INFORMATION LIFELINE OR HIGH-TECH TETHER: AN EMPIRICAL INVESTIGATION OF WORKPLACE CONNECTIVITY BEHAVIOR

by

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Abstract

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by

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The advent of wireless email technology available through laptops and handheld devices is rapidly turning what has traditionally been a fixed form of communication into a portable one. There is little empirical research that examines the use of mobile communications technology (MCT) by organization employees. The purpose of this study was to develop a model of connectivity behavior (CB), defined as an organization member's use of MCT to engage with work or work-related colleagues during non-work time. I examined the situational and individual difference correlates of CB, and applied Conservation of Resources (COR) theory to examine the relationship between CB and psychological variables related to well-being.

I tested the model via an online survey using three samples: a cross-sectional group of full-time working adults (n=67), a group of employees from a single organization in the northeast (n=139), and a stratified random sample of alumni from a northeastern university (n=98). Results from a meta-analysis of bivariate correlations revealed that CB duration and frequency were significantly related to the distribution of a wireless email device by one's organization (r = .22, r = .47), perceived organizational norms (r = .22, r = .31), polychronicity (r = .24, r = .28), role integration preference (r =

.15, r = .25), and personal innovativeness with information technology (r = .19, r = .26). In addition, CB duration and frequency were significantly negatively related to psychological detachment from work [PDFW] (r = -.20, r = -.25), but unrelated to job control. PDFW (r = .17) and job control (r = .25) were positively related to psychological well-being.

I concluded there are several important factors that may influence individuals to engage with MCT beyond normal working hours. These include the distribution of MCT by an employer, perceived norms about connectivity, and individual difference variables related to orientations around time and work. In addition, CB may impede employees' abilities to psychologically detach from work, and ultimately affect psychological well-being. I recommended further application of COR theory to better understand the motivating factors that influence individuals to continuously engage with MCT, sometimes to their personal detriment.

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CHAPTER 1

INTRODUCTION

Scholars have recently suggested that distinctions between work and non-work time are becoming blurred, due to the growth of non-conventional organization structures and the influence of technological innovations (Hassan, 2003; Kaufman-Scarborough, 2006). In the new millennium, there has been an enormous increase in the variety of technology-mediated communication (TMC) devices that enable individuals to connect to the office (e.g., wireless email and telephony devices, personal digital assistants, pagers, and Bluetooth and WAP-enabled applications). As telecommunication and computing costs have plummeted, power and function have increased (Hill, Ferris, & Martinson, 2003). The advent of such portable wireless technologies is creating a new era of "workplace connectivity" (Schlosser, 2002).

In the past, one needed access to a desktop computer with Internet connection to log-on to workplace servers and/or communicate via email and instant messaging from remote locations. Initially, only 'virtual' employees who performed work outside of the office, such as telecommuters or salespeople, used such tools as the primary means of maintaining their employee relationship (Boswell & Olson-Buchanan, 2007). Wireless email and telephony devices, however, are becoming more ubiquitous among individuals who report to work in traditional office settings. The BlackBerry, in particular, may be the most common mobile communications device, and has replaced the cellular phone as the "must-have" status symbol for the office executive (Goodchild & Hodgson, 2006). Continued advancements in communications technology have resulted in mobile devices

that do "everything," such that choosing which device to carry becomes obsolete. For example, RIM's BlackBerry 8800 'smart phone' is a mobile phone that has voicemail, email, text and instant messaging capabilities, a personal organizer, a media player for audio and video files, a built-in GPS system and a web browser (www.rim.com). A host of similar gadgets has recently hit the market, and in November 2007, U.S. smart phone sales were up 163% versus the same period last year (Business Wire, 2007). The popularity of these devices continues to grow, as Apple – who launched the iPhone in June, 2007 – announced it sold its one-millionth iPhone on September 9 (Apple press release, 9/10/07).

Wireless TMC devices were designed to make communicating across time and geographic boundaries easier, causing these boundaries to virtually disappear. From the employer perspective, there is a belief that this helps to ease the collaboration process and increase productivity among workers. From an employee perspective, in contrast, the boundaries of time and space have traditionally provided a clear demarcation between work and non-work time. Without said boundaries, it becomes possible to remain connected to the workplace from any location, at any time. This may be beneficial for those seeking flexible work arrangements, or wishing to communicate around-the-clock with global partners. There may, however, be adverse effects for individuals who work a full day at the office, and then remain connected to the organization during traditional non-work time (e.g., evenings, weekends, vacation).

A dilemma therefore exists regarding these new technologies: Does the ability to connect to the workplace from any location, at any time, provide organizational members with increased control and autonomy? Or do these technological devices act as "high-tech

tethers" (Eden, 2001) that impede workers from psychologically detaching from the workplace? Why are some organizational members more inclined to use communications technology after hours, and what is the overall impact to their psychological well-being? The purpose of the current paper is to explore these general questions by developing and testing a model of workplace connectivity behavior (CB). I define CB as an organizational member's use of technology-mediated communication (TMC) devices to engage with work or work-related colleagues during non-work time (e.g., mornings before work, evenings after work, weekends, vacation).

Venkatesh and Vitalari (1992) were among the first researchers to examine the relationship between technology and "supplemental work at home," which they defined as, "a distributed work arrangement where the home is used as a setting for job-related work by individuals employed full time outside, after normal work hours or on weekends" (p. 1688). In a two-year longitudinal study of computer use among 450 U.S. households, they found that computer owners worked approximately twice the number of hours on supplemental work at home than non-owners (7.3 versus 3.5 hours, $p < .001$). Furthermore, the amount of time spent on supplemental work was significantly positively related to the availability of a telecommunications link between the home and an office computer. During the time of this study, a telecommunications linkage between a home and office computer was a relatively rare phenomenon, and likely consisted of a slow, dial-up modem using a home telephone line. In other words, users remained in a fixed place, and the onus was on them to 'dial in' to their work network. Wireless technology, however, means that 'supplemental work' need no longer be confined to one place (e.g., a home office) but can be performed while also pursuing leisure activities (i.e., at a

restaurant, play or ballgame) or while doing non-work 'work' (i.e., laundry, banking, childcare). The primary differences between the new tools and the telecommunications devices of old (e.g., desktop computer with modem) is that they are portable and always 'on,' automatically pushing incoming voice and email messages to the user. Thus, employees are able to remain continuously connected.

A new stream of research has begun to examine the use of communications technologies after hours to perform job-related functions (Boswell & Olson-Buchanan, 2007; Fenner & Renn, 2003; Mazmanian, Orlikowski, & Yates, 2006). Fenner and Renn (2003) developed a framework of technology-assisted supplemental work (TASW), which they defined as "the practice of lengthening working time by remaining connected to work, coworkers, supervisors, and other organizational stakeholders from home via advanced digital information technology" (p. 179). They theorized that organizational climate, employee characteristics, perceived usefulness and satisfaction with the technology would influence TASW, and TASW would positively relate to job performance, career success and work-to-family conflict. Propositions were offered but their model was not empirically tested.

More recently, Boswell and Olson-Buchanan (2007) empirically investigated the relationship between work-related attitudes and work-to-life conflict with the use of communications technology beyond "normal working hours." Results revealed that employees with higher ambition and job involvement were more likely to use technologies after hours, and this behavior was associated with greater work-to-life conflict. In addition, qualitative research on the use of BlackBerries after hours has found that the devices provide users with a sense of control, albeit at the possible cost of

increased stress over the long term (Mazmanian et al., 2006). These studies suggest that there may be both positive and negative outcomes associated with CB. Prior research, however, has not provided an adequate theoretical explanation for this paradox. Furthermore, we know little about the situational and individual differences among organizational members who choose to stay connected versus those who do not.

In this paper, I build a model to examine the correlates of CB, drawing from literature within the MIS (e.g., technology use and acceptance) and organizational behavior (e.g., individual differences, stress management) fields. I propose the following research questions:

1. How do social factors within one's organization relate to CB?
2. How do individual orientations around time, work roles and personality relate to CB?
3. How does CB relate to psychological constructs, such as job control, psychological detachment from work, and psychological well-being?
4. And finally, are there personality factors that moderate the relationship between CB and psychological constructs?

In Chapter 2, I address the situational and individual difference correlates of CB. First, I examine the relationship between situational factors (e.g., social factors within one's organization) and CB. Second, I investigate the relationship between individual difference variables and CB. These include orientations around time (e.g., polychronicity and role segmentation preference) and personality factors (e.g., conscientiousness, extraversion, neuroticism, and personal innovativeness with information technology). In

Chapter 3, I offer hypotheses regarding the relationship between CB and perceptions of job control and psychological detachment from work, based on Conservation of Resources (COR) theory (Hobfoll, 1988, 1989, 2001). In addition, I predict an overall relationship between these constructs and psychological well-being. Finally, I address the recent literature on technology-mediated interruptions (TMI) to assess whether there are potential moderators to the proposed relationships.

There are both theoretical and practical implications of this research. From a theoretical perspective, I integrate research from the MIS and OB literatures to examine the CB phenomenon. Orlikowski and Iacono (2001) called for the development of interdisciplinary theories to inform studies about technology, noting, "how people engage with various technological artifacts in the course of working, learning, communicating, shopping, or entertaining themselves must become of central theoretical concern." Specifically, I believe that applying the COR model to examine the use of TMC devices provides valuable insight to understand the paradoxical nature of CB.

The correlates of CB are also a concern to practitioners and human resource professionals, who may be concerned that some employees may be unable to judge when technology has begun to govern their activities, rather than facilitate them (Porter & Kakabadse, 2006). Organizations are increasingly concerned about the potential for lawsuits by employees who feel their Blackberries have led to chronic insomnia, premature burn-out, failed marriages and car crashes (Goodchild & Hodgson, 2006). It is unlikely that the tools of connectivity will disappear from organizational life. On the contrary, the next generation of workers is highly familiar with these devices and will have grown up using them, albeit conversing with friends and family as opposed to

bosses and co-workers. As organizational scholars, we should seek to better understand whether these technologies are truly blurring the distinction between work and non-work time, why some individuals are more inclined to stay connected, and whether the overall consequence to one's health is positive or negative.

CHAPTER 2

In this chapter I begin developing a model of CB, defined as an organizational member's use of TMC devices to engage with work or work-related colleagues during non-work time. I propose there are both situational and individual factors that relate to CB. First, I examine situational factors related to one's job environment that correlate with CB, including organizational distribution of TMC devices and social influence from referent others. Second, I explore individual difference variables related to CB, including orientations around time and work (e.g., polychronicity and role segmentation-integration preference) and personality factors (e.g., conscientiousness, extraversion, neuroticism, and personal innovativeness with information technology). I present hypotheses throughout the chapter.

SITUATIONAL CORRELATES OF CB

Early research on TMC within organizations identified a relationship between systems use and factors related to one's social environment (Kling & Gerson, 1977; Steinfeld, 1986; Svenning, 1982). Kling and Gerson (1977) suggested that a network of supportive relationships facilitated the use of personal computers. Svenning (1982) found that perceptions and opinions of coworkers and supervisors were a significant predictor of employees' attitudes and intentions to use a videoconferencing system. Steinfeld (1986), examining the use of an electronic mail system, found that the extent to which relevant co-workers also used the system was the primary predictor of task-related uses.

These early studies revealed that situational factors might influence technology use via two means: the extent of users within one's organization (i.e., organizational distribution), and the perception that important others think s/he should use the systems (i.e., social influence).

Organizational Distribution

Researchers have found that the use of a communications system by members of one's primary group is an important determinant of a potential user's behavior (Kraut, Rice, Cool & Fish, 1998; Rice, Grant, Schmitz, & Torobin, 1990). Rice et al. (1990) found in an early study of email use that individuals were more likely to adopt email if others in the network also adopted it. Likewise, Kraut et al. (1998) studied the introduction and use of a pair of competing video telephone systems in a company over a period of 18 months. Data from quantitative time-series analyses and qualitative interviews revealed that people used a particular system more when others were using it, whether they were general users or those specific to their work group. In a wireless mobile environment, in particular, for individuals to use communications devices after hours, a certain number of members of the subject's social network need to be users as well (Sarker & Wells, 2003). For example, if I use a BlackBerry to send an email to a co-worker during non-work hours and expect an immediate answer, it's necessary that the recipient have the ability to monitor work emails during non-work time.

