits that there are two cyberloafing factors—email and web-browsing (Lim, 2002). Lim’s 2-Factor Model had comparable fit to the General 1-Factor Model based on the incremental (TLI = .89, NFI = .88, CFI = .90, GFI = .69) and discrepancy-based (RMSEA = .11, SRMR = .09) fit

indices. However, Lim's 2-Factor Model had better fit than the General 1-Factor Model based on the EVCI index ($EVCI_{Lim} = 7.92$, $EVCI_{General} = 9.01$).

Mahatanankoon et al.'s 3-Factor Model. Mahatanankoon et al.'s 3-Factor Model posits that there are three cyberloafing factors—e-commerce, information research, and communication (Mahatanankoon et al., 2004). Mahatanankoon et al.'s 3-Factor Model showed comparable fit to Lim's 2-Factor Model based on the incremental fit indices (TLI = .90, NFI = .88, CFI = .90, GFI = .69), the discrepancy-based fit indices (RMSEA = .11, SRMR = .11), and the EVCI (7.90).

Blau et al.'s 3-Factor Model. Blau et al.'s 3-Factor Model posits that there are three cyberloafing factors—email, web-browsing, and interactive cyberloafing (Blau et al., 2004). Of the four factor-models, Blau et al.'s 3-Factor Model had the worst fit. The incremental fit indices (TLI = .85, NFI = .83, CFI = .86, GFI = .64) and the RMSEA (RMSEA = .12) were comparable to the other factor-models, but the EVCI and SRMR indices were considerably worse (SRMR = .22, EVCI = 10.13).

Selecting a factor-model. Model-data fit was generally poor across the four tested models, suggesting that more work is needed on how to categorize cyberloafing behaviors. However, Lim's 2-Factor Model and Mahatanankoon et al.'s 3-Factor Model showed considerably better fit than the other two models on the ECVI index—an index that is increasingly becoming favored by researchers for comparing non-nested models (Brown & Cudeck, 1993). For this reason, I chose to use Lim's 2-Factor Model and Mahatanankoon et al.'s 3-Factor Model as my working minor cyberloafing models for Study 2.

Selecting items. Next, I had to select items to represent the different minor cyberloafing factors. The selected items were to serve as indicators for their respective factors in the structural equation models in Study 2. For each factor, I chose the three highest loading items to represent that factor. This resulted in the same items being chosen for the email and communication factors, and the same items being chosen for the web-browsing and information research factors. In other words, the only difference between my two working taxonomies is the presence or absence of the e-commerce factor.

One last step was needed to prepare the items for Study 2. Since the items came from different scales, they had different lead-in statements, and often different tenses. To make the scales easier to read, items were changed to a common tense. For example, the item “Conducting on-line shopping” was changed to “Conduct on-line shopping” and the item “Checked non-work related email” was changed to “Check non-work related email”.

Discussion

The purpose of Study 1 was to choose a working taxonomy of minor cyberloafing for Study 2. This was accomplished by comparing the model-data fit of four factor-models based on four minor cyberloafing taxonomies. Comparable fit was found for Lim’s 2-Factor Model and Mahatanankoon et al.’s 3-Factor Model. Rather than arbitrarily choosing one of models, the decision was made to use both models in Study 2. Although the fit of the two models was not ideal, Study 1 allowed me to do two things necessary for Study 2: (a) rule out two minor cyberloafing models and focus on the selected working models, and (b) develop the subscales needed for Study 2.

Chapter 6

Study 2

The goal of Study 2 was to test and evaluate a series of causal minor-cyberloafing models. In order to do this, I had to finish proposing the models. The minor cyberloafing factors to be included in the causal models had been selected in Study 1. The next step was to identify all the other variables to be included in the models (i.e., the variables proximal to minor cyberloafing). The next few subsections describe these variables, and why they were hypothesized to be important to minor cyberloafing.

Perceived Injunctive Norms

Social norms are behavioral expectations of what is and is not acceptable behavior within a group or society. There are two types of social norms: injunctive norms and descriptive norms. Injunctive norms are what people say others *should* do, and descriptive norms are what people *actually* do. The two types of norms are not always in agreement: For example, a group of smokers may say that you shouldn't smoke (injunctive norm), even though everyone in the group does smoke (descriptive norm).

Although there was some initial controversy over the role of norms in predicting behavior (Schultz et al., 2007), since then research has clearly established that norms are important in guiding people's actions (Aarts & Dijksterhuis, 2003; Cialdini, Kallgren, & Reno, 1991; Darley & Latane, 1970; Kerr, 1995; Terry & Hogg, 2001). Indeed,

perceived injunctive norms have been the best predictor of cyberloafing found to date (Blanchard & Henle, 2008).

The high correlation between cyberloafing and perceived injunctive norms found in previous research ($r = .43$; Blanchard & Henle, 2008) justifies the inclusion of perceived injunctive norms in the models. At the individual level, norms are usually considered to be antecedents to behavior; thus, perceived injunctive norms are included in the models as an antecedent to cyberloafing. It is expected that the results of this study will replicate results found by Blanchard and Henle (2008).

Job Boredom

Job boredom is the individual's subjective appraisal of how dull or exciting his or her job is (Bruursema, 2007). Individuals who find their job boring, often experience state boredom—a dissatisfying, low-arousal state, often attributed to lack of stimulation from the environment—at work (Farmer & Sundberg, 1986; O'Hanlon, 1981).

