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Hemin Jiang

Employee Personal Internet Usage in the Workplace

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ABSTRACT

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Information technology (IT) devices connected to the Internet, such as computers, tablets, and smartphones, have become pervasive in the workplace. These IT devices have greatly facilitated the performance of job tasks for employees. At the same time, employees are increasingly using these technologies for non-work-related purposes during office hours, which is called personal Internet usage in the workplace (PIU). Examples of PIU include, but are not limited to, checking and sending non-work-related emails, surfing news sites, visiting social network sites, e-banking, stock trading, and online shopping, chatting, and gaming. Previous studies on PIU present two schools of thought on PIU outcomes. Negative PIU studies see PIU as decreasing employees' job performance by stealing their work time. In contrast, positive PIU studies see PIU as enhancing employees' productivity, social capital, learning ability, and creative performance, which may eventually improve their job performance as well. However, it is unknown from previous studies the conditions under which PIU is likely to result in a positive or negative impact on employees' job performance. Further, although Internet monitoring has been widely adopted by organizations to regulate employees' PIU, it is not known from previous studies the impact of Internet monitoring on employees' various behaviors and perceptions.

This dissertation, consisting of two studies, attempts to address the two issues above. In study 1, we conducted a literature review of PIU and examined the state-of-the-art research on PIU as well as research gaps in existing PIU literature; next, we developed a theoretical model to understand the conditions under which PIU is likely to positively or negatively affect employees' job performance. In study 2, we conducted a field experiment to examine how Internet monitoring, a PIU policy which has been widely adopted by organizations, affects employees' PIU behaviors, policy satisfaction, and organizational citizenship behavior (OCB). This dissertation has important implications for employees with respect to understanding the impact of PIU on their job performance, and for organizations in terms of developing and implementing better policies to avoid the disadvantages of PIU without sacrificing its benefits.

Keywords: Personal Internet Usage in the workplace (PIU), Job Performance, Internet Monitoring, Policy Satisfaction, Organizational Citizenship Behavior (OCB)

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Hemin Jiang

FIGURE

TABLE

ABBREVIATIONS

PIU – Personal Internet Use in the Workplace

PS – Policy Satisfaction

PA – Policy Awareness

SC – Sanction Concerns

IPC – Information Privacy Concerns

OCB – Organizational Citizenship Behavior

OCB-I – Organizational Citizenship Behavior-Interpersonal Dimension

OCB-O – Organizational Citizenship Behavior-Organizational Dimension

ANOVA – Analysis of Variances

CONTENTS

1 INTRODUCTION

1.1 Research Background and research questions

Information technology (IT) devices connected to the Internet, such as computers, tablets, and smartphones, play a central role in the operation of many organizations. These IT devices have greatly improved the productivity of organizations and have assisted employees in performing their job tasks. At the same time, they have also provided a new avenue to employees for performing non-work-related activities, such as checking and sending non-work-related emails, surfing news sites, visiting social network sites, e-banking, stock trading, and online shopping, chatting, and gaming, just to name a few. The term *personal Internet usage in the workplace* (PIU) was coined to refer to employees' online non-work-related activities using organizational IT resources (Moody and Siponen 2013).

Evidence suggests that PIU is becoming increasingly common in organizations. It is reported that more than 90% of employees engage in PIU in their workplaces (Sharma and Gupta 2004; Bock and Ho 2009). Further, it is estimated that 30-65% of Internet surfing in the workplace during office hours is essentially non-work- related (Blanchard and Henle 2008; Jia et al. 2013). Human resource professionals have estimated that employees spend about one hour engaged in PIU every day (Lim and Chen 2009), whereas employees have actually admitted to spending around two hours per day on PIU (Rajah and Lim 2011). Compared with other traditional non-work-related activities in the workplace, such as longer-time lunch and socializing with coworkers, PIU does not require employees to be physically absent from the office and is thus not as visible as other non-work-related behaviors (Wanger et al. 2012). This partly explains why PIU is currently the main form of non-work-related behavior in the workplace (Ivarsson and Larsson 2012).

Previous studies present two schools of thought on PIU outcomes (Anandarajan et al. 2006). Some studies (i.e., negative PIU studies) view PIU as a negative, even deviant, behavior that decreases employee productivity; these stud-

ies have variously labeled PIU as cyberloafing (e.g., Lim et al. 2002; Liberman et al. 2011), Internet deviance behavior (e.g., De Lara 2006), or cyberslacking (e.g., Vitak et al. 2011). Negative PIU studies also claim that the time spent on PIU could translate into an estimated annual productivity loss of $54–85 billion for U.S. companies (Lim and Teo 2005; Jia et al. 2013). In contrast, other studies (i.e., positive PIU studies) see PIU as enhancing employee productivity (Coker 2011), social capital (Anandarajan and Simmers 2005), learning ability (Oravec 2002), and creative performance (Kuem and Siponen 2014), all of which may eventually improve employee job performance.

The two opposing viewpoints about the impact of PIU on employee job performance has led scholars to discuss PIU antecedents and PIU policies from opposing perspectives as well. Specifically, negative PIU studies have explored PIU antecedents from the perspective of why employees engage in a deviant behavior, and have suggested PIU policies such as Internet monitoring or sanctions to prohibit employees' PIU. In contrast, positive PIU studies have explored PIU antecedents from the perspective that PIU can help employees better deal with both work and personal tasks and that PIU should not be totally prohibited.

We argue that both the negative and positive viewpoints on PIU are partly correct. PIU can have either negative or positive impacts on employees' job performance in different situations. What is not known from previous research are the conditions under which PIU is more likely to have a negative or positive impact on job performance. As a result, previous research cannot explain questions such as why PIU (e.g., surfing Facebook) decreases the job performance of some employees while increasing the job performance of others, or why PIU decreases the job performance of one employee in some cases but increases the job performance of the same employee in other cases.

In addition, to prevent the potential negative impact of PIU on employees' job performance, previous studies have discussed different types of organizational policies to regulate employees' PIU. Of all the PIU policies mentioned by previous studies, Internet monitoring is most widely adopted by organizations. For instance, it has been reported by the American Management Association that at least 63% of employers monitor employees' Internet connections (Alder et al. 2008; Posey et al. 2011). However, the impact of Internet monitoring on employees' PIU is not clear from previous studies. Further, previous studies only preliminarily discussed the impact of Internet monitoring on employees' PIU, without investigating employees' satisfaction regarding the Internet monitoring policy. This is a significant limitation. Even though employees may comply with a policy regardless of whether they are satisfied or dissatisfied with it, dissatisfied employees may vent their dissatisfaction through other avenues. For instance, employees may express dissatisfaction by engaging in other deviant behaviors, such as intentionally taking longer breaks than needed or decreasing behaviors that are beneficial to organizations, including organizational citizenship behavior (OCB).

This dissertation is an attempt to address the two issues above, namely (1) to understand the conditions under which PIU is likely to positively or negatively affect employees' job performance, and (2) to examine the impact of Internet monitoring on employees' PIU, policy satisfaction, and OCB. In the first study, we conducted a systematic review of extant PIU literature, examined the state-of-the-art research on PIU and the research gaps in existing PIU literature, and then developed a theoretical model to understand the conditions under which PIU is likely to negatively or positively affect employees' job performance. In the second study, we conducted a field experiment to empirically examine how Internet monitoring, a PIU policy which has been widely adopted by organizations, affects employees' PIU behaviors, policy satisfaction, and organizational citizenship behavior (OCB).

This dissertation provides valuable insights for understanding the impact of PIU on employees' job performance, as well as the impact of Internet monitoring on employees' behaviors and perceptions. The dissertation also has important implications for organizations. Specifically, our first study can help employees understand whether their PIU behaviors improve or damage their job performance. Consequently, employees may be better able to leverage IT as a means to facilitate both their work and personal lives in a way that is mutually enriching. Our first study can also help organizations recognize the conditions under which PIU should be discouraged or allowed, so that organizations can offer more effective ways to realize the positive implications of PIU while avoiding the negative implications. Our second study can enhance understanding of the potential side effects of Internet monitoring as a policy to regulate employees' PIU; management teams may thus be able to make better decisions regarding whether it is beneficial to their organizations to implement Internet monitoring in order to regulate employees' PIU.

1.2 Summary of the Dissertation

Two studies were conducted to address the two research questions mentioned above respectively. Specifically, study I reviewed existing literature of PIU and proposed a model to discuss in what conditions PIU is more likely to positively or negatively affect employee job performance. Study II examined the impact of Internet monitoring on employees' PIU behavior, policy satisfaction and OCB. Next, I briefly introduce

1.2.1 Study I: Personal Internet Usage in the Workplace: A Literature Review and A Model to Understand Its Impact on Job Performance

In this study, we conducted a systematic literature review of previous PIU studies with respect to three research themes we observed from the extant PIU literature: PIU outcomes, PIU antecedents, and PIU policies. We found two research gaps in the existing literature that future research should address.

First, on an empirical level, we found that existing research findings regarding the same research questions are contradictory. For instance, some studies found that employees' negative affect towards work or organizations (e.g., job dissatisfaction, frustration) generated by stressors (e.g., perceived injustice, work role ambiguity, or role conflict) are the main reasons employees engage in PIU (e.g., Lim 2002; Henle and Blanchard 2008), whereas other studies found that it is actually the outcome expectancy, such as saving time, having an interesting work life, and maintaining personal relationships, which serves as the main incentives for employees to engage in PIU. Similarly, some studies found that Internet monitoring and sanctions were negatively associated with employees' PIU (Henle et al. 2009; Ugrin and Pearson 2008; Ugrin and Pearson 2013); conversely, other studies found that Internet monitoring and sanctions were either not associated or even positively associated with employees' PIU (De Lara 2006; De Lara et al. 2006; De Lara and Olivares-Mesa 2010). Accordingly, we discussed limitations of the previous studies that may have caused the contradictory findings, and we proposed three avenues for future research to integrate the previous findings.

Second, on a theoretical level, we found that scholars hold opposite assumptions and viewpoints regarding the impact of PIU on employees' job performance. Specifically, two schools of thought exist in the PIU literature—namely, negative PIU studies and positive PIU studies. Negative PIU studies consider how PIU may negatively affect job performance, while positive PIU studies consider how PIU may positively affect job performance. However, previous studies did not clarify the conditions under which PIU is likely to affect job performance, negatively or positively. To address this research gap, we outline a theoretical model to understand the conditions under which PIU negatively or positively affects employees' job performance.

As a boundary of our theoretical model, we focus on those job types that require relatively high cognitive effort. This is because employees with job tasks requiring high cognitive effort (e.g., knowledge workers) usually have relatively high job autonomy, which in turn potentially offers more opportunities for PIU. Therefore, the positive or negative impact of PIU on their job performance is more salient when PIU is leveraged appropriately or inappropriately, compared with those performing job tasks requiring relatively low cognitive effort (e.g., a receptionist). Our model (see Figure 2 in page 35) holds that (1) the impact of PIU on employees' job performance depends on the extent to which the time spent on PIU replenishes or depletes employees' cognitive resources (e.g., better concentration on work), which are valuable in terms of job performance; and (2) whether PIU replenishes or depletes employees' cognitive resources may be related to why employees engage in PIU.

Specifically, previous studies have suggested two types of PIU motives of employees: expressive PIU motives and instrumental PIU motives. Expressive PIU motives refer to employees' tendency to engage in PIU in order to distance or escape from the negative affect produced by various stressors. Instrumental PIU motives refer to employees' tendency to engage in PIU to actively deal with

personal tasks or take a mental break during work. Drawing on the conservation of resources (COR) theory (Hobfoll 1989, 2001; Halbesleben et al. 2014), our model holds that if employees engage in PIU as an instrumental means to facilitate a balance between work and non-work (i.e., solve work–family role conflict or take a break at work), then the time spent on PIU may replenish employees' cognitive resources and eventually affect job performance in a positive way. In contrast, if employees engage in PIU as an expressive means to escape the negative affect (e.g., anger, frustration) generated by various stressors, then PIU is likely to consume employees' time without replenishing their cognitive resources. In this sense, PIU behaviors may negatively affect employees' job performance. We further offer three propositions and eight sub-propositions to discuss the interactions between employees' perceived resource (e.g., job skills, social support) levels, PIU behaviors, and PIU outcomes (regarding employees' job performance), see the detailed discussion in Section 2.4.2 in page 35.

Our proposed model helps understand the conditions under which PIU is likely to affect employees' job performance, positively or negatively, and therefore integrates the opposing viewpoints of previous studies about the impact of PIU on employees' job performance. Understanding these conditions may also help organizations develop effective interventions to avoid the negative effects of PIU without sacrificing its positive effects.

1.2.2 Study II: Internet Monitoring Can be Worse Than Useless for Regulating Employees' Personal Internet Usage in the Workplace: Evidence from a Field Experiment

To prevent the potential negative impact of PIU on employees and organizations, previous studies have suggested different PIU policies for organizations to regulate employees' PIU behaviors, including Internet monitoring (e.g., Henle et al. 2009), formal or informal sanctions (e.g., Ugrin and Pearson 2013), and positive approaches (e.g., informal coaching discussions) (Wong et al. 2005). Of all the PIU policies mentioned by previous studies, Internet monitoring has been the most widely deployed in organizations. For instance, it has been reported by the American Management Association that at least 63% of employers monitor employees' Internet connections (Alder et al. 2008; Posey et al. 2011). However, the impact of Internet monitoring on employees' PIU is not yet clear. Further, previous studies did not investigate employees' perceptions about Internet monitoring, including employees' satisfaction or dissatisfaction with the Internet monitoring policy. This is a significant limitation. Employees may comply with a policy regardless of whether they are satisfied with it or not; however, if employees are not satisfied with the policy, they may vent their dissatisfaction through other avenues. For example, employees may engage in other deviant behaviors, such as intentionally taking longer breaks than needed or decreasing behaviors that are beneficial to organizations (e.g., organizational citizenship behavior [OCB]), to express their dissatisfaction with the policy.

To examine the issues outlined above, we conducted a field quasi-experiment to explore the impacts of Internet monitoring on employees' PIU as

well as employees' policy satisfaction and OCB. We developed our hypotheses (see Figure 3 in page 55) based on psychological contract theory (Rousseau 1990; Morrison and Robinson 1997; Zhao et al. 2007). Specifically, previous studies have suggested that Internet monitoring may elicit sanction concerns (H1) and information privacy concerns (H2) of employees. Sanction and concerns and information privacy concerns, which constitute a form of psychological contract breach in the PIU context, further affect employees' PIU (H3), policy satisfaction (H4), and OCB (H5).

We tested the five hypotheses above by conducting a field quasi-experiment with 84 participants at a software development company. The 84 participants were assigned into control group and treatment group. The experiment was conducted in three steps. In step 1 (i.e., pre-test), we collected data about employees' sanction concerns (of their PIU), information privacy concerns (of their PIU), PIU policy satisfaction, and OCB. In step 2, one month after our data collection in step 1, an Internet monitoring policy was announced to participants of the treatment group but not to participants of the control group. In step 3 (i.e., post-test), one month after the implementation of the Internet monitoring policy, we again collected data about employees' sanction concerns, information privacy concerns, policy satisfaction, and OCB. Employees' PIU activities were tracked by the company's Internet server system during the entire experiment. That is, the data of employees' PIU behavior was generated by the company's Internet server system.

We did a between-group comparison regarding the pre-test data and the post-test data. The results suggested that there were no significant differences in pre-test between the control group and the treatment group in terms of PIU, policy satisfaction and PIU. However, in post-test, the policy satisfaction and OCB of employees from the treatment group were significantly lower than those of employees from the control group, while there was still no difference regarding PIU of employees from the two groups. That is, our results suggested that Internet monitoring did not significantly change employees' PIU but did lead to employees' dissatisfaction due to the perception of information privacy violation. As an expression of policy dissatisfaction and information privacy concerns, employees' organizational citizenship behavior decreased.

This study helps reveal the impact of Internet monitoring on employees' PIU, policy satisfaction, and OCB, it has important theoretical contributions. Since our results also suggest that employees may decrease their OCB, which is important to the operation of organizations, as a response to Internet monitoring. Organizations should better evaluate the tradeoff between the losses and benefits of Internet monitoring, which should only be implemented if the potential benefits outweigh the potential losses.

1.3 Publication Status

As mentioned above, this dissertation consists of two studies (shown as follows), which are either under review with a journal or will be submitted to a journal for review:

I. Jiang, H., Siponen, M., Tsohou, A. 2016. Personal Internet Usage in the Workplace: A Literature Review and a Model to Understand Its Impact on Job Performance. Under the 2nd round review at MIS Quarterly.

II. Jiang, H., Siponen, M., Tsohou, A., Jiang, Z., 2016. Internet Monitoring Could be Worse Than Useless for Regulating Employees' Personal Internet Usage in the Workplace: Evidence from a Field Experiment. To be submitted to MIS Quarterly.

Hemin Jiang is the first author of all the articles listed in this dissertation and did the majority of the related work. Prof. Mikko Siponen provided overall guidance as well as valuable comments and suggestions for the two articles included in the dissertation. Dr. Aggeliki Tsohou provided helpful reviews and comments for all my studies during my PhD study. Dr. Aggeliki Tsohou also supported the data collection for the article II. Prof. Zhenhui Jiang guided the experiment design for article II, he also provided comments and suggestions in terms of theoretical basis and data analysis of the article II. The earlier versions of article I and article II has been published in the European Conference on Information Systems (2014, 2015), which are listed as follows:

III. Jiang, H., Tsohou, A. 2014. The Dual Nature of Personal Web Usage at Workplace: Antecedents, Impacts and Regulating Policies. Twenty-Second European Conference on Information Systems, Tel Aviv.

IV. Jiang, H., Tsohou, A. 2014. Expressive or Instrumental? The Dual Perspective Model of Personal Web Usage at Workplace. Twenty-Second European Conference on Information Systems, Tel Aviv.

V. Jiang, H., Tsohou, A. 2015. The Same Antecedents Do Not Fit All Activities: An Activity-specific Model of Personal Internet Use in Workplace. Twenty-Third European Conference on Information Systems, Münster, Germany.

Given that the earlier published papers (i.e., article III, article IV and article V) have been significantly improved in the form of the article I and article II, so my dissertation is primarily based on the article I and article II.

2 STUDY I: PERSONAL INTERNET USAGE IN THE WORKPLACE: A LITERATURE REVIEW AND A MODEL TO UNDERSTAND ITS IMPACT ON JOB PERFORMANCE

2.1 Overview

Employees' personal Internet usage in the workplace (PIU), defined as employees' online activities at work using organizational IT resources for non-work-related purposes, is increasingly common in organizations. Our systematic literature review of PIU research suggests that previous studies have widely discussed PIU outcomes, PIU antecedents, and PIU policies. However, we find two research gaps in the existing literature. First, on an empirical level, we found that the existing research findings regarding the same research questions are contradictory. Accordingly, we discuss the limitations of the previous studies that may have caused the contradictory findings and propose three avenues for future research to integrate the previous findings.

Second, on a theoretical level, we found that scholars hold opposite assumptions and viewpoints regarding the impact of PIU on employees' job performance. Specifically, two schools of thought exist in the PIU literature, namely, negative PIU studies and positive PIU studies. Negative PIU studies regard PIU as stealing work time, which results in decreased job performance. In contrast, positive PIU studies see PIU as facilitating mental recovery or work-life balance, which eventually benefits job performance. We argue that the two viewpoints are both partly correct. However, the existing literature does not discuss the conditions in which PIU is likely to negatively or positively affect employees' job performance. As a consequence, the previous research cannot explain why the same PIU, say non-work related Facebook use, decreases the job performance of one employee but increases the job performance of another. To give another example, the previous research cannot explain why surfing Facebook decreases job performance of one employee in some situations but in-

creases job performance of the same employee in some other situations. To address this shortcoming, we outline a theoretical model to understand the conditions in which PIU negatively or positively affects employees' job performance. Drawing on the conservation of resources (COR) theory, our model holds that if employees engage in PIU as an instrumental means to facilitate a balance between work and non-work (i.e., instrumental PIU), the time spent on PIU may replenish employees' cognitive resources, and PIU may eventually affect job performance in a positive way. In contrast, if employees engage in PIU as an expressive means to escape the negative affect (e.g., anger, frustration) generated by various stressors (i.e., expressive PIU), the PIU behavior is likely to consume employees' time without replenishing the cognitive resources. In this sense, PIU behavior may negatively affect employees' job performance. The implications of the proposed model are discussed.

2.2 Research Background

Information technology (IT) devices connected to the Internet, such as computers, tablets, and smartphones, are currently pervasive in the workplace. These IT devices have greatly facilitated the performance of job tasks for employees. At the same time, employees increasingly use these technologies for non-work related purposes during office hours (Henle et al. 2009), which is called personal Internet usage in the workplace (PIU) (Garrett and Danziger 2008; Moody and Siponen 2013). Examples of PIU include, but are not limited to, checking and sending non-work-related e-mails, surfing news sites, visiting social network sites, e-banking, stock trading, and online shopping, chatting, and gaming.[1] Empirical evidence suggests that PIU currently is very common in organizations. More than 90% of employees are estimated to engage in PIU (Bock and Ho 2009), and around half of Internet use in organizations is non-work related (Blanchard and Henle 2008). Human resource professionals estimate that employees spend about one hour engaged in PIU every day (Lim and Chen 2012), while employees have admitted to spending around two hours per day (Rajah and Lim 2011). Compared with other traditional non-work related activities in the workplace such as long-time lunch and socializing with coworkers, PIU does not require employees to be physically absent from office and thus it is not as visible as other non-work related behavior (Wanger et al. 2012). This partly explains why PIU is currently the main form of non-work related behaviors in the workplace (Ivarsson and Larsson 2012).

In line with the prevalence of PIU in practice, research on PIU has also been proliferative in recent years. Our systematic review of the PIU literature (consisting of 108 publications) suggests that previous studies have widely dis-

[1] In this dissertation, we use the term "PIU behavior" to refer to the general phenomenon of employees' PIU and use the term "PIU activities" to refer to the different types of PIU. For instance, visiting news websites and online shopping are considered to be two different *PIU activities*, but both of them belong to *PIU behavior.*

cussed PIU outcomes, PIU antecedents, and PIU policies, which provide important implications to understand different facets of PIU. However, our literature review also reveals two primary research gaps from existing PIU research that impede our further understanding of PIU, namely, contradictory findings on an empirical level and contradictory viewpoints on a theoretical level. First, on an in empirical level, we specifically find that existing research findings regarding the same research question are contradictory. For instance, some studies have found that a certain PIU policy, such as Internet monitoring or sanctions, negatively affects PIU, but some other studies have found that the policy did not affect or even positively affect PIU. These contradictory findings provide confusing implications to organizations in developing appropriate PIU policies. Accordingly, we discuss the limitations of the previous studies that may have caused the contradictory findings, and propose three possible avenues for future research to explore and integrate the contradictory findings.