Mazmanian et al. (2006) investigated the use of BlackBerry devices in a small, U.S. private-equity firm. They found that shared patterns of usage behavior quickly emerged when BlackBerries were provided to all organizational members (excluding

administrative assistants). Data from face-to-face, semi-structured interviews revealed that norms developed whereby all employees remained "continuously connected," and communication behavior changed such that workers began to check their email "every seven or eight minutes" via the BlackBerries. The employees knew that their co-workers would be monitoring messages, and feared that if they did not check emails, they would be left out of the loop. If the organization does not provide TMC devices to its employees, then it may be likely that individuals would be less motivated to continuously monitor their email and voicemails after hours. Employees may purchase TMC devices on their own, but the network of users among their colleagues would be smaller. Thus, it may be important to consider whether the organization distributes the tools of connectivity to its employees. I therefore predict that the distribution of wireless email devices (WEDs), standard mobile phones (i.e., voice-only capabilities; separate from WEDs) and laptop computers to organization members are positively related to CB. I specifically focus on these devices since data from a pilot study (i.e., assessing the CB of a group of full-time workers who were also part-time MBA students, n = 63) suggested they are the most common type of TMC devices that organizations may distribute to their workers.

Hypothesis 1a: The distribution of WEDs to organization members are positively related to CB.

Hypothesis 1b: The distribution of standard mobile phones to organization members are positively related to CB.

Hypothesis 1c: The distribution of laptop computers to organization members are positively related to CB.

Social Influence

Models of information technology (IT) adoption and diffusion (Moore & Benbasat, 1991; Taylor & Todd, 1995; Venkatesh & Davis, 2000), as well as research within the communications (Fulk, 1993; Schmitz & Fulk 1991) and marketing (Nysveen, Pedersen, & Thorbjornsen, 2005; Thorbjornsen, Pedersen, & Nysveen; 2007) literatures have all examined the role of social factors on technology use. Within the usage and diffusion literature, Moore and Benbasat (1991) were the first to examine the effect of perceived social image as it relates to adoption of an IT innovation. They defined image as, "the degree to which use of an innovation is perceived to enhance one's … status in one's social system" (p. 195). According to Kelman's (1958) three processes of influence (e.g., compliance, identification, and internalization), this is most similar to 'identification,' which occurs "when an individual accepts influence because he wants to establish or maintain a satisfying self-defining relationship to another person or group" (p. 53). Moore and Benbasat developed and validated a scale to measure image (as part of a larger 38-item instrument to assess the perceptions of adopting an IT innovation). Items were subject to four rounds of sorting by judges to determine convergent and discriminant validities, as well as three separate field tests. The resulting 5-item scale obtained alphas > .80, and included items such as, "People in my organization who use [X technology] have more prestige than those who do not," "People in my organization

who use [X technology] have a high profile," and "Having [X technology] is a status symbol in my organization."

Subsequently, MIS researchers began to examine whether additional social factors should be included in technology acceptance models (Taylor & Todd, 1995; Venkatesh & Davis, 2000). Taylor and Todd (1995) drew from Ajzen's (1991) Theory of Planned Behavior, and investigated the influence of subjective norms on the use of a computer facility by business school students. They based subjective norm on Fishbein and Ajzen's (1975, p. 302) definition, "a person's perception that most people who are important to him think he should or should not perform the behavior in question." According to French and Raven's (1959) taxonomy of bases of power, this construct is similar to referent power, whereby one adopts the attitudes, behavior or beliefs of important others in order be associated with them.

Taylor and Todd (1995) examined the relationship between subjective norms for using a computer resource center (CRC) and actual usage among a large sample of business school students (n = 786). Subjective norms for using the computer facility was measured with the following two items, "People who influence my behavior would think that I should use the CRC," and "People who are important to me would think that I should use the CRC." Results from path analyses revealed that subjective norms for using the CRC were significantly related to behavioral intention to use the system ($\gamma = .20$, $p < .05$), which was significantly related to actual usage behavior ($\gamma = 1.28$, $p < .05$).

Venkatesh and Davis (2000) proposed that both types of persuasive social information (e.g., image and subjective norms about behavior) would influence users' perceptions about the usefulness of a technology, and ultimately their usage behavior.

They tested their model (TAM2) in a longitudinal field experiment across four different organizations that were about to implement a new system. Data revealed that both image and subjective norms influenced behavioral intention. Specifically, within the two organizations where system use was voluntary, the correlations between behavioral intention to use the system and image (e.g., "People in my organization who use the system have more prestige than those who do not," "Having the system is a status symbol in my organization") were significant and increased over time. Pre-implementation correlation was $r = .24$ ($p < .01$) and three months post-implementation was $r = .31$ ($p < .001$). Likewise, the correlations between behavioral intention to use the system and subjective norms (e.g., "People who influence my behavior think that I should use the system," "People who are important to me think that I should use the system") also increased over time. Pre-implementation correlation was $r = .13$ and three months post-implementation was $r = .18$ ($p < .05$).

A subsequent review of technology usage models by Venkatesh, Morris, Davis and Davis (2003) examined how social influence factors have been conceptualized and measured within the use and acceptance literature. They empirically compared eight usage models, using data from four organizations over a six-month period. Venkatesh et al. suggested that even though social influence was labeled differently among the models (e.g., subjective norms, image), data revealed that the constructs behaved similarly. Each was a representation that individuals' behavior is influenced by the way in which they believe others view them as a result of using the technology (Venkatesh et al., 2003).

A number of technology acceptance studies have incorporated both subjective norms and image and into their operational models (Lu, Yu, Liu, & Yao, 2003; Lu, Yao,

& Yu, 2005; Teo & Pok, 2003). Teo and Pok (2003) examined the relationship between these constructs and intention to use a WAP (wireless application protocol)-enabled mobile phone, which provides a standardized way to link to the Internet from a cellular phone. Data was collected from two large samples of Internet users (n = 587 and n = 425). Results from structural equation modeling revealed a significant path between subjective norms about using a mobile phone (e.g., "People who influence my behavior think that I should use a WAP-enabled mobile phone") and behavioral intention to adopt a mobile phone ($\gamma = .22$ and $\gamma = .28$, $p < .05$). In addition, there was a significant path that connected image (e.g., "People who use a WAP-enabled mobile phone have more prestige") with attitude towards using a mobile phone ($\gamma = .28$ and $\gamma = .30$, $p < .05$), which in turn significantly related to behavioral intention to adopt a mobile phone ($\gamma = .21$ and $\gamma = .30$, $p < .05$).

Lu, Yao, & Yu (2005) studied the relationship between subjective norms and image and intention to adopt wireless Internet services via mobile technology (WIMT) among a sample of MBA students' (n = 357). They combined subjective norms and image into one social influence construct and measured it with items such as "People who influence my behavior think that I should use WIMT" (i.e., subjective norms) and "People around me who use WIMT have more prestige than those who do not" (i.e., image). Results revealed that this social influence construct was strongly related to perceived usefulness of WIMT ($r = .52$, $p < .001$), perceived ease of use of WIMT ($r = .30$, $p < .001$), and intention to adopt WIMT ($r = .38$, $p < .001$).

More recently, Turner, Grube, Tinsley, Lee, and O'Pell (2006) found that employees who followed organizational norms in their use of email and IM were

awarded higher performance evaluations from their supervisors, after controlling for demographics, hours worked, organizational commitment, and supervisors' media use. Correlations between performance ratings and frequency of email and IM use were r = .25 ($p < .05$) and r = .31 ($p < .01$), respectively. Furthermore, employee email and IM use was strongly related to frequency of email use by one's supervisor (r = .58, $p < .001$) and IM use by one's supervisor (r = .50, $p < .001$).

Finally, findings from Mazmanian et al.'s (2006) qualitative study of BlackBerry use further suggested that the expectations of colleagues had an impact on individual use. The communication behavior of senior employees, in particular, appeared to influence the behavior of their junior colleagues, who wanted to "make a good impression on superiors" by responding to messages in an almost instantaneous fashion. Findings revealed that norms about checking email quickly developed after Blackberries were introduced to the organization (Mazmanian et al., 2006). These results provide further support that subjective norms about connectivity may develop within an organization. According to Feldman (1984), "norms are formed and enforced only with respect to behaviors that have some significance for the group" (p. 47). Thus, organization members' perceptions that they should be reachable throughout the day and evening may likely influence CB. I therefore predict that subjective norms about connectivity are positively related to an organization member's CB.

Hypothesis 2a: Subjective norms about connectivity are positively related to an organization member's CB.

In addition to subjective norms about connectivity, the literature suggests that image (i.e., the degree to which use of an innovation is perceived to enhance one's status in the social system; Moore & Benbasat, 1991) may also influence CB. For the purposes of this study, I specifically focus on image as it relates to the use of a WED (e.g., BlackBerries, Treos, iPhones). As noted in the Mazmanian et al. (2006) study, junior colleagues felt that using their BlackBerries would "make a good impression on superiors." It is likely that these employees felt that using the BlackBerries improved their status, or image, within the organization. I therefore predict that image related to WED usage is positively related to an organization member's CB.

Hypothesis 2b: Image related to WED usage is positively related to an organization member's CB.

To summarize, I reviewed situational factors related to one's job environment that correlate with CB. Specifically, I predicted that the distribution of WEDs, mobile phones and laptops by organizations are positively related to CB. I also predicted that social influence from referent others is positively related to CB, in the form of both subjective norms about connectivity and image related to WED usage. Next, I discuss factors related to individual differences that may correlate with CB.

INDIVIDUAL CORRELATES OF CB

MIS research has shown that factors influencing intention to use information systems may vary among individuals (Harrison & Rainer, 1992; Legris, Ingham, & Collerette, 2003; Lu, Yao & Yu, 2005; Zmud, 1979). The proposed definition of CB (the use of TMC devices to engage with work or work-related colleagues during non-work time) assumes integration, or blurring, of work and non-work time. Thus, it is important to examine individual differences that reflect orientations around time and work. Specifically, I discuss the literature on polychronicity and role segmentation-integration preference. In addition, a large body of work in the personnel psychology literature supports the belief that long-term dispositional traits influence individuals' behavior in work settings (Mount & Barrick, 1998). I therefore examine whether particular personality traits relate to CB. I discuss both the role of higher-level personality factors (e.g., conscientiousness, extraversion, neuroticism) as well as personality traits that are specifically relevant to IT usage (e.g., personal innovativeness with information technology [PIIT]).

Polychronicity

Hall (1959), an anthropologist, first introduced the term polychronicity and defined it as the extent to which people in a culture prefer to be engaged in two or more tasks or events simultaneously. Bluedorn, Kaufman, and Lane (1992) examined polychronicity at the individual level, and noted that – similar to other psychological constructs – individuals may fall along a continuum from very monochronic to very

polychronic. Studies have shown that individuals vary in their preference for polychronicity (Bluedorn, Kalliath, Strube, & Martin, 1999; Conte, Rizzuto, & Steiner, 1999; Cotte & Ratneshwar, 1999; Kaufman, Lane & Lindquist, 1991; Persing, 1999). Cotte and Ratneshwar (1999) found that polychronics believe it is appropriate to interrupt a meeting with a colleague to flag down someone in the hallway to ask for verbal reports on different projects. Persing (1999) examined polychronicity among biochemists and found that polychronics preferred to run two experiments together, while simultaneously reading a journal and checking email. Monochronics preferred working on one project, without interruptions, until it is completed.

Polychronicity is particularly suited to the study of communications technology, and organizational and MIS researchers have adopted the term to represent one's preference for multi-tasking. Polychronic communication represents the "managing of multiple conversations at once within a given time period" (Turner & Tinsley, 2002). Research has shown that polychronicity can relate to outcomes such as role overload and overlap of work and non-work (cf. Benabou, 1999; Kaufman et al., 1991). One of the reasons for this may be that new forms of communications technology, such as email and IM, are not necessarily used as a replacement for other communication media, but as an additional method for reaching others (Cameron & Webster, 2005; Kraut & Attewell, 1997). Therefore, contemporary workers may use multiple technologies *concurrently* to interact with various colleagues and/or clients at the same time. For example, individuals can be on the phone, responding to email on their BlackBerry, receiving instant messages, and engaging in a face-to-face conversation all at once (Rennecker & Godwin, 2003).