There are two reasons to expect job boredom to strongly correlate with minor cyberloafing. First, cyberloafing can be considered a type of withdrawal CWB—behavior that restricts the amount of time one works to less than what is expected (Spector et al., 2006)—and withdrawal behavior has been found to strongly correlate with job boredom ($r = .52$; Bruursema, 2007). If cyberloafing is a type of withdrawal behavior, it should have the same relations with other variables as other withdrawal behaviors. Therefore, the high correlation found between job boredom and withdrawal CWB should also exist between job boredom and minor cyberloafing.

The second reason to expect job boredom to strongly correlate with minor cyberloafing is theoretical. As stated earlier, job boredom refers to one's subjective appraisal of how dull or exciting his or her job is (Bruursema, 2007) and individuals who find their job boring, often experience state boredom—a dissatisfying, low-arousal state—at work (Farmer & Sundberg, 1986; O'Hanlon, 1981). Since boredom is a *dissatisfying* state, when one experiences boredom he or she is motivated to reduce his or her feelings of boredom. In the work context, where the number of engaging activities is often limited, cyberloafing can be an effective and discreet way to reduce boredom.

Because job boredom is hypothesized in the CWB literature to be an antecedent to withdrawal behavior, and because job boredom is hypothesized to motivate increases in minor cyberloafing, job boredom will be included in the models as an antecedent to minor cyberloafing.

Task Performance

Task performance is employees' performance on the core parts of their job. Task performance for a salesperson may refer to how many sales he or she made in a given time span; the task performance for a McDonald's employee might be how quickly he or she makes cheeseburgers. The defining feature of task performance is that it refers to core aspects of the employee's job.

Although the conceptual definition of cyberloafing implies that cyberloafing is harmful to task performance, a number of researchers have suggested that cyberloafing is sometimes beneficial to task performance. These researchers argue that cyberloafing can provide a much needed break, which can lead to improved task performance once the

employee resumes work (Anandarajan, Devine, & Simmers, 2004; Anandarajan & Simmers, 2003; Belanger & Van Slyke, 2002; Block, 2001; Greenfield & Davis, 2002; Oravec, 2002; Stanton, 2002).

This idea, that short cyberloafing breaks can boost task performance, is plausible. However, the focus of this study is on the *overall* relations among cyberloafing and its antecedents and consequences, as these relations occur in “the wild”. In certain circumstances cyberloafing may be beneficial, but what is the overall relation between cyberloafing and task performance in organizations today? The studies on the prevalence and effects of cyberloafing, mentioned earlier, imply that what is occurring in organizations is not that employees are taking short breaks, but rather employees are spending considerable amounts of time cyberloafing.

Furthermore, even if cyberloafing increases task performance once the employee resumes work, in order for the relation between cyberloafing and task performance to be positive, the performance gain would have to be big enough to compensate for the time lost cyberloafing. Given the high base rates of cyberloafing discussed in the introduction, it seems unlikely that the benefits of cyberloafing will compensate for the productivity that could have occurred. Minor cyberloafing is therefore hypothesized to negatively relate to task performance.

The Ability to Hide Cyberloafing

The ability to hide cyberloafing refers to a worker’s ability to hide his or her computer activity from his or her coworkers and supervisors based on variables in his or her work environment. Variables that are likely to be important to an employee’s ability

to hide cyberloafing include: (a) the visibility of the computer screen to coworkers and supervisors [e.g., computer screen facing the hallway vs. computer screen facing the wall], (b) the location of the employee's computer [e.g., in an isolated corner vs. next to a busy hallway], (c) the employee's ability to detect someone approaching [i.e., can the employee see his or her supervisor approaching?], and (d) whether or not the employee's computer activity is recorded [e.g., whether or not the IP addresses they visit are logged].

The ability to hide cyberloafing is likely to be an important predictor of cyberloafing because it presumably affects the chances of being reprimanded for cyberloafing. Simply put, the ability to hide cyberloafing lowers the risk of cyberloafing, which raises the expected value of cyberloafing. Thus, all other things being equal, an employee with a high ability to hide cyberloafing is more likely to cyberloaf than an employee with a low ability to cyberloafing.

Despite its potential importance, the ability to hide cyberloafing has not been examined by cyberloafing researchers. This creates two problems for the current investigation. The first problem is conceptual: it is necessary to know which ability to hide cyberloafing factors are important to minor cyberloafing so those factors can be included in the causal-models. The second problem is practical: scales are needed to measure the relevant ability to hide cyberloafing factors. These problems need to be addressed in a pilot study before the causal models can be finalized.

Chapter 7

The Ability to Hide Cyberloafing Pilot Study

A pilot study was conducted to (1) examine the factor structure of an initial ability to hide cyberloafing scale, (2) determine which factors are likely to be important antecedents to cyberloafing, and (3) finalize scales to measure these factors.

Method

Participants. Participants were 63 employees from various companies. The sample was mostly male (71.2%), with a mean age 41.86 years old (SD = 10.34). Many participants in the sample had high incomes: Over half of participants who completed the annual-household-income item indicated that they have household incomes exceeding \$100,000 a year. Participants also indicated that they worked many hours a week (M = 50.98, SD = 10.61).