Second, on a theoretical level, we identify two schools of thought on PIU outcomes from the existing literature (Anandarajan et al. 2006). Specifically, some studies (i.e., negative PIU studies) view PIU as a negative behavior and label it as cyberloafing (e.g., Lim et al. 2002; Liberman et al. 2011), Internet deviance behavior (e.g., De Lara 2006), and cyberslacking (e.g., Vitak et al. 2011). These studies see PIU as stealing work time that decreases employees' job performance. Accordingly, these studies explored PIU antecedents and discussed PIU policies from the perspective that PIU is a negative or even deviant behavior in the workplace that should be prohibited. In contrast, some other studies (i.e., positive PIU studies) see PIU as enhancing employees' productivity (Coker 2011), social capital (Anandarajan and Simmers 2005), learning ability (Oravec 2002), and creative performance (Kuem and Siponen 2014), which may eventually improve employees' job performance. Accordingly, these studies explored PIU antecedents and PIU policies from the perspective that PIU can help employees better deal with both work and personal tasks and that PIU should not be totally prohibited.

We argue that both the negative and positive viewpoints on PIU are partly correct. PIU can have either negative or positive impacts on employees' job performance in different situations. What is not known from the previous research are the conditions in which PIU is more likely to result in a negative or positive impact on job performance. Consequently, the previous research cannot explain questions such as why PIU (e.g., surfing Facebook) decreases the job performance of one employee but increases the job performance of another or why PIU decreases the job performance of one employee in some cases but increases the job performance of the same employee in some other cases. Recognizing both negative and positive impacts of PIU on job performance and explaining the conditions in which they happen could present new implications for practice. Specifically, the existing studies either suggest prohibiting PIU or allowing PIU without any constraints. Such categorical advice may not be optimal, provided that PIU can lead to both positive and negative impacts on job performance. Instead, recognizing the situations in which PIU should be discouraged

or allowed could offer more effective ways to achieve the positive implications of PIU and to avoid the negative implications.

We propose a theoretical model to understand the conditions in which PIU is likely to positively or negatively affect employees' *job performance*. Our model holds that (1) the impact of PIU on employees' job performance depends on the extent to which the time spent on PIU replenishes or depletes employees' cognitive resources (e.g., better concentration on work), which are valuable in terms of job performance, and (2) whether PIU replenishes or depletes employees' cognitive resources may relate to why employees engage in PIU. For example, some employees may use Facebook to escape from difficult problems encountered in performing job tasks. However, the escaping does not actually solve those problems, but leave less time available for solving the problems after surfing Facebook. Further, the escaping may induce problems to accumulate and become more serious so that the employees may feel that it is more difficult to solve the problems after surfing Facebook. Both the perception of less time available and the increasing difficulty of the problems may induce negative affect, such as stress or even anxiety, which consume employees' cognitive resources (Beal et al. 2005). In this sense, the time spent on the PIU does not replenish or produce any new resources to solve the problems, but further depletes employees' cognitive resources. Therefore, job performance is likely to be negatively affected by PIU due to the time wasted. In contrast, some other employees may use Facebook as a mental break at work. In this case, the time spent on PIU may replenish employees' cognitive resources, which are valuable in performing job tasks. In this case, the PIU behavior is likely to positively affect employees' job performance. Our proposed model further discusses in detail the interactions between PIU behaviors and PIU impacts on job performance.

The rest of this study is organized as follows. In Section 2.3, we systematically review the previous studies on PIU regarding PIU outcomes, PIU antecedents, and PIU policies. We also present the research gaps that we identified from the literature review. In Section 2.4, we develop a theoretical model, in the form of three propositions and eight sub-propositions, to advance our knowledge regarding the conditions in which PIU is likely to positively or negatively affect employees' job performance. Our proposed model helps resolve the contradictions between the negative and positive perspectives of previous studies on PIU outcomes. Finally, we conclude the study by discussing the implications and limitations of our proposed model.

2.3 Literature Review and Research Gaps

2.3.1 What is PIU?

PIU refers to employees' online activities at work using organizational IT resources for non-work-related purposes. In addition to the term *PIU*, previous

studies also use other terms to describe the phenomenon, such as *cyberloafing*, *non-work-related computing* (NWRC), *personal web usage* (PWU), *Internet abuse*, and *workplace Internet deviance*. The definitions and example studies that have adopted these terms are depicted in Table 1. Although these terms are used by different studies with slightly different definitions, all of them include three key connotations of PIU, namely, (1) employees' behavior in terms of using organizational IT resources (2) for non-work-related purposes and (3) during work hours. In fact, some studies consider and use these different terms interchangeably (e.g., Garrett and Danziger 2008; Vitak et al. 2011; Ugrin and Pearson 2013).

With the increasing usage of personal IT devices, such as personal smartphones and tablets, employees may also use these personal IT devices for non-work-related activities at work. Therefore, the definition of PIU for future studies should also address employees' usage of *private*, as opposed to organizational, devices for non-work-related purposes at work. Nevertheless, as a literature review paper, to be consistent with the existing literature, we define PIU as employees' behaviors of using (any of) organizational IT resources for non-work-related purposes, although the discussions of our studies also have implications in understanding the phenomenon in which employees use their own IT devices for non-work-related purposes at work.

TABLE 1 The terms used by previous studies to describe PIU

Term	*Definition*	*Example Studies*
Cyberloafing	Any voluntary act of employees' using their companies' Internet access during office hours to surf non-job-related Web sites for personal purposes and to check (including receiving and sending) personal e-mail.	Lim 2002 Kim and Byrne 2011
Cyberslacking	The use of internet and mobile technology during work hours for personal purposes.	Ugrin and Pearson 2008 Vitak, et al. 2011
NWRC	An employee's usage of organizational IS resources for personal purposes during working hours or after.	Lee et al. 2005 Chun and Bock 2006
PWU	PWU is defined as voluntary online web behaviors during working time using any of the organization's resources for activities outside current customary job/work requirements.	Mahatanankoon et al. 2004 Anandrajan and Simmers 2005
Internet Abuse	Internet abuse in the workplace is conducting non-work-related activities or public communications online on company time.	Shepherd and Klein 2007 Chen et al. 2007
Workplace Internet Deviance	Employees surfing the Internet when they should be working.	De Lara 2006

TABLE 2 Typologies of PIU in Previous Studies

Study	Typologies	Empirical Evidence
Lim (2002)	• Browsing activities • Emailing activities	No
Blau et al. (2006)	• Browsing activities • Emailing activities • Interactive activities	Cluster analysis
Blanchard and Henle (2008)	• Serious forms of PIU activities • Minor forms of PIU activities	Cluster Analysis
Mastrangelo et al. (2006)	• Non-productive PIU behavior • Counter-productive PIU behavior	Factor analysis
Mahatanankoon et al. (2004)	• PIU related to e-commerce • PIU related to information seeking • PIU related to interpersonal communication	Factor analysis
Anandarajan et al. (2002)	• Disruptive PIU • Recreational PIU • Personal learning PIU • Ambiguous PIU	Multidimensional scaling techniques
Doorn (2011)	• Development behavior • Recovery behavior • Deviant behavior • Addiction behavior	No
Anandarajan et al. (2011)	• Hedonic behavior • Self-development behavior • Citizenship behavior • Work/family behavior	Multidimensional scaling techniques, cluster analysis
Ramayah (2010)	• Personal downloading • Personal Information research • Personal communication • Personal e-commerce	No

Employees may engage in different types of PIU activities; for instance, Lim (2002) classified PIU as e-mailing and browsing activities, and Blau et al. (2006) later added interactive PIU as a third category. Based on the objectives of PIU, Mahatanankoon et al. (2004) introduced three categories of PIU: e-commerce, information seeking, and interpersonal communication. Based on the extent of deviation to organizational norms, Blanchard and Henle (2008) classified PIU behaviors as minor PIU (e.g., sending and receiving personal e-mail at work) and serious PIU (e.g., online gambling and surfing adult-oriented websites). Table 2 summarizes the previous studies on typologies and taxonomies of PIU.

In the rest of this section, we systematically review the existing PIU literature. We first present the methodology to identify the PIU-related literature; we then analyze the identified PIU literature with respect to three research themes that we observed, namely, PIU outcomes, PIU antecedents, and PIU policies.

2.3.2 Methodology

We conducted a systematic literature search to identify relevant publications following the steps of Webster and Watson (2002). We first searched the academic databases ScienceDirect and EBSCO, using all the terms that the previous studies have used, including non-work-related computing, cyberloafing, cyberslacking, personal web usage, Internet abuse, and workplace Internet deviance. We did not include terms such as Internet addiction and pathological Internet use in our search because they refer to behaviors of a psychiatric nature, which exceeds the scope of our study. We also excluded studies discussing Internet abuse outside the workplace, such as cyber stalking, as the scope of our study is limited to behavior in the workplace. As a result, we found 46 papers from EBSCO and 42 papers from ScienceDirect. Second, we searched for relevant publications in the conference proceedings database ACM Digital Library and also in the conference proceedings of leading conferences in the IS field (i.e., ICIS, ECIS, PACIS, AMCIS, and HICCS) published between 2005 and 2015. We found two articles from ACM Digital Library and twenty-two articles from the leading conferences in the IS field. Third, we identified further literature sources by studying the references of the papers obtained from the journal databases and conference sources, which resulted in the inclusion of three theses and one book in our review. After removing duplicated records, we finally included 108 publications in the literature review: eighty-two journal publications, twenty-two conference publications, three theses, and one book.

2.3.3 Review of the PIU Literature

In reviewing the 108 studies, we observed three research themes that the existing PIU literature primarily addresses, namely, (1) PIU outcomes, (2) PIU antecedents, and (3) PIU policies. We also observed that scholars have opposite opinions or assumptions on PIU outcomes (i.e., PIU negatively vs. positively affects job performance), which further led scholars to discuss PIU antecedents and PIU policies from opposing perspectives. In the rest of this section, we review the previous studies on PIU with respect to the three research themes. For each theme, we discuss what has been found by the previous studies, what the theoretical explanations for these findings are, and what important questions need to be further clarified by future research.

2.3.3.1 PIU Outcomes: Negative or Positive

Two schools of studies exist in the PIU literature: negative PIU studies and positive PIU studies. The negative PIU studies consider PIU an idle, even deviant workplace behavior (e.g., Lim 2002), leading to lost productivity, information

security risks, or legal disputes. In contrast, the positive PIU studies suggest that PIU could facilitate better performance of job tasks through allowing employees to take a mental break or to maintain a work-life balance, which could eventually benefit both employees and organizations. Among the 108 studies that we identified, 82 studies mainly discussed negative PIU outcomes or PIU antecedents or policies that were assumed to lead to negative outcomes. By contrast, seven studies mainly discussed positive PIU outcomes or PIU antecedents and policies based on the assumption that PIU may lead to positive outcomes. Nineteen studies acknowledged both positive and negative outcomes of PIU. These studies are summarized below (see the appendix for the coding of these studies in terms of research themes and positive or negative aspects of PIU, Tables 20 and 21).

In terms of negative PIU studies, Lim (2002) conceptualized PIU behavior as a type of production deviance, with the emphasis that, unlike other traditional forms of production deviance (e.g., having a long-time lunch), PIU does not entail physical absence from the office and is not visible and thus may pose a greater threat to organizations in terms of performance loss and the other costs incurred (Lim 2002; Wagner et al. 2012). It is reported that 30% to 40% of employees' productivity can be lost due to PIU behavior (Lim and Teo 2005). Negative PIU studies claim that PIU has become the most common way that employees waste time at work (Blanchard and Henle 2008). Further, Bock et al. (2010) argued that PIU behavior could lead to task postponement, which is consistent with the Lavoie and Pychyl (2001) finding that PIU behavior is positively related to individuals' Internet procrastination. Additionally, certain PIU activities, such as downloading entertainment-oriented applications or illegal software, may pose risks to organizations in terms of information security and legal disputes of intellectual property (Lim 2002; Henle et al. 2009).

In contrast to negative PIU studies, positive PIU studies see positive effects from PIU on employees' productivity (Oravec 2002), recovery (Ivarsson and Larsson 2012), social capital (Anandarajan and Simmers 2005), learning, and creative performance (Belanger and Slyke 2002), all of which may eventually benefit employees' job performance. For instance, the experimental study by Kuem and Siponen (2014) demonstrated the positive effect of short-time (i.e., maximum 15 minutes) PIU activities, as a means of mental recovery on individuals' creative performance. Coker (2011) found that workplace Internet leisure browsing had a positive effect on employees' work productivity when it did not consume more than 12 percent of work time. Similarly, Lim and Chen (2009) found that employees perceived browsing activities as having positive impacts on their emotions because it allows employees to take their mind off of work while browsing websites. Further, Rajah and Lim (2011) found a positive relationship between employees' non-work-related e-mail use and organizational citizenship behaviors (OCB). According to Rajah and Lim (2011), employees may experience negative affect, such as guilt, when they engage in PIU as a deviant behavior; therefore, they may engage in OCB to alleviate negative affect and to feel better about themselves. In addition, Messarra et al. (2011)

found that freedom of access to the Internet and performing PIU were positively related to employees' work satisfaction.

Although 19 studies in the literature acknowledge that PIU may potentially have both positive and negative impacts in different situations, the two possible aspects of PIU have not been discussed jointly in an integrative way. Therefore, the previous studies have not discerned the conditions in which PIU is more likely to have positive or negative impacts on which aspects of employees or organizations and why. This unaddressed question also gives rise to confusion for organizations in developing appropriate PIU policies to take advantage of the positive side of PIU while avoiding the negative side of PIU.

2.3.3.2 PIU Antecedents: Expressive or Instrumental

The second research theme we observed from the PIU literature is PIU antecedents, which are the reasons that lead employees to engage in PIU. The opposing viewpoints or assumptions on PIU outcomes have led scholars to discuss PIU antecedents from different perspectives. Specifically, negative PIU studies discuss PIU antecedents from the perspective of why employees engage in a *deviant* behavior, suggesting that PIU is a means of employees to passively cope with the negative affect (e.g., anger, frustration) generated by chronic stressors[2] at work, such as perceived injustice (e.g., Lim 2002), role ambiguity, and role conflict (e.g., Henle and Blanchard 2008). In contrast, positive PIU studies explore what drives employees to perform PIU from the perspective of the expected outcome of PIU, suggesting that PIU is a means for employees to facilitate both personal tasks (e.g., saving time and maintaining personal relationships) and work tasks (e.g., taking a mental break to perform work tasks better).

To facilitate the discussions in later sections, we define an employee's tendency to engage in PIU to distance or escape from the negative affect produced by various stressors as expressive PIU motives, and we define an employee's tendency to engage in PIU to actively deal with some personal tasks or take a mental break during work as instrumental PIU motives. Expressive PIU motives and instrumental PIU motives are different in the way that they are cognitively triggered by different stimuli. Expressive PIU motives are triggered by the perceived inability to actually solve the encountered stressors and the tendency to escape from the negative affect generated by those stressors. Instrumental PIU motives are triggered by the perceived capability to solve a "problem" (e.g., the need to reserve a dentist at work or to conveniently have a mental break) by leveraging IT resources in the workplace. Next, we review in detail the PIU antecedents identified by the previous studies with respect to expressive PIU motives and instrumental PIU motives.

From the negative PIU perspective, Lim (2002) found that employees were more likely to rationalize their PIU behavior when they perceived injustice (e.g.,

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[2] Chronic stressors are defined by as "problems and issues that are either so regular in the enactment of daily roles and activities, or so defined by the nature of daily role enactments or activities, that they behave as if they are continuous for the individual" (Wheaton 1994, p.82). Forms of chronic stressor include under-reward, uncertainty, conflict, demands, and so on.

being unjustly treated or underpaid) from organizations. The relationship between perceived injustice and PIU was further confirmed by several subsequent studies (e.g., Ahamadi et al. 2011; De Lara 2006; De Lara 2008). The rationale for the relationship between perceived injustice and PIU, according to these studies, is that employees who perceive injustice may develop the feeling of skepticism toward formal regulations in organizations, which creates the feelings of uncertainty, anger, or frustration. To cope with these instances of negative affect, employees may rationalize, justify, and eventually engage in PIU behavior as a distraction or to avoid negative affect (Lim 2002; De Lara 2006; De Lara 2008).

Following a similar rationale, employees' perceptions of role ambiguity and role conflict at work were also found to positively associate with PIU (Henle and Blanchard 2008; Sawitri 2012). Role ambiguity refers to the uncertainty regarding job duties and expectations, a lack of guidelines for appropriate work behaviors, and the unpredictability of behavioral outcomes (Rizzo et al. 1970). Role conflict refers to incompatible demands in the workplace, which may include conflicts between work demands and one's personal values, different supervisor or group requests, organizational policies, and work duties (Rizzo et al. 1970). Role ambiguity and role conflict may create negative affect, such as uncertainty and frustration. PIU is considered an ideal way for employees to escape or distance themselves from negative encounters (Henle and Blanchard 2008). As Griffiths (2010) suggested, online behavior can provide a potent escape from the stresses and strains of real life. Using a similar rationale, Blau et al. (2006) found a positive relationship between powerlessness and some PIU activities, which is in line with Blanchard and Henle (2008), who suggested that an external locus of control[3] was related to employees' PIU behavior.

In contrast to the negative PIU studies above, the positive PIU studies have explored what drive employees to perform PIU from a positive perspective. For instance, Garrett and Dansiger (2008) and Li et al. (2010) demonstrated that the expected outcomes of Internet use and the perceived benefit of engaging in PIU (e.g., time saving, convenience, and interesting work life), rather than work dissatisfaction or other negative affect, are the main reasons that lead employees to perform PIU. These scholars hold that the physical boundaries between work life and private life are increasingly blurred due to the pervasiveness of various IT devices connected to the Internet (Ivarsson and Larsson 2012). On one hand, the blurred boundaries facilitate working remotely, which is evidenced by the growing proportion of employees working at home (Kossek et al. 2006). On the other hand, it also allows employees to deal with private tasks at work (Ivarsson and Larsson 2012). Work-family relationship studies suggest that flexibility of time and space is important to allow one's work and family roles to enrich each other, improving performance and effectiveness in both roles (Greenhaus and Powell 2006). PIU provides such flexibility for employees to deal with some personal issues. Accordingly, by viewing PIU as a convenient means to maintain both work and personal issues, studies on PIU have identi-

[3] An external locus of control refers to the extent to which an individual believes that others determine an outcome.

fied meeting private demands or benefits (e.g., maintaining personal relationships and saving time) as antecedents of PIU (Chen et al. 2011; Köng and Guardia 2014).

In addition to the antecedents we review above, which are identified in the way of associating with scholars' viewpoints regarding PIU is a "negative" or "positive" behavior, earlier studies also found some other factors related to PIU, but may not necessarily associate with scholars' viewpoints on PIU outcomes, and may not embody employees' *motives* to engage in PIU. First, researchers applied some classic psychological theories—the theory of planned behavior (Ajzen 1991), the theory of reasoned action (Fishbein 1979), and the theory of interpersonal behavior (Triandis 1977)—in the PIU context (e.g., Pee et al. 2008; Woon and Pee 2004; Lee et al. 2007; Bock et al 2010b; Moody and Siponen 2013; Askew et al. 2014). The findings were generally consistent with the results when these theories were applied to study other contexts (e.g., IT adoption). Attitude and subjective norms significantly affected PIU intention, which, along with facilitation conditions or perceived behavioral control, affected PIU behavior. An especially noteworthy finding is that habit had a powerful influence on PIU (e.g., Moody and Siponen 2013), overruling other rational factors (e.g., attitude, subjective norms, intention) when included in a model explaining PIU (Chun and Bock 2006; Lee et al. 2005; Bock et al. 2010b).

Second, personality factors such as the Big Five traits (Costa and McCrae 1992) and demographic characteristics (e.g., gender and age) were found significant in explaining PIU. Specifically, conscientiousness, emotional stability, agreeableness, and honesty were negatively related to PIU (Jia et al. 2013; O'Neill et al. 2014), whereas extroversion, neuroticism, and procrastination were positively associated with PIU (Jia et al. 2013, O'Neill et al. 2014, Lavoie and Pychyl 2001). In addition, Everton et al. (2005) found that employees with higher impulsivity and lower conscientiousness were more likely to engage in PIU behavior. In addition, males were found to be more likely to perform PIU behavior than females, and younger individuals more likely than older individuals to perform PIU behavior (Lim and Chen 2009; Vitak et al. 2011; Jia et al. 2013).

In summary of the previous studies on PIU antecedents, the negative PIU studies have reported that employees' main motive for engaging in PIU is to escape from negative affect (i.e., expressive PIU motive), whereas the positive PIU studies have suggested that employees' main motive for engaging in PIU is to facilitate a balance between work and non-work (i.e., instrumental PIU motive). However, these two types of PIU motives have not been discussed jointly. As a result, the previous studies do not differentiate the conditions in which expressive motives or instrumental motives are the main drivers of PIU.

2.3.3.3 PIU Policies: Deterrence or Non-deterrence

The third research theme that we observe from the PIU literature pertains to PIU policies, that is, what policies should organizations develop to address PIU and what the effectiveness of these policies would be. The negative PIU studies have primarily discussed deterrence-based policies to regulate employees' PIU, where-

as the positive PIU studies have discussed the fit between different PIU policies with different job types or different organizational cultures, suggesting that employees' PIU behavior should not be addressed uniformly by deterrence policies.

Specifically, in terms of negative PIU studies, two types of deterrence policies have been discussed to regulate PIU, namely, Internet monitoring and sanctions. However, the effectiveness of these two policies in regulating PIU is not conclusive. In terms of Internet monitoring, some studies (e.g., Henle et al. 2009; Ugrin and Pearson 2013) found that Internet monitoring was effective in reducing employees' PIU behavior, and some other studies found that Internet monitoring was only effective in deterring PIU when combined with sanctions (De Lara and Olivares-Mesa 2010).

The opposite results were also found from the research on sanctions. For instance, some studies found that employees' awareness of the enforcement of sanctions was the biggest deterrent on employees' intention to engage in PIU (Ugrin et al. 2008, Ugrin and Pearson 2008) and that sanctions were the core element in making Internet monitoring effective in reducing PIU (De Lara and Olivares 2010). Yet, some other studies found that employees' fears of organizational punishment actually increased their Internet deviance behavior (De Lara 2006; De Lara et al. 2006). Because the punishment may increase employees' hostile attitudes toward their organizations, they may therefore engage in PIU as a means of rebelling (Wang et al. 2013). The finding of De Lara and Olivares (2010) further suggested that sanctions only decreased PIU in situations with high certainty of detection (through monitoring or employers' proximity) of employees' PIU and that sanctions would actually increase PIU in a situation with low certainty of detection of employees' PIU. Further, Ugrin and Pearson (2013) found that both detection mechanisms (i.e., Internet monitoring) and sanctions (e.g., the threat of termination) were effective, individually, against some PIU activities, such as viewing pornography, managing personal finances, and personal shopping, but must be combined together and actually enforced to deter other PIU activities, such as personal e-mailing and social networking.

In contrast to the deterrence-based policies above, the positive PIU studies suggest that employees' PIU behavior should not be addressed uniformly by deterrence policies, given that deterrence-related factors are less significant in explaining PIU than other factors, such as the perceived benefits of PIU and personal norms against PIU (Li et al. 2010; Moody and Siponen 2013). In fact, deterrence policies might elicit employees' resisting behaviors, such as increased PIU behavior (De Lara et al. 2006) and decreased job satisfaction (Bock et al. 2010b; Urbaczewski and Jessup 2002; Shepherd and Klein 2012). Accordingly, these studies either propose policies that are less deterrent or else discuss the fit between different policies of PIU and different contextual factors, such as job type and organizational culture.