Bluedorn et al. (1999) developed the Inventory of Polychronic Values (IPV) to measure one's preference for polychronicity. They initially based the IPV on Kaufman et al.'s (1991) Polychronic Attitudes Index (PAI), a four-item scale that reported somewhat poor reliability (alpha coefficient of .68). Bluedorn et al. first modified several of the items from the PAI, and developed two new items. They tested the six-item scale with a sample of 205 bank employees, and found that five of the six items loaded on a single factor (all five loadings > .60) that explained 49.3% of the variance. These five items produced an alpha coefficient of .74 (Bluedorn et al., 1999). To further improve the scale, Bluedorn et al. developed seven additional items and administered the revised 12-item scale to a sample of 115 senior business majors. Ten of the twelve items (including all five from the first sample) loaded on a single factor (all ten loadings > .55) that explained 45.6% of the variance and produced an alpha coefficient of .86. Bluedorn et al. (1999) then administered the ten-item IPV to four additional samples to assess the test-retest reliability of the scale. Results were as follows: immediate test-retest, r = .95; one-week interval, r = .82; two-week interval, r =.89; and four-week interval, r = .78. These samples provided eight further alpha coefficients (two per sample), which ranged from .76 – .93 (only one of the eight alphas was < .80).

Bluedorn et al. (1999) tested the content adequacy and construct validity of the IPV among five additional samples (N = 1,484). Content adequacy was tested using the quantitative Q-method approach developed by Schriesheim, Powers, Scandura, Gardiner and Lankau (1993). Judges completed a questionnaire with three subscales, the IPV and two scales from Schriber and Gutek's (1987) time dimensions at work: schedules-and-deadlines and punctuality. They were also presented a definition of a construct, and asked

to rate each item according to how much it refers to each particular definition. Results strongly supported the content adequacy of the IPV (Bluedorn et al., 1999). In addition, data from confirmatory factor analyses supported the discriminant and convergent validities of IPV.

Conte et al. (1999) performed two separate studies to further support the construct validity of polychronicity. In the first study, a multitrait-multimethod design was used to assess the relationship between individuals' stated polychronicity preferences and peer ratings of polychronicity. Results provided initial evidence that participants and their chosen peers (who knew them for at least one year) were able to agree on the participants' polychronicity levels (N = 161 pairs). In addition, raters were able to discriminate between polychronicity and two potentially related subcomponents of the Type A Behavior Pattern (achievement striving and impatience/irritability). In the second study, Conte et al. performed a cross structure analysis and assessed whether polychronicity would be linked with potentially related variables, such as time urgency and time management behavior. Using a sample of American (N = 209) and French (N = 68) undergraduate students, results suggested that polychronic individuals tend to be less aware of time and do less scheduling than those less polychronic. Also, polychronicity was negatively associated with a preference for organization, consistent with prior research (Conte et al., 1999).

In a recent study, Turner et al. (2006) found that polychronic individuals were more able to adapt to the communication environment of their organization, with regard to email and instant messaging, than less polychronic colleagues. For example, high polychronics were likely to mix different media (e.g., IM, email and phone) but low

polychronics (i.e., monochronics) would only engage in multiple conversations if they all involved the same media (e.g., IM). Furthermore, Benabou (1999) found that polychronic individuals perceived the world in a less compartmentalized fashion than their monochronic counterparts, and were more likely to overlap work and leisure time. In the current paper, I define CB as an organization member's use of TMC devices to engage with work or work-related colleagues during non-work time. As such, individuals engaging in CB may be able to perform two or more tasks at the same time (e.g., checking emails on a BlackBerry while watching a child's soccer game) or even use two or more TMC devices at the same time (e.g., looking for a file on a laptop while responding to an email on a WED). Therefore, I predict that polychronicity is positively related to CB.

Hypothesis 3: For organizational members, polychronicity is positively related to CB.

Role Segmentation-Integration Preference

Prior research has found that a given pair of roles (e.g., manager and parent) can be arrayed along a continuum from high segmentation to high integration (Ashforth, Kreiner and Fugate; 2000). Furthermore, individuals differ in the degree to which they prefer to segment or integrate their work and home roles (Edwards & Rothbard, 1999). Segmentation refers to the separation, whereas integration refers to the overlap between work and nonwork time, artifacts and activities (Nippert-Eng, 1996). For example, roles that are highly segmented permit few cross-role interruptions (i.e., impermeable

boundary) and are tied to specific settings and times (i.e., inflexible). In contrast, roles that are highly integrated allow cross-role interruptions (i.e., permeable boundary) and are not tied to specific settings and times (i.e., flexible). The primary benefit of segmentation is that it reduces the blurring between roles (Ashforth et al., 2000). Work-family blurring, or integration, is defined by Desrochers, Hilton and Larwood (2005) as, "a subjective, cognitive phenomenon involving perceived integration of work life and home life that is situated in a highly interdependent work-family context such as … when people bring their paid work into the home."

Ashforth et al. (2000) suggested that "highly segmented roles tend to be relatively impermeable." Even with highly segmented roles, however, communication tools exist that may increase the chances for permeability. Permeability is defined as the degree to which a role allows one to be physically located in the role's domain, but psychologically and/or behaviorally involved in another role (Ashforth et al, 2000). Mental health professionals have reported that the intrusion of mobile email gadgets into family life is a growing topic of discussion in therapy (Rosman, 2006). In a qualitative study, Mazmanian et al. (2006) reported that BlackBerry users were unable to disengage from the workplace, since during time spent at home there was still a compulsion to check messages, making it difficult to know when the workday ended. Allen and Shoard (2005) examined BlackBerry use among a group of UK police officers, and found they also reported a blurring between work and family time. Earlier research on teleworkers identified a similar pattern. Hill, Hawkins and Miller (1996) surveyed both mobile teleworkers and office workers from the same organization, and found that although

teleworkers reported greater work flexibility, they had a more difficult time balancing work and personal/home life than non-teleworkers.

A distinction is made between actual *role* segmentation and integration as a characteristic of one's job, versus an individual's *preference* for segmentation and integration. Edwards and Rothbard (1999) empirically examined the fit between an individual's *preference* for role segmentation and the boundary characteristics of one's job among a large sample (N = 1,758) of university employees. They measured role segmentation preference using a four-item scale adapted from the detachment measure of the Work Aspect Preference Scale (Pryor, 1983). Participants were asked to assess what they valued (i.e., acceptable amount of segmentation) and what their jobs supplied (i.e., actual amount). Cronbach alphas were .77 for the value measure and .72 for the supply measure. The findings revealed that participants differed in their preference for role segmentation. Further, employees' psychological well-being was predicted by how much segmentation they preferred as well as by the fit between that which they preferred and what they actually experienced.

Researchers have attempted to create and validate a scale to effectively measure role segmentation-integration preference. Clark (2002) conducted interviews and focus groups with individuals who had full-time employment and significant family responsibilities to identify instances of cross-role communication, permeability, and flexibility between domains. From this qualitative research, she developed and tested a questionnaire to assess communication with work associates about family, communication with family about work, permeability and flexibility of borders around

work, and permeability and flexibility of borders around family. Internal consistency reliabilities for the scales varied from .75 - .89.

Desrochers et al. (2005) created the work-family integration and blurring scale (WFIBS) to measure role integration as a characteristic of one's job. The scale contains three items: "It is often difficult to tell where my work life ends and my family life begins," "I tend to integrate my work and family duties when I work at home," and "In my life, there is a clear boundary between my career and my role as a parent" (reverse coded). They tested the scale using a sample of 100 business professors with preadolescent children from private and public universities in the United States. Factor analysis produced one factor with an eigenvalue of 1.98 that accounted for 65.9% of the scale variance, but the alpha coefficient was only .73. Results also revealed a significant large correlation between role integration and self-reported hours spent on the computer at home ($r = .50$, $p < .01$). Although the sample population limits the generalizabilty to non-academic settings, the data suggests that there is a strong relationship between role integration and non-work technology use behavior.

Olson-Buchanan and Boswell (2006) were among the first researchers to examine whether one's preference for role integration relates to the use of communication technologies during non-work time. Survey data were collected from the non-academic staff (e.g., administrative, clerical and computer support, $N = 360$) of a public university. Role segmentation-integration preference was assessed on two aspects (e.g., permeability of boundaries and role-referencing) and along two directions (e.g., work to non-work and non-work to work). Findings revealed that individuals who reported a preference for *higher* work to non-work integration reported setting *fewer* boundaries for using

communication technologies during non-work time. The correlation between setting boundaries (e.g., "I do not use communication technologies for work purposes on weekends") and preference for work to non-work permeability was $r = -.34$ ($p < .01$), and for work to non-work role-referencing was r -.24 ($p < .01$). This suggests that individuals who prefer role segmentation are more likely to restrict their use of communication technologies to the work domain, and individuals who prefer role integration are less likely to establish those boundaries. I therefore predict that role integration preference is positively related to CB.

> *Hypothesis 4*: For organizational members, role integration preference is positively related to CB.

Personality

Personality traits are enduring characteristics that provide a person with a predisposition to behave in a certain way (Robertson & Callinan, 1998). There are thousands of personality characteristics that can be used to distinguish people from one another (Ones, Viswesvaran, & Dilchert, 2005), but there is now common consensus that five general factors underlie the traits of most personality inventories (Barrick and Mount, 1991; Goldberg, 1992; 1993). The so-called "Big Five" model consists of five over-arching factors of personality, each factor representing a group of personality characteristics: Conscientiousness, Neuroticism, Openness, Agreeableness, and Extraversion. Evidence suggests that the Big Five global dimensions transcend individual differences in age, sex, and race, and may have a biological basis (Costa & McCrae,

1992). Barrick and Mount (1991) used meta-analysis to investigate the relation of these five factors to three job performance criteria, and found variations in relationships. Conscientiousness, in particular, showed consistent positive relations with all the job performance criteria, for all occupational groups studied. Results supported the belief that individuals do have long-term dispositional traits that are relatively enduring, and that influence their behavior in work settings (Mount & Barrick, 1998).

The structure of the Big Five is hierarchical, with each meta-trait described by narrow, specific traits (Costa & McCrae, 1995). At the lowest level are individual responses to test items. Items that cluster together are indicators of specific subdimensions or facets. These facets, in turn, combine to define the five personality factors (Ones et al., 2005). For example, Extraversion is a broad factor that encompasses subdimensions such as sociability, energy, and assertiveness (Ones et al., 2005). There is often a tradeoff in research between using the broad traits to measure basic relationships, versus using more specific subfactors. Since a goal of the current paper is to explore new relationships, I adopt both approaches. First, I examine the relationship between CB and conscientiousness, extraversion and neuroticism. Second, I examine the relationship between CB and a lower-level personality trait specifically related to IT usage: PIIT.

Conscientiousness. Conscientious individuals have been described as dependable, responsible, persistent, goal directed and organized (Mount and Barrick, 1998). They have a strong sense of purpose and high aspiration levels (Costa & McCrae, 1992). This facet of personality appears to represent traits that are important to the accomplishment of work tasks across most jobs (Barrick & Mount, 1991). A conscientious individual who is dependable and hard-working may feel responsible to monitor work emails during

evenings, weekends and even vacations. They also may be more likely to respond to TMIs from the workplace during non-work time.

Extraversion. Extraverted individuals are described as sociable, talkative, assertive and ambitious (Barrick & Mount, 1991). This factor is associated with activity and excitement seeking (McCrae & John, 1992). In their meta-analysis of personality factors and job performance, Barrick and Mount (1991) found that extraversion was a valid predictor of performance for managers and salespeople, where interaction with others represents a significant portion of the job. It is likely that in this new electronic era, those extraverted individuals may be more likely to use MCT to communicate and interact with work colleagues.