Materials. The ability to hide cyberloafing was measured with 17 items created for this study. Items covered various reasons why employees might have the ability to hide cyberloafing, including: (a) the visibility of the computer screen to coworkers and supervisors, (b) the location of employee's computer, (c) the employee's ability to detect someone approaching, and (d) whether or not the employee's computer activity is recorded. In addition, global ability to hide cyberloafing items were also included.

Cyberloafing was measured with Blanchard and Henle's (2008) cyberloafing scale. Ideally, it would have been best to use the minor cyberloafing scales developed in Study 1, since those are the scales I included in Study 2. However, at the time of data collection, the results from the first study were incomplete. Since the purpose of including a cyberloafing scale in the pilot study is to provide criteria from which to evaluate the predictive validity of the ability to hide cyberloafing factors, Blanchard and Henle's scale was deemed sufficient for this purpose.

Procedure. I approached travelers individually at a departure gate of a large international airport. Travelers were only approached if they were not engaged in another activity, such as reading or talking on a cell phone. This selection strategy appeared to work well as it limited the number of potential participants in a given area to a manageable few—possibly limiting selection bias on my part.

Once a potential participant was selected, I approached him and asked if he would mind filling out a one-page questionnaire. If the participant agreed, I asked him “Do you have a job that involves working with a computer with internet access?” If he said “Yes”, I handed him the informed consent form and the questionnaire. If he said “No”, I thanked him, but kindly explained that he was not eligible to participate. Occasionally, a traveler would see me distributing the questionnaire, and ask to participate in the study.

When a participant was filling out the questionnaire, I waited nearby. The survey took most participants about 10 minutes to complete. When a participant completed the survey, he would hand the survey to me, and I would thank him for participating.

Results

Items demonstrated sufficient variability: Most items had mean responses around 4 (*neither agree, nor disagree*) and a standard deviation around 2. These results suggest that participants in different work situations do differ in their ability to hide cyberloafing.

Factor structure. I first ran a principal axis exploratory factor analysis with no rotation to determine the number of factors to extract. Three “elbows” were present in the scree plot, the locations of the elbows suggesting a 1-, 2-, or 5-factor solution. I then ran three exploratory factor analyses, extracting one, two, and five factors. In order to select among the solutions, I needed to choose a criterion to compare them. I chose interpretability as my primary criterion since—in order to appropriately place the factors within the causal-models—it is necessary that the factors be interpretable. Both the 1- and 5-factor solutions were easy to interpret. Because the purpose of the exploratory factor analysis was to identify factors which could possibly relate to minor cyberloafing, I decided that—all things being equal—it was better to have more factors than fewer. Thus, I decided the 5-factor solution was the best representation of the data for my purposes.

Five-factor solution. The five-factor solution yielded five easily interpretable factors. Items that loaded highly on Factor 1 were items related to one’s global assessment of one’s ability to hide cyberloafing. The items that loaded highly on Factor 1 were, “I COULD hide my computer activity if I wanted to” ($\lambda = 1.03$), “I COULD pretend to be working on my computer without anybody knowing” ($\lambda = .93$), “Other employees don’t know what I do on my computer” ($\lambda = .63$), “I COULD hide what I do

on my work computer from other employees” ($\lambda = .60$), and “I COULD watch a 30-minute video on my computer without anybody knowing” ($\lambda = .53$). I named Factor 1 “*Perceived Ability to Hide Cyberloafing*”.

Items that loaded highly on Factor 2 were items related to how easily other employees could see one’s computer screen. The items that loaded highly on Factor 2 were, “It is easy for people to see my computer screen without me knowing” ($\lambda = .88$), “My computer screen is highly visible to other employees” ($\lambda = .85$), “There are a lot of people around me when I am working” ($\lambda = .66$), and “Many people walk by my cubicle/office during the day” ($\lambda = .65$). I named Factor 2 “*Visibility of the Computer Screen*”.

Items that loaded highly on Factor 3 were items related to one’s ability to detect people approaching his or her work station. The items that loaded highly on Factor 3 were, “I can see people approaching my work station” ($\lambda = .83$), “I can hear people approaching my work station” ($\lambda = .73$), and “It is impossible for people to sneak up on me at work” ($\lambda = .72$). I named Factor 3 “*Ability to detect people approaching*”.

Factors 4 and 5 were represented with two items and one item respectively, which is below the recommended minimum of three items for each factor. However, since the purpose of the exploratory factor analysis was to create factors which could possibly relate to minor cyberloafing, I decided to retain the factors.

Two items loaded highly on Factor 4, and both were related to the amount of monitoring from the organization. The items that loaded highly on Factor 4 were, “My company keeps records on my computer activity” ($\lambda = .93$) and “My company monitors

my computer activity” ($\lambda = .86$). In order to maintain the same positive directional hypotheses as the other ability to hide cyberloafing factors, I named Factor 4 “*Lack of Company Monitoring*”. Only one item loaded highly on Factor 5: “I have an assigned computer at work” ($\lambda = .78$). I named Factor 5 “Assigned computer”.

Correlations with minor cyberloafing. The second goal of the pilot study was to determine which of the ability to hide cyberloafing factors are likely to be antecedents to minor cyberloafing. To accomplish this goal, I examined the relation between each factor and minor cyberloafing. Composite scores for each participant on a given factor were created by taking their mean response of all items whose (a) loadings were highest on the given factor, and (b) whose factor loadings were greater than .30. Composite scores for each factor were then correlated with minor cyberloafing.