Specifically, Wong et al. (2005) examined the effectiveness of a punitive approach (e.g., promotion opportunity loss) and a positive approach (e.g., informal coaching discussion) on employees' commitments to change PIU behavior. They found that the positive approach was more effective than the punitive

approach in inducing employees' affective commitment to change (change by desire) and their normative commitment to change (change by obligation), and there was no significant difference between the two approaches in terms of the continuance of commitment to change (change by cost-benefit comparison). Given that affective and normative commitment to change may lead to stronger behavioral support, Wong et al. (2005) suggested that the positive approach may be more effective in changing employees' PIU behavior.

Similarly, Bock et al. (2010a) adopted a fit perspective to examine the effectiveness of punitive and positive policies in different circumstances. Based on the lens of task-technology fit (Goodhue and Thompson 1995), Bock et al. (2010a) found that when task non-routineness was high, PIU control mechanisms (e.g., Internet monitoring and websites blocking) were less effective in reducing PIU behavior. This is because employees performing job tasks with high non-routineness need to seek more information and utilize high creativity, and they perceive PIU behavior as more useful and more legitimate compared with employees performing job tasks with low non-routineness. Further, Bock et al. (2010a) found that punitive disciplines (e.g., a supervisor's warnings, suspension, and dismissal) were associated with greater satisfaction in bureaucratic cultures, whereas positive discipline systems generated higher satisfaction in innovative and supportive cultures.

In summary, scholars have discussed PIU policies from two different perspectives. From the negative perspective, it seems that the previous studies agree that the combination of Internet monitoring and sanctions are effective in address employees' PIU, but further studies are still needed to clarify the impact of a single policy (i.e., Internet monitoring or sanctions) on employees' PIU. From the positive perspective, scholars have discussed the role of contextual factors (e.g., job characteristics and organizational cultures) in terms of the impacts of PIU policies on employees' PIU behavior and job satisfaction. However, the circumstances in which positive or negative perspectives should be adopted regarding PIU policies are not clear yet, nor is how to design and implement PIU policies to take advantage of the potential positive PIU outcomes while avoiding the potential negative PIU outcomes. Although the previous studies have preliminarily discussed the role of organizational culture and job type in affecting the effectiveness of certain policies, assuming all employees within a given organizational culture or job type will respond to a certain policy in a consistent manner is problematic because this view does not consider individuals' differences (Leidner and Kayworth 2006). Individuals' differences are particularly important in the PIU context, given that PIU may have positive impacts on one employee's job performance, but have negative impact on the job performance of another employee in the same organization or with the same job type. Therefore, future research should pay more attention to individuals' differences, such as employees' different PIU motives, when exploring the circumstances in which positive or negative perspectives should be adopted.

2.3.4 A Summary of the Previous Research on PIU to Date and the Research Gaps

Overall, the previous studies have widely discussed PIU outcomes, PIU antecedents, and PIU policies. In spite of the important implications of these studies, we identify two types of research gaps from our review of the PIU literature, namely, contradictory findings on an empirical level and contradictory viewpoints on a theoretical level (see Figure 1).

On an empirical level, some of the findings regarding the same research questions are opposite; this is particularly the case in terms of studies on PIU antecedents and PIU policies. In terms of PIU antecedents, some studies found that expressive factors are the main reason for employees to engage in PIU (e.g., Lim 2002; Blanchard and Henle 2008), whereas some other studies found that it is actually not the expressive factors, but instrumental factors that lead to employees' PIU behavior (e.g., Garrett and Dansiger 2008). In terms of PIU policies, some studies found that Internet monitoring reduces employees' PIU behavior (Ugrin and Pearson 2008; Henle et al. 2009), while some other studies found that Internet monitoring did not work in regulating employees' PIU behavior (De Lara and Olivares 2010). Similarly, some studies found that sanctions are negatively related to employees' PIU (Ugrin et al. 2008; Ugrin and Pearson 2008), and some other studies found a positive relationship between sanctions and employees' PIU (De Lara 2006; De Lara et al. 2006). These contradictory findings provide confusing implications to organizations for developing appropriate PIU policies.

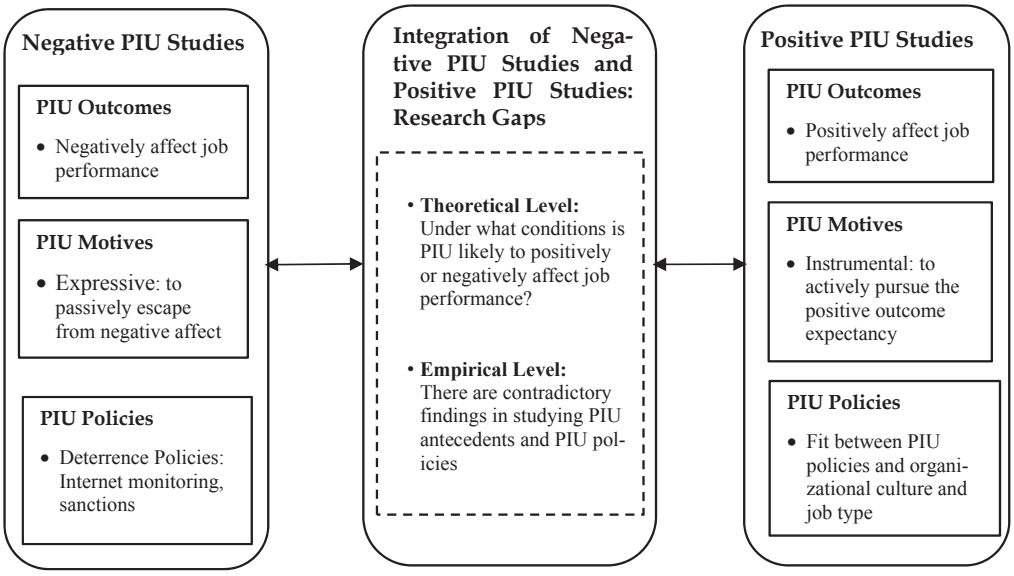

FIGURE 1 Summary of previous research on PIU and research gaps

Next, we discuss three limitations of the previous studies that may cause the contradictions and thus suggest three avenues for future research to clarify and integrate the contradictory findings:

1. **Future research should consider adopting the PIU activity-specific view to study PIU antecedents and PIU policies**. We argue that one reason for the opposite findings above may be that the previous studies considered all different types of PIU activities (e.g., visiting news websites vs. visiting porn websites), without taking into account the differences among different types of PIU activities. For instance, the reasons that employees surf news websites may be different from why they surf porn websites. Similarly, the effectiveness of a certain PIU policy (e.g., Internet monitoring) may be different in regulating employees' PIU of surfing news websites as opposed to regulating surfing porn websites. Therefore, future research should discuss the distinctions among different types of PIU activities and how the distinctions matter in terms of PIU antecedents and PIU policies. In other words, future research should further clarify which antecedents are related to which type of PIU activity, and which policies (e.g., Internet monitoring and sanctions) are more effective for which type of PIU activity. Adopting the PIU activity-specific view may address the contradictory findings of the previous PIU literature to some extent.
2. **Future research should consider using different research methods than those used in the previous studies**. For instance, the previous studies primarily adopted field surveys to examine the impact of Internet monitoring or sanctions on employees (e.g., De Lara et al. 2006; Wang et al. 2013). This has limitations. For instance, employees may change their PIU behavior at the beginning of the deployment of Internet monitoring, but the effectiveness may recede or even disappear over time if there is no other action combined with PIU, such as formal or informal sanctions. If the effectiveness of the PIU policies evolves over time, then a survey method with data collected at different time points may lead to different findings. Therefore, future research should consider using research methods such as field experiments with longitudinal data to better clarify the causal and dynamic relationship between a certain PIU policy and employees' behaviors and perceptions.
3. **Future research should consider relying more on data of employees' PIU behavior collected from web server systems as opposed to "subjective data" collected by employees' self-reports**. While the use of self-report data may have certain advantages and has been widely adopted by previous studies, it also has limitations. On one hand, social desirability may lead employees to underreport their PIU behavior in an intentional manner. On the other hand, due to the good "flow" when engaging in PIU, employees may underestimate their PIU behavior and thus unintentionally underreport their PIU behavior. The biased data of em-

ployees' PIU behavior may lead to biased findings in terms of PIU antecedents and PIU policies. Instead, Internet server systems in organizations may provide more accurate data regarding employees' PIU behavior with more details, such as the starting and ending time for visiting a certain webpage and the data volume received and sent during the visit of the webpage.

In addition to the research gaps on the empirical level, the other gap we identify from the existing literature is the contradiction in terms of perspectives on the theoretical level. Specifically, scholars hold different viewpoints and assumptions regarding the impact of PIU on employees' job performance, and these opposing viewpoints further lead scholars to discuss PIU antecedents and PIU policies from opposing perspectives. Given that PIU can lead to both positive and negative impacts on job performance, conditions in which the positive or negative impacts are more likely to happen remain to be explained. We believe that a theoretical model to explain and integrate the opposite perspectives would be useful to guide future empirical research and theory development. In the rest of this paper, we take a first step in developing such a model.

2.4 A Theoretical Model to Understand How PIU Affects Job Performance

In this section, we propose a theoretical model to integrate the opposite viewpoints of the previous studies (i.e., negative PIU studies vs. positive PIU studies) regarding how PIU affects job performance. In this study, job performance refers to how well (in terms of quality and quantity) an employee performs the tasks specified by the job responsibilities. The impact of PIU on employees' job performance may depend on whether and to what extent employees need to exert cognitive efforts in performing their tasks. For instance, the impact of PIU on the job performance of a programmer may be different from the impact of PIU on the performance of a receptionist. As an illustrative example, our model focuses on the job types requiring relatively high cognitive effort. This is because employees with job tasks requiring high cognitive effort (e.g., knowledge workers) usually have relatively high job autonomy, which potentially offers more opportunities for PIU. Therefore, the negative or positive impact of PIU on their job performance is more salient when PIU is leveraged inappropriately or appropriately, compared with those performing job tasks requiring relatively low cognitive effort (e.g., a receptionist). In addition, those PIU activities that are illegal, such as online sexual harassment, are beyond the scope of our model, given that all organizations prohibit these activities regardless of the impacts on employees' job performance.

Generally speaking, employees' job performance is determined by the amount and allocation of resources that are valuable to the job performance (Beal et al. 2005). In this sense, the impact of PIU on job performance is depend-

ent on how PIU affects the number of employee resources that are valuable to job performance and their allocation. Drawing on conservation of resource theory (COR theory, Hobfoll 1989, 2001), we develop a model to discuss the situations in which PIU replenishes resources or produces new resources (and is thus likely to positively affect job performance) and the situations in which PIU only consumes resources without replenishing or producing resources (and is thus likely to negatively affect job performance). Next, we introduce the COR theory, which forms the basis of our proposed model.

2.4.1 Conservation of Resources Theory

The basic tenet of COR theory (Hobfoll 1989, 2001) is that humans are motivated to protect their current resources and acquire new resources. Stress and strain occur when an individual's resources are in jeopardy of being lost or are actually lost or when no resource gains appear after a resource investment (Halbesleben et al. 2014). *Resource* is defined by Hobfoll (1989) as "as those objects, personal characteristics, conditions, or energies that are valued by the individual or that serve as a means for attainment of these objects" (p. 516). The different types of resources (see Ten Brummelhuis and Bakker 2012, Wang 2007) include physical resources (e.g., muscle strength), cognitive resources (e.g., working memory, attention), financial resources (e.g., salary and pension), and social resources (e.g., social support). Therefore, unless otherwise clarified, the term *resource*, in the rest of the paper, refers to the general perception of employees regarding all the different types of resources mentioned above.

COR theory suggests that individuals "must invest resources in order to protect resources against loss, recover from resource losses, and gain resources" (Hobfoll 2001, p. 349). For instance, if an employee would like to attain mental recovery (i.e., replenishing cognitive resources) by engaging in PIU activities, he or she has to spend some time in PIU (i.e., invest time resources and gain cognitive resources). The actual impact of the PIU activity on job performance will depend on whether the cognitive resources replenished by the PIU are more important for job performance, compared to the time resources that were consumed by the PIU.

COR theory (Hobfoll 1989, 2001; Halbesleben et al. 2014) posits that individuals with greater resources are in a better position to protect against resource losses and to gain additional resources. Individuals with fewer resources are more vulnerable to resource loss and less capable of resource gain. For instance, an employee with higher levels of work skills (i.e., more resources) is likely to perform job tasks better than employees with lower levels of work skills (i.e., fewer resources). Having a better job performance can lead to additional resources for the employee, such as increased salary or promoted position (i.e., resource gain).

Further, according to COR theory, initial resource loss may beget future loss (i.e., a resource loss spiral); this is because resource investment becomes more difficult as individuals lose resources so that individuals have a lower ability to protect the extant resources and to gain additional resources. Similarly,

initial resource gain begets future gain (i.e., a resource gain spiral); as individuals gain resources, they are more capable of investing resources and gaining additional resources. For instance, an employee with low working skills may perceive frustration in performing job tasks, and he or she may engage in PIU as an escape from the frustration (i.e., expressive PIU motive). However, the PIU behavior does not improve working skills, nor does it help eliminate the frustration when performing tasks. Instead, the PIU behavior wastes time and thus decreases job performance (i.e., initial resource loss). The decreased job performance may increase the perceived frustration of the employee and increase his or her tendency to escape from the frustration by engaging in PIU, which may further decrease the job performance (i.e., further resource loss). As a result, this employee may be trapped in a resource loss spiral.

In contrast, an employee with high working skills may be less likely to engage in PIU for the purpose of escaping work related frustrations. Instead, PIU is more likely to be leveraged by this employee as a means to have a mental break or to solve a conflict between work and personal tasks, such as ordering a gift for a kid's birthday rather than actually going to shops during work (i.e., instrumental PIU motives). The replenished cognitive capacity (due to the mental break) or saved time (due to the conflict being resolved) may eventually increase job performance (i.e., initial resource gain). The increased job performance may further result in a good mood or even an increased salary or promotion for the employee (i.e., further resource gain).

2.4.2 A Model to Understand the Impact of PIU on Job Performance

Combining the discussions above, the employees' perceived amount of resources may affect why and how they engage in PIU, which further determines whether the PIU will positively or negatively affect job performance. The increased or decreased job performance may, in turn, affect employees' perceived resource levels. As a result, we propose our model, depicted in Figure 2, with the following three propositions:

> **Proposition 1:** Different resource levels perceived by employees are associated with their different types of PIU behaviors.
>
> **Proposition 2:** Employees' different types of PIU behaviors have different impacts on their job performance.
>
> **Proposition 3:** The different impacts of PIU on job performance further affects employees' perceived resources levels.

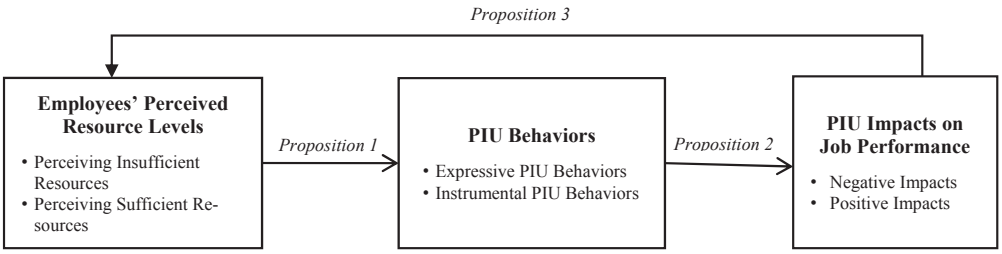

FIGURE 2 A theoretical model of the impact of PIU on job performance

The proposed model helps explain the conditions in which PIU is more likely to positively or negatively affect employees' job performance. Next, we elaborate on the model in detail to discuss how employees' resource levels, PIU behaviors, and job performances interact. As a result, eight sub-propositions are proposed. The propositions and sub-propositions are shown in Table 3.

TABLE 3 Propositions and sub-propositions

Propositions	Sub-propositions
Proposition 1: Different resource levels perceived by employees are associated with their different types of PIU behaviors.	**Proposition 1a:** An employee is more likely to engage in expressive PIU behaviors when s/he perceives having insufficient resources, compared with when s/he perceives having sufficient resources. **Proposition 1b:** An employee is more likely to engage in instrumental PIU behaviors when s/he perceives having sufficient resources, compared with when s/he perceives having insufficient resources. **Proposition 1c:** Employees who perceive having insufficient resources are more likely to engage in expressive PIU behaviors, compared with employees who perceive having sufficient resources. **Proposition 1d:** Employees who perceive having sufficient resources are more likely to engage in instrumental PIU behaviors, compared with employees who perceive having insufficient resources.
Proposition 2: Employees' different types of PIU behaviors have different impacts on their job performance.	**Proposition 2a:** Expressive PIU behaviors are more likely to negatively affect employees' job performance, compared with instrumental PIU behaviors. **Proposition 2b:** Instrumental PIU behaviors are more likely to positively affect employees' job performance, compared with expressive PIU behaviors.
Proposition 3: The different impacts of PIU on job performance further affects employees' perceived resources levels.	**Proposition 3a:** The more that decreased job performance is induced by PIU, the more likely employees perceive that they lack sufficient resources after engaging in PIU, formulating a resources loss spiral. **Proposition 3b:** The more that improved job performance is induced by PIU, the more likely employees perceive that they have sufficient resources after engaging in PIU, formulating a resource gain spiral.

2.4.2.1 How Employees' Resources Levels Affect PIU Behaviors: Proposition 1

Our literature review in Section 2 suggests that employees' PIU motives could be expressive or instrumental. We further define *expressive PIU behaviors* as PIU behaviors driven by expressive motives and define *instrumental PIU behaviors* as PIU behaviors driven by instrumental motives. Based on COR theory, we theorize in this section that these two types of employee PIU behaviors are associated with whether employees perceive having sufficient or insufficient resources to deal with encounters.

Employees' perceived resources quantity varies on both the within-person level and the between-person level. That is, the same employee may perceive having sufficient resources in some situations or in dealing with some encounters or stressors, and he or she may perceive lacking sufficient resources in some other situations (i.e., within-person difference) in dealing with some other encounters or stressors. Nevertheless, the perceived resource levels of some employees may be consistently higher than for some other employees (i.e., between-person difference). Both the within-person difference and the between-person difference of perceived employee resources matter in explaining employees' PIU behaviors.

On the within-person level, according to COR theory (Hobfoll 1989, 2001, Halbesleben et al. 2014), employees are more vulnerable to resource loss and less capable of resource gain (Hobfoll 1989, 2001; Halbesleben et al. 2014) in situations in which they perceive having insufficient resources (e.g., work skills and social support). Therefore, an employee is more likely to perceive various encounters (e.g., work demand) as stressors and is less capable of appropriately dealing with the stressors when he perceives having insufficient resources. That is, in situations when an employee perceives having insufficient resources, s/he is more likely to experience strain or negative affect (such as anger and frustration) from the stressors and is more likely to escape those stressors or to vent negative affect by engaging in PIU. In other words, when an employee perceives having insufficient resources, s/he is more likely to engage in expressive PIU behaviors.

In contrast, in situations in which employees perceive having sufficient resources, they are less vulnerable to resource loss and are in a better position to gain new resources by appropriately leveraging existing resources. That is, when an employee perceives that s/he has sufficient resources to deal with various encounters, s/he is either less likely to perceive the encounters as stressors, or s/he is able to appropriately tackle the stressors using the possessed resources. For instance, an employee with high work skills may not consider high work demand as a stressor. Even when s/he perceives some stressors at work, s/he may well cope with it by using the various support mechanisms (or other resources) from organizations, rather than feeling anger or frustration. That means, in the PIU context, an employee is less likely to have negative affect due to work stressors in situations in which s/he perceives having sufficient resources. Even if s/he experiences negative affect or emotions, s/he is less likely

to escape by engaging in PIU; instead, s/he is more likely to confront and solve the problem caused by the stressors. Therefore, an employee is less likely to engage in expressive PIU behaviors in situations in which s/he perceives having sufficient resources to deal with various encounters.

Accordingly, we propose the following propositions:

Proposition 1: Different resource levels perceived by employees are associated with their different types of PIU behaviors.

Proposition 1a: An employee is more likely to engage in expressive PIU behaviors when s/he perceives having insufficient resources, compared with when s/he perceives having sufficient resources.

Proposition 1b: An employee is more likely to engage in instrumental PIU behaviors when s/he perceives having sufficient resources, compared with when s/he perceives having insufficient resources.

Our discussions above suggest that the same employee may engage in expressive PIU behaviors in some situations (when s/he perceives lacking enough resources) and engage in instrumental PIU in some other situations (when s/he perceives having enough resources). The similar rationale also applies to between-person differences in terms of resource levels perceived by different employees. That is, employees who perceive having more resources are less likely to engage in expressive PIU behaviors. In contrast, employees perceiving fewer resources are more likely to engage in expressive PIU behaviors. No doubt that all employees, regardless of the level of resources, engage in PIU for instrumental motives in some cases. However, we argue that expressive PIU behaviors will account for a higher proportion of employees who perceive that they lack sufficient resources, compared with employees who perceive that they have sufficient resources.

As a result, we propose the following propositions:

Proposition 1c: Employees who perceive having insufficient resources are more likely to engage in expressive PIU behaviors, compared with employees who perceive having sufficient resources.

Proposition 1d: Employees who perceive having sufficient resources are more likely to engage in instrumental PIU behaviors, compared with employees who perceive having insufficient resources.

The propositions above not only provide a new perspective (i.e., a resource perspective) to understand employees' embedded motives to engage in PIU but also help integrate the existing findings of the previous research on PIU antecedents. For instance, the PIU antecedents identified by studies from the negative PIU perspective, such as perceived injustice, role ambiguity and role conflict, could be understood as a form of employees' perception of insufficient resources (to solve the problems leading to perceived injustice or job dissatisfaction). In contrast, the PIU antecedents identified by studies from the positive PIU perspective, such as meeting private demand and saving time, could be

understood as a form of employees' perception of sufficient resources and an investment of the resources to gain new resources.

2.4.2.2 How Different PIU Behaviors Affect Job Performance: Proposition 2

We discussed the relationships between perceived resource levels and different PIU behaviors in the previous section. In this section, we discuss how different PIU behaviors affect employees' job performance. Previous studies (e.g., Dalal et al. 2014) have suggested that job performance varies across different employees (between-person difference), and the job performance of an employee may also fluctuate within a certain period, such as a workday or a week (within-person difference). We argue that PIU plays a role in accounting for both the between-person difference and the within-person difference of job performance. For instance, the same PIU behavior, such as surfing Facebook for non-work-related purposes, may have positive impacts on one employee's job performance but have negative impacts on the job performance of another employee (between-person difference). Even for the same employee, surfing Facebook may enhance his or her job performance in some situations and decrease the job performance in some other situations (within-person difference).