Neuroticism. Neurotics are described as having irrational perfectionist beliefs, low self-esteem, and pessimistic attitudes (Costa & McCrae, 1992). Common traits associated with neuroticism include being anxious, depressed, worried and insecure (Barrick & Mount, 1991). A neurotic individual may also be more likely to use TMC to engage with the workplace, but for different reasons than the conscientious or extraverted person. Neurotics might be motivated by a need to be perfect or to reduce their anxiety about work. They are more likely to engage in addictive behaviors. For example, among a large sample of Norwegian healthcare employees (N = 496), Burke, Matthiesen and Pallesen (2006) found that neuroticism was strongly correlated ($r = .36$, $p < .001$) with the "Feeling driven to work" component of workaholism. Thus, neurotic individuals may also be likely to engage in CB, as their anxious nature may lead to a compulsion to monitor incoming messages at all hours of the day.

Despite the widespread application of the Big Five personality traits to personnel psychology literature, the model has rarely been used in MIS research. Researchers have recently examined the relationship between the Big Five factors and technophobia (cf. Anthony, Clarke, & Anderson, 2000; Korunkonda, 2005, 2007), but not usage or adoption. I use this study as an opportunity to explore the relationship between three Big Five factors – conscientiousness, extraversion and neuroticism – and technology usage behavior. I propose that these traits are positively related to CB.

Hypothesis 5: For organization members, (5a) Conscientiousness, (5b) Extraversion and (5c) Neuroticism are positively related to CB.

I next assess a lower-level personality trait that is specifically relevant to IT usage and adoption: PIIT.

Personal Innovativeness with Information Technology (*PIIT*). PIIT is defined by Agarwal and Prasad (1998, p. 206) as a personality trait that represents "the willingness of an individual to try out any new information technology." This definition is derived from research on consumer innovativeness found within the marketing literature (cf., Midgley & Dowling, 1978; Flynn & Goldsmith, 1993). Agarwal and Prasad theorized that individuals with higher levels of PIIT would have more positive intentions toward the use of a new IT or system. They developed a measure for PIIT based on Goldsmith and Hofacker's (1991) measure of consumer innovativeness, which had exhibited high reliability and validity and was further validated in another study (cf. Flynn & Goldsmith,

1993). A sample item for the PIIT measure is, "I like to experiment with new information technologies." Agarwal and Prasad validated the scale by examining Internet use among a sample of business professionals (N = 175) enrolled in a part-time MBA program. They performed exploratory and then confirmatory factor analyses on the PIIT scale with Webster and Martocchio's (1992) Computer Playfulness Scale. Cronbach's alpha for the scale was .84, and data suggested good convergent and discriminant validities.

MIS researchers have begun to examine PIIT as an important predictor of technology adoption and use (Jones, Sundaram, & Chin, 2002; Lewis, Agarwal & Sambamurthy, 2003; Lu et al., 2005). Jones et al. (2002) studied the relationship between PIIT and use of a new sales force automation system among a sample of salespeople working for a Fortune 500 insurance company (N = 164 at T1, 85 at T2). Survey data revealed that PIIT (measured pre-implementation) was significantly related to use of the new system ($r = .52$, $p < .01$) and perceived ease of use ($r = .72$, $p < .01$), measured 6 months post implementation.

Lewis et al. (2003) studied the adoption of Internet teaching strategies among faculty at a large, public university (N = 161). They used Agarwal and Prasad's (1998) measure of PIIT ($\alpha = .90$) and found it to be significantly related to perceived usefulness ($r = .53$, $p < .01$) and perceived ease of use ($r = .48$, $p < .01$) of the web technology. Finally, Lu et al. (2005) investigated college students' (N = 377) intention to adopt wireless Internet technology services, and also found that the measure of PIIT ($\alpha = .82$) was strongly related to perceived usefulness ($r = .474$, $p < .001$) and perceived ease of use ($r = .457$, $p < .001$). These studies suggest that there may be a positive relationship

between PIIT and CB, since individuals who are more willing to try out new technologies may be more comfortable communicating via TMC devices.

Hypothesis 6: For organization members, PIIT is positively related to CB.

To conclude, in this chapter I began to develop a model of CB, defined as organizational member's use of TMC devices to engage with work or work-related colleagues during non-work time. First, I examined situational factors related to one's job environment that I predicted to correlate with CB. Second, I discussed how individual differences related to orientations around time (e.g., polychronicity and role segmentation-integration preference), personality (e.g., Conscientiousness, Extraversion, Neuroticism, PIIT) may correlate with CB. In the next chapter, I offer hypotheses regarding the relationship between CB and perceptions of job control, psychological detachment from work, and psychological well-being.

CHAPTER 3

The purpose of this chapter is to discuss the relationship between CB and perceptions of job control and psychological detachment from work, as well as psychological well-being. First, I discuss the literature on COR (Hobfoll, 1988, 1989, 2001), which provides the theoretical foundation for the proposed relationships. I highlight empirical research that has been performed in various disciplines to develop and validate the theory, and then review the literature that is particularly relevant to the study of CB. Second, I address the recent literature on TMI to assess whether there are potential moderators to the proposed relationships. I present hypotheses throughout the chapter.

Conservations of Resources Theory

COR theory (Hobfoll, 1988, 1989, 2001) is based on the central tenet that people strive to obtain, build, and protect that which they value (e.g., resources), and psychological stress occurs when resources are lost, threatened with loss, or if individuals fail to replenish resources after significant investment. Although COR was initially presented as a model to understand the stress process, it has grown into a theory of motivation (Westman, Hobfoll, Chen, Davidson, & Laski, 2005). Resources may be objects (e.g., home, car), personal characteristics (e.g., positive outlook), conditions (e.g., good marriage, financial security) and energies (e.g., time, knowledge) (Hobfoll, 1989).

A cycle develops where resources are constantly used and replenished, and an individual must learn to manage this process within their environment.

Much of the initial literature on COR was based on intervention research related to community psychology (cf. Hobfoll & Leiberman, 1987; Hobfoll & Lerman, 1988; Hobfoll & Lilly, 1993) and response to war and natural disasters (cf. Hobfoll, London & Orr, 1988; Freedy et al., 1992). In the mid-1990's, scholars began to use COR to understand the process of burnout and stress in organizational settings (Hobfoll & Freedy, 1993; Freedy & Hobfoll, 1994; Lee & Ashforth, 1996; Wright & Cropanzano, 1998; Taris, Schreurs, & Van Iersel-Van Silfhout, 2001). According to Hobfoll and Freedy (1993), job demands threaten one's resources, and over time, prolonged exposure to such demands results in strain in the form of emotional exhaustion, a core dimension of burnout. People attempt to minimize net resource losses, but in a work setting, the rate at which work demands use up employee resources is typically greater than the rate the resources are replenished, and "loss spirals" develop (Freedy & Hobfoll, 1994). Thus, one might visualize a loss spiral as a leaky bucket that constantly needs to be refilled, but the water pours out at a faster rate than it is filled.

Hobfoll (1989, 2001) proposed two important principles of the COR model. The first is that "resource loss is disproportionately more salient than resource gain" (Hobfoll, 2001, p 343). This proposition is initially based on findings in the psychology literature, whereby other things being equal, negative events appear to elicit more physiological, cognitive, affective and behavioral responses than neutral or positive events (Taylor, 1991). It also consistent with Kahneman and Tversky's (1979) prospect theory, which predicts that individuals assign value to outcomes as gains or losses relative to a neutral

reference point, but losses are expected to "loom larger than gains" (p 288). The second major principle of COR emphasizes the importance of resource investment. Hobfoll (2001) proposed, "people must invest resources in order to protect against resource loss, recover from losses, and gain resources" (p 349). Furthermore, those with greater resources are more capable of resource gain and those with limited or less resources are more susceptible to resource loss (Hobfoll, 2001; Hobfoll & Lilly, 1993).

Resource Loss versus Gain

The saliency of resource loss over resource gain has been supported by several empirical studies within community psychology (Freedy, Shaw, Jarrel, & Master, 1992; Hobfoll & Lilly, 1993; Ironson, Wynings, Schneiderman, Baum, Rodriguez, Greenwood et al., 1997). Hobfoll and Lilly (1993) investigated the relationship between resource loss or gain with psychological distress among a sample of undergraduate students and community residents. Participants were asked to rate the recent losses and gains they experienced during the last few weeks, as well as during the past year, using the Conservation of Resources Evaluation (COR-Evaluation) measure, a list of 74 resources (e.g., sense of humor, time for adequate sleep, financial assets) similar to a life events scale. Psychological distress was measured via the State Trait Anxiety Indicator (STAI, Spielberger, Gorsuch, & Lushene, 1970) and Beck Depression Scale (Beck, Ward, Mendelson, Mock & Erbaugh, 1961). Results supported the principle that both recall of recent resource loss and losses in the past year were more predictive of psychological distress compared to recall of resource gains (Hobfoll & Lilly, 1993). Furthermore, after the contribution of loss was removed, resource gains did result in less psychological

distress. While these findings were based on self-reported recollections of resource gains and losses, they provided some support that resource loss was significantly related to psychological distress, and resource gains were secondary to losses.

Two additional studies of hurricane disaster victims (Freedy et al., 1992; Ironson et al., 1997) provided further evidence supporting the importance of resource loss on assessing psychological distress. Freedy et al. (1992) studied Hurricane Hugo disaster victims and found that loss of resources was more critical in determining psychological distress ($r = .64$, $p < .01$) than were coping responses or personal characteristics of the victims. Ironson et al. (1997) performed a similar study of victims of Hurricane Andrew, and found that resource loss was the best predictor of post-traumatic stress disorder and general psychological distress. The benefit of these studies is that they clearly separate the cause of stress (e.g., hurricane) from the effects. Although Hobfoll, London and Orr (1988) advocated the importance of performing studies on real stressful life events (e.g., cancer, natural disaster, war), it is not always practical for researchers to do so. Furthermore, stress often results from chronic daily hassles (Davidson, Eden, & Westman, 2004; Eden, 1990).

COR in the Workplace

Evidence for the diminishing effect of resource gains over chronic resource loss has also been found in several empirical studies that focused on the effects of job demands and resources on burnout (Lee & Ashforth, 1996; Wright & Cropanzano, 1998; Taris et al., 2001). Lee and Ashforth (1996) performed a meta-analysis that examined the demand and resource correlates of the three dimensions of job burnout: emotional

exhaustion, depersonalization, and diminished personal accomplishment. Demand correlates included variables such as role ambiguity, role conflict, workload, and work pressure. Resource correlates included support variables (e.g., supervisor and coworker support) and job enhancement opportunities. Demand and resource correlates were more strongly related to the emotional exhaustion dimension than to depersonalization or personal accomplishment, and demand correlates were more strongly related to emotional exhaustion than the resource correlates (Lee & Ashforth, 1996). For example, five of eight demand correlates had individually corrected weighted mean correlations greater than or equal to $r = .50$ ($p < .05$) with emotional exhaustion. In contrast, only three of eight resource correlates had individually corrected weighted mean correlations greater than $r = -.30$ ($p < .05$) with emotional exhaustion. This meta-analysis supported the conservation of resources model of burnout by providing empirical support that individuals may be more susceptible to chronic resource demands than resource gains, and over time these demands may lead to emotional exhaustion.

Wright and Cropanzano (1998) applied COR to investigate the relationship between emotional exhaustion and job satisfaction, job performance, and voluntary employee turnover. They surveyed a group of social welfare workers twice over a one-year period and found that emotional exhaustion – as measured via the Maslach Burnout Inventory (Maslach & Jackson, 1986) – was negatively related to job performance ($r = -.27$, $p < .05$) and positively related to voluntary turnover ($r = .34$, $p < .01$). The data suggested that emotionally exhausted employees exhibit diminished job performance and eventually quit their jobs. The authors proposed that emotionally exhausted employees, without the ability to increase resources via outside help or intervention, coped by

attempting to minimize any further resource loss, and therefore engaged in withdrawal behavior (Wright & Cropanzano, 1998). A problem with this conclusion is that the researchers did not measure any variables that would be reflective of resource gains, such as supervisor or coworker support. Thus, we don't know for sure whether employees who left the company were deficient in these resource categories.