The correlations among composite scores and minor cyberloafing can be seen in Table 2. I decided a priori to use a 1-tailed significance test since I had lower-than-expected power (due to a lower-than-expected sample size). One-tailed significance tests were appropriate since I had clear directional hypotheses (Hayes, 1994).

Table 2

Correlations Among the Ability to Hide Cyberloafing Factors

Variable	α	1	2	3	4	5
1. Minor cyberloafing	.82					
2. Perceived AtHC	.85	-.04				
3. Visibility of the computer screen	.82	-.12	.52			
4. Ability to detect people	.78	.08	.37	.38		
5. Lack of company monitoring	.93	.23	.36	.26	.02	
6. Assigned computer	-	-.10	.00	-.04	-.16	.04

Note. Correlations equal to or higher than .23 are significant at the .05 level.

Out of the five ability to hide cyberloafing factors, only the lack of company monitoring factor significantly correlated with minor cyberloafing, $r(63) = .23, p < .05$.

Selecting items. The last goal of the pilot study was to create a short ability to hide cyberloafing scale. Since only two items loaded highly on the lack of company monitoring factor, eliminating items was unnecessary. However, it is recommended that each latent construct in a structural equation model be represented by at least three indicators (Bollen, 1989). In order to meet this recommendation, a third item that closely resembled the first two items was created: “My company keeps logs of the websites I visit”. Thus, the final lack of company monitoring scale consisted of the following items: “My company monitors my computer activity”, “My company keeps records of my computer activity”, and “My company keeps logs of the websites I visit”. Coefficient alpha of the 2-item scale was .93 in the pilot study.

Discussion

The construct of the ability to hide cyberloafing was examined in this study. A number of factor analyses were conducted, and based the interpretability of the solutions, the five factor solution was chosen. Composite scores for each participant for each factor were created, and these factor scores were correlated with minor cyberloafing. The lack of company monitoring factor was found to correlate significantly with minor cyberloafing, suggesting that lack of company monitoring might be an antecedent to minor cyberloafing. The results also suggest that if the ability to hide cyberloafing is an antecedent to cyberloafing, the relation is driven primarily by the lack of company monitoring factor.

Chapter 8

Study 2 Continued

Causal Minor-Cyberloafing Models

Given the relations hypothesized in Study 2's introduction and the results from the Ability to Hide Cyberloafing Pilot Study, I now have two causal minor-cyberloafing models. The models posit that company monitoring, perceived injunctive norms, and job boredom affect the two/three minor cyberloafing factors, and that the two/three minor cyberloafing factors affect self-rated task performance. The last step is to test and evaluate these proposed models, as well as a number of plausible alternative models.

In order to distinguish between models using different taxonomies, an "M" suffix will be added to the name of models using Mahatanankoon et al.'s taxonomy, and an "L" suffix will be added to the names of models using Lim's taxonomy. For example, I will call the two above-mentioned models "Model 1M" and "Model 1L".

Method

Power analysis. To conduct the power analysis, I used a table from a seminal SEM power-analysis article (MacCallum, Browne, and Sugawara , 1996). I wanted at least 80% power to reject the null hypothesis of *not*-close fit. To ensure adequate power for each test, I based my power analysis off the causal model with the fewest degrees of

freedom (Model 2L, $df = 177$). Results indicated that I needed a sample size of 178 participants. However, so that I could drop problematic participants (e.g., participants who do not work with a computer) and still maintain the designated level of power, I decided a minimum sample size of 200 participants was needed.

Participants and procedure. Participants were 220 male and female employees from downtown Tampa. Potential participants were approached by myself or one of my research assistants and asked to complete a short one-page survey. Participants were asked the following qualifying question: “Do you have a job that involves working with a computer with internet access?” Participants who answered affirmatively were handed the survey, while I or a researcher assistant waited nearby. Participants were offered a bottle of water for their participation, although the large majority of participants declined the bottled water. Most participants took about 15 minutes to complete the survey.

Materials. A one-page, front-and-back survey was created for Study 2. The survey consisted of 12 scales (some exploratory), five demographic and exploratory items, and one item to check the integrity of the data.

Perceived injunctive norms. Perceived injunctive norms towards cyberloafing were measured with a 4-item cyberloafing norms scale developed by Blanchard and Henle (2008). Participants were asked to rate their beliefs that their coworkers would approve of them using the internet for personal use on a 5-point scale (1 = *strongly disapprove*, 5 = *strongly approve*). An example item is, “My coworkers would approve of me using the Internet for non-work related purposes”. Coefficient alpha was .89 in Study 2.

Job boredom. Job boredom was measured using four items from Lee's (1986) Job Boredom Scale. Participants were asked to respond to questions about how dull or exciting their job is on a 7-point Likert scale (1 = *never*, 7 = *always*). An example item is, "Do you get bored with your work?" Coefficient alpha was .80 in Study 2.

Company monitoring. Company monitoring was measured using the 3-item scale developed in the pilot study. Participants responded to each item using a 7-point Likert scale (1 = *strongly disagree*, 7 = *strongly agree*). An example item is "My company keeps records of my computer activity". Coefficient alpha was .94 in Study 2.