On the within-person level, the impact of PIU on an employee's job performance depends on whether the resources consumed by PIU (e.g., time) are more important for job performance or the resources replenished (or saved/produced) are more important for job performance. In situations in which the resources *gain* resulting from PIU is more valuable than the resources consumed by PIU, the PIU behavior is likely to positively affect job performance. In situations in which the resources *consumed* by PIU are more valuable for job performance, the PIU behavior is likely to negatively affect job performance.[4] On the between-person level, the impact of PIU on employees' job performance depends on whether PIU leads employees toward reaching a resource gain spiral or a resource loss spiral.

Given that the concept of resources is broad, PIU may not affect (consume or produce) all different types of resources at the same time; therefore, before discussing how PIU consumes or replenishes resources, it is imperative to first clarify which resources that are valuable to job performance can *be affected* by PIU. We argue that two resources are particularly important in the PIU context, namely, time and executive attention.

Time is a key resource in getting things done (Hobfoll, 1998). Assuming all other factors are constant, the more time spent on job tasks, the better the job performance. The time "wasted" on PIU is also the main reason for the previous studies to claim that PIU has a negative impact on employees' job performance. With respect to COR theory, time is the resource that employees "invest" when they engage in PIU. According to the principles of COR theory (Halbesleben et al. 2014), if there are new resources acquired (e.g., better concentration on work, more cognitive resources) out of the resource investment (i.e., the time spent on

[4] However, if the resources consumed by PIU are not valuable to job performance, for example, when an employee has a low workload such that he or she has some spare time to engage in PIU at work, the PIU behavior may not negatively affect job performance.

PIU), then PIU may have a positive impact on job performance. Otherwise, if the invested resource (i.e., the time spent on PIU) does not replenish resources or produce new resources, PIU is likely to give rise to additional strain on employees and negatively affect employees' job performance. This is particularly the case for employees lacking resources, as they are more vulnerable to resource loss (i.e., time loss in the PIU context).

In addition to time, we argue that employees' *executive attention*, a type of cognitive resources, is another important and relevant resource that may be affected by PIU behavior. Attention refers to the selectivity of response (Hebb 1949). Two types of attention have been discussed: involuntary attention and executive attention. The latter is also called voluntary attention, directed attention, or focused attention (Diamond 2013). Involuntary attention is a natural reaction and requires little effort, such as the attention attracted by a student's shouting in a classroom while a lecture is being delivered. In contrast, executive attention requires individuals' cognitive efforts, for example, when an employee focuses his or her attention on job tasks and ignores other stimuli or distractions. Executive attention is characterized by the ability to effectively block outside distractions while focusing on a single object or task and is helpful in controlling individuals' thoughts and behaviors in adaptive ways. Executive attention is always needed when (1) planning or making decisions, (2) correcting errors, (3) responding in a novel way (or in a way that is not well learned), and (4) facing conditions that are dangerous.

The reasons that executive attention is a key resource in the PIU context are as follows. *First*, PIU is thought to affect employees' executive attention. For instance, Lim and Chen (2009) suggested that PIU may offer employees a break and help refocus their attention on work demands. They further found that men took 4 minutes to switch (their attention) from PIU back to work, while women took 10 minutes. This evidence suggests that appropriate PIU positively affects employees' executive attention, but individuals may not be able to switch their focus and concentration (i.e., executive attention) to their job tasks immediately after performing PIU activities. *Second,* executive attention is suggested as a source of other important functions, such as working memory, cognitive flexibility, reasoning, problem solving, and planning (Kaplan and Berman 2010), all of which are important to individuals' performance tasks that require an exertion of cognitive efforts (Diamond 2013). Therefore, job performance is more likely to be facilitated when more executive attention is focused on job tasks, and job performance is likely to suffer when executive attention is focused elsewhere (Hirst and Kalmar 1987; Speier et al. 1999). *Third,* executive attention is not only a valuable resource per se but also a key resource that impacts the effectiveness of other resources. Executive attention facilitates bringing different resources together that bear on the job task at hand. For instance, an employee's resources, such as work-related skills, will not be utilized at work unless the individual focuses executive attention on the tasks.

In other words, when engaging in PIU, employees "invest" the resource of time, and the PIU behavior may affect employees' executive attention, which in

turn affects job performance. That is, if the time spent on PIU helps replenish employees' executive attention, PIU is likely to positively affect the job performance. Otherwise, if the time spent on PIU leads employees to further deplete their executive attention, PIU is more likely to negatively affect the job performance.

We further argue whether PIU replenishes or depletes employees' executive attention may depend on whether the PIU behavior addresses the triggers of the PIU motives (i.e., expressive PIU motives vs. instrumental PIU motives). In this sense, different types of PIU behaviors (i.e., expressive PIU behaviors vs. instrumental PIU behaviors) may have different impacts on job performance. Next, we discuss the impact of instrumental PIU and expressive PIU on job performance, respectively.

2.4.2.2.1 The Impact of Instrumental PIU Behaviors on Job Performance

Instrumental PIU behaviors are likely to have positive impacts on employees' job performance. When employees engage in instrumental PIU, they use PIU as a means to take a mental break or to solve conflicts between work and personal tasks. Clearly, appropriate mental recovery is helpful in improving job performance. As an example of resolving conflict between work and personal tasks, suppose that an employee needs to order a gift for the birthday of his or her kid, but at the same time, he or she has to work in the office on job tasks; the family role may compete for her executive attention (Dalal et al. 2014), leaving limited executive attention available for job tasks. If the employee has the autonomy to spend some time ordering a gift for the child via the Internet, then the work-family role conflict can be resolved, and the employee can focus better on job tasks. That is, the PIU behavior eliminates the triggers that compete for executive attention. Therefore, this specific PIU behavior replenishes the employee's executive attention by eliminating a trigger that competes attentional resources with job tasks. As a result, this PIU behavior may positively affect job performance. The improved job performance, in turn, may provide the employee more resources (e.g., positive mood and more executive attention) to deal with job tasks. This positive loop may lead the employee to a resource gain spiral.

It is noteworthy that in some cases, instrumental PIU behaviors may not necessarily positively affect job performance, but at the least, they do not negatively affect job performance. For instance, some employees may not have enough work load in a certain time period, so they may engage in PIU just as a means of killing time. In this sense, the PIU behavior actually does not significantly affect job performance positively or negatively, given that the time spent on PIU is not valuable to job performance. In summary of the discussions above, instrumental PIU behaviors are likely to positively affect job performance, or at the least, they are not likely to negatively affect job performance.

2.4.2.2.2 The Impact of Expressive PIU Behaviors on Job Performance

The case may be different for expressive PIU behaviors, which are engaged by employees to escape from the negative affect generated by various stressors. Previous studies have suggested that employees may have chronic negative

affect, such as frustration, due to chronic work stressors (e.g., perceived injustice, role conflict, and role ambiguity in the workplace), and they may engage in PIU to escape of those issues. However, escaping from the negative affect and the stressors does not really address those issues. As a result, employees' negative affect does not decay after PIU because the stressors are still there. That is, the time spent on PIU does not help an employee gain any new resources. According to COR theory, strain and stress occurs when employees do not gain resources from there resource investment. In other words, the time spent on the PIU behaviors does not help alleviate the negative affect; instead, the PIU behavior actually generates additional negative affect. Given that negative affect consumes employees' executive attention resource (Dalal et al. 2014), employees need to allocate more cognitive resources to tackle the negative affect after engaging in PIU, leaving fewer cognitive resources available to perform job tasks. Therefore, in this case, PIU negatively impacts employees' job performance.

Our discussions above suggest that employees' job performance may be negatively affected when they engage in PIU as an escape of *chronic* affect that is generated by some *chronic* stressors. In addition to *chronic* affect, employees may also engage in expressive PIU behaviors as a means to deal with *acute* emotions, which could be generated by acute stressors that are either related or unrelated to work tasks, such as when an employee feels anger due to a quarrel with his or her partner. Compared with chronic negative affect, acute negative emotions are usually more intense but may last for a shorter time period. Some say that PIU behaviors in this case may help release the acute negative emotion, and therefore help employees to concentrate better on job tasks. We argue that this may not actually be the case. The reasons are twofold.

First, acute negative emotions naturally decay over time because individuals may unconsciously deal with the emotions even without doing anything on purpose (Hemenover 2003). In many cases, this unconscious response may be more effective in dealing with the negative emotions than the effortful strategies adopted by individuals. For instance, in a meta-analysis of the effectiveness of different emotion-regulation strategies, Augustine and Hemenover (2009) found that individuals who just sit quietly, without adopting any strategies on purpose (e.g., distraction and avoidance), actually achieved equally or even better outcomes in alleviating the negative emotions. Therefore, assuming that employees' acute negative emotions are released by engaging in PIU in some cases, it is not known whether PIU per se or the *time* spent on PIU actually releases the negative emotion. And it is not known whether PIU plays a role in releasing the emotion over a certain period of time, whether PIU actually plays an adverse role that prohibits the emotions being released over time, or whether PIU does not actually play a significant role in this case.

Second, even if PIU helps release the negative emotion, it can only provide short-term relief. However, studies in the emotion regulation field suggest that engaging in PIU as a distraction or to avoid negative emotions may be an unhealthy strategy to tackle the negative emotions, because it does not allow individuals to cognitively process the negative emotions. As a result, employees

may easily recall and experience the negative emotions again. In this sense, expressive PIU does not really alleviate the negative emotions in the long run (Kross and Ayduk 2008; Sheppes and Gross 2010). In addition, previous studies suggest that the frequent use of distraction or avoidance, including the use of PIU, to deal with negative emotions increases the risks of depression and anxiety (Aldao et al. 2010), which actually affects job performance in a negative way in the long run.

As a result, PIU may not be an effective means of dealing with acute negative emotions; therefore, expressive PIU behaviors are hardly able to positively affect job performance. At the same time, it is noteworthy that in the case of acute negative emotions, PIU may not negatively affect job performance either. The reason is that acute negative emotions are usually so intense that employees' job performance may be negatively affected by the negative emotion per se even without engaging in PIU. In other words, in cases of acute negative emotions, it is essentially the intense and negative emotions, as opposed to the PIU behaviors (driven by the negative emotions), that negatively affect job performance.

In summary, expressive PIU may not be an effective a means of dealing with either chronic or acute negative affect. In cases of chronic negative affect, expressive PIU behaviors may lead to additional negative affect that further depletes employees' executive attentional resources, negatively affecting job performance. In cases of acute negative emotions, expressive PIU has hardly any positive impact in releasing the emotions and improving job performance.

Combining the discussions above regarding the impacts of expressive PIU behaviors and instrumental PIU behaviors on job performance, instrumental PIU behaviors are likely to positively affect job performance, or at the least, they have hardly any negative impact on job performance. On the other hand, expressive PIU behaviors are likely to negatively affect job performance, or at the least, they have hardly any positive impact on job performance. As a result, we propose the following propositions:

> **Proposition 2:** Employees' different types of PIU behaviors have different impacts on their job performance.
>
> **Proposition 2a:** Expressive PIU behaviors are more likely to negatively affect employees' job performance, compared with instrumental PIU behaviors.
>
> **Proposition 2b:** Instrumental PIU behaviors are more likely to positively affect employees' job performance, compared with expressive PIU behaviors.

2.4.2.3 How Job Performance Affects Employees' Perceived Resource Levels: Proposition 3

We have previously discussed how the perceived resource levels of employees affect their PIU behaviors and how different PIU behaviors affect their job performance. According to the COR theory, individuals' current resource levels affect their behaviors, and the outcomes of the behaviors may, in turn, affect

their resource levels in the future. That is, in the PIU context, employees' resource levels and PIU behaviors may affect employees' job performance, and the increased or decreased job performance due to PIU behaviors may, in turn, further affect employees' perceived resource levels, formulating either a resource gain spiral or a resource loss spiral.

For instance, when an employee perceives having insufficient resources for dealing with the difficulties of job tasks, he or she may engage in PIU as a means to escape from the difficulties encountered in performing job tasks. As we discussed earlier, the PIU behavior is likely to negatively affect the job performance. The decreased job performance may further enhance the employee's perception of lacking the resources and abilities to perform the job tasks, increasing the tendency to escape from the tasks by engaging in PIU. The interactions among resources, PIU behaviors, and job performance formulate a resource loss spiral.

In contrast, suppose an employee uses PIU as a means to solve a conflict between the work role and the family role (e.g., spending a few minutes paying a family bill); in this case, the PIU behavior may release more executive attention that was previously occupied by the work-family role conflict. As a result, the employee's job performance may actually improve because of the PIU behavior. The improved job performance may further provide more perceived resources to the employee in both the short term (e.g., a good mood) and the long term (e.g., a promotion). As a result, the interactions among PIU behavior, job performance, and resources formulate a resource gain spiral.

Accordingly, we propose the following:

Proposition 3: The different impacts of PIU on job performance further affects employees' perceived resource levels.

Proposition 3a: The more that decreased job performance is induced by PIU, the more likely employees perceive that they lack sufficient resources after engaging in PIU, formulating a resources loss spiral.

Proposition 3b: The more that improved job performance is induced by PIU, the more likely employees perceive that they have sufficient resources after engaging in PIU, formulating a resource gain spiral.

2.5 Discussions and Conclusions

2.5.1 Implications

PIU is currently such a common phenomenon in organizations that increasing attention of research is paid to PIU. We reviewed the main findings of extant PIU literature, identified research gaps of previous studies, and proposed a theoretical model to understand the impacts of PIU on employees' job performance. Our study has important implications in terms of both research and practice.

In terms of a theoretical contribution, we identified two types of research gaps from the existing PIU literature, namely, contradictory findings on an empirical level and contradictory perspectives on a theoretical level. Accordingly, we propose three avenues for future research to explore and integrate the contradictory findings. We also proposed a new theoretical model to help integrate the opposing viewpoints regarding the impacts of PIU on employees' job performance, by explaining the conditions in which PIU is likely to negatively or positively affect employees' job performance. In doing so, our study provides a new perspective to understand existing PIU studies and provides new avenues for future research to further discuss PIU outcomes, PIU antecedents, and PIU policies.

The practical implications of our proposed model are twofold. First, our model provides a lens with which employees can reflect on whether their PIU behaviors are essentially expressive or instrumental, whether their PIU behaviors help improve job performance or actually decrease job performance, and whether their PIU behaviors trap them in a resource loss spiral or help them to actually reach a resource gain spiral. As a result, employees should be better able to leverage IT as a means to facilitate both work and personal life and to allow work and personal life to enrich each other.

Second, our model also has implications for organizations in terms of developing PIU policies. While previous studies have proposed either punitive or no policies at all to address employees' PIU behaviors, our model suggests that employees' different PIU behaviors driven by different motives may have different impacts on job performance. Therefore, appropriate PIU policies should consider the different outcomes of different PIU behaviors. Instead of adopting policies with a "one size fits all" approach, one alternative for organizations could be organizing formal or informal training to foster employees' awareness of the situations in which PIU is more likely to negatively or positively affect their job performance so that employees may exert better self-control in regulating their PIU behavior. In addition, organizations may also consider providing various resources to deal with work and even non-work-related stressors, such as job skills training and social support, so that employees are less likely to be trapped in a resource loss spiral through engaging in expressive PIU and more likely to maximize the positive impact of PIU on job performance.

2.5.2 Limitations and Future Research Challenges

In spite of the important implications for research and practice, our proposed model is not without limitations. The first limitation is that the model, which is essentially a variance- or continuum-based model, does not address the dynamic nature of PIU. For instance, one's PIU behavior may first be triggered by instrumental motives, for instance, through replying to a quick personal e-mail, but this instrumental PIU behavior may further trigger his or her expressive PIU motives (if the employee has the expressive PIU motive). He or she may start loafing by browsing news websites after replying to an e-mail. That is, certain PIU behaviors may be initially instrumental (or expressive) but later be-

come expressive (or instrumental). Further, both expressive and instrumental PIU behaviors may develop into habitual PIU behaviors. Future research should further develop and improve our model to take into account the dynamic nature of employees' PIU behaviors.

Second, while we have theoretically discussed the distinctions between expressive PIU behaviors and instrumental PIU behaviors, future research may need to further explore the differences on empirical and operational levels. Our model implies the differences between expressive PIU and instrumental PIU may be twofold. First, compared with instrumental PIU motives, employees with expressive PIU motives may perform PIU activities requiring lower cognitive load. The reason is, when an employee experiences a negative emotion, part of his or her cognitive resources are consumed by the negative affect (Beal et al. 2005), leaving limited cognitive resources for other tasks. Therefore, employees are less likely to engage in PIU activities that require high cognitive effort, such as playing a new complex computer game. Instead, they are more likely to surf news sites aimlessly or play a familiarized computer game that requires a relatively low cognitive load. Second, compared with instrumental PIU motives, expressive PIU motives are more likely to relate to a longer duration and higher frequency of PIU behavior. This is because, expressive PIU is essentially a means to escape from real-world stressors. As long as the real-world stressors are not addressed, employees are likely to engage in PIU and stay in the virtual world, resulting in a longer PIU duration and/or a higher PIU frequency. Distinguishing between expressive and instrumental PIU (motives and behaviors) on an operational level would be helpful in testing our proposed model.

Future researchers should consider testing the proposed model by conducting empirical studies, and they could also expand our theoretical model by loosening some of the boundaries of our model and addressing the limitations mentioned above.

2.5.3 Conclusion

Based on 108 published articles on PIU, we reviewed the findings of the PIU literature with respect to PIU outcomes, PIU antecedents, and PIU policies. We found that some findings from previous studies are contradictory. To improve understanding and to integrate the contradictory results, we proposed three possible avenues for future research. We also found from the literature that scholars hold opposite assumptions and viewpoints regarding the impact of employees' PIU on their job performance, without clarifying the conditions in which PIU is more likely to negatively or positively affect employees' job performance. The opposite viewpoints on PIU outcomes have further led scholars to discuss PIU antecedents and PIU policies from opposing perspectives. The contradictory viewpoints impede knowledge advancement in PIU research and provide confusing implications for organizations regarding PIU policies development.

Drawing on COR theory, we developed a new theoretical model, holding that employees who perceive that they have insufficient resources are more likely to use PIU as a means to escape the negative affect produced by various stressors, which is likely to deplete their executive attention and negatively affect job performance. In contrast, employees who perceive that they have sufficient resources are more likely to use PIU as a means to facilitate a balance of work and non-work, which is likely to replenish executive attention, and eventually, positively affect job performance. The decreased or increased job performance may, in turn, further negatively or positively affect employees' perception of their resource levels in dealing with various encounters or stressors. In line with this logic, we proposed three propositions and eight subpropositions to further discuss the interactions among employees' resource levels, PIU behaviors, and PIU outcomes regarding job performance.

Our proposed model provides an explanation of *which outcomes* (negative impact on job performance vs. positive impact on job performance) are more likely to result from *whom* (employees who perceive having insufficient resources vs. employees who perceive having sufficient resources), with *what PIU behaviors* (expressive PIU vs. instrumental PIU). As a result, our model helps integrate the opposing viewpoints and findings of previous studies and advances our understanding of the impact of PIU on employees' job performance. Our proposed model could be a basis for further theory development and empirical research.

3 STUDY II: INTERNET MONITORING CAN BE WORSE THAN USELESS FOR REGULATING EMPLOYEES' PERSONAL INTERNET USAGE IN THE WORKPLACE: EVIDENCE FROM A FIELD EXPERIMENT

3.1 Overview

The operations of organizations are increasingly reliant on IT devices connected to the Internet, such as computers, tablets, and smartphones. At the same time, it is becoming increasingly common for employees to use these IT resources to perform non-work-related activities, defined as personal Internet usage in the workplace (PIU). To prevent the potential negative impact of PIU on employees and organizations, Internet monitoring has been widely deployed in organizations. However, the impact of Internet monitoring on employees' PIU is not clear from previous studies. Further, Internet monitoring may violate employees' information privacy, resulting in their dissatisfaction with the Internet monitoring policy. As an expression of their dissatisfaction, employees may be less likely to engage in behaviors that are beneficial to organizations, such as organizational citizenship behavior (OCB). The threat of Internet monitoring beyond PIU has not yet been studied.

We argue that Internet monitoring can be worse than useless, since it may not decrease PIU behaviors but can decrease policy satisfaction and OCB. To empirically investigate our argument, we conducted a quasi-field experiment at a software company to examine how Internet monitoring affects employees' PIU, policy satisfaction, and OCB. We measured employees' PIU behaviors by using "objective" system data. Our findings suggest that Internet monitoring does not significantly change employees' PIU but does lead to employees' dissatisfaction due to the perception of information privacy violation. As an expression of dissatisfaction with the policy and information privacy concerns,

employees' organizational citizenship behavior decreased. Our study has a number of implications for research on PIU.

3.2 Research Background

IT devices connected to Internet, such as desktops, laptops, tablets, and smartphones, are playing an increasingly central role in organizations (Vodanovich et al. 2010; Ozler and Polat 2012). On the one hand, these IT resources have greatly improved employees' work productivity (Melville et al. 2004); on the other hand, it has also become common for employees to perform non-work-related activities during office hours, which is defined as personal Internet usage in the workplace (PIU) (Vitak et al. 2011; Moody and Siponen 2013). Examples of PIU include surfing general news sites, non-work-related emailing, visiting social network sites, booking personal travel or vacations, and online stock-trading, shopping, gaming, and chatting, to name just a few.

Evidence suggests that PIU is prevalent in organizations. It is estimated that around 30% to 59% of employees' Internet use in the workplace is non-work-related (Griffiths 2003), and employees spend approximately one to two hours every working day on non-work-related activities online (Rajah and Lim 2011; Li and Cheng 2013). Compared with other traditional non-work-related activities in the workplace, such as longer lunch breaks and socializing with coworkers, PIU does not require employees to be physically absent from the office and is thus not as visible as other non-work-related behaviors (Wanger et al. 2012). This partly explains why PIU is currently the main form of non-work-related behavior in the workplace (Ivarsson and Larsson 2012).

While the positive side of PIU has also been discussed in the literature (Belanger and Slyke 2002; Oravec 2002; Kuem and Siponen 2014), most of the existing studies view PIU as stealing work time and thereby decreasing employees' work productivity (Lim 2002; Bock and Ho 2009); PIU has also been viewed as potentially leading to security risks, such as increasing vulnerability to spyware and viruses (Liberman et al. 2011). Given the prevalence of PIU, it is understandable that at least 63% of employers monitor employees' Internet connections (Alder et al. 2008; Posey et al. 2011). While previous studies preliminarily examined the impact of Internet monitoring on employees' PIU, they did not investigate the impact of PIU on employees beyond their PIU behaviors. We argue that it is important for organizations to recognize the potential impact of PIU on employees beyond PIU itself. For instance, Internet monitoring may violate employees' information privacy, resulting in employees' dissatisfaction with the Internet monitoring policy. As an expression of their dissatisfaction, employees may be less likely to engage in behaviors that are beneficial to organizations, such as organizational citizenship behavior.

To examine our argument, we conducted a quasi-field experiment to explore the impact of Internet monitoring on employees' PIU as well as their poli-

cy satisfaction and OCB. The structure of this study is organized as follows: in Section 3.3, we review previous studies related to Internet monitoring; in Section 3.4, we provide a theoretical background and develop our research hypotheses; in Section 3.5, we discuss the experimental design and methods, followed in Section 3.6 by the results of our study. The study concludes by discussing the implications and limitations of our research as well as future research directions.