Taris et al. (2001) performed a similar study among a sample of Dutch university staff. Using cross-sectional survey data, the researchers examined the antecedents of job strain (e.g., emotional exhaustion) and withdrawal behavior. As an improvement over Wright and Cropanzano's (1998) study, however, they included a measure of decision latitude as a job resource, as well as measures of job demands (e.g., time pressure, relationship with students). Results revealed that job resources and job demands were differentially related to strain and withdrawal behavior. Specifically, the effects of job demands were most prominent for the strains (e.g., exhaustion, mental health complaints) and the effects of job resources were most prominent with withdrawal behaviors (e.g., lack of commitment, cynicism, turnover intentions). The authors concluded that high occupational stress leads to elevated levels of strain, which eventually leads to psychological (e.g., depersonalization) and actual withdrawal behavior (e.g., turnover) if individuals are unable to re-build their resources.

Recent research has applied COR theory to explain the positive benefits of time away from work. Interrupting "loss spirals" and instituting "gain spirals" may be the most effective course for preventing stress (Eden, 2001). A gain spiral could occur any time when resources are replenished, which is more likely to occur during time away from work. Westman and Eden (1997) measured stress and burnout before, during and after

vacation among a group of clerical employees. Results showed substantial declines in burnout during the vacation, but a return to pre-vacation levels within three weeks after returning to work. Westman and Etzion (2001) obtained similar findings in vacation studies that also examined attendance and performance as dependent variables. Data collected immediately after vacation showed substantial declines in self-reported stress and burnout, and an increase in self-reported performance. A month later, however, these returned to pre-vacation levels. Other respite studies have examined time away from work due to computer shutdowns (Caplan & Jones, 1975; Eden, 1990), military reserve service (Etzion, Eden & Lapidot, 1998), business trips (Westman & Etzion, 2002), and sabbaticals (Davidson et al., 2004). The results consistently point to the restorative benefit of time away from work. Thus, getting away from the sources of stress, or reducing exposure to stressors, promotes recovery from stress-generated strain, but no matter how long the respite – whether a weekend or year-long sabbatical – employees may ultimately return to pre-respite stress levels (Eden, 2001). The data suggest, however, that respites may be a necessary means for individuals to build up resources that aid in stress resistance.

To summarize, COR was initially presented as a model to understand the stress process, and has grown into a theory of motivation (Westman et al., 2005). It is based on the belief that individuals seek to obtain, build and protect their resources. The theory helps to explain the processes of burnout, as well as the ameliorative effects of time away from work (i.e., away from stressors). COR allows for the examination of resource gains and losses independently, which helps to dissect and better understand the antecedents of stress-generated strain. COR has been applied to a variety of settings, including

community psychology, disaster research, and organizational research. Furthermore, the theory has been tested across many different cultures, including (but not limited to) China, Germany, Hong Kong, Israel, Mexico, the Netherlands, Singapore and the United States.

COR and CB

I use the COR model (Hobfoll, 1988, 1989, 2001) to examine potential outcomes of CB. COR proposes that people are motivated to obtain, build, foster and protect that which they value (e.g., resources). Resources include objects, conditions, energies, and personal characteristics. The latter two are especially relevant for the study of CB. Specifically, energies include resources such as time and information. Energies are valued because they allow individuals to acquire other resources (Hobfoll, 1989). Personal characteristics (e.g., perceived control) may also be resources if they aid in stress resistance (Hobfoll, 1989). For example, studies have shown that control is an important factor in determining health and well-being (cf. Bond & Bunce, 2003; Ganster, Fox, & Dwyer, 2001; Karasek, 1979). Applying this framework to CB, I predict that individuals may be motivated to remain virtually connected to the workplace because it helps them to build or conserve important resources related to their jobs, such as perceived job control. At the same time, a potential downside of CB is that it enables a constant connection to the organization, which may impede one's ability to psychologically detach from work. I predict that the combination of resource gains with resource losses has an overall negative affect on employee well-being.

Perceived Job Control

Two recent qualitative studies investigated the use of wireless email devices in very different organizational settings: a UK police department (Allen & Shoard, 2005) and a small, U.S. private-equity firm (Mazmanian et al., 2006). Results from these studies provide valuable insight into the behavior patterns and attitudes of "connected" employees, and I use this data to provide evidence for the relationship between CB and perceived job control.

Allen and Shoard (2005) examined BlackBerry use among senior officers in the West Yorkshire, UK, Police Force, who used the wireless networking devices primarily for sending and receiving emails. Most officers cited email as the primary cause of information overload within the organization, but they did not feel that the volume of messages changed after introduction of the BlackBerries. The technology devices enabled the officers to "spread the load" and respond to messages at all times of the day, helping to ease peak workload cycles and thus reduce feelings of overload. The officers therefore experienced control over the incoming messages – they could read them on their own time. Mazmanian et al. (2006) conducted a similar study of BlackBerry use among a small, U.S. private-equity firm and found comparable behavioral trends. Data from face-to-face, semi-structured interviews revealed that the ability to monitor incoming messages provided information workers with a "sense of control."

Greenberger and Strasser (1986) suggested that individuals are motivated to seek control over their environment. They defined "personal control" as a psychological construct that reflects an individual's beliefs about his or her ability to change the environment. It is differentiated from locus of control (Rotter, 1966) because it is not

considered a stable personality trait, since perceptions of control can change over time (Greenberger & Strasster, 1986). Karasek (1979, p 289-90) conceptualized control as job decision latitude, and defined it as, "… the working individual's potential control over his tasks and his conduct during the working day." Ganster (1989) further refined the definition of perceived job control to "the perceived ability to exert some influence over one's work environment in order to make it more rewarding and less threatening." Perceived job control has been heavily researched in two popular areas: job redesign (cf. Hackman & Oldham, 1976) and participative decision-making (cf. Jackson, 1983). A meta-analysis by Spector (1986) found that high levels of perceived control were associated with increased general job satisfaction (adjusted $r = .38$, $p < .05$), decreased physical symptoms (adjusted $r = -.34$, $p < .05$) and decreased emotional distress (adjusted $r = -.32$, $p < .05$).

Perrewe and Ganster (1989) noted that feelings of job control may result from different types of control experienced in the workplace (e.g., informational control). TMC devices allow users to control the flow of information within their work and leisure environments. Mintzberg (1973) noted that a manager is "continually seeking, and being bombarded with, information that enables him to understand what is taking place in his organization and its environment" (p 67). Today's organization members must sort through the communication data, identify what is most important and disseminate the information to others. Advancements in communications technology have allowed information to be produced more quickly and disseminated to a wider audience than ever before (Speier, Valacich, & Vessey, 1999). If an individual receives one email every five minutes, this adds up to over 100 emails to review during one 9-hour workday, excluding

IM communication. It becomes virtually impossible to monitor this communication flow and also complete one's required work in a given day. Therefore, organization members who have access to technology that enables them to review these messages during the commute home, or during the evenings, may experience greater perceptions of job control.

A recent study by Kossek, Lautsch, and Eaton (2006) examined perceived job control as it relates to "individual perceptions of one's personal freedom to control where, when, and how one did one's job" (p. 356). They developed a 7-item psychological job control scale. Three survey items were adapted from the Job Diagnostic Survey (Hackman & Oldham, 1980) to measure job autonomy (e.g., "My job permits me to decide on my own about how to go about doing the work"). The remaining four items were constructed by Kossek et al. to "capture the newer forms of flexibility that professionals have as noted in the work and family literature" (p. 356), such as control over work location and scheduling. The scale was tested among a large sample (N=245) of professional employees from two information and financial services organizations (α = .74). They found that individuals who were technologically wired to have access to internal company networks from home reported greater job control (r = .31, $p < .001$). I therefore predict that CB is positively related to perceived job control.

Hypothesis 7: For organization members, CB is positively related to perceived job control.

Psychological Detachment from Work

Etzion et al. (1998) first used the term psychological detachment from work (PDFW) to represent "an individual's sense of being away from the work situation" (p 579). PDFW implies not being occupied by work-related duties (e.g, receiving job-related phone calls at home) during non-work time (Sonnentag & Fritz, 2007). Respite research has consistently found that time away from work provides a restorative benefit by promoting recovery from stress-generated strain (Caplan & Jones, 1975; Davidson et al., 2004; Eden, 1990; Etzion et al., 1998; Westman & Eden, 1997; Westman & Etzion, 2001, 2002). According to COR, in the absence of chronic work demands, individuals are able to develop resource surpluses that promote well-being (Hobfoll, 1989, 2001). Studies have also shown that how one spends time away from work affects employees' ability to psychologically detach from work (Fritz & Sonnentag, 2005; Sonnentag, 2001; Sonnentag & Bayer, 2005).

Etzion et al. (1998) initially measured PDFW in a study of army reservists to assess the ameliorative effects of being away from work. Questionnaire data was collected shortly before the reservists left work for a stint of service, and immediately upon their return. Data was also collected from a matched control in the same company who was not called away during that time (N = 81 matched pairs). PDFW was measured with a 6-item scale ($\alpha = .76$). Questions assessed amount of contact with the workplace during reserve service (e.g., visits, phone calls), thinking about the primary job during reserve service, and similarity of activities between primary job and reserve service. Results revealed a significant decline in job stress and burnout among those who served, and no change among the control participants. Among those who served, the degree of

psychological detachment from work moderated the respite effect, such that those who reported greater detachment achieved greater declines in job stress and burnout.

A respite alone may not relieve stress if one spends the time thinking about work or engaged in work activities. A study by Sonnentag (2001) showed that *how* employees spend their time during a respite may influence its ameliorative effects. She obtained survey data and diary entries from a group of Dutch school teachers. Participants who engaged in work-related activities during their evening off-hours reported higher strain before going to sleep. In contrast, those who engaged in social, physical (e.g., sports or dancing), or low-effort (e.g., watching TV or taking a bath) activities reported less strain (Sonnentag, 2001). Engaging in work-related activities was negatively related to well-being at bedtime (r = -.22, $p < .05$), whereas engaging in low-effort activities was positively related to well-being (r = .21, $p < .05$). Fritz and Sonnentag (2005) extended this research to weekend experiences. They surveyed a group of emergency medical services workers in different German cities about their weekend experiences, assessing non-work hassles (e.g., conflict with partner, work at home), social activity, and positive work reflection (e.g., thinking about positive aspects of one's job). Data suggested that low social activity, absence of positive work reflection and non-work hassles during the weekend predicted burnout and poor general well-being.

Sonnentag and Fritz (2007) recently developed and validated a PDFW measure, as part of an overall scale to assess recovery experience (e.g., how individuals unwind and recuperate during leisure time). Items were generated based on existing literature (cf. Etzion et al., 1998), plus additional brainstorming by the authors. Sonnentag and Fritz then conducted a series of studies that assessed content validity via review by subject

matter experts (N = 16), investigated construct validity via confirmatory factor analysis using survey data from a diverse sample of employees (N = 991), and finally examined the nomological net using additional survey data (N = 271). The final "Recovery Experience Questionnaire" (REQ) includes four factors: PDFW (α = .89), relaxation (α = .87), mastery (α = .82), and control (α = .87). The PDFW subscale includes four items, "I forget about work," "I don't think about work at all," "I distance myself from work," and "I get a break from the demands of work." The authors noted that among the four subscales, detachment from work showed the strongest relations with impaired well-being. For example, PDFW was negatively correlated with emotional exhaustion (r = -.56, $p < .05$) and health complaints (r = -.47, $p < .05$), and positively correlated with emotional stability (r = .30, $p < .05$).

The preceding research has not yet examined the influence of modern communications technology on respite time. Eden (2001, p 187) noted, "an urgent threat to respite relief is the high-tech tethers clamped on respites during their time away from their jobs." Connection to the workplace during non-work time (e.g., evenings, weekends, vacations) is likely to be negatively related to psychological detachment from work. Research suggests that wireless communication devices allow users to "spread the load" and respond to messages at all times of the day, helping to ease peak workload cycles (Allen & Shoard, 2005). This likely means that users are responding during non-work time. Mazmanian et al. (2006) found that when BlackBerries were introduced to an organization, employees developed a "compulsion to check" messages and found it difficult to turn off the device, even while at home. Employees found it difficult to

disengage, resulting in a "life without downtime." Therefore, I predict that CB is negatively related to PDFW.