Minor cyberloafing. Minor cyberloafing was measured using the cyberloafing scales developed in Study 1. Each of the "five" scales contained three items. Participants rated how much they engage in each activity on a 7-point Likert scale (1 = *never did this*, 7 = *almost constantly*). Coefficient alphas for the minor cyberloafing scales ranged from .77 to .86 in Study 2.

Task performance. Self-rated task performance was measured using William and Anderson's (1991) 7-item in-role behavior subscale. Participants rated their performance at work compared to their coworkers with the same job on a 5-point Likert scale (1 = *a lot less than others*, 5 = *a lot more than others*). An example item is, "I adequately complete assigned duties". Task performance items 5-7 (mean $r_{\text{item-total}} = .32$) had considerably lower corrected item-total correlations than task performance items 1-4 (mean $r_{\text{item-total}} = .80$). Since I planned to use SEM—and since SEM operates at the factor level—I dropped task performance items 5-7 to create a more homogenous factor. Coefficient alpha for a scale consisting of items 1-4 was .96 in Study 2.

Demographics and exploratory items. A number of additional items were included for exploratory and control purposes. Some of these additional items measured demographic information (e.g., age, gender, job category, hours worked per week), others measured cyberloafing (e.g., social networking sites, percentage of the work day spent cyberloafing), and still others measured potential antecedents and moderators of cyberloafing (e.g., cyberloafing intentions, cyberloafing attitudes, computer knowledge, perceived ability to hide cyberloafing, descriptive norms).

Analysis. The data were initially screened using SPSS. Three participants were dropped because they indicated that they did not work with a computer with internet access. For each item, the mean, standard deviation, and corrected item-total correlations were calculated.

The plausibility of each of the causal minor-cyberloafing models was tested using structural equation modeling (SEM) as implemented by the program LISREL. In order to test the proposed models in LISREL, a number of steps were taken. First, the covariance matrix of the observed variables (i.e., the items) was calculated using SPSS. Then the covariance matrix, along with a template from an SEM course, was used to create the input file for Model 1M. Input files for Model's 2M, 3M, and 4M were subsequently created by modifying the input file for Model 1M. This three step process was repeated to generate input files for Models 1L, 2L, 3L, and 4L.

After creating the input files, I tested the proposed models using LISREL. After running each model, I examined the output to make sure LISREL converged on a solution. After that, I examine the significance of the path loadings between the latent

constructs and the observed variables, and the path loadings between latent variables and other latent variables. Next, model-data fit was examined using incremental fit indices (i.e., TLI, NFI, CFI, GFI), discrepancy-based fit indices (i.e., RMSEA, SRMR), and the test of *not-close* fit. The fit indices and statistical tests allowed me to examine whether the proposed models were plausible representations of the data. Finally, I used the fit indices, including the EVCI, to compare the fit of the different models.

Results

Results of the SEM analyses are discussed below. A summary of the SEM analyses are shown in Table 3.

Table 3

Model-Data Fit Statistics for Models Using Lim's (2002) Taxonomy

Model	χ^2_{exact}	<i>df</i>	p_{exact}	RMSEA	ECVI	TLI	CFI	GFI
Null Model	3,916.33	210						
Model 1L	523.56	178	<.01	.09	2.97	.89	.91	.81
Model 2L	521.50	177	<.01	.09	2.97	.89	.91	.81
Model 3L	531.68	181	<.01	.09	2.98	.89	.91	.81
Model 4L	529.51	180	<.01	.09	2.98	.89	.91	.81

Note. GFI = Goodness of Fit index.

Model 1M. Model 1M posits that company monitoring, perceived injunctive norms, and job boredom affect Mahatanankoon's three types of cyberloafing—e-commerce, information research, and communication—and that the three types of cyberloafing affect self-rated task performance. Model 1M showed a moderate improvement over the null model as shown by the incremental fit indices (TLI = .89, NFI = .87, CFI = .91, GFI = .78). However, only one of the incremental fit values was higher

than the recommended .90 cut-value. The RMSEA and SRMR for Model 1M were .10 and .12 respectively, suggesting poor model-data fit. Overall, model-data fit was somewhat poor for Model 1M.

Model 2M. Model 2M posits that company monitoring, injunctive norms, and job performance affect Mahatankoon et al.'s three cyberloafing factors, and that the three cyberloafing factors *and* job boredom directly affect task performance. Model 2M had similar incremental fit values to Model 1M (TLI = .89, NFI = .87, CFI = .91, GFI = .78). Again, two of these values were somewhat below the recommended .90 cut-value, and one of these values (i.e., the GFI value) was well below the recommended .90 cut-value. The RMSEA and SRMR for Model 2M were .10 and .12, suggesting that there was discrepancy between the observed data and what we would expect to observe based on the model. The EVCI for Model 2M was the same as Model 1M (EVCI = 3.97). Overall, Model 2M had comparable fit to Model 1M.

Model 3M. Model 3M posits that company monitoring affects injunctive norms, which influences the three types of cyberloafing, which affects task performance. Additionally, Model 3M posits that job boredom also influences the three types of cyberloafing. Model 3M had similar incremental fit values (TLI = .89, NFI = .87, CFI = .89, GFI = .76), and the discrepancy-based fit values (RMSEA = .09, SRMR = .12) to the first two models. The EVCI for Model 3M was 4.00, which is *slightly* higher (i.e., worse) than Models 1M and 2M's EVCI value of 3.97.