3.3 Literature Review and Research Gaps

The existing literature suggests two types of employer monitoring to employees: monitoring for performance feedback (e.g., Stanton and Julian 2002; Alder and Ambrose 2005) and monitoring for behavioral control (e.g., Alge 2001; Urbaczewski and Jessup 2002). Since Internet monitoring is deployed by organizations to regulate employees' Internet behaviors, we focus on the latter type of monitoring for the purposes of our study.

There are only a handful of studies that have discussed the impact of Internet monitoring on employees' PIU behavior. The findings of these studies have been inconclusive. That said, some of these studies found that Internet monitoring was effective for reducing employees' PIU behaviors. For instance, based on self-report survey data from 116 employees of multiple companies, Henle et al. (2009) found that employees were less likely to engage in PIU if the Internet policy included periodic monitoring. Similarly, based on a survey of 87 participants, Ugrin et al. (2008) demonstrated that security detection mechanisms (i.e., monitoring systems) and employee awareness of monitoring system enforcement significantly deterred intentions to engage in PIU. However, based on qualitative data collected from 26 respondents who were monitored in some respect at work, Stanton and Weiss (2000) found that only four of them reported changing their non-work-related Internet behaviors as a response to monitoring, while 10 respondents claimed that monitoring did not bother them at all. This is in line with De Lara and Olivares (2010), who suggested that monitoring is not able to deter employees from engaging in PIU unless it is implemented alongside sanctions.

Based on the admittedly limited number of previous studies in this area, it seems that the impact of Internet monitoring on employees' PIU behaviors is inconclusive. One possible reason for this may be that the impact of Internet monitoring on employees' PIU behaviors could evolve over time. For instance, employees might change their PIU behaviors at the beginning of the deployment of Internet monitoring, but its effectiveness may recede or even disappear over time if there is no other action combined with monitoring such as formal or informal sanctions. Consequently, the relationship between Internet monitoring and PIU may be different at different points in time. Unfortunately, previous studies only used cross-sectional data (i.e., field surveys at a certain point in time), which did not address the possible dynamic relationship between Inter-

net monitoring and PIU, and did not clarify the point in time of data collection (i.e., at the beginning of the deployment of Internet monitoring vs. a long time after the deployment of Internet monitoring). In this sense, using longitudinal data from field experiments are helpful for investigating the relationship between Internet monitoring and PIU.

Another possible reason for the inconclusive results could be that these studies measured employees' PIU behaviors using self-reported data. While self-reports may be appropriate for measuring certain constructs, such as employees' awareness of the existence of the Internet monitoring policy in organizations, it may not be appropriate for measuring PIU behaviors. On the one hand, social desirability may lead employees to intentionally under-report their PIU behaviors; on the other hand, due to the good cognitive "flow" when engaging in PIU, employees may underestimate their PIU behaviors and thus unintentionally under-report it. Potentially biased employee data may also lead to biased findings regarding the relationship between Internet monitoring and PIU. In this sense, using "objective" employee data generated by the Internet servers of organizations may be helpful for addressing this issue.

In addition, previous studies only preliminarily examined the impact of Internet monitoring on employees' PIU, without discussing its impact *beyond* PIU, such as employees' satisfaction with Internet monitoring. This is a significant limitation. Employees may comply with a certain policy even if they disagree or are dissatisfied with it; yet, if employees are dissatisfied, they may express their disapproval by engaging in counterproductive behaviors beyond those regulated by the policy (Workman 2009). Moreover, they may also be less likely to engage in other behaviors that are considered beneficial to organizations, such as OCB.

As a first step toward addressing the shortcomings mentioned above, we designed a quasi-experiment to investigate whether employees' PIU behaviors changed at the beginning of the implementation of Internet monitoring. We used data on employees' PIU behaviors generated by an organizational Internet server system. Our experiment also examined the impact of Internet monitoring on employees' policy satisfaction and OCB. Next, we discuss the theoretical background upon which we developed our research model and hypotheses.

3.4 Theoretical Background and Research Hypotheses

We developed our research hypotheses based on psychological contract theory. In this section, we first discuss why Internet monitoring may lead to employees' perception of a psychological contract breach as well as the forms of psychological contract breach in the context of Internet monitoring and PIU. We then discuss how the psychological contract breach affects employees' PIU, policy satisfaction, and OCB.

3.4.1 Psychological Contract in Internet Monitoring and PIU context

Psychological contract theory has been widely used in discussing the employer–employee relationship (e.g., Turnley et al. 2003; Dawson et al. 2014). In the context of the employer–employee relationship, psychological contracts refer to an employee's beliefs and expectations about the mutual obligations in an employment exchange relationship (Rousseau 1995). These beliefs and expectations are shaped and affected by the implicit or explicit promises of employers (Robinson 1996), as well as a number of other factors, such as personal values, organizational culture, and social norms (Dabos and Rousseau 2004). Compared with formal employment contracts, psychological contracts are inherently perceptual and are thus more subjective. The interpretations and expectations of an employee about the mutual obligations within the psychological contract may not be shared by the employer or even another employee (Morrison and Robinson 1997; Zhao et al. 2007).

Psychological contract breach occurs when employees perceive that the organization has failed to fulfill its promises or obligations, or vice versa (Robinson and Rousseau 1994). Psychological contract breach leads to a discrepancy between what is expected and what is received by an employee, which is the main source of dissatisfaction (Locke 1969). That is, employees' perceptions of psychological contract breach leads to dissatisfaction with their jobs or organizations. Further, psychological contract breach may also affect employees' behaviors within organizations. This is because employees' behaviors within organizations (e.g., task performance, OCB) represent their perceived obligations to employers; employees may refuse to fulfill these obligations by following or not following certain behaviors if they perceive their employers to not be fulfilling their own obligations (Zhao et al. 2007).

Internet monitoring, which aims to curb employees' PIU, represents employers' expectations of employees' PIU behaviors and could therefore be considered as representing *employers'* perceived psychological contract. Similarly, employees' attitudes about and compliance or non-compliance with the Internet monitoring policy embodies their expectations of PIU behaviors, which could be considered an outcome of *employees'* psychological contract. In this sense, it is reasonable to study the impact of organizational Internet policies on employees from the perspective of psychological contract theory.

While acknowledging that psychological contract theory is an appropriate frame for examining the impact of Internet monitoring on employees, it should be noted that, as a concept, *psychological contract* is broad, including both *transactional* content such as expectations about payment or bonuses, and *relational* content such as employers' support or employees' loyalty (Rousseau 1990). Next, we discuss why Internet monitoring may lead to perceived psychological contract breach by employees as well as the connotation of psychological contract breach in the context of Internet monitoring and PIU.

Given that employees and employers may have different viewpoints about PIU, the legitimacy of Internet monitoring (as a policy to regulate PIU), as

perceived by employees, may also be different from that of employers. Previous studies have suggested that Internet monitoring may elicit employees' information privacy and sanction concerns (Straub and Nance 1990; D'Arcy et al. 2009). Therefore, we conceptualize employees' information privacy and sanction concerns as two dimensions of psychological contract breach in the context of Internet monitoring and PIU. These two dimensions are discussed in detail below.

3.4.2 Sanction Concerns as Psychological Contract Breach (in PIU Context)

Previous studies have found that employees' awareness of monitoring enhances their perceptions of both the certainty and severity of sanctions. On the one hand, monitoring and surveillance increase the possibility of being caught while performing a certain behavior, and hence the *certainty* of sanctions is likely to increase under monitoring (Straub and Nance 1990). On the other hand, implementing monitoring of a certain behavior implies that organizations devote more resources and pay more attention to regulating the behavior. Thus, employees may interpret increased attention and resources as resulting in a more severe sanction should they misbehave (D'Arcy et al. 2009). Therefore, even though no sanction may be explicitly described in the Internet monitoring policy, Internet monitoring per se may elicit employees' sanction concerns in terms of both the certainty and severity of sanctions. This may particularly be the case for employees who spend an excessive amount of time on PIU for non-work-related purposes.

However, we argue that the sanction concerns elicited by Internet monitoring may not be in line with employees' expectations in the context of PIU. From an employer's perspective, the rationale for implementing sanction-based policies to address PIU include (1) PIU behaviors could raise information security risks, such as increased vulnerability to malware, and (2) PIU behaviors negatively affect employees' job performance. However, the reasons may not be valid from an employee's perspective. On the one hand, it may be the case that the risk of infection by malware or viruses is relatively high in terms of some PIU activities, such as visiting adult-oriented websites, when compared to others, such as visiting popular news sites; however, employees may find it difficult to believe that information security is a concern in most PIU activities, such as visiting leading news websites (e.g., BBC) or social network sites (e.g., Facebook).

On the other hand, employees may believe that PIU does not necessarily negatively affect job performance. In fact, appropriate PIU behaviors may actually facilitate a mental recovery, or reducing the absenteeism via taking the resolution of personal issues, and eventually benefit their job performance (Oravec 2002; Anandarajan and Simmers 2005; Ivarsson and Larsson 2012). Further, the fading boundary between work life and personal life (D'Abate 2005; König and Guardia 2014) has made it more common for work tasks to be handled at home; conversely, it has also become more common for some personal issues to be

dealt with in the workplace, such as paying bills. PIU provides employees with a convenient avenue for dealing with these sorts of personal issues, which could arguably allow them to concentrate more on their work tasks and also reduce the absenteeism rate. As work–family relationship studies suggest, flexibility of time and space is important for making one's work and family roles mutually enriching, thereby improving performance and effectiveness in both roles (Greenhaus and Powell 2006). In this sense, PIU is not necessarily destructive to organizations; some PIU behaviors could even be constructive for both employees and organizations in some cases.

Taken together, from an employee's perspective, it may not be legitimate to implement a PIU policy to regulate employees' PIU, such as Internet monitoring, which could elicit sanction concerns. Employees expect to have a certain degree of freedom and autonomy in terms of Internet usage in the workplace; this is particularly the case for knowledge workers, such as software programmers, whose work is mainly outcome-oriented. This expectation constitutes a part of employees' psychological contract in modern digital society and within organizations. Accordingly, completely prohibiting employees from PIU by implementing deterrence-based policies like Internet monitoring may also prevent employees from constructively using the Internet for personal activities, thus violating employees' psychological contract.

3.4.3 Information Privacy Concerns as Psychological Contract Breach

In addition to sanction concerns, Internet monitoring may also elicit employees' information privacy concerns. Privacy is generally defined as the extent to which individuals believe they have control over their personal information and interactions with others (Stone and Stone 1990). Due to the pivotal role that the Internet plays in contemporary society, individuals leave many electronic footprints that detail their behaviors and preferences. Further, data mining techniques enable sophisticated analyses of individuals' personal information even without their knowledge and consent (Culnan and Armstrong 1999). As a result, *information privacy* is becoming more vulnerable to disclosure, and individuals are paying increasing attention to information privacy as a result.

Information privacy represents an individual's ability to control when, how, and to what extent his or her personal information is communicated to others (Stone et al. 1983; Son and Kim 2008). Previous studies have suggested the importance of information privacy in employees' psychological contract perceptions. For instance, Allen et al. (2007) reported that employees state that maintaining their privacy is an essential element in determining how they feel about their jobs and employers. Workman (2009) further argued that employees' privacy boundaries (such as the privacy of email activities and Internet usage) and expectation that employers will not cross them could constitute a psychological contract.

When employees lose control over the communication of their personal information to others, their information privacy concerns will be evoked. Information privacy concerns refer to an individual's subjective views of fairness

within the context of information privacy (Campbell 1997; Malhotra et al. 2004; Jiang et al. 2013). Internet monitoring systems track all the websites that employees visit in the workplace. Since employees do not have control over what information is collected by the monitoring system nor whether, when, and how such information will be communicated to others, the implementation of Internet monitoring will likely elicit their information privacy concerns (Alge 2001). In line with the viewpoints of previous studies, we argue that Internet monitoring that violates employees' information privacy will lead to a psychological contract breach.

In sum, Internet monitoring is likely to increase employees' sanction and information privacy concerns, neither of which are in line with their expectations in the PIU context; hence, both types of concerns constitute a form of psychological contract breach. Accordingly, we propose the following two hypotheses:

H1 Employees' sanction concerns are positively affected by the implementation of Internet monitoring.

H2 Employees' information privacy concerns are positively affected by the implementation of Internet monitoring.

Psychological contract breach caused by sanction and information privacy concerns further affects employees' PIU behaviors, policy satisfaction, and OCB. Below, we discuss in more detail our hypotheses regarding how the Internet monitoring policy affects employees' PIU behaviors, policy satisfaction, and OCB. Our research model and hypotheses are illustrated in Figure 3.[5]

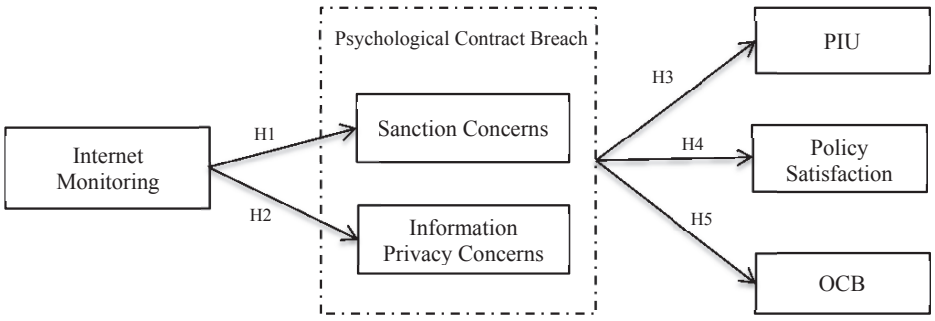

FIGURE 3 Research model and hypotheses

[5] In Figure 3, it is worth noting that by including the two constructs of sanction concerns and information privacy concerns, we are not aiming to test the mediation effect of the two constructs. Instead, we are aiming to explore the underlying mechanism of how Internet monitoring affects employees' PIU, policy satisfaction, and OCB.

3.4.4 The Impact of Internet Monitoring on Employees' PIU Behavior

As we discussed above, Internet monitoring may elicit employees' sanction and information privacy concerns. In turn, both types of concerns may affect employees' PIU behaviors.

In terms of sanction concerns, deterrence theory (Gibbs 1975) posits that individuals will be deterred from an illicit act by sanctions imposed on the act. That is, individuals are likely to avoid a behavior if there are sanctions on that behavior. Deterrence theory has been widely discussed in the context of information systems (IS) security (e.g., D'Arcy et al. 2009; Siponen and Vance 2010) as well as in the context of PIU (e.g., De Lara 2006; Ugrin et al. 2008). Monitoring systems (such as Internet monitoring) are likely to enhance employees' perceptions of the certainty and severity of sanctions (D'Arcy et al. 2009; D'Arcy and Herath 2011), both of which are negatively related to the actions they are intended to regulate (Nagin and Pogarsky 2001).

In a PIU context, employees may have different perceptions regarding the legitimacy of different types of PIU behaviors. For instance, visiting news websites may be deemed more acceptable in most organizations than visiting adult websites (Blanchard and Henle 2008; Lim and Chen 2009). Similarly, engaging in PIU for 15 minutes a day may be deemed more acceptable in most organizations than engaging in PIU for two hours a day. We argue that Internet monitoring may not deter all PIU behaviors; however, if the Internet monitoring policy is communicated to employees appropriately and is strictly enforced, at least some PIU behaviors (especially those hardest to justify) could be decreased. Specifically, PIU activities that are considered to be "serious", such as online job-hunting and visiting adult websites (Lim and Chen 2009), are more likely to be reduced than those considered to be minor, such as visiting news websites. This is in line with previous studies that have suggested that some PIU activities could be reduced under Internet monitoring, such as viewing pornography and managing personal finances, but not social network activities (Ugrin and Pearson 2013).

Furthermore, employees may also shorten the duration of some minor PIU activities even if they do not completely stop engaging in it. For instance, although employees might occasionally visit a news website for a mental break, they may spend more time on the site than they originally intended because surfing the news is a relaxing and interesting activity that diverts their attention and prolongs the duration of the behavior, even without their awareness. However, this situation would be less likely if a monitoring system were in place, because employees would then be unable to justify visiting a news website for longer than a short break.

Due to the two pathways described above (i.e., sanction concerns cause employees to decrease serious PIU activities and shorten the duration of PIU in general), employees' PIU behaviors are likely to be decreased under deterrence.

In addition to sanction concerns, information privacy concerns due to Internet monitoring may also affect employees' PIU behaviors. For example, pre-

vious studies have suggested that information privacy concerns can hinder individuals from performing some activities, including online shopping (Son and Kim 2008), social network activities (Jiang et al. 2013), and location-based services (Xu et al. 2009). In the PIU context, Internet monitoring increases the likelihood of employees' electronic footprints being exposed to others (e.g., those authorized to check Internet log files). For instance, an employee's record of visiting dental websites or searching for the keyword "toothache" on Google might reveal that he or she has dental problems. This privacy concern might be even higher in cases where the information disclosed is embarrassing or otherwise sensitive, such as private health problems or adult website preferences. In this sense, information privacy concerns could lead employees to decrease some of their PIU activities.

Taken together, the effect of sanction concerns and information privacy concerns due to Internet monitoring are likely to reduce employees' PIU behaviors. Accordingly, we propose the following hypothesis:

H3 Employees' PIU behaviors are negatively affected by the implementation of Internet monitoring.

3.4.5 The Impact of Internet Monitoring on Employees Policy Satisfaction

Employees complying with the Internet monitoring policy by reducing their PIU behaviors does not necessarily mean that they agree or are satisfied with it (Lowry and Moody 2015). In line with our discussion above, both sanction concerns and information privacy concerns elicited by Internet monitoring constitute a form of psychological contract breach in the PIU context, which in turn leads to employees' dissatisfaction with the policy.

Specifically, in terms of sanction concerns, deterrence-based policies such as Internet monitoring may be suitable for addressing some extreme forms of deviant Internet behaviors, such as visiting adult websites or engaging in online sexual harassment, but may not be necessarily suitable for most PIU activities, such as visiting news websites or checking personal email. This is because employees may engage in appropriate PIU activities that actually benefit their performance on both work-related and personal tasks. For these reasons, employees may need a certain amount of autonomy regarding PIU; this is especially true for software programmers and other knowledge workers whose jobs require a relatively high cognitive load and are outcome-oriented. As an example, suppose that an employee needs to order a gift for his or her child's birthday, but at the same time must work on job tasks in the office; in this situation, family duties may compete for attentional resources (Dalal et al. 2014), leaving limited executive attention available for job tasks. However, if this employee has the autonomy to spend some time ordering a gift via the Internet, then the work–family role conflict would be resolved and the focus on job tasks would be restored. This specific example of PIU would thus be beneficial for performance on both work and personal tasks. However, after the implementation of Internet monitoring, employees may have sanction concerns that could limit

their sense of autonomy in terms of PIU. As a result, they may be dissatisfied with the Internet monitoring policy.

In terms of information privacy concerns, although there are valid business reasons for monitoring, most employees do not wish to surrender their privacy to their employers (Ariss 2002). Further, from an employer's perspective, PIU steals work time and is thus harmful to job performance. However, from an employee's perspective, this may not necessarily be the case. Internet monitoring policy violates employees' information privacy, and thus leads to a psychological contract breach. According to previous studies on psychological contract theory, psychological contract breach negatively affects some employees' job satisfaction (Robinson and Rousseau 1994; Robinson 1996; Chen et al. 2008). For instance, in the information systems (IS) field, information privacy concerns have been discussed in both the context of customer–organization relationships in e-commerce (e.g., Malhotra et al. 2004; Son and Kim 2008) and employee–employer relationships in organizations (e.g., Chalykoff and Kochan 1989; Ariss 2002; Smith et al. 1996. These studies found that individuals' perceptions of information privacy invasion have a significant impact on their attitudes and behaviors. For instance, in the context of employee–employer relationships, Chalykoff and Kochan (1989) suggested that the violation of employees' information privacy would reduce their job satisfaction and increase their intention to quit.

Taken together, we propose that the implementation of Internet monitoring is likely to increase employees' sanction and information privacy concerns, both of which could lead to employees' perception of psychological contract violation. The perception of psychological contract breach is likely to in turn lead to employees' dissatisfaction with the policy. As a result, we propose the following hypothesis:

H4 Employees' satisfaction with Internet use policy is negatively affected by the implementation of Internet monitoring.

3.4.6 The Impact of Internet Monitoring on Employees' Organizational Citizenship Behaviors

Organizational citizenship behavior (OCB) refers to "individual behavior that is discretionary, not directly or explicitly recognized by the formal reward system, and in the aggregate promotes the efficient and effective functioning of the organization" (Williams and Anderson 1991, p. 601). Based on the behavior target, previous studies (e.g., Smith et al. 1983) conceptualized two dimensions of OCB: an organizational dimension (OCB-O) and an interpersonal dimension (OCB-I). OCB-O benefits the organization in general. Examples of OCB-O include protecting organizational property or adhering to informal rules devised to maintain order. OCB-I benefits specific individuals and indirectly contributes to organizations. Examples of OCB-I include helping orient new employees or helping others who have been absent. OCB has been suggested to contribute to resource transformations, innovativeness, and the adaptability of organizations;

therefore, OCB is an important factor for enhancing organizational effectiveness (Organ and Konovsky 1989).

We propose two paths by which Internet monitoring may affect employees' OCB. First, since Internet monitoring may violate employees' psychological contract, employees may focus more on the tasks that are specified by the "formal" contract (as opposed to the psychological contract) in terms of the employee–employer relationship. As a result, they may be less likely to devote themselves to those behaviors that are not in the scope of the formal contract, such as OCB. Second, when employees are not satisfied with the Internet monitoring policy, they may vent their dissatisfaction by becoming less likely to engage in behaviors that are beneficial to their organizations, such as OCB. As a result of these two reasons, employees' OCB is expected to be reduced due to Internet monitoring.

Theoretically, employees are likely to reduce their OCB in terms of both OCB-O and OCB-I. However, in reality, this may not actually be the case. This is because although OCB is usually not included as a formal responsibility, it has been acknowledged that OCB may be recognized, directly or indirectly, and rewarded during performance appraisals (Organ 1997; Dalal 2005). Compared with OCB-I, OCB-O may be more detectable by organizations and therefore implicitly or explicitly counted as part of job performance (Dalal 2005). For example, employees are more likely to be given a warning for not providing advance notice before failing to come into work than for failing to voluntarily help orient a new employee. Consequently, to vent their dissatisfaction, employees are more likely to reduce their OCB-I compared to OCB-O. As Belot and Schröder (2016) suggested, when employees have multiple ways to reciprocate, they are likely to choose the cheapest means of reciprocating. Therefore, we propose the following hypotheses:

H5 Employees' OCB is negatively affected by the implementation of the Internet monitoring policy.

H5a Employees' OCB-O is not significantly affected by Internet monitoring.

H5b Employees' OCB-I is negatively affected by Internet monitoring.

3.5 Experimental Design and Procedures

3.5.1 Targeted Company and Participants

We conducted a field experiment to study the impact of Internet monitoring on employees' PIU, policy satisfaction, and OCB. Data were collected from a software development company in Portugal, which is named "PortCom" in our study. PortCom employs roughly 170 employees, of which 123 are programmers and 47 are administrative staff. As a software company, PortCom has

some programmers working on their clients' premises, and thus their Internet behavior is regulated by the Internet use policy of the client companies. Therefore, those employees who do not work on the premises of PortCom were excluded from our study. As a result, 84 of the 170 employees of PortCom were included as participants in our study. The demographic characteristics of the participants are shown in Table 4.