Hypothesis 8: For organization members, CB is negatively related to PDFW.

Psychological Well-being

Lee and Ashforth's (1996) meta-analysis on the correlates of job burnout found that over time, individuals are more susceptible to chronic resource demands (e.g., work pressure, work load) than resource gains (e.g., job control, autonomy). People attempt to minimize net resource losses, but in a work setting, the rate at which work demands use up employee resources is typically greater than the rate the resources are replenished, and "loss spirals" develop (Freedy & Hobfoll, 1994). As discussed in the previous section, I predict that CB is positively related to job control, but negatively related to psychological detachment from work. According to COR theory, over time the chronic resource demands (e.g., inability to psychologically detach from work) have a greater effect on the individuals than the resource gains (e.g., increased job control), resulting in a negative effect on one's psychological well-being. The current research design, however, does not allow for the specific testing of causal relationships. I therefore predict that both job control and PDFW are positively related to psychological well-being, but the relationship between PDFW (i.e., resource loss) and well-being is stronger than the relationship between job control (i.e., resource gain) and well-being.

Hypothesis 9: For organization members, (9a) job control and (9b) PDFW are positively related to psychological well-being.

Hypothesis 10: For organization members, PDFW is more strongly related to psychological well-being than job control.

To summarize, I have argued that CB is positively related to organization members' perceptions of job control. In contrast, I proposed that CB is negatively related to psychological detachment from work. I also predicted that both job control and psychological detachment from work relate positively to psychological well-being, but the relationship is stronger for PDFW. In the final section of this chapter, I address the literature on TMI, and discuss whether TMI locus of control (TMI-LOC) may moderate the proposed relationships.

Moderator Effects: TI-LOC

Communications technology is often discussed in terms of paradoxes because there may be positive and negative consequences of its usage (cf. Arnold, 2003; Jarvenpaa & Lang, 2005; Kraut, Kiesler, Boneva, Cummings, Helgeson, & Crawford, 2002; Orlikowski, 1991). For example, Jarvenpaa & Lang (2005) noted that permanent connectivity associated with mobile phones empowers people, but at the same time makes it difficult for users to maintain distance from others. Thus, CB may be discussed in similar paradoxical terms. As addressed in the previous section, using TMC devices to remain connected to the workplace may aid in building resources such as job control, but it may also open the door for exposure to workplace demands and interruptions during

non-work time, which negatively influence psychological detachment from work. How one perceives those interruptions may moderate the proposed effects.

An interruption is defined as "a synchronous interaction which is not initiated by the recipient, is unscheduled, and results in the recipient discontinuing their current activity" (O'Conaill & Frohlich, 1995). Advancements in communication technology have increased the number of ways that one person or group can interrupt another (Jett & George, 2003). MIS researchers have begun to investigate the effect of TMI resulting from human-computer interaction (Cameron & Webster, 2005; Cummings, 2004; Czerwinski, Cutrell, & Horvitz, 2000; McFarlane, 2002; Rennecker & Godwin, 2003; Speier et al., 1999; Speier, Vessey, & Valacich, 2003). Results have suggested that the nature (i.e., simple versus complex) and frequency (i.e., low versus high) of TMI have varying effects on performance of a main task in a laboratory setting (Speier et al., 1999; 2003). IM interruptions, in particular, were found to be more disruptive for fast, stimulus driven tasks than for slower, semantic-based tasks (Czerwinski et al., 2000).

In a recent field experiment, Cummings (2004) examined IM use among Navy personnel during a series of "human-in-the-loop" Tomahawk missile simulations. Findings revealed that participants often fixated on the IM queries and ignored the primary assignment of retargeting the missiles, despite being told that missile control was the most important task. Cameron and Webster (2005) investigated the effects of workplace IM use through a series of semi-structured interviews with employees from four separate organizations. Results suggested that employees use IM not only to replace other communication media, but as an additional method for reaching others. Although not specifically addressed as an interview question, over half the subjects mentioned the

disruptive effect of IM on task execution. Those on the receiving end of IM communication described the tool as "unfair." Thus a dilemma of IM was revealed – users valued the tool when they felt in control and initiated the messages, but they disliked it when messages were "pushed" at them and immediate responses were required.

McFarlane (2002) investigated various forms of TMI to determine which is the most optimal for interrupting someone during computer-based multitasking activities. He empirically compared the effects of four types of interruptions on performance of a computer-based multitasking game: immediate interruption (i.e., user needs to respond instantly), negotiated (i.e., user chooses when to respond), mediated (i.e., a third party or intelligent agent determines when to interrupt the user), and scheduled (i.e., users are interrupted at pre-arranged time intervals). Participants worked individually and were interrupted by each of the four means. Results revealed there was no one "best" way to coordinate interruptions, since tradeoffs occurred (McFarlane, 2002). When people were forced to handle interruptions immediately, they completed the interrupted task but made mistakes and were less effective overall. Participants performed better when they could negotiate when to respond. These results suggest that how one manages incoming TMI affects performance-related outcomes.

Prior studies have primarily focused on TMI from the perspective that they affect employee productivity and well-being during working hours, presumably while engaging in a work-related task (Cameron & Webster, 2005; Cummings, 2004; Czerwinski et al., 2000; Rennecker & Godwin, 2003). There is very little research on TMI that are instigated by mobile communication technologies during non-work time, which are likely

to happen if one engages in CB. For example, how would a work-related TMI (e.g., receiving an email from one's boss on a WED) received during non-work activities (e.g., having dinner with friends, watching a child's soccer game, shopping) affect perceptions of job control and PDFW? How one perceives the TMI may moderate the proposed effects.

Prior research on WEDs reveals that individuals develop behavior patterns for engaging with TMC devices that may be difficult to change (Allen & Shoard, 2005; Mazmanian et al., 2006). These behaviors may be influenced by one's locus of control related to technology. Locus of control refers to an individual's perception about the underlying main causes of events in his or her life (Rotter, 1966). Individuals may be classified as external (i.e., believing that one's behavior is guided by external circumstances, fate, or luck) or internal (i.e., believing that one's behavior is guided by his/her personal decisions and efforts). It may therefore be possible to classify individuals as having an internal or external technology interruptions locus of control (TI-LOC). For example, individuals with an internal TI-LOC would anticipate that they could manage TMI successfully, since they expect outcomes and rewards to be controlled by their own actions and efforts. In contrast, individuals with an external TI-LOC would perceive that they are less able to manage incoming TMIs. They might perceive that external forces out of their control cause the interruptions (e.g., bosses, co-workers, clients) and they may be unable to ignore them. For example, Corno (1993) found that individuals with an external LOC find it harder to ignore extraneous noise, stimuli, or other distractions when working and feel less in control of their accessibility to others.

A recent study by Hair, Renaud, and Ramsay (2007) investigated whether locus of control (LOC) is associated with email-related stress. Researchers used a web-survey and collected responses from academic and non-academic professionals across the globe (N = 177). LOC was measured using Rotter's (1966) 16-item scale. Data revealed a significant negative relationship between external LOC and the ability to ignore distractions (e.g., noise and stimuli) while working (r = -.209, $p < .05$). Thus, an internal LOC was positively related to the ability to manage workplace distractions. In addition, ability to ignore distractions was negatively related to perceptions of email stress (r = -.376, $p < .01$).

Researchers have used various instruments to measure the LOC construct. The two most popular general measures are the Rotter (1966) scale, which uses a forced-choice format, and the Levenson (1974) scale, which uses a Likert format. Phares (1976) proposed that researchers should develop domain-specific measures of LOC. Spector (1988) responded by creating the work LOC scale, which specifically measures LOC in the work domain. He designed the scale so that eight items reflect internal work LOC (e.g., "Most people are capable of doing their jobs well if they make the effort") and eight items reflect external work LOC (e.g., "It takes a lot of luck to be an outstanding employee on most jobs"). The Spector scale provided stronger relationships with work-related constructs (e.g., job satisfaction, perceived influence at work, role stress) than more general LOC scales (e.g., Rotter, 1966; Levenson, 1974). Internal consistency generally ranges from .80 to .85 (Spector, 2004).

In the current research, I measure LOC in the technology domain. Specifically, I adapt items from Spector's scale to develop a TI-LOC measure. I propose that using a

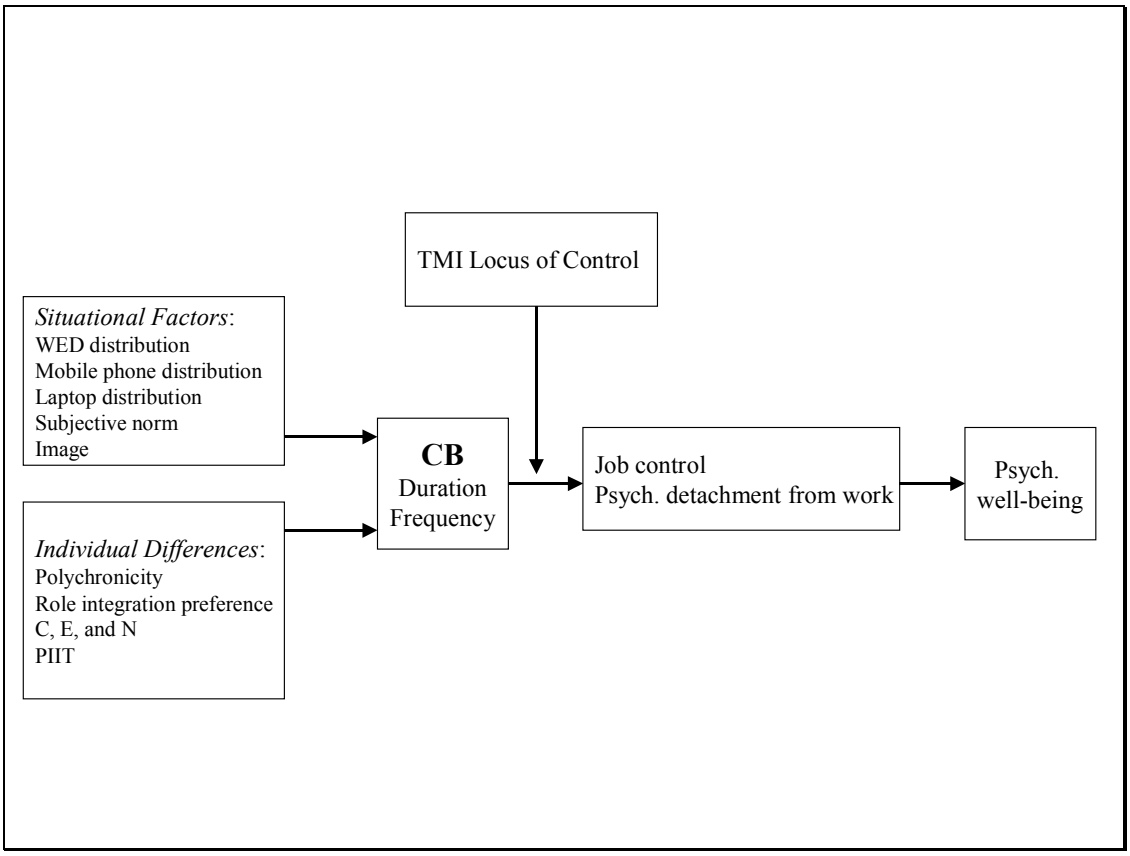
domain-specific LOC measure identifies stronger relationships than a general measure. I therefore predict that an organization member's TI-LOC may moderate the proposed relationships between CB and job control and psychological detachment from work.

Hypothesis 11a: For organization members, TI-LOC moderates the relationship between CB and job control.

Hypothesis 11b: For organization members, TI-LOC moderates the relationship between CB and psychological detachment from work.