Model 4M. Model 4M posits that company monitoring affects injunctive norms, which influences the three types of cyberloafing, which affects task performance.

Additionally, Model 4M posits that job boredom directly affects the three types of cyberloafing *and* task performance. Model 4M had similar incremental fit values (TLI = .89, NFI = .87, CFI = .89, GFI = .76), and discrepancy-based fit values (RMSEA =.09, SRMR =.12) to the first three models. The EVCI for Model 4M was 4.00, which is slightly higher than Models 1M's and 2M's EVCI value and the same as Model 3M's EVCI value.

Model 1L. Model 1L posits that company monitoring, injunctive norms, and job boredom affect Lim's two cyberloafing factors—email and web-browsing—and that the two cyberloafing factors affect self-rated task performance. Model 1L had similar values to Models 1-4M for the incremental fit indices (TLI = .89, NFI = .87, CFI = .91, GFI = .81) and the discrepancy based fit indices (RMSEA =.09, SRMR =.10). However, Model 1L's EVCI (2.97) was considerably lower than the EVCI for Models 1-4M (3.97-4.00). The EVCI statistic suggests that Model 1L is a more parsimonious model than Models 1-4M.

Model 2L. Model 2L posits that company monitoring, injunctive norms, and job boredom affect Lim's two cyberloafing factors, and that the two cyberloafing factors and job boredom directly affect task performance. Model 2L had identical values to Model 1L on all incremental fit indices (TLI = .89, NFI = .87, CFI = .91, GFI = .81), discrepancy-based fit indices (RMSEA= .09, SRMR= .10), and the EVCI (2.97).

Model 3L. Model 3L posits that company monitoring affects injunctive norms, which influence the two types of cyberloafing, which affects task performance. Additionally, Model 3L posits that job boredom influences the two types of cyberloafing.

Model 3L showed comparable fit to Models 1L and 2L based on incremental fit indices (TLI = .89, NFI = .86, CFI = .91, GFI = .81) discrepancy-based fit indices (RMSEA = .09, SRMR = .11), and the EVCI (3.98).

Model 4L. Model 4L posits that company monitoring affects injunctive norms, which influences the two types of cyberloafing, which affects job performance. Additionally, Model 4L posits that job boredom directly affects the two types of cyberloafing and task performance. Model 4L showed comparable fit to Models 1-3L based on the incremental fit indices (TLI = .89, NFI = .86, CFI = .91, GFI = .81), discrepancy-based fit indices (RMSEA = .09, SRMR = .11), and the EVCI (3.98).

Summary of the Results. Overall, model-data fit was poor for all eight tested models: Fit indices values were mostly outside the recommended cut-off values, and for no model was I able to reject the null hypothesis of not-close fit. The poor model-data fit is likely due to the variables job boredom and job performance, which—judging by the significance of the path loadings—did not relate to the other latent variables as hypothesized. Despite the less-than-ideal fit, the models showed improved fit over the basic measurement model.

Model-data fit was highly similar across the eight models, especially when the same minor cyberloafing taxonomy was used. If I had to choose one of the eight proposed models, I would choose Model 1L because it had the lowest EVCI, the lowest SRMR, and the highest GFI of the eight models. However, because Model 1L also had poor model-data fit, it is unlikely to be an accurate representation of how cyberloafing relates to the other studied variables.

Exploratory Analyses

In addition to the primary analyses, I conducted a number of exploratory analyses. Within each set of exploratory analyses, the analyses were conducted using multiple cyberloafing variables as the dependent variable (e.g., all minor CL items, web-browsing, email). Two patterns were present across all analyses: (a) The magnitude of the relations was *greater* when *all minor CL items* was used as the dependent variable, and (b) the magnitude of the relations were *less* when *e-commerce* was used as the dependent variable. Besides these two exceptions, results were largely consistent in pattern and magnitude regardless of the cyberloafing variable used as the dependent variable.

My first set of exploratory analyses examined the bivariate correlations among the exploratory variables and various minor cyberloafing variables. I found that the exploratory variables (a) perceived ability to hide cyberloafing, (b) perceived descriptive norms, (c) cyberloafing attitudes, and (d) cyberloafing intentions were strongly correlated with all examined cyberloafing variables. For example, the correlations between *web-browsing* and perceived ability to hide cyberloafing, descriptive norms, cyberloafing attitudes, and cyberloafing intentions were .36, .57, .58, and .57, respectively.

To explore the combined predictive power of these new variables, I ran a number of regression models. The first question I had was, “Do descriptive norms predict cyberloafing incremental to injunctive norms?” To answer this question, I conducted a hierarchical regression with injunctive norms in the first step, and descriptive norms added in the second step. I used all the cyberloafing variables as criteria (e.g., web-

browsing, email), but the results were so consistent in pattern and magnitude that only the results using *web-browsing* as the criterion will be reported.

Adding perceived descriptive norms to the model resulted in a significant change in R^2_{web} , $F(1, 199) = 44.12$, $p < .01$, suggesting that descriptive norms did account for variance in web-browsing unaccounted for by injunctive norms. In fact, descriptive norms accounted for a substantial amount of variance unaccounted for by injunctive norms: Adding descriptive norms to the model increased the adjusted R^2 by .14 units—both variables together accounting for a surprising 35% of the variance in web-browsing. Furthermore, examination of the betas revealed that most of the variance was being accounted for by descriptive norms ($\beta_{\text{desc}} = .45$, $\beta_{\text{inj}} = .22$).