Since it does not make sense from an organizational perspective to implement different PIU policies for employees with the same job types, we used programmers as the treatment group and administrative staff as the control group; in this sense, our study was a quasi-experiment. In other words, the Internet monitoring policy were communicated to programmers (via email) but not to administrative staff. However, as we show in later sections, although the job types of employees in the treatment group and control group were different, we did not find any pre-test differences regarding key variables of interest, namely PIU behaviors, policy satisfaction, OCB, as well as sanction concerns (of PIU) and information privacy concerns (of PIU).

TABLE 4 Demographic characteristics of participants

		Experiment participants (N= 84)	
Gender	Male	50	59.5%
	Female	34	40.5%
Age	20–29	20	23.8%
	30–39	40	47.6%
	40–49	19	22.6%
	50–59	4	6.0%
Job Type	Programmers	43	51.2%
	Administration	41	48.8%
Education	High School	14	16.7%
	Technical College	6	7.1%
	Bachelor	48	57.1%
	Master	16	19.1%
Work Experience	< 3 years	44	52.4%
	3–6 years	12	14.3%
	6–9 years	17	20.2%
	9–12 years	8	9.5%
	> 12 years	3	3.6%

3.5.2 Experiment Procedures

Prior to our experiment, a central logging system has been available at PortCom to track and aggregate employees' Internet activity. In other words, PortCom has the ability to deploy Internet monitoring of employees, although it had not been exercised prior to our experiment. This study was a true field experiment that involved three major steps. In the first step, we surveyed all of the participants one month before the implementation of Internet monitoring. Six constructs were included in the survey: Internet use policy awareness (PA), information privacy concerns about Internet use policy (IPC), sanction concerns of Internet use policy (SC), policy satisfaction (PS), and OCB. In the second step, the company announced Internet monitoring to the participants in the treatment group, but not to participants in the control group. In the third step, we again surveyed all of the participants one month after the implementation of Internet monitoring, using the same questionnaire from the first step.

PIU activities of all participants in both the control group and treatment group were also collected during each step of our experiment. The data from participants' PIU activities were generated by PortCom's Internet server system. In other words, the data were collected from two sources. Employees' PIU behaviors were collected through PortCom's web server, while other constructs were collected through a survey. The entire survey questionnaire was translated from English to Portuguese via a professional translation agent (i.e., translation), and then translated back from Portuguese to English by a bilingual individual (i.e., back translation) to ensure equivalency of meaning.

The Internet monitoring policy, which is defined below, was communicated to the participants in the treatment group via an email sent by the CEO of the company:

> "*Recent reports in business magazines and academic research suggest that non-work-related computing activities are at times seen in organizations, such as checking friend updates on Facebook, reading news on Yahoo!, watching videos on Youtube, buying things on Amazon, and so on. To make sure our employees use the Internet in an effective way, the management team has decided to start using the monitoring and tracking functions of the proxy server in our company, to record all the websites visited daily by our employees from now on.*"

Prior to our experiment, we collected some trial data to examine the prevalence of PIU at PortCom. Specifically, we documented the top 200 websites that were visited most frequently by all employees of PortCom in each month from January 2015 to June 2015. By analyzing these websites, we found that the percentage of non-work-related websites varied from 22% to 30%, with a monthly average of 27.8%. The non-work-related websites generally included social network sites (e.g., Facebook, Twitter), news websites (e.g., general news and sport news), online shopping websites, and online video websites (e.g., online TV). This result suggests that non-work-related websites indeed account

for a significant percentage of all websites visited by employees of PortCom in the workplace, which is in line with previous PIU literature.

3.5.3 Measures and Instrumentation

Seven constructs were measured in our study, including PIU, PA, PS, IPC, SC, and OCB. All constructs except for PIU were measured by multi-item scales drawn from previously validated measures and were adapted specifically to the context of PIU and Internet monitoring. The details of these items are shown in the Appendix II. All items were assessed via a 7-point Likert scale, from "strongly disagree" to "strongly agree."

We used the time duration that employees spent on PIU websites as the indicator of employees' PIU behaviors. The duration of a particular website visit was estimated by the PortCom company's Internet server. Our method for defining PIU websites was as follows: We first extracted all of the websites visited by all participants for two weeks[6] prior to the policy implementation. We then went through all of the websites and judged whether they were work-related or not. We only considered websites that were "absolutely" non-work-related as PIU websites. For instance, employees may visit "www.google.com" to search for both work and non-work-related information; in this case, we did not consider "www.google.com" a PIU website. Similarly, based on our interviews with some of the participants, it is common for some employees to visit some music websites to listen to music while they are working. As a consequence, we did not include music websites as PIU websites. The websites were coded by two scholars, with an inter-rater reliability of 92%. We further discussed the websites that were initially coded differently and reached an agreement. The coding results suggest that, during the two weeks of our experiment, 221 PIU websites were visited by the participants in the treatment group and 175 PIU websites were visited by the participants in the control group (The list of PIU websites is shown in the Appendix III, Tables 22 and 23).

Based on the PIU data provided by the Internet server at PortCom and the identified PIU websites, we found that PortCom employees spend on average 1.9 hours on PIU every working day, provided that the typical working hours of PortCom employees are 9:30am–7:00pm for programmers and 9:00am–6:00pm for administrative staff.

[6] Previous research has indicated that a two-week period is typically a sufficient interval by which to capture a representative snapshot of one's life (Trougakos et al. 2014).

3.6 Results

3.6.1 Construct Validity and Reliability

We conducted confirmatory factor analysis to assure the reliability and validity of the self-report constructs using AMOS. The factor structure fit the data reasonably well, with $\chi^2 = 437.6$, $df = 260$; root-mean-square residual (RMSR) = 0.07; comparative fit index (CFI) = 0.94; incremental fit index (IFI) = 0.94. Furthermore, this model fit the data better than alternative models that combined any two of the constructs. The Cronbach's alpha and composite reliability shown in Table 5 suggest that the reliability of the constructs is acceptable.

The loadings in Table 6 show that the item loadings were in excess of 0.7 on their respective constructs, and the average variance extracted (AVE) for each construct was greater than 0.5, suggesting that the constructs have good convergent validity. In addition, the cross loadings in Table 6 show the correlations between items and their targeted constructs were better than the correlations between items with other constructs, showing that all of the constructs have good discriminant validity.

TABLE 5 Reliability and inter-construct correlations

	Cronbach's Alpha	Composite Reliability	OCB-O	OCB-I	PA	PS	PC	SC
OCB-O	0.633	0.802	**0.758**					
OCB-I	0.891	0.917	0.556	**0.806**				
PA	0.876	0.924	0.014	0.222	**0.895**			
PS	0.912	0.938	0.038	0.104	-0.104	**0.890**		
IPC	0.932	0.951	-0.248	-0.351	0.231	-0.472	**0.911**	
SC	0.971	0.977	0.059	0.059	0.430	-0.197	0.114	**0.936**

Note: PA = policy awareness, SC = sanction concerns, IPC = information privacy concerns, PS = policy satisfaction, OCB = organizational citizenship behavior, PIU = personal Internet usage in the workplace

TABLE 6 Loadings, cross loadings, and AVEs for multi-item constructs

	OCB-O	OCB-I	PA	PS	IPC	SC	AVE
OBC1	**0.758**	0.396	0.047	0.030	-0.213	0.084	0.575
OCB3	**0.828**	0.510	0.019	0.051	-0.164	-0.062	
OCB5	0.261	**0.710**	-0.029	0.042	-0.375	-0.152	0.650
OCB6	0.388	**0.819**	0.027	0.131	-0.346	0.141	
OCB9	0.582	**0.897**	0.073	-0.019	-0.206	0.088	
OCB11	0.532	**0.810**	0.006	0.129	-0.254	0.132	
OCB12	0.368	**0.770**	-0.032	0.102	-0.293	0.134	
OCB13	0.517	**0.820**	0.040	0.129	-0.254	0.132	
PA1	0.124	-0.072	**0.896**	-0.220	0.198	0.428	0.801
PA2	-0.051	-0.000	**0.897**	-0.111	0.192	0.359	
PA3	-0.048	-0.023	**0.892**	0.063	0.229	0.360	
PS1	0.062	0.050	-0.039	**0.842**	-0.409	-0.048	0.792
PS2	0.038	0.156	-0.051	**0.854**	-0.378	-0.278	
PS3	0.001	0.082	-0.111	**0.925**	-0.433	-0.206	
PS4	-0.043	0.081	-0.160	**0.934**	-0.457	-0.155	
IPC1	-0.257	-0.336	0.205	-0.466	**0.872**	0.084	0.831
IPC2	-0.240	-0.322	0.234	-0.451	**0.924**	0.159	
IPC3	-0.190	-0.320	0.163	-0.433	**0.912**	0.085	
IPC4	-0.202	-0.308	0.237	-0.354	**0.935**	0.082	
SC1	0.067	0.089	0.431	-0.172	0.092	**0.922**	0.875
SC2	-0.030	-0.112	0.314	-0.215	0.236	**0.883**	
SC3	0.127	0.117	0.409	-0.153	0.022	**0.935**	
SC4	0.078	0.034	0.375	-0.228	0.127	**0.946**	
SC5	0.025	0.097	0.422	-0.162	0.103	**0.960**	
SC6	0.025	0.069	0.444	-0.185	0.083	**0.965**	

Note: PA = policy awareness, SC = sanction concerns, IPC = information privacy concerns, PS = policy satisfaction, OCB = organizational citizenship behavior, PIU = personal Internet usage in the workplace

3.6.2 Pre-experimental Similarity Check

Since our study design was quasi-experimental, with participants in the control group and treatment group not being randomly assigned, we examined the similarity between the two groups in the pre-test. Given the fact that the data of the constructs involved in this study did not follow a normal distribution, we conducted a Mann-Whitney U test, which is a non-parametric test, to compare the differences between the two independent groups, and examined whether

there was any significant difference in the pre-test regarding the key variables of interest in our study. The Mann-Whitney U test is one of the most commonly used non-parametric statistical tests, and was found to be nearly as efficient as the *t*-test (Nachar 2008). Instead of comparing the *means of the data* of the two groups (like a *t*-test does), the Mann-Whitney U test examines the difference between the two groups by comparing the *mean ranks of the data* of the two groups, provided that the data of the two groups are sorted in ascending order.

Table 7 depicts the means and standard deviations of the constructs involved in this study with respect to both pre-tests and post-tests. The results of the Mann-Whitney U test for the pre-experimental similarity check are shown in Tables 8 and 9. Table 8 shows the mean rank and sum of ranks, and Table 9 shows the U value and *p* value. Taking "OCB-Pre" as an example, Table 8 shows that the mean rank of OCB-Pre in the control group (i.e., group 0) is 30.38, and the mean rank of OCB-Pre in the treatment group is 29.56. That is, the OCB-Pre of the control group is slightly greater than that of the treatment group. However, the corresponding *p* value shown in Table 9 is 0.855, suggesting that the difference above is not significant. Therefore, the result can be interpreted as no difference in terms of OCB-Pre between the control group and the treatment group. Similarly, as shown in Table 9, all *p* values are greater than the 0.05 level, suggesting that there is no significant difference in the pre-test between the participants in the control group and the treatment group regarding all of the constructs of interest. In other words, although the administrative employees and programmer employees do not perform the same type of job tasks, this does not seem to be a significant issue in the PIU context. As suggested by previous studies, PIU is a prevalent phenomenon across different types of organizations. Therefore, it is reasonable for the purpose of our quasi-experiment to compare the participants of the control group and treatment group.

TABLE 7 Descriptive statistics of all constructs involved in the study

Descriptive Statistics									
	All Participants			Control Group			Treatment Group		
	N	Mean	*SD*	*N*	Mean	*SD*	*N*	Mean	*SD*
PA-Pre	69	3.3285	1.28655	33	3.4242	1.37506	36	3.2407	1.21266
PA-Post	60	3.3111	1.31751	34	3.0392	1.36272	26	3.6667	1.18884
PS-Pre	69	4.8333	1.11199	33	4.9470	1.04724	36	4.7292	1.17317
PS-Post	70	4.7857	1.14231	34	5.1912	.95952	36	4.4028	1.18061
IPC-Pre	70	2.8500	1.11998	34	2.5662	1.14202	36	3.1181	1.04452
IPC-Post	70	3.0643	1.38815	34	2.5441	1.14228	36	3.5556	1.43441
SC-Pre	69	2.6087	1.06942	33	2.7273	1.15155	36	2.5000	.99203
SC-Post	70	2.8714	1.21357	34	2.7696	1.33460	36	2.9676	1.09749
OCB-Pre	68	5.9191	.64124	32	6.0807	.56776	36	5.9838	.65278
OCB-Post	61	5.8426	.70243	34	6.0049	.54739	27	5.6358	.84547
OCB-O-Pre	69	6.1812	.67503	33	6.2121	.69631	36	6.1528	.66353
OCB-O-Post	61	6.0328	.78988	34	6.1471	.72331	27	5.8889	.85859
OCB-I-Pre	69	5.8623	.74038	33	5.9141	.64297	36	5.8148	.82595
OCB-I-Post	61	5.6503	.84091	34	5.8627	.52460	27	5.3827	1.07200
PIU-Pre	50	6878.64	9670.04	22	7882.46	7695.15	28	6089.91	11053.51
PIU-Post	50	10071.74	11651.03	22	11884.44	11284.29	28	8647.47	11938.81

Note: PA = policy awareness, SC = sanction concerns, IPC = information privacy concerns, PS = policy satisfaction, OCB =organizational citizenship behavior, PIU = personal Internet usage in the workplace

TABLE 8 Ranks of Mann-Whitney U Test of similarity check

	Group	*N*	Mean Rank	Sum of Ranks
OCB-Pre	.0	32	30.38	972.00
	1.0	27	29.56	798.00
	Total	59		
OCB-O-Pre	.0	33	30.76	1015.00
	1.0	27	30.19	815.00
	Total	60		
OCB-I-Pre	.0	33	30.95	1021.50
	1.0	27	29.94	808.50
	Total	59		
PA-Pre	.0	33	36.21	1195.00
	1.0	36	33.89	1220.00
	Total	69		
SC-Pre	.0	33	36.80	1214.50
	1.0	36	33.35	1200.50
	Total	69		
PS-Pre	.0	33	36.80	1214.50
	1.0	36	33.35	1200.50
	Total	69		
IPC-Pre	.0	34	30.96	1052.50
	1.0	36	39.79	1432.50
	Total	70		
PIU-Pre	.0	22	28.91	636.00
	1.0	28	22.82	639.00
	Total	50		

Note: (1) Group 0 refers to the control group; control 1 refers to the treatment group. (2) PA = policy awareness, SC = sanction concerns, IPC = information privacy concerns, PS = policy satisfaction, OCB = organizational citizenship behavior, PIU = personal Internet usage in the workplace

TABLE 9 Mann-Whitney U test result of similarity check

	OCB-Pre	OCB-O-Pre	OCB-I-Pre	SC-Pre	PS-Pre	IPC-Pre	PIU-Pre
Mann-Whitney U	420.000	437.000	430.500	534.500	534.500	457.500	233.000
Wilcoxon W	798.000	815.000	808.500	1200.500	1200.500	1052.500	639.000
Z	-.183	-.131	-.225	-.726	-.733	-1.848	-1.466
Asymp. Sig. (2-tailed)	.855	.896	.822	.468	.464	.065	.143

Note: PA = policy awareness, SC = sanction concerns, IPC = information privacy concerns, PS = policy satisfaction, OCB = organizational citizenship behavior, PIU = personal Internet usage in workplace

3.6.3 Manipulation Check

We also conducted a manipulation check to make sure that the participants of the treatment group actually received the announcement about the Internet monitoring policy. The manipulation check was conducted on both the individual and group level. On the individual level, a manipulation check question was included in the survey to all participants following the description of the Internet monitoring policy presented above—namely, "Did you receive an email from the company regarding the Internet monitoring policy described above?" For participants in the treatment group, two options were provided to answer the manipulation check question: "yes" or "no". Only those who chose the "yes" option were included as valid participants in the treatment group; those who answered "no" were excluded. For participants in the control group, three options were provided to answer the manipulation question: (1) Yes, I received the email; (2) No, I did not receive the email; and (3) No, I did not receive the email, but I heard about the policy from my colleagues. Only those who chose option 2 were included as valid participants in the control group. As a result, 70 participants were deemed valid in terms of the manipulation, with 34 participants in the control group and 36 participants in the treatment group.

On the group level, we also compared awareness of organizational policy regarding the PIU of participants in the control group and treatment group before and after the Internet monitoring announcement. Specifically, based on the result of Mann-Whitney U test (see Tables 10 and 11), we found no significant difference in the pre-test between the control group and treatment group regarding employees' awareness of organizational Internet use policy ($U = 554$, $p = 0.624$, 2-tailed). However, in the post-test, we found that policy awareness by participants of organizational Internet use policy in the treatment group was significantly higher than awareness by participants in the control group ($U = 303$, $p = 0.035$, 2-tailed). This difference also suggests, at an aggregate level, that the participants of the treatment group had been successfully manipulated by the Internet monitoring policy.

TABLE 10 Ranks of Mann-Whitney U test of employees' PA

	Group	*N*	Mean Rank	Sum of Ranks
PA-Pre	.0	33	36.21	1195.00
	1.0	36	33.89	1220.00
	Total	69		
PA-Post	.0	34	26.41	898.00
	1.0	26	35.85	932.00
	Total	60		

Note: Group 0 refers to the control group; group 1 refers to the treatment group. PA = policy awareness

TABLE 11 Mann-Whitney U test result of employees' PA

	PA-Pre	PA-Post
Mann-Whitney U	554.000	303.000
Wilcoxon W	1220.000	898.000
Z	-.491	-2.108
Asymp. Sig. (2-tailed)	.624	.035

3.6.4 Hypotheses Testing

Next, we discuss whether our hypotheses are supported by the data by examining whether the Internet monitoring policy changed employees' PIU behaviors, policy satisfaction, and OCB. As we stated earlier, in the pre-test, we did not find any difference between the control group and treatment group regarding PIU, PS, IPC, SC, and OCB. Next, we discuss how Internet monitoring affected employees' perceptions and behaviors of interest. In doing so, we conducted both between-group comparison (comparing the two groups in pre-test and post-test respectively) and within-group comparison (i.e., comparing the pre-test and post-test of the same group). In cases that the results from between-group comparison and within-group comparison are not strictly consistent, we further conducted a difference-in-difference analysis.

3.6.4.1 Between-Group Comparison

As we mentioned earlier, the data we collected did not follow normal distribution, we use Mann-Whitney U test to compare the differences between the control group and the treatment group. In Section 3.6.2, we have found that there was no significant of the two group in terms of all constructs of interests (including OCB, OCB-O, OCB-I, SC, IPC, PS and PIU). However, after implementing Internet monitoring, we found that some of the employees' perceptions and behaviors had changed significantly, as depicted in Tables 12 and 13.

TABLE 12 Ranks of Mann-Whitney U test of post-test

	Group	*N*	Mean Rank	Sum of Ranks
OCB-Post	.0	32	34.08	1090.50
	1.0	27	25.17	679.50
	Total	59		
OCB-O-Post	.0	33	33.10	1125.50
	1.0	27	28.35	765.50
	Total	60		
OCB-I-Post	.0	34	34.34	1167.50
	1.0	27	26.80	723.50
	Total	61		
SC-Post	.0	34	33.28	1131.50
	1.0	36	37.60	1353.50
	Total	70		
PS-Post	.0	34	42.47	1444.00
	1.0	36	28.92	1041.00
	Total	70		
IPC-Post	.0	34	28.51	969.50
	1.0	36	42.10	1515.50
	Total	70		
PIU-Post	.0	22	28.09	618.00
	1.0	28	23.46	657.00
	Total	50		

Note: Group 0 = control group, group 1 = treatment group. SC = sanction concerns, IPC = information privacy concerns, PS = policy satisfaction, OCB = organizational citizenship behavior, PIU = personal Internet usage in the workplace

TABLE 13 Mann-Whitney U test result of post-test

	SC-Post	IPC-Post	PIU	PS-Post	OCB-Post	OCB-O-Post	OCB-I-Post
Mann-Whitney U	536.500	374.500	251.000	375.000	301.500	387.500	345.500
Wilcoxon W	1131.500	969.500	657.000	1041.000	679.500	765.500	723.500
Z	-.902	-2.817	-1.114	-2.829	-1.986	-1.063	-1.656
Asymp. Sig. (2-tailed)	.367	.005	.265	.005	.047	.288	-.098

Note: Group 0 = control group, group 1 = treatment group. SC = sanction concerns, IPC = information privacy concerns, PS = policy satisfaction, OCB = organizational citizenship behavior, PIU = personal Internet usage in the workplace

First, the results suggest that after implementing Internet monitoring, the SC of employees in the treatment group were not significantly higher than the SC of employees in the control group. That is, Internet monitoring did not in-

crease employees' SC, which is contrary to H1 (U = 536.5, p = 0.367, 2-tailed, n.s.).

Second, the results suggest that after implementing Internet monitoring, the IPC of employees in the treatment group were significantly higher than the IPC of employees in the control group (U = 374.5, p = 0.005, 2-tailed), which is consistent to H2. This result suggests that Internet monitoring indeed evokes employees' IPC, which is also in line with findings from previous studies.

Third, the results suggest that after Internet monitoring, there was no significant difference between the PIU of employees in the treatment group and the PIU of employees in the control group, which is contrary to H3 (U = 251, p = 0.265, 2-tailed, n.s.). In other words, Internet monitoring did not work to regulate employees' PIU.

Fourth, the results suggest that after implementing Internet monitoring, the PS of employees in the treatment group was significantly lower than the PS of employees in the control group (U = 375, p = 0.005, 2-tailed), which is in line with H4. This result suggests that employees are dissatisfied with Internet monitoring for the purpose of regulating PIU.

Fifth, after implementing Internet monitoring, the OCB of employees in the treatment group was found to be significantly lower than that of the control group (U = 301.5, p = 0.047, 2-tailed), in line with H5. Further, by examining the two dimensions of OCB, namely OCB-O and OCB-I, we found that after implementing Internet monitoring, there was no significant difference between the OCB-O of employees in the treatment group and control group (U = 387.5, p = 0.288, 2-tailed); however, the OCB-I of employees in the treatment group was significantly lower than that of the OCB-I of employees in the control group (U = 345.5, p = 0.049, 1-tailed). These findings were in line with H5a and H5b.

3.6.4.2 Within-Group Comparison

While the findings above suggest that, in post-test, there were indeed differences of participants in the treatment group from participants in the control group, in terms of some behaviors (e.g., OCB) and perceptions (e.g., IPC and PS), it may be a concern that the difference may not necessarily come from the manipulation (i.e., Internet monitoring), it is not sure whether there was something else beyond Internet monitoring that happed during the longitudinal experiment. To address this concern, we conducted a within-group comparison of the control group to examine whether there was any difference of post-test from pretest of participants in the control group regarding the behaviors and perceptions of interest.