To conclude, in this chapter I addressed potential outcomes of CB. I began by discussing the COR model (Hobfoll, 1988, 1989, 2001), which provided the theoretical foundation for the proposed relationships between CB and job control, psychological detachment from work, and psychological well-being. Second, I reviewed research on TMI to develop an argument for the moderating effect of TMI-LOC. Figure 1 depicts the proposed model of CB. In the next chapter, I present the methodology for the study.

FIGURE 1
Proposed Model of Connectivity Behavior



CHAPTER 4

METHOD

Design and Participants

I tested the hypotheses with three samples, using an online questionnaire. Compared to pencil-and-paper methods, online survey administration has been found to yield higher participation rates, more and longer write-in comments on open-ended surveys, quicker data analysis and – within specific organizations – faster implementation of new policies based on the data (Hill, Campbell, & Koblenz, 1997). Further, there is a significant cost savings to using an email survey due to the reduction of paper and mailing costs (Sheehan, 2001). The research protocol was reviewed and approved by the Baruch College Institutional Review Board.

Sample A. Sample A participants were a cross-sectional group of full-time working adults. I sent an email to a group of family and friends, and encouraged them to take the survey and pass along the URL to their colleagues and associates. This was a mixed sample, and a total of 67 people completed the survey.

Sample B. Sample B participants were members of the marketing division of a media organization in a large city in the northeastern US. The group is responsible for direct and retail marketing of company products. The division president sent an email to all members of the division. The email described the purpose of the research project and provided a URL link to the web-based questionnaire (see Appendix A). Of the 274 emails sent, 179 individuals (65.3%) clicked on the link, and 139 participants (50.7%) completed the survey.

Sample C. Sample C participants were alumni from a large urban university in the northeastern US. The university's marketing department hired an independent research organization to conduct a survey. They used stratified random sampling to select a sample of 600 graduates, who were then contacted via postcard or email and invited to answer an online questionnaire about their experiences as alumni of the university. At the end of this alumni questionnaire, respondents were invited to participate in a second survey (e.g., the current survey) that was being conducted by the university's department of management, and a URL link was provided (see Appendix B). Of the 600 people who completed the alumni survey and saw the invitation to participate in the current survey, 127 individuals (21.2%) clicked on the link, and 98 participants (16.3%) completed the survey.

To encourage participation among Samples B and C, I invited individuals who completed the survey to partake in a raffle to win a $100 Amazon.com gift certificate. I conducted two separate raffles (i.e., one for each sample). To ensure anonymity, participants provided their email addresses on a website that was separate from the data collection survey. Thus, email addresses were not linked to survey responses.

Measures

I assessed the independent and dependent variables using self-report measures. With the exception of two variables (organizational distribution and CB), I measured the constructs by using or adapting scales from prior research studies. Unless otherwise noted, I rated responses on a 7-point, Likert-type scale from 1 (strong disagreement) to 7 (strong agreement). I first discuss the constructs based on previously developed scales.

Subjective norms about connectivity. I measured subjective norms about connectivity using Venkatesh and Davis's (2000) scale. I modified the questions to reflect norms around being "connected" and reachable via technology, as opposed to norms for using a generic IT system.

- Most employees at my organization continue to check email and voicemail even when they are not at work.
- It's normal to be reachable throughout the day and evening at my organization.
- Most people who are important to me think that I should be reachable throughout the day and evening.
- The people at my organization whose opinions I value check their email and voicemail even when they are not at work.

Image. I measured image using Venkatesh and Davis's (2000) scale. I modified the questions to reflect usage of a particular device, as opposed to the generic IT system. For this study, I specifically focused on image as it relates to the use of WEDs.

- People in my organization who use a wireless email device (like a BlackBerry of iPhone) have a high profile.
- People in my organization who use a wireless email device have more prestige than those who do not.
- Having a wireless email device is a status symbol in my organization.

Polychronicity. I used the 6-item version of the Inventory of Polychronic Values (IPV) created by Conte and Jacobs (2003) and used in recent studies (Conte & Gintoft, 2005). Conte and Jacobs created the 6-item version as a shorter alternative to the 10-item IPV (Bluedorn et al., 1999). I modified three of the items to change the frame of reference from others to self. I pretested the modified scale in a pilot study using a sample of part-time MBA students (N = 35) and reliability was .84.

- I like to juggle several activities at the same time.
- I prefer to do one thing at a time. (R)
- I enjoy trying to do many things at once.
- When I work by myself, I usually work on one task at a time. (R)
- I am happiest when I complete one task before beginning another. (R)
- I believe I do my best work when I have many tasks to do.

Work role segmentation-integration preference. I used Clark's (2002) 6-item work-to-family permeability scale ($\alpha = .89$). I modified the items to reflect role integration *preference* (e.g., "I don't mind receiving work-related calls while I am at home") rather than behavior (e.g., "I receive work-related calls while I am at home"). I removed one item that loaded poorly on the scale in Clark's study, and also modified two items to allow for reverse scoring. I pretested the revised scale in a pilot study using a sample of part-time MBA students (N = 35). Internal consistency reliability was .84.

- I don't mind receiving work-related calls while I am at home.
- I don't like having work-related items at my home. (R)
- I am willing to hear from people related to my work while I am at home.

- I don't like being stopped in the middle of my home activities to address a work concern. (R)
- I am willing to take care of work-related business while I am at home.

Personality. I measured conscientiousness, extraversion and neuroticism with the International Personality Item Pool (IPIP; Goldberg, 1992). There are 10 items per factor, and coefficient alphas for each factor are above .83. Evidence for reliability and validity is found in Goldberg (1992) and Costa and McCrae (1995). The IPIP is rated on a 5-point, Likert-type scale, from 1 (very inaccurate) to 5 (very accurate). Sample items include, "I am always prepared" for conscientiousness, "I am the life of the party" for extraversion, and "I am relaxed most of the time" for neuroticism.

Personal innovativeness with information technology. I measured PIIT using Agarwal and Prasad's (1998) scale ($\alpha = .84$). Evidence for reliability and construct validity is found in Agarwal and Prasad and Lewis et al. (2003).

- If I heard about a new information technology, I would look for ways to experiment with it.
- In general, I am hesitant to try out new information technologies. (R)
- Among my peers, I am usually the first to try out new information technologies.
- I like to experiment with new information technologies.

Perceived job control. I measured perceived job control with Kossek et al.'s (2006) 7-item job control scale. Five of the seven items in the scale were phrased as

questions, such as “How much autonomy do you have with your job?” (scored very little to very much) and “To what extent does your job permit you to decide on your own about how to go about doing the work?” (scored very little to very much). I reworded those five items to reflect statements rather than questions, such as “I have a great deal of autonomy in my job.”

- I have a great deal of autonomy in my job.
- My job permits me to decide on my own about how to go about doing the work.
- I have little opportunity for independence and freedom in how I do the work at my job. (R)
- In my job, I am able to decide on my own about WHERE the work is done.
- In my job, I am able to decide on my own about WHEN the work is done.
- I have the freedom to work wherever is best for me – either at home or at work.
- I do not have control over when I work. (R)

Psychological detachment from work. I measured psychological detachment from work (PDFW) with the psychological detachment subscale of Sonnentag and Fritz’s (2007) Recovery Experience Questionnaire. Evidence for reliability and construct validity is presented in their study. I asked participants to respond with respect to both: 1) time away from work in the evenings or on weekends, and 2) time away from work during a vacation. I modified one item to allow for reverse scoring, and combined the items to create an overall composite score of psychological detachment from work. I

pretested the scale in a pilot study using a sample of part-time MBA students (N = 35). Internal consistency reliability was .90.

During time away from work *in the evenings or on weekends*:

- I am unable to forget about work. (R)
- I don't think about work at all.
- I distance myself from work.
- I get a break from the demands of work.

During time away from work *during a vacation*,

- I am unable to forget about work. (R)
- I don't think about work at all.
- I distance myself from work
- I get a break from the demands of work.

TI-LOC. I developed a 7-item measure to assess TI-LOC, based on Spector's (1988) work LOC measure. I wrote three of the items to indicate an internal TI-LOC (e.g., "If I make the effort, I am capable of responding to all my email and instant messages") and four to indicate an external TI-LOC (e.g., "It takes a lot of luck to be able to reply to all my emails in a given day").

- I often find it difficult to manage my incoming email and instant messages. (E)
- I am generally able to respond to email and instant messages at my own pace. (I)
- It takes a lot of luck to be able to reply to all my emails in a given day. (E)

- If I make the effort, I am capable of responding to all my emails and instant messages. (I)
- In general, I am easily distracted by email and instant messages. (E)
- I consider myself fortunate if I'm able to read all my emails in a timely manner. (E)
- I am usually able to manage my email in-box. (I)

Psychological well-being. I measured psychological well-being with the General Health Questionnaire-12 (GHQ-12), a shortened form of the GHQ, which measures current mental health (Goldberg, 1992). The GHQ-12 has been used extensively in different settings and different cultures, and has been found to be a consistent and reliable instrument when used in general population samples (Jacob, Bhugra, & Mann, 1997; Pevalin, 2000). Each item is rated on a four-point scale (e.g., less than usual, no more than usual, rather more than usual, or much more than usual), with higher scores indicating greater psychological distress. For this study, I reverse coded the answers so that higher scores indicated higher levels of psychological well-being.

Have you recently (in the last few weeks):

- been able to concentrate on what you're doing?
- loss much sleep over worry?
- felt that you are playing a useful part in things?
- felt capable of making decisions about things?
- felt constantly under strain?
- felt you couldn't overcome your difficulties?

- been able to enjoy your normal day to day activities?
- been able to face up to your problems?
- been feeling unhappy or depressed?
- been losing confidence in yourself?
- been thinking of yourself as a worthless person?
- been feeling reasonably happy, all things considered?

I constructed the measures of organization distribution and CB with new items that are based on the literature.

Organization distribution. To measure organization distribution, I provided a list of TMC devices and asked participants to check one of the following responses for each item: "Do not own," "Purchased for self," or "Provided or paid for by employer." Since I predicted that the distribution of TMC devices to organization members (i.e., "Provided or paid for by employer") would be positively related to CB, I dummy coded these responses as 1, and dummy coded the "Do not own" and "Purchased for self" responses as 0. The list of TMC devices was as follows:

- WED (e.g., BlackBerry, Treo, i-Phone, or similar tool)
- Mobile phone (voice only, separate from BlackBerry, Treo, or similar tool)
- Laptop computer
- Home desktop (or additional laptop) computer
- Pager
- Facsimile.

Connectivity behavior. I defined CB as an organizational member's use of TMC devices to engage with work or work-related colleagues during non-work time. The CB measure, therefore, must reflect an individual's *use of TMC devices* (e.g., wireless email devices, mobile phones, pagers, laptop and/or desktop computers with Internet access, etc.). The recent work of Burton-Jones and Straub (2006) recommended using diverse conceptualizations of systems usage in the same study. For example, they suggested collecting "lean" measures to capture activity (e.g., duration of use) as well as "rich" measures that incorporate information about the nature of the activity (e.g., breadth of use, context of use). I therefore collected self-reported measures of both duration (e.g., how much time they use the TMC devices) and frequency in context (e.g., how often do you use the devices during particular non-work activities or events). Other studies have used self-reported measures to assess technology usage behavior (Davis, 1989; Turner et al., 2006; Venkatesh & Davis, 2000), and prior research has suggested that self-report usage measures correlate well with actual usage (cf. Taylor & Todd, 1995).

First, I measured *CB duration* by asking respondents to report, on average, how much time they used each device (e.g., wireless email device, mobile phone, laptop, etc.) to perform job-related duties during non-work hours. I collected responses for three time periods (e.g., before work, after work, and during days off) and provided response categories in ranges of minutes. I took the midpoint of each response category (e.g., 1-30 minutes = 15 minutes) and added them together for the three time periods (e.g., before work, after work, and during days off) to calculate CB duration by device. I then added these totals together to calculate the overall measure of *CB duration*. Table 1 lists the response category ranges with corresponding mid-points used in the calculations.