My next question was, “What is the most amount of variance I can account for in minor cyberloafing while still keeping a relatively simple model?” To answer this question, I examined various combinations of the variables that were found to significantly predict cyberloafing. Ultimately, the model I came to favor was a linear regression model with perceived descriptive norms and cyberloafing attitudes as predictors. These two variables accounted for 45% of the variance in web-browsing—even more than injunctive norms and descriptive norms. Examination of the betas revealed that each variable contributed about equally to the variance accounted for in web-browsing ($\beta_{\text{desc}} = .38$, $\beta_{\text{att}} = .41$).

Discussion

The purpose of Study 2 was to test and evaluate a series of causal minor-cyberloafing models. Contrary to expectations, the models did not fit the data well: No model had acceptable fit statistics, and for no model was I able to reject the null hypothesis of not-close fit. Model 1L had somewhat better fit than the other models, but not by much. The overall lack of model-data fit was likely due to the variables job boredom and self-rated task performance, which did not relate to the other latent variables as hypothesized.

The results of the primary analyses were underwhelming. However, three noteworthy findings came out of the exploratory analyses. First, four variables, previously untested in relation to cyberloafing, were found to strongly predict minor cyberloafing. Second, descriptive norms were found to predict incremental to injunctive norms. And third, a parsimonious model consisting of the variables descriptive norms and cyberloafing attitudes was found to account for a substantial amount of the variance in minor cyberloafing.

The findings from the exploratory analyses are empirically interesting, but the findings have potential theoretical importance as well. First, recall that CWB researchers take different perspectives on the nature of CWB (Robinson & Bennett, 2003). Some researchers view CWB as an emotional reaction to experiences at work, other researchers view CWB as reflection of one's personality, while still others view CWB as an adaptation to the social context. CWB researchers who view CWB as an adaptation to the social context, typically draw off theories such Social Information Processing Theory (Salancik & Pfeffer, 1978) and Social Learning Theory (Bandura, 1977), which state that much of what we learn about the appropriateness of behaviors comes from other people

in the environment. The strong relation between minor cyberloafing and social norms found in the second set of exploratory analyses—in combination with the fact that personality variables and emotional variables have only weakly correlated with minor cyberloafing in past studies—suggests that minor cyberloafing is perhaps best viewed from the adaptation to the social context perspective.

A second potential theoretical contribution can be extrapolated from the finding that a large amount of variance in minor cyberloafing was accounted for by the variables descriptive norms and cyberloafing attitudes. These results suggest that the Theory of Reasoned Action—which posits that perceived social norms and attitudes influence intention to behave, and that intention to behavior influences behavior (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975)—may be an appropriate model for minor cyberloafing. However, more research is needed before any firm conclusions can be made.

Chapter 9

General Discussion

The goal of the presented investigation was to develop, test, and evaluate a series of causal minor-cyberloafing models. Obtaining this goal required a few intermediate steps, including: (1) selecting a working minor cyberloafing taxonomy, (2) identifying important proximal variables to minor cyberloafing, and (3) hypothesizing a series of causal-minor cyberloafing models. These intermediate steps were completed in Study 1, the pilot study, and the introduction to Study 2.

In Study 2, I tested the model-data fit for each of the eight models. Model-data fit was consistently poor: Most fit statistics were outside the recommended values and for no model was I able to reject the null hypothesis of not-close fit. The poor model-data fit suggests that the models are not reasonable representations of minor cyberloafing and its relations with the other examined variables.

Contributions to the Literature

Despite the poor primary findings, the current investigation makes at least three contributions to the cyberloafing literature. The first contribution is that a number of strong, previously-untested relations were found among minor cyberloafing and some of the exploratory variables. In fact, the correlations between minor cyberloafing and descriptive norms, cyberloafing attitudes, and cyberloafing intentions are the highest

correlations with cyberloafing I am aware of. And the correlation between perceived-ability-to-hide-cyberloafing and minor cyberloafing is almost as high. Thus, one contribution of the present studies is the identification of four previously untested, but potentially important, cyberloafing antecedents.

A second contribution of the present study is the finding of the incremental power of measuring perceived injunctive and descriptive norms. Injunctive norms were previously the best known predictor of minor cyberloafing (Blanchard & Henle, 2008) and descriptive norms have been suggested (using different terminology) as a possible predictor of minor cyberloafing. Study 2 showed that descriptive norms are not only important, but that they predict incremental to injunctive norms—accounting for approximately 35% of the variance in minor cyberloafing.

But perhaps the most important finding in the present investigation was the finding that descriptive norms and cyberloafing attitudes account for a surprising amount of the variance in minor cyberloafing (45% of the variance in Study 2). Why do I consider this the most important finding of the present investigation? Because when combined with the fact that intentions were highly correlated with minor cyberloafing, the findings suggest that the well-established Theory of Reasoned Action (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975) is a useful theory for understanding cyberloafing. Therefore, although my goal to provide a plausible causal minor-cyberloafing model was not obtained in the primary analyses, a plausible model emerged accidentally during the exploratory analyses. More research is needed, but the strong relations found are certainly promising.