We use Wilcoxon Signed Ranks Test, which is a non-parametric test for comparing two related samples, to conduct the within group comparison. We first discuss whether the behaviors and perceptions of interest of employees from control group changed or not in terms of pre-test and post-test. Tables 14 and 15 depict the result of the test. The within-group comparison results suggest that, there was no significant difference of participants in the control group in the post-test from the pre-test in terms of SC, IPC, PS, OCB, OCBO and OCBI.

That is, in addition to Internet monitoring, there was nothing happened during our experiment that matters to SC, IPC, PS, OCB, OCBO. Therefore, the result of the between-group comparison regarding SC, IPC, PS, OCB, OCBO in Section 3.6.4.1 are valid.

However, the Tables 14 and 15 suggests that the PIU of participants in the control group increased in post-test compared with pre-test ($Z = -3{,}493$, $p = 0.00$, 2-tailed). We further conducted a within-group comparison in terms of the PIU of participants in the *treatment* group. The result suggested that the PIU of participants in the treatment group also increased in post-test compared with that of pre-test, although not quite significantly ($Z = -1{,}741$, $p = 0.082$, 2-tailed). The within-group comparisons of both the control group and the experiment group suggests that, in addition to the manipulation (i.e., Internet monitoring), there is a possibility that something else has happened during our experiment that affected participants' PIU. In order to address this possibility, we further conducted a difference-in-difference analysis, which is discussed in the next section.

TABLE 14 Ranks of wilcoxon signed ranks test of the control group

Ranks				
		N	Mean Rank	Sum of Ranks
SCPost - SCPre	Negative Ranks	10[a]	9,45	94,50
	Positive Ranks	10[b]	11,55	115,50
	Ties	13[c]		
	Total	33		
IPCPost - IPCPre	Negative Ranks	12[d]	10,92	131,00
	Positive Ranks	10[e]	12,2	122,00
	Ties	12[f]		
	Total	34		
PIUPost - PIUPre	Negative Ranks	3[g]	5.00	15,00
	Positive Ranks	18[h]	12.00	216,00
	Ties	0[i]		
	Total	2[l]		
PSPost - PSPre	Negative Ranks	8[j]	9,94	79,50
	Positive Ranks	13[k]	11,65	151,50
	Ties	12[l]		
	Total	33		
OCBPost - OCBPre	Negative Ranks	17[m]	15.09	256,50
	Positive Ranks	11[n]	13.59	149,50
	Ties	4[o]		
	Total	32		
OCBOPost - OCBOPre	Negative Ranks	8[p]	9,63	77,00
	Positive Ranks	8[q]	7,38	59,00
	Ties	17[r]		
	Total	33		
OCBIPost - OCBIPre	Negative Ranks	18[s]	12,72	229,00
	Positive Ranks	9[t]	16,56	149,00
	Ties	6[u]		
	Total	33		

Note: a = (SCPost < SCPre), b = (SCPost > SCPre), c = (SCPost = SCPre), d = (IPCPost < IPCPre), e = (IPC-Post > IPCPre), f = (IPCPost = IPCPre), g = (SCPost < SCPre), h = (SCPost > SCPre), i = (SCPost = SCPre), j = (SCPost < SCPre), k = (SCPost > SCPre), l = (SCPost = SCPre), m = (SCPost < SCPre), n = (SCPost > SCPre), o = (SCPost = SCPre), p = (SCPost < SCPre), q = (SCPost > SCPre), r = (SCPost = SCPre), s = (SCPost < SCPre), t = (SCPost > SCPre), u = (SCPost = SCPre)

TABLE 15 Test statistics of Wilcoxon signed ranks test of the control group

Test Statistics[a]							
	SCPost - SCPre	IPCPost - IPCPre	PSPost - PSPre	PIUPost - PIUPre	OCBOPost - OCBOPre	OCBIPost - OCBIPre	OCBPost - OCBPre
Z	-.393[b]	-.146[a]	-1.255[b]	-3,493	-.490[a]	-.967[a]	-1.223[a]
Asymp. Sig. (2-tailed)	.695	.884	.209	.000	.624	.333	.221

Note a. based on positive ranks.
b. based on negative ranks.

3.6.4.3 Difference in Difference Analysis of PIU

Difference-in-difference analysis is an analysis of comparing the difference of two groups in post-test taking into account the difference of the two groups in pre-test. The results of the difference-in-difference are shown in Tables 16, 17, and 18. These three tables demonstrate the explanation power of the two independent variables "group" and "pre-post" (i.e., the manipulation of the experiment, namely, Internet monitoring) to the dependent variable, namely participants' PIU.

Specifically, Table 16 shows that the adjusted R square is 0.06, meaning that the two independent variables account for only 6% of the variance of the dependent variable. This suggests that is only a marginal explanation power of the two independent variables to the dependent variable. Table 17 suggests that the relationship between the two independent variables (as a whole) and the dependent variable is significant (although the explanation power is only marginal as Table 16 suggests).

Table 18 suggests that the independent variable "group" is negatively related to the dependent variable PIU, but not significantly ($t = -1.942$, $p = 0.055$). Given that the control group is represented by "group 0" and the treatment group is represented by "group 1" (as shown in Table 8), this result suggests that the PIU of participants in the control group is slighter more than the PIU of participants in the treatment group, but the difference is not significant. This is in line with the result of our pre-experimental similarity check in Section 3.6.2. Table 18 also suggest that the variable "pre-post" is positively related to PIU ($t = 2.163$, $p = 0.033$). That is, Internet monitoring actually increased participants' PIU. This result is, to some extent, consistent with the result of within-group comparison in Section 3.6.4.2 (see Tables 14 and 15). However, it is noteworthy that the explanation power of Internet monitoring to PIU is only marginal (explanation power is less than 6% percent), therefore, we believe that the impact of Internet monitoring on employees' PIU may not really substantial, as suggested by the results of between group comparison in Section 3.6.4.1 (see Tables 12 and 13).

TABLE 16 Model summary of difference-in-difference analysis

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.280[a]	.079	.060	12485.99827

a. Predictors: (Constant), Pre-Post, Group

TABLE 17 ANOVA[a] of difference-in-difference analysis

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.302E+9	2	651209185	4.177	.018[b]
	Residual	1.528E+10	98	155900153		
	Total	1.658E+10	100			

Note: a. dependent variable: PIU
b. predictors: (constant), pre-post, group.

TABLE 18 Coefficients[a] of difference-in-difference analysis

Model		Unstandardized B	Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	Constant	12149.148	2257.993		5.381	.000
	Group	-4878.839	2512.838	-.188	-1.942	.055
	Pre-Post	5376.079	2485.093	.210	2.163	.033

Note: a. dependent variable: PIU

3.6.4.4 Summary of Hypotheses testing

Taken together the results of between-group comparison, within-group comparison and the difference-in-difference analysis, the result of the hypotheses testing is summarized in Table 19.

TABLE 19 Results of hypothesis test

No.	Hypotheses	*P* Level (1-tailed)	Test Result
H1	Internet monitoring increases employees' sanction concerns	0.183	Not supported
H2	Internet monitoring increases employees' information privacy concerns	0.003	Supported
H3	Internet monitoring decreases employees' PIU	0.132	Not supported
H4	Internet monitoring decreases employees' policy satisfaction	0.003	Supported
H5	Internet monitoring decreases employees' OCB	0.024	Supported
H5a	Internet monitoring does not decrease employees' OCB-O	0.144	Supported
H5b	Internet monitoring decreases employees' OCB-I	0.049	Supported

First, the between-group comparison results suggested that after implementing Internet monitoring, the SC of employees in the treatment group were not significantly higher than the SC of employees in the control group. That is, Internet monitoring did not increase employees' SC, which is contrary to H1 (U = 536.5, p = 0.367, 2-tailed, n.s.). The within-group comparison suggested that there was nothing happened during our experiment that matters to SC, in addition to our experimental manipulation (i.e., Internet monitoring). Therefore, our result suggested that Internet monitoring did not change employees' perception of SC. That is, H1 was not supported by the data. This result is not consistent with some previous studies (e.g., D'Arcy et al. 2009) that suggested that monitoring may increase employees' perceptions of sanction concerns in the context of information security policy compliance. The reason for our result may be that the participants in our study were programmers who are supposed to have relatively high job autonomy, and whose jobs are outcome-oriented. Therefore, employees do not believe their PIU destructively affects organizations as long as they deliver their work results on time. The relationship between monitoring and perceived sanctions may depend on different contexts. For behaviors that are considered by employees to be harmful to organizations, such as noncompliance with IS security policies, monitoring may enhance employees' perceptions of sanctions. For behaviors that are not considered by employees to be harmful to organizations, monitoring may not lead to employees' enhanced perceptions of sanctions.

Second, the between-group comparison results suggested that after implementing Internet monitoring, the IPC of employees in the treatment group were significantly higher than the IPC of employees in the control group (U = 374.5, p = 0.005, 2-tailed), which is in line with H2. Further, the within-group comparison suggested that there was nothing happened during our experiment that matters to IPC, in addition to our experimental manipulation (i.e., Internet

monitoring). Therefore, we conclude that H2 was supported by our data. This result suggests that Internet monitoring indeed evokes employees' IPC. This result is also in line with findings from previous studies.

Third, the between-group comparison results suggest that after Internet monitoring, there was no significant difference between the PIU of employees in the treatment group and the PIU of employees in the control group, which is contrary to H3 (U = 251, p = 0.265, 2-tailed, n.s.). Both the within-group comparison results of the treatment group and the difference-in-difference analysis result suggested that participants' PIU actually increased after Internet monitoring. The relationship between Internet monitoring and PIU is significant, but the explanation power of Internet monitoring to PIU is only marginal. None of the three perspectives of data analysis suggested that Internet monitoring actually decreased PIU. Therefore, we conclude that H3 was not supported by our data. In other words, Internet monitoring did not work to regulate employees' PIU. The reasons for this may be twofold. On the one hand, Internet monitoring did not lead to increased sanction concerns by employees. Therefore, employees may not need to curb their PIU behaviors due to sanction concerns. On the other hand, even though Internet monitoring elicits employees' information privacy concerns, previous studies have suggested that there is a "privacy paradox" in which a person's intention to disclose their information does not match up with their behavior in actually disclosing that information (Norberg et al. 2007). In the PIU context, although employees have IPC about Internet monitoring, their IPC may not be strong enough to actually change their PIU behaviors, since employees may believe that the Internet monitoring system only tracks which websites they visit rather than the actual messages they send or receive when visiting certain websites. In other words, in the PIU context, it is not monitoring but "monitoring depth" that really matters in affecting employees' PIU behaviors.

Fourth, the between-group comparison results suggested that after implementing Internet monitoring, the PS of employees in the treatment group was significantly lower than the PS of employees in the control group (U = 375, p = 0.005, 2-tailed), which is in line to H4. The within-group comparison results further suggested that there was nothing happened during our experiment that matters to PS, in addition to our experimental manipulation (i.e., Internet monitoring). Therefore, we conclude that H4 was supported by our data. This result suggests that employees are dissatisfied with Internet monitoring for the purpose of regulating PIU. This is an important finding, suggesting that the cost of implementing Internet monitoring not only includes the cost of the monitoring system, but also the negative consequences. Therefore, organizations may need to recalculate the costs and benefits before implementing Internet monitoring.

Fifth, after implementing Internet monitoring, the OCB of employees in the treatment group was found to be significantly lower than that of the control group (U = 301.5, p = 0.047, 2-tailed); This is in line with H5. Further, by examining the two dimensions of OCB, namely OCB-O and OCB-I, we found that after implementing Internet monitoring, there was no significant difference be-

tween the OCB-O of employees in the treatment group and control group (U = 387.5, p = 0.288, 2-tailed); however, the OCB-I of employees in the treatment group was significantly lower than that of the OCB-I of employees in the control group (U = 345.5, p = 0.049, 1-tailed). These findings were consistent with H5a and H5b. The within-group comparison results further suggested that there was nothing happened during our experiment that matters to PS, in addition to our experimental manipulation (i.e., Internet monitoring). Therefore, we conclude that H5, H5a and H5b were supported by our data. These finding suggests that as an expression of dissatisfaction with Internet monitoring, employees may reciprocate with organizations by reducing OCB. The findings confirm our statement above that Internet monitoring may backfire by producing some unexpected outcomes, such as decreased OCB. Further, although employees are likely to decrease their OCB behaviors as an expression of dissatisfaction with Internet monitoring, it seems they only reduce their OCB-I as opposed to OCB-O; this finding suggests that employees are likely to choose the reciprocating behaviors with minimal cost and risk to themselves.

3.6.5 Post Hoc Analysis

Since H1 and H3 are not supported by our data, we conducted a post hoc analysis to further explore the underlying reasons for this finding. First, we examined the impact of Internet monitoring on employees' visits to different types of PIU websites, including news websites, social network sites, online shopping sites, online video sites, and travel-related sites. We compared the PIU behaviors of employees in the control group and treatment group in terms of these different types of sites. We did not find any significant differences in the pretest between the two groups in the context of any of these websites. This result further confirms that the participants dividing is not a major issue for our experiment. In the post-test, we still did not find significant differences in employees' PIU between the control group and treatment group regarding these PIU websites, except for online video websites. Specifically, in the post-test, employees in the treatment group visited online video websites significantly less often than employees in the control group ($p < 0.001$). However, since the duration of employees' visits to online video websites only accounts for a very low percentage of the overall PIU duration, the overall PIU duration was not significantly affected by Internet monitoring. The post-hoc analysis also suggests that Internet monitoring has very limited effectiveness in regulating employees' PIU behaviors.

In order to explore why Internet monitoring did not result in employees' sanction concerns, as well as why employees' information privacy concerns did not result in any change of their PIU behaviors, we collected further empirical data by interviewing eight of the study's treatment group participants. Two of the researchers designed an interview protocol that included questions aimed at revealing the reasons for the survey results, especially regarding the results for H1 and H3. The interview was semi-structured, and the interviewer did not have access to the survey answers that we found above. The interviewees were

selected randomly and according to their availability. In line with our manipulation check, all eight of the programmers explicitly stated that they received the announcement from the company regarding the Internet monitoring policy.

We first sought insights regarding the finding that Internet monitoring did not increase employees' sanction concerns. All participants stated that even if they visit non-work websites while at the office, they do not believe that they will be sanctioned so long as they deliver their work outcomes on time. For example, Interviewee 1 stated that "*To me, if I deliver my projects on time, they shouldn't care about how much time it took me. I like to take short breaks with Facebook, for example, but I always deliver my software on time. So why would they punish me?*" (Interviewee 1, 07/25/2016). Another participant noted that "*It would be hard to imagine what punishment you could get and how it would be selected. … in reality, we work with deadlines and we don't have clear working hours. So it's hard to say*" (Interviewee 2, 07/25/2016). Interviewee 4 claimed that punishment is not needed because it is "*Middle-Age thinking*" (Interviewee 4, 07/25/2016). She also referred to the flexible working hours and intermediate breaks, which, according to her, are absolutely necessary for being productive. One participant also argued that because she works more than eight hours per day, sanctions in her case do not make sense: "*I would say I give to the company much more than I take from the working time on Internet things*" (Interviewee 5, 07/27/2016). Therefore, our post hoc analysis shows that the reason why Internet monitoring did not increase employees' sanction concerns is because of their belief that (1) they are evaluated on the basis of delivering work on time rather than on maintaining a strict work timeline, and (2) they often work more than eight hours a day, and thus they should not be sanctioned for taking some time for mental breaks.

We also sought information regarding the reasons why information privacy concerns provoked by Internet monitoring did not actually decrease employees' PIU behaviors. The participants indicated that even though they had information privacy concerns, they did not feel that their privacy had actually been violated seriously because they recognized two types of Internet monitoring: (1) monitoring that is not "deep", which refers to the monitoring of website visits but not website content (e.g., visiting an email site is recorded, but the content of the emails is not), and (2) "deep" monitoring, in which the company monitors not only website visits but website content as well (e.g., monitoring both Facebook visits and the content of chat conversations). Given that participants classified Internet monitoring by their company in the first category, they did not consider this as a reason to stop PIU behaviors. For example, Interviewee 6 remarked, "*I think it is a matter of content versus activity monitoring … Normally, monitoring should be collecting meta-data, rather than the data themselves. If people thought the company could collect data, too, then it would raise serious privacy concerns, of course*" (Interviewee 6, 07/26/2016). Interviewee 5 also mentioned that privacy concerns depend on how one understands monitoring: Is only the activity monitored, or is the content as well? Therefore, our interviews indicated that Internet monitoring did not decrease employees' PIU behaviors because

participants did not consider Internet monitoring to be "deep" enough to make them change their PIU behaviors.

3.7 Discussion

Our study investigated how Internet monitoring affects employees' PIU behaviors, policy satisfaction, and OCB. We conducted a quasi-field experiment at a software development company. We found that employees were dissatisfied with Internet monitoring due to the information privacy concerns it provoked. As a result of dissatisfaction with Internet monitoring, employees' OCB significantly decreased. However, Internet monitoring did not work to regulate employees' PIU behaviors. Next, we discuss the implications of our study for research and practice.

3.7.1 Theoretical Implication

The theoretical implications of our study are threefold. First and most importantly, our study contributes to the Internet monitoring and PIU literature. In terms of the Internet monitoring literature, we confirmed the findings of previous studies that Internet monitoring itself does not really affect employees' PIU behaviors. This finding is also consistent with previous studies on monitoring in general. That is, only combined with incentives (e.g., formal or informal sanctions, rewards) is monitoring able to change the employee behaviors they are designed to regulate. In terms of the PIU literature, to the best of our knowledge, our study is the first to empirically examine the impact of Internet monitoring on employees beyond their PIU behaviors. Our study provides valuable empirical evidence regarding the impact of Internet monitoring on employees' PIU, policy satisfaction, and OCB. Interestingly, we found that Internet monitoring leads to employees' decreased OCB. That is, employees may reciprocate by decreasing OCB as a reaction to Internet monitoring, although they are likely to decrease their OCB-I as opposed to their OCB-O. In other words, Internet monitoring, at least in some cases, can be worse than useless; this is particularly the case for software programmers and other knowledge workers who have relatively higher work autonomy and whose work is mainly outcome-oriented.

Second, our study has implications for research on information privacy. Previous studies have proposed the so-called "information privacy paradox," according to which individuals may express information privacy concerns but behave as if there are no information privacy concerns. Our study confirms the existence of the information privacy paradox by demonstrating that information privacy concerns associated with Internet monitoring did not affect employees' PIU behaviors. Based on our post hoc analysis, we propose that one plausible explanation for the information privacy paradox is that it is not information privacy concerns that truly affect individuals' behaviors, but rather

the *depth* of information privacy concerns. Nevertheless, this does not mean that employees' information privacy concerns should be ignored, since our study suggests that even though employees' information privacy concerns did not change their PIU, the dissatisfaction caused by these concerns could lead employees to change some other behaviors, such as OCB.

Third, our results suggest that Internet monitoring may not necessarily lead to sanction concerns in the PIU context, a finding which differs from those of D'Arcy (2009). One plausible explanation for this could be that monitoring may lead to sanction concerns only for deviant behaviors that are difficult to justify, such as frequent absenteeism from work. Accordingly, monitoring may not lead to sanction concerns for other behaviors not considered detrimental or difficult to justify. Future research should further clarify the relationship between monitoring and sanction concerns in different contexts.

3.7.2 Practical Implication

Our study also has important implications for practice. The findings of our study suggest that organizations should think twice about implementing Internet monitoring for the purpose of limiting employees' PIU behaviors. Internet monitoring may be useful as part of the information security measures taken by organizations; however, our study suggests that it is not an effective means of regulating employees' PIU behaviors. Instead, Internet monitoring may backfire by lowering employees' policy satisfaction and reducing their OCB. Therefore, organizations should seriously consider other means for addressing the potential negative aspects of PIU on employees' job performance. For instance, employers could organize training sessions to help employees discriminate between situations in which PIU positively affects job performance and situations in which PIU negatively affects job performance; in so doing, employees may be better able to exert self-control and regulate their PIU behaviors.

3.7.3 Limitations and Future Research Directions

In spite of the important implications discussed above, our study also has several limitations. First, as a quasi-experiment, our study did not divide participants randomly into the control and treatment groups. However, it seems that this was not a significant concern for the purpose of our study, given that we did not find significant differences between the two groups. In other words, PIU is equally prevalent in the workplace across different job types. Nevertheless, future research should employ field experiments to replicate the study and further test our findings.

Second, because our findings were based on data collected from one software development company, they may not be generalizable to other types of organizations. Further, the participants in our treatment group were programmers, who usually have high work autonomy, and thus the findings may not be generalizable to other types of professions. Therefore, future research should

also collect data from different types of organizations and use participants from different types of professions to further examine the impact of Internet monitoring on employees' PIU or other behaviors and perceptions.

Third, our study only focused on employees' PIU behaviors while using laptops or computers. Since smartphones and tablets are increasingly used by employees in daily life, they may also be used to engage in non-work-related Internet activities as well. Therefore, future research should also consider how a certain PIU policy, such as Internet monitoring, affects employees' personal smartphone/tablet usage behaviors in the workplace. Nevertheless, we argue that this may not be a major concern of our study, since the findings suggest that Internet monitoring did not change employees' PIU behaviors while using laptops/computers; therefore, there is little reason to believe that employees would also change their personal smartphone/tablet usage in the workplace due to Internet monitoring.

3.7.4 Conclusion

With the prevalence of IT devices connected to the Internet in all organizations, such as desktops, laptops, tablets, and smartphones, it has become increasingly common for employees to engage in PIU. In some cases, PIU may have some positive impacts on employees and organizations, such as helping employees to have mental recovery or maintain a work–life balance. Nevertheless, employees work performance may suffer if they engage in excessive PIU. To avoid the potential negative impacts of PIU on employees and organizations, many organizations have implemented Internet monitoring as an attempt to regulate employees' PIU. However, it is not known from previous studies how Internet monitoring affects employees' PIU, policy satisfaction, and OCB.

Based on a quasi-field experiment, we found that contrary to the expectations of many organizations, Internet monitoring may not actually significantly affect employees' PIU. Further, due to the information privacy concerns elicited by Internet monitoring, which is conceptualized as a form of psychological contract breach in our study, employees demonstrated dissatisfaction with Internet monitoring. As a result of the psychological contract breach and dissatisfaction with Internet monitoring, employees are likely to reduce their OCB. Our study has implications for research on (Internet) monitoring in organizations, information privacy, and employees' PIU behaviors. Our study also has important implications for organizations to better develop Internet usage policies.

4 SUMMARY AND CONCLUSIONS

In this dissertation, we conducted two studies to understand (1) the conditions under which PIU is likely to negatively or positively affect employees' job performance, and (2) the impact of Internet monitoring on employees' PIU, policy satisfaction, and OCB.

Based on a systematic literature review of previous PIU studies, the first study proposed a theoretical model to understand the impact of PIU on employees' job performance. By clarifying the conditions under which PIU is likely to affect employees' job performance, negatively or positively, this study helps explain and integrate the opposing viewpoints and findings of previous studies regarding the impact of PIU on employees' job performance.