Limitations

A number of limitations need to be acknowledged. First, self-rated task performance may have been a poor proxy for *actual* task performance. It is impossible to tell with the current data whether there is no relation between actual task performance and minor cyberloafing, or if no relation was found because actual task performance was not adequately measured. Future research should use supervisor-rated task performance instead of self-rated task performance to better examine the relation between minor cyberloafing and task performance.

A second limitation of the current investigation is that it is impossible to tell the importance of actual norms towards cyberloafing in determining cyberloafing. Are actual norms the real drivers of cyberloafing, and perceived norms the mere mediators? Or are perceived norms influenced by other factors? Future research should examine the extent to which subjective norms and actual norms agree. To examine this, one could gather a sample of work groups, have each member in those work groups fill out the injunctive and descriptive norms scales, and then look at the intraclass correlations. A high intraclass correlation would suggest that people are accurate in perceiving the cyberloafing norms, and would be consistent with the hypothesis that objective norms are the real drivers of cyberloafing. A low intraclass correlation would suggest that there are no objective cyberloafing norms, and would be consistent with the hypothesis that perceived norms are substantially influenced by other factors.

A third limitation is that the perceived descriptive norms-minor cyberloafing relation is slightly overstated by the Pearson correlation. The perceived descriptive

norms-cyberloafing correlations in Study 2 are based on participants who responded to at least one of the descriptive norms items. Fifteen of the 217 participants indicated that they did not know the descriptive norms of their coworkers by writing something like “Don’t Know” and leaving the descriptive norms items blank. Therefore, the descriptive norms correlations should be interpreted as the correlations among people who are *aware* of their coworkers’ computer behavior.

A fourth limitation is that job boredom was not distinguished from excessive free-time. A person may think his or her job is boring—not because he or she has nothing to do—but because he or she finds the work itself boring. Perhaps excessive free-time—not job boredom—is the critical variable. Future research should tease apart the effect of free-time from the effect of job boredom in relation to cyberloafing.

A fifth limitation is that a model based on the Theory of Reasoned Action was not directly tested using SEM. Testing the model with current data is inappropriate since I measured *past* cyberloafing and intentions to cyberloaf in the *future*. If the Theory of Reasoned Action was tested using the current data, the model would posit that intention to cyberloaf in the *future* causes *past* minor cyberloafing! Future research should test the Theory of Reasoned Action model using appropriate data from a longitudinal study.

A sixth limitation is that serious cyberloafing was excluded from the present investigation. Serious cyberloafing is likely to have different antecedents than minor cyberloafing (the person watching cat videos is probably different from the person watching pornography) and so separate models, at least for now, are appropriate.

Whereas minor cyberloafing seems to be strongly influenced by social norms, there is at

least preliminary evidence that social norms are less important for serious cyberloafing (Blanchard & Henle, 2008). Perhaps serious cyberloafing is driven more by individual personality characteristics, such as impulsivity and machiavellism. Future research should focus on developing separate causal-models for serious cyberloafing.

Finally, most of the present study's contributions are based on post hoc analyses. Future studies are needed to make sure the findings are robust.

Future Directions

Although Lim's (2002) definition of cyberloafing (i.e., the misuse of the computer at work) has been fruitful, changes in technology and the way technologies are used suggest that Lim's definition may be deficient, or at least need some clarification. For example, is cyberloafing limited to personal use of work computers, or is the use of personal devices at work (i.e., browsing the web on your phone) also cyberloafing? Is cyberloafing qualitatively different from general loafing, or is it a different manifestation of general loafing? And is cyberloafing conceptual similar across different job types ("nine-to-five jobs" vs. jobs where one often works from home)? Furthermore, the construct of cyberloafing is beginning to get fuzzier as the boundary between being online and offline is blurred (e.g., an increasing portion of the population carries cell-phones which are constantly connected to the internet).

One possible solution to these issues is to include harm-to-the-organization as a necessary component for cyberloafing. But this raises other issues: If a computer-related behavior reduces productivity, but makes it less likely that the employee engages in larger CWBs (e.g., stealing), should that be considered cyberloafing? One could address

this discrepancy by specifying that cyberloafing is computer-related behavior that is harmful to the organization in the *long-term*, however, this definition could be problematic if the same behavior has similar short-term consequences but different long-term consequences in different organizations.

A final conceptual issue that needs to be addressed is how to model minor cyberloafing. The current practice is to model minor cyberloafing using effects indicators, but this sometimes results in seemingly good items being dropped [e.g., in the current study, the items “Played computer games against your computer while at work” and “Downloaded computer programs/applications (NOT job related)”]. Perhaps causal indicator models would be a more appropriate way to model minor cyberloafing.

Once these conceptual issues are worked out, cyberloafing researchers can begin to work on other important problems. For example, how important is one’s perception of equity? If you work from home, are you more likely to find it justifiable to engage in personal activities at work? How do personality variables interact with the situational variables to cause cyberloafing? Although in past studies personality variables have only weakly correlated with minor cyberloafing, perhaps certain lower personality variables (e.g., industriousness) are important to minor cyberloafing.

Summary and Conclusion

In short, the proposed causal models were a bust. Descriptive norms predicted minor cyberloafing above and beyond injunctive norms. And exploratory analyses strongly suggest that the Theory of Reasoned Action is an appropriate model for minor cyberloafing, but more research is needed.

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