Based on a field experiment, the second study empirically examined the impact of Internet monitoring on employees' PIU, policy satisfaction, and job performance. The results suggest that Internet monitoring did not actually change employees' PIU. Instead, Internet monitoring led to employees' dissatisfaction and decreased OCB. In other words, as a policy, Internet monitoring can be worse than useless for regulating employees' PIU behaviors; this is particularly the case for knowledge workers, such as software programmers. To the best of our knowledge, the second study provided the first empirical evidence about the impact of Internet monitoring on employees' policy satisfaction and OCB.

In addition to the aforementioned theoretical contribution, both studies have important implications for employees to adjust their PIU in a way that improves rather than jeopardizes their job performance. Both studies also have important implications for organizations to develop appropriate PIU interventions to avoid the negative effects of PIU without sacrificing their positive effects.

YHTEENVETO (FINNISH SUMMARY)

Tämä väitöskirja sisältää kaksi tutkimusta, joiden avulla pyritään ymmärtämään (1) henkilökohtaisen internetin käytön positiivista ja negatiivista vaikutusta työntekijöiden suorituskykyyn sekä (2) internetin käytön tarkkailun vaikutusta työntekijöiden henkilökohtaiseen internetin käyttöön, tyytyväisyyteen työpaikan menettelytapoja kohtaan ja työntekijöiden alaistaitoihin.

Ensimmäinen tutkimus pohjautuu systemaattiseen kirjallisuuskatsaukseen aiemmasta työntekijöiden henkilökohtaisen internetin käyttöön liittyvästä tutkimuksesta. Kirjallisuuskatsauksen tuloksena syntyi teoreettinen malli, jonka avulla pyritään ymmärtämään henkilökohtaisen internetin käytön mahdollisia vaikutuksia työntekijöiden suorituskykyyn. Tämä tutkimus yhdistää aiempien tutkimusten tuloksia ja osittain eriäviä näkökulmia ja auttaa siten ymmärtämään paremmin tilanteita, joissa työntekijöiden henkilökohtainen internetin käyttö vaikuttaa työntekijöiden suorituskykyyn joko positiivisesti tai negatiivisesti.

Toinen tutkimus on organisaatiossa tehty kokeileva tutkimus, jonka avulla selvitettiin empiirisesti internetin käytön tarkkailun vaikutusta työntekijöiden henkilökohtaiseen internetin käyttöön, tyytyväisyyteen työpaikan menettelytapoja kohtaan ja työn suorituskykyyn. Tulosten mukaan internetin käytön tarkkailu ei vaikuttanut työntekijöiden henkilökohtaiseen internetin käyttöön. Sen sijaan internetin käytön tarkkailu johti työntekijöiden tyytymättömyyteen ja vaikutti negatiivisesti työntekijöiden alaistaitoihin. Menettelytapana internetin käytön tarkkailu ei siis ole ainoastaan tehoton keino kontrolloida työntekijöiden henkilökohtaista internetin käyttöä vaan myös haitallinen vaikuttaessaan negatiivisesti työntekijöiden alaistaitoihin. Tämä pitää paikkansa varsinkin tietotyöläisten kohdalla. Tutkimuksen tulokset tarjoavat ensimmäisiä empiirisiä todisteita internetin käytön tarkkailun vaikutuksesta työntekijöiden tyytyväisyyteen työpaikan menettelytapoja kohtaan sekä työntekijöiden alaistaitoihin.

Teoreettisen kontribuution lisäksi tämän väitöskirjatutkimuksen tulokset auttavat ymmärtämään paremmin työntekijöiden henkilökohtaista internetin käyttöä työpaikoilla sekä työntekijän että organisaation näkökulmasta. Työntekijöiden tulisi kiinnittää huomiota henkilökohtaiseen internetin käyttöön työpaikoilla niin, että se ei heikentäisi työn suorituskykyä vaan parantaisi sitä. Organisaatioiden tulisi puolestaan kehittää sopivia rajoitteita työntekijöiden henkilökohtaisen internetin käytön negatiivisten vaikutusten välttämiseksi uhraamatta siitä saatavia positiivisia vaikutuksia.

APPENDICES

Appendix I: Relevant Publications Coded by Research Question and Source

To be relevant to our study, the identified publications were coded according to the research themes, viewpoints on PIU outcomes (regarding job performance), and database sources. The coding rules of the research themes are as follows. (1) If one study empirically examined the influencing factors of PIU, such as factors that are likely to increase or decrease PIU, then the research theme of this study was categorized as "PIU antecedents." However, (2) if the influencing factors involved organizational policies related to PIU, such as monitoring or sanctions, the research theme was assigned to the category "PIU policy." (3) If one study empirically examined the influence of PIU on any aspect of employees or organizations, such as the impact of PIU on employees' job productivity, and job satisfaction, the study was categorized as "PIU outcome." (4) If one study did not empirically discuss the relationships between PIU and any other factors, we categorized it as "PIU description" or "typology study." It is noteworthy that if a study met more than one of the four conditions above, then we categorized it into multiple research themes accordingly. Based on the rules above, the identified PIU publications were coded by the first and the third author of this study. Based on the location of the "clicks" (i.e., "√"), the initial inter-rater reliability of the research theme was 80%. The differences were further agreed upon by the two raters.

We also coded the literature based on the research perspective (i.e., negative perspective vs. positive perspective). The initial inter-rater reliability of "Negative/Positive" was 92%. After discussing the literature being coded differently, we further agreed on the coding result shown in Tables 20 and 21.

TABLE 20 PIU publications at journals

No.	Study	Term used	Research Themes				Source			Perspective	
			Antecedent	Outcome	Policy	Descriptive /Typology	EBSCO	Science Direct	ACM Digital Library	Negative	Positive
1	Lim, 2002	Cyberloafing	√					√		√	
2	Blanchard & Henle, 2008	Cyberloafing	√			√	√	√		√	
3	Lim & Teo, 2005	Cyberloafing				√		√		√	
4	Wagner et al., 2012	Cyberloafing	√					√		√	
5	Zoghbi et al. 2006	Cyberloafing	√		√		√	√		√	
6	Zoghbi, 2007	Cyberloafing	√				√	√		√	
7	Henle et al., 2009	Cyberloafing			√		√	√		√	
8	Liberman et al., 2011	Cyberloafing	√				√	√		√	
9	Lim & Chen, 2009	Cyberloafing	√	√		√	√	√		√	√
10	Restubog, et al. 2011	Cyberloafing	√				√	√		√	
11	O'Neill et al., 2014a	Cyberslacking	√	√				√		√	
12	Ugrin & Pearson, 2013	Cyberloafing			√	√	√	√		√	√
13	Zoghbi & Olivares, 2010	Cyberloafing			√			√		√	
14	Askew et al., 2014	Cyberloafing	√				√	√		√	
15	Zoghbi, 2012	Cyberloafing		√		√	√	√		√	
16	Kidwell 2010	Cyberloafing				√		√		√	
17	Zoghbi, 2009	Cyberloafing	√				√	√		√	

No.	Study	Term used	Research Question				Source			Perspective	
			Antecedent	Outcome	Policy	Descriptive /Typology	EBSCO	Science Direct	ACM Digital Library	Negative	Positive
18	Mahatanankoon et al. 2004	PIU				√	√	√		√	
19	Lee et al., 2007	PIU	√			√		√		√	
20	Anandarajan et al., 2006	PIU				√	√	√		√	√
21	Anandarajan et al., 2011	PIU				√	√	√		√	√
22	Kim & Byrne, 2011	PIU				√	√	√		√	√
23	Pee et al., 2008	NWRC	√					√		√	
24	Bock & Ho, 2009	NWRC		√			√	√	√	√	
25	Bock et al., 2010a	NWRC			√			√		√	
26	Bock et al., 2010b	NWRC	√					√	√	√	√
27	Lavoie & Pychyl, 2001	Cyberslacking		√			√	√		√	
28	Block, 2001	Cyberslacking				√		√		√	√
29	Greengard, 2000	Cyberslacking				√	√	√		√	
30	O'Neill et al., 2014b	Cyberslacking	√				√	√		√	
31	Young & Case, 2004	Internet Abuse			√		√	√		√	
32	Griffiths, 2003	Internet Abuse				√	√	√		√	
33	Chen et al., 2008	Internet Abuse	√		√			√		√	

No.	Study	Term used	Research Question				Source			Perspective	
			Antecedent	Outcome	Policy	Descriptive /Typology	EBSCO	Science Direct	ACM Digital Library	Negative	Positive
34	Anandarajan, 2002	Internet Abuse				√	√	√		√	
35	Sharma & Gupta, 2003	Internet Abuse			√			√		√	
36	Garrett & Danziger 2008a	Personal Internet Use; Cyberslacking	√				√	√		√	√
37	Garrett & Danziger 2008b	Personal Internet Use	√				√	√		√	
38	Guthrie & Gray 1996	Junk Computing				√		√		√	√
39	Vitak et al. 2011	Personal Internet Use; Cyberslacking	√				√	√		√	
40	Moody & Siponen 2013	Personal Internet Use	√					√		√	√
41	König & Guardia 2014	Personal Internet Use		√			√	√			√
42	Piotrowski 2012	Cyberloafing				√	√				
43	Mcbride et al. 2013	Cyberslacking				√	√			√	
44	Sharpe et al. 2003	Internet Abuse				√	√				
45	Snyder 1997	Internet Abuse				√	√			√	
46	Cheng et al. 2014	Personal Internet Use	√		√		√			√	
47	Ahamadi, et al. 2011	Cyberloafing	√							√	

No.	Study	Term used	Research Question				Source			Perspective	
			Antecedent	Outcome	Policy	Descriptive /Typology	EBSCO	Science Direct	ACM Digital Library	Negative	Positive
48	Al-Shuaibi et al. 2013	Cyberloafing	√							√	
49	Anandarajan & Simmers 2005	Personal Web Use		√						√	√
50	Anandarajan et al. 2002	Personal Web Usage				√				√	√
51	Blau et al. 2006	Cyberloafing	√			√	√			√	
52	Chen et al. 2011	Internet Abuse	√				√			√	
53	Chou et al. 2008	Internet Abuse				√				√	
54	Coker 2011	Workplace Internet Leisure Browsing		√							√
55	Griffiths 2010	Internet Abuse				√	√			√	
56	Henle & Blanchard 2008	Cyberloafing	√			√				√	
57	Ivarsson & Larsson 2012	Personal Internet Usage			√						√
58	Jia et al. 2013	Cyberloafing	√							√	
59	Johnson & Ugray 2007	Internet Abuse			√					√	
60	Li et al. 2010a	Internet Policy Compliance	√		√					√	
61	Lim et al. 2002	Cyberloafing				√	√			√	

No.	Study	Term used	Research Question				Source			Perspective	
			Antecedent	Outcome	Policy	Descriptive /Typology	EBSCO	Science Direct	ACM Digital Library	Negative	Positive
62	Everton et al. 2005	Personal Use of Work Computers	√				√			√	
63	Mastrangelo et al. 2006	Personal Use of Work Computers	√				√	√		√	
64	Messarra, et al. 2011	Personal Internet Usage		√	√					√	√
65	Ozler & Polat 2012	Cyberloafing	√	√						√	√
66	Page 2014	Cyberloafing				√					√
67	Reinecke 2009	Recreational Use of Computer Games	√				√				√
68	Sawitri 2012	Cyberloafing	√							√	
69	Siau et al. 2002	Internet Abuse				√	√			√	
70	Oravec 2002	Internet Recreation in the Workplace				√	√				√
71	Stavropoulos et al. 2013	Internet Abuse	√				√			√	
72	Ugrin et al. 2007	Cyberslacking	√			√				√	
73	Ugrin et al. 2008	Cyberslacking	√		√					√	
74	Weatherbee 2010	Cyberdeviancy				√				√	
75	Ugrin and Pearson 2008	Internet Abuse			√					√	

No.	Study	Term used	Research Question				Source			Perspective	
			Antecedent	Outcome	Policy	Descriptive /Typology	EBSCO	Science Direct	ACM Digital Library	Negative	Positive
76	Urbaczewski & Jessup 2002	Internet Abuse			√		√			√	
77	Young 2010a	Internet Abuse				√	√			√	
78	Young 2010b	Internet Abuse				√	√			√	
79	Zoghbi 2012	Cyberloafing				√	√			√	
80	Scheuermann & Langford 1997	Internet Abuse				√	√			√	
81	Wang et al. 2013	Cyberloafing			√		Cross citation			√	
82	Ramayah 2010	Personal Web Usage		√			Cross citation			√	

TABLE 21 PIU publications at IS conferences, theses and books

No.	Study	Term used	Research Question			Source		Perspective	
			Antecedent	Impact	Policy	Descriptive /Typology	IS Conference	**Negative**	**Positive**
83	Zhang et al. 2006	NWRC	√				HICSS 2006	√	
84	Johnson & Chalmers 2007	Internet Abuse				√	HICSS 2007	√	
85	Shepherd & Klein 2012	Internet Abuse			√		HICSS 2012	√	
86	Shepherd et al. 2014	Internet Abuse			√		HICSS 2014	√	
87	Kuem & Siponen 2014	NWRC		√			HICSS 2014		√
88	Claybaugh & Nazareth 2009	Internet Abuse				√	AMCIS 2009	√	
89	Jia & Jia 2012	Computer Loafing	√				AMCIS 2012	√	
90	Campbell & Lu 2007	Technology Abuse				√	AMCIS 2007	√	
91	Liao et al. 2007	NWRC			√		AMCIS 2007	√	
92	Schechtman et al. 2006	Internet Abuse	√				AMCIS 2006	√	
93	Chun & Bock 2006	NWRC	√		√		PACIS 2006	√	

No.	Study	Term used	Research Question			Source		Perspective	
			Antecedent	Impact	Policy	Descriptive /Typology	IS Conference	**Negative**	**Positive**
94	Jia & Jia 2014	Cyberloafing	√				PACIS 2014	√	
95	Wong et al. 2005	NWRC			√		PACIS 2005	√	
96	Li & Cheng 2013	Internet Abuse	√		√		PACIS 2013	√	
97	Lim 2005	Cyberloafing	√				PACIS 2005	√	
98	Prasad et al. 2010	Cyberloafing	√				PACIS 2010	√	
99	Krishnan and Lim 2010	Cyberloafing	√				PACIS 2010	√	√
100	Rajah and Lim 2011	Cyberloafing			√	√	PACIS 2011		√
101	Krishnan et al. 2010	Cyberloafing	√				ICIS 2010	√	
102	Li et al. 2010b	Internet Policy Compliance			√		ICIS 2010	√	
103	Ugrin and Pearson 2010	Cyberloafing			√		ICIS 2010	√	
104	Jia et al. 2007	Problematic Technology Usage	√				ICIS 2007	√	

No.	Study	Term used	Research Question			Source		Perspective	
			Antecedent	Impact	Policy	Descriptive /Typology	IS Conference	**Negative**	**Positive**
105	Doorn 2008	Cyberloafing				√	Thesis	√	√
106	Askew 2012	Cyberloafing	√	√			Thesis	√	√
107	Stephen 2011	Cyberloafing				√	Thesis	√	√
108	Anandara-jan & Simmers 2004 Missing?	Personal Web Usage	√	√	√	√	Book	√	√

Appendix II: The Constructs Measurement

Policy Satisfaction (PS): Adapted from Bhattacherjee 2001

PS1: I am satisfied with the Internet use policy of my company

PS2: I am pleased to the Internet use policy of my company.

PS3: I am contented to the Internet use policy of my company.

PS4: I am delighted to the Internet use policy of my company

Information Privacy Concern (IPC): Malhotra et al. 2004

IPC1: All things considered, the Internet monitoring policy would cause serious privacy problems to me.

IPC2: I am concerned about the threats of the Internet use policy of my company to my information privacy.

IPC3: I feel that the Internet policy of my company is an invasion of my privacy.

IPC4: I feel personally invaded by the Internet use policy of my company.

Sanction Concern (SC): Adapted from D'Arcy et al. 2009

SC1: I would be severely reprimanded if I were caught using work computers for non-work-related activities in office (e.g., surfing news sites, social media, online shopping, chatting and gaming).

SC2: The likelihood that my organization would discover that I use work computers for non-work-related activities is high.

SC3: The punishment would be immediate if I were caught using work computers for non-work-related activities in office.

SC4: The punishment would be immediate if I were caught using work computers for non-work-related activities in office.

SC5: The punishment would be severe if I were caught using work computers for non-work-related activities in office.

SC6: I would be immediately reprimanded if I were caught using work computers for non-work-related activities in office.

Policy Awareness (PA): Adapted from D'Arcy et al. 2009

PA1: My organization has guidelines regarding non-work-related Internet activities

PA2: My organization has policy that describe acceptable use of the Internet for non-work-related activities.

PA3: My organization has formal policy that governs employees' non-work-related Internet activities.

Organizational Citizenship Behavior (OBC): Adapted from Williams and Anderson 1991.

OCB1: My attendance at work is above the norm

OCB2: I complain about insignificant things at work (R)

OCB3: I conserve and protect the property of my company
OCB4: I adhere to informal rules devised to maintain order
OCB5: I help others who had been absent
OCB6: I help others who have heavy workload
OCB7: I assist my supervisor with his/her work even when not asked
OCB8: I take time to listen to co-workers' problems and worries
OCB9: I go out of way to help new employees
OCB10: I take a personal interest in helping other employees
OCB11: I help orient new employees even though it is not required of me
OCB12: I always lend a helping hand to others on the job
OCB13: I am willing to give time to help other employees

Appendix III: PIU Websites Visited by Participants

TABLE 22 PIU websites visited by the participants in the treatment group

News Sites	Liveleak.com Loures.com Media-imdb.com meusresultados.com mlive.com myspace.com nit.pt noticiasmagazine.pt o2.pl inshape.pt zerozero.pt xl.pt dn.pt dinheirovivo.pt dailymail.co.uk bbc.com altran.com businessinsider bloomberg cnn.com theguardian.com theladbible.com tsf.pt turner.com 10bet.com 10betapostas.com	observador.pt publico.pt reddit.com rtp.pt uol.com.br speisa.com sporting.pt tacool.xyz tafixe.com washingtonpost elmundo.es gizmodo.com englishrussia.com eurocid.pt expresso.pt fastnewsforum.net fcporto.ws flashvidas.pt foxnews gloabalnoticia.pt iol.pt 9gag.com about.com msn.com globalsportsmedia.com	amoreiras.com aol.com arcamax.com argiro.gr buzzfed.com cbsnews.com controlinveste.pt globalmediagroup.pt globalnoticias.pt ionline.pt jn.pt kotaku.com lifehacker.com tqn.com venturebeat.com wsj.com wsj.net yahoo.com abola.pt sapo.pt rr.pt abril.com.br aeiou.pt ojogo.pt vsports.pt
Online Shopping Sites	lookfantastic.com lookastic.com louisvuitton.com nanochip.pt odisseias.com olx.pt amazon pcdiga.com pinimg.com planeo.pt polyvore.com pursevalley.cn redcoon.pt	apple.com dpreview.com elorteingless.es enetural.com era.pt escolha.pt florflor.pt fnac forretas goodfashion achado.pt Ebay bestbuy.com	ikea.com laredoute.pt lidl prozis.com megahits pinterest.com swarovski.com thomann.de vivobarefoot.com wbtrk.net wook.pt worten.pt yves-rocher.pt

	shop.pe shopping.com sparkfun.com sportzone.pt stacksocial.com goodlife groupon	bertrand.pt buscape.com.br decathlon.com ebayimg.com ebooks.gr ecoced.com	zales.com kuantokusta.pt nocookie.ne gsmarena.com honorbuy.com hm.com
Social Networking Sites	t.co Facebook Fbcdn	twitter linkedin postimage.org	blogger.com giphy.com
Online Video Sites	movenoticias.com ratotv.xyz ted.com legendas.tv	legent.tv cbs.com imdb.com scene-rls.com	cbsistatic.com dailymotion.com tabonito.pt videojs.com
Online Game Sites	mmorpg.com mmosite.com mol.im starcitygames.com	game geocaching lineage2.com	0daymusic.org aiononline.com boardgamegeek.com
Personal Travel Sites	homeaway tripadvisor.com iberia.com flytap.com	travelocity booking.com airfrance.com	ana.pt expedia.com vivendamiranda
Job Hunting Sites	careerjet.net indeed.com	indeed.pt	itjobs.pt
Other Sites	meo.pt wxug.com underground.com fitnessshut.pt glam.com hotmail.com live.com jalopnik.com standvirtual.com	clubenet hyundai ainanas.com (Porn) anagalvao.pt askmen.com comm100.com comixology.com continente.pt	opel.pt cetelem.pt autohoje.com blogspot bmw niponspa ocasiao.pt zendesk.com zomato.com

TABLE 23 PIU websites visited by the participants in the treatment group

News Sites	mas.com yahoo abola.com sapo media-imdb.com mlive.com myspace.com nit.pt o2.pl observador.pt publico.pt reddit.com rtp.pt uol.com.br sporting.pt jornaldenegocios latintimes.com zerozero.pt	xl.pt dn.pt dinheirovivo.pt bbc cnn expresso.pt flashvidas.pt sl.pt aeiou.pt ainanas.com tsf.pt turner.com casasapo.pt theguardian.com gloabalmediagroup.pt globalnoticias.pt jn.pt	novagente.pt rt.com swimmingworldmagazine tabonito.pt taaz.com thezoereport.com vice.com vip.pt vogue.com 10bet.com globo.com ionline.pt noticiasaominuto.com sol.pt sporttv.pt tenis-portugal.com unicef.com vsports.pt
Online Shopping Sites	Pinimg.com redcoon.pt olx.pt shop.pe shopping.com tvshopping.pt sportzone.pt goodlife groupon gsmarena.com ikea.com amazon laredoute.pt lidl	amazon pinterest.com apple.com era.pt fnac.pt zara achado.pt yoox adidas amoferta.com asos.com bertrand.pt decathlon ebay	hm.com josefinas.pt kuantokusta.pt mauser.pt optica24.pt proteste.pt redcoon shopstyle.com testfreaks.com tictail.com topshop.com ttcdn.co wook.pt worten
Social Networking Sites	facebook fbcdn.net twitter	linkedin blogger.com giphy.com badoo	fbsbx.com instagram.com t.co twoo.com
Online Video Sites	movenoticias.com adorocinema.com	imdb.com mrpiracy.xyz	rutube.ru sembilhete.tv vimeo.com

Online Game Sites	mmosite.com innogames.com	mmosgame.com	pathofexile.com
Personal Travel Sites	homeaway tripadvisor.com iberia.com flytap.com aegeanair.com agoda.net	bangkokair.com booking.com bstatic.com clubenet.com easyjet.com airasia	expedia.com ryanair.com klm.com skyscanner.net turkeytravelplanner.com
Other Sites	meo.pt hotmail.com live.com arrendanahora.com audi batanga blogspot bmw montepio.pt db.com xe.com Volkswagen	Clube.net dailymotion.com fashion flashtalking.com homehunting.pt honda.pt idealista.pt imgur.com imovirtual.com impala.pt ipma.pt kia.pt	legendasdivx.com live.come live.net mercedes-benz.com nissan peugeot renault.pt rentalcars.com seat.pt soadultos.net (porn) suzuki zomato.com vine.co

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