TABLE 1
CB Duration Response Categories and Corresponding Midpoints (in minutes)

	Time Periods		
Response Category	Before Work	After Work	Days Off
None	0	0	0
1 – 30 minutes	15	15	15
31 – 60 minutes	45	45	45
61 – 90 minutes	75	75	75
91 – 120 minutes	105	105	105
More than 2 hours	150	150	n/a
2 – 3 hours	n/a	n/a	150
4 – 5 hours	n/a	n/a	270
More than 5 hours	n/a	n/a	300

Second, in order to gain a more rich and contextual understanding of CB (Burton-Jones & Straub, 2006), I created a measure for *CB frequency*. I followed the recent work by Boswell and Olson-Buchanan (2007), which measured the use of communication technologies after hours by asking respondents to report the frequency (on a Likert-type scale) with which they used an array of communication technologies to perform their job during non-work hours. Boswell and Olson-Buchanan assessed the use of five different technologies: cell phones, email, voice mail, PDA's and pagers. Responses to the individual technologies were averaged to create an overall index of reported communication technology use after hours. A goal of the current study was to improve upon the reliability of Boswell and Olson-Buchanan's measure by (1) asking about the use of a specific technological device (e.g., wireless email device) as opposed to asking about the communication medium (e.g., email), and (2) asking how frequently each device is used during a specific non-work activity or event (e.g., shopping, traveling, dinner with friends, etc.). Consistent with Boswell and Olson-Buchanan, I averaged the

responses to the individual technologies to create an overall index of *CB frequency*. A complete list of the twenty activities and events can be found in Appendix C.

Control variables. I collected the following demographic variables to be used as control variables for the regression analyses: age, gender, marital status, job level, and (for Samples A and C) occupation and full-time/part-time worker.

I controlled for age and gender because prior research has shown that technology use and acceptance may be affected by age (cf. Czara, Hammond, Blascovich, & Swede, 1989; Harrison & Rainer, 1992; Prensky, 2001) and gender (cf. Gutek & Bison, 1985; Harrison & Rainer, 1992; Venkatesh & Morris, 2000). In addition, I controlled for marital status, since an individual's family structure and demands may influence technology use after hours and well-being (cf. Boswell & Olson-Buchanan, 2007; Standen, Daniels, & Lamond, 1999). I also controlled for job level, which may influence perceptions of job control (Ganster, 1989). Finally, for Samples A and C, I controlled for two additional variables that I expected might confound the results – occupation and full-time/part-time work schedule. There samples were cross-sectional groups of respondents from a variety of organizations and occupations (versus one organization for Sample B) and 86% were full-time employees (versus 100% for Sample B). I anticipated that excess variance due to occupation (e.g., accounting, sales, information systems) and part-time work status might confound the regression analyses for Samples A and C.

RESULTS

Demographics

Table 2 reports the descriptive information for the samples, including average CB duration for the three time periods: before work, after work, and during days off. For Sample B, I obtained demographic information (e.g., age, gender, job level) on the entire division and found it was quite similar to the sample that responded. For Sample C, I obtained age, gender, and geographic information for the entire stratified sample, and found my study sample had a greater proportion of females (51% female, versus 41% in the stratified sample) and was slightly younger (50% under the age of 45, versus 42% in the stratified sample).

TABLE 2
Sample Demographics

	Sample A	*Sample B*	*Sample C*
N	67	139	98
Average Age	38.0	34.4	44.1
% Female	38%	69%	51%
% Married	66%	40%	54%
% with children	47%	23%	30%
Average commute (in minutes)	42	46	45
CB duration (in minutes):			
Before work, daily	30	12	35
After work, daily	79	50	96
During days off	136	100	166
Job level:			
Administrative Assistant	3%	2%	5%
Asst/Assoc Manager	5%	23%	10%
Manager	34%	41%	20%
Asst/Assoc Director	-	4%	6%
Director	23%	18%	14%
Vice President	17%	7%	5%
President/CEO	2%	-	3%
Independent contractor	2%	-	12%
Entrepreneur	-	-	3%
Other	14%	5%	22%
Occupation:			
Accounting	2%	N/A	14%
Consulting	-		3%
Education	-		10%
Entertainment	-		2%
Finance	33%		9%
Human resources	3%		5%
Information systems	6%		12%
Management	16%		6%
Marketing	5%		12%
Operations	14%		2%
Sales	16%		5%
Other	5%		20%

Table 3 reports the results for the distribution of technological devices among the samples.

TABLE 3
Percent Distribution of Technology Devices

	Provided/ paid for by employer	Purchased for self	Do not own
Sample A			
WED	58%	12%	30%
Mobile phone (separate from above)	18%	63%	19%
Laptop computer	39%	40%	21%
Home desktop (or additional laptop)	0%	73%	27%
Pager (separate from WED/mobile phone)	0%	1%	99%
Facsimile (fax)	18%	33%	49%
Sample B			
WED	25%	11%	64%
Mobile phone (separate from above)	3%	87%	10%
Laptop computer	19%	57%	24%
Home desktop (or additional laptop)	2%	58%	40%
Pager (separate from WED/mobile phone)	0%	0%	100%
Facsimile (fax)	0%	26%	74%
Sample C			
WED	20%	22%	58%
Mobile phone (separate from above)	9%	79%	12%
Laptop computer	31%	48%	21%
Home desktop (or additional laptop)	3%	89%	8%
Pager (separate from WED/mobile phone)	4%	3%	93%
Facsimile (fax)	3%	52%	45%

Statistical Analysis

I entered all survey responses into SPSS 11.5 for Windows. I calculated general descriptive statistics and correlations among the constructs, as well as Cronbach alpha reliability coefficients for each of the scales. Tables 4 – 6 report the results of these analyses for each sample individually.

TABLE 4
Descriptive statistics and correlations[a] for Sample A (n=67)

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1. Age	38.0	7.74																			
2. Gender	1.63	.49	-.04																		
3. Marital status	1.66	.48	.16	.32																	
4. Job level	4.86	2.23	-.16	.26	-.09																
5. WED distrib.	.58	.50	-.02	-.05	.14	-.24															
6. Mobile distrib.	.18	.39	.09	.12	.09	-.17	-.08														
7. Laptop distrib.	.39	.49	.22	-.17	-.16	-.40	.05	.19													
8. Image	3.85	1.41	-.08	.00	-.22	-.02	-.14	-.01	.19	**.77**											
9. Norm	5.60	1.08	-.10	-.13	.09	-.23	.20	.11	.26	-.08	**.82**										
10. PIIT	4.66	1.34	-.32	-.04	-.08	-.12	.19	.08	.10	-.16	.27	**.89**									
11. Polychron.	4.55	1.09	-.11	-.05	-.05	-.06	.08	.07	-.04	-.18	.25	.30	**.82**								
12. Role integr.	4.74	1.20	.05	.12	-.04	-.12	.08	.07	.19	-.19	.30	.24	.35	**.80**							
13. Conscient.	3.86	.60	.24	-.15	.09	-.03	.23	-.27	-.06	-.28	.03	-.03	.17	.18	**.79**						
14. Extraversion	3.60	.78	-.07	.01	-.26	.09	.09	.16	.01	.11	.11	.05	.12	.03	.00	**.90**					
15. Job control	4.48	1.05	.28	-.19	.15	-.25	.00	.20	.40	-.09	.16	.01	.27	.12	.28	.02	**.80**				
16. PDFW	4.15	1.41	.08	-.03	-.08	.02	-.37	-.20	-.11	-.02	-.13	-.22	-.13	-.28	-.12	-.18	.04	**.88**			
17. Well-being	20.5	4.79	.36	.02	-.02	.07	-.14	.03	-.24	-.22	-.16	-.22	.15	-.01	.16	-.16	.32	.28	**.79**		
18. TLOC	4.92	1.12	.17	-.03	-.13	.02	-.22	.10	.00	-.05	-.14	-.05	.30	.22	.16	-.01	.23	.21	.27	**.79**	
19. CB Frequency	20.2	17.2	.14	-.20	-.27	.15	.28	-.04	.15	-.09	.15	.22	.17	.29	.25	.16	.07	-.23	.09	-.07	**.98**
20. CB Duration	245.4	263	.00	-.29	.06	-.08	.23	.11	.12	-.03	.25	.24	.31	.20	.18	.18	.24	-.34	-.04	.21	.25

[a] Correlations greater than 0.24 are significant at the $p < .05$; Alpha internal consistency reliability coefficients for scales appear on the main diagonal in **bold**.

TABLE 5
Descriptive statistics and correlations[a] for Sample B (n=139)

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1. Age	34.3	9.0																			
2. Gender	1.30	.46	.11																		
3. Marital status	1.39	.49	.44	.11																	
4. Job level	3.58	1.51	.43	.27	.39																
5. WED distrib.	.25	.44	.14	.20	.17	.47															
6. Mobile distrib.	.03	.17	.01	-.02	-.05	.05	.10														
7. Laptop distrib.	.19	.39	-.01	.12	.07	.20	.40	.03													
8. Image	4.41	1.36	-.21	-.08	-.03	-.03	-.08	-.07	.03	**.88**											
9. Norm	4.50	1.14	-.08	-.07	.01	.04	.25	-.03	.11	.16	**.78**										
10. PIIT	4.58	1.22	-.37	.06	-.14	-.20	.15	.00	.13	-.03	.07	**.87**									
11. Polychron.	4.62	1.06	.09	-.07	.05	.06	.20	.06	.08	.02	.16	.12	**.88**								
12. Role integr.	4.42	1.18	.11	.10	.07	.11	.09	.12	-.02	-.02	.27	.03	.24	**.85**							
13. Conscient.	4.02	.53	.18	.10	.17	.18	.05	-.09	-.01	-.09	.07	-.05	-.13	.05	**.78**						
14. Extraversion	3.40	.65	-.11	-.06	-.09	-.10	.12	.09	.08	.06	.12	.20	.25	.10	-.11	**.85**					
15. Job control	4.43	.86	.39	.07	.10	.36	.23	.01	.07	-.10	.03	-.07	.11	.05	.14	.06	**.74**				
16. PDFW	4.85	1.24	-.12	-.05	.00	-.10	-.16	.02	-.15	-.03	-.35	.01	-.21	-.23	.02	.10	.02	**.88**			
17. Well-being	20.5	4.22	.01	.03	.04	-.08	.02	-.10	-.08	.07	.00	.11	.12	.05	.18	.14	.17	.23	**.79**		
18. TLOC	5.02	1.19	-.02	-.01	.03	-.20	-.13	-.10	-.13	-.19	-.18	.16	-.02	.16	.17	.01	.06	.09	.12	**.82**	
19. CB Frequency	6.21	5.89	.10	.10	.02	.19	.54	.01	.30	.00	.36	.18	.34	.26	.03	.14	.14	-.35	.06	-.10	**.93**
20. CB Duration	162.4	199	-.10	-.08	-.12	.00	.33	.07	.15	-.06	.32	.19	.20	.25	.07	.06	-.08	-.25	.01	.03	.43

[a] Correlations greater than 0.16 are significant at $p < .05$; Alpha internal consistency reliability coefficients for scales appear on the main diagonal in **bold**.

TABLE 6
Descriptive statistics and correlations[a] for Sample C (n=98)

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. Age	44.1	13.7																				
2. Gender	1.49	.50	.29																			
3. Marital status	1.54	.50	.27	.04																		
4. Job level	5.70	3.07	.34	.15	-.02																	
5. Full/part-time	1.14	.35	.31	.11	.11	.11																
6. Occupation	7.07	4.10	-.11	-.16	-.04	.13	-.20															
7. WED distrib.	.20	.41	-.12	.01	.18	-.16	-.20	.08														
8. Mobile distrib.	.09	.29	-.04	.16	.13	-.09	.10	-.12	.19													
9. Laptop distrib.	.31	.46	-.04	.11	.14	-.16	-.13	-.10	.38	.17												
10. Image	3.92	1.60	-.07	.13	-.02	-.21	.05	.04	.12	.17	.20	**.86**										
11. Norm	4.87	1.43	-.19	.21	-.01	-.10	.19	.07	.22	.13	.24	.12	**.85**									
12. PIIT	4.68	1.47	-.14	-.01	.09	-.12	-.17	.11	.24	.05	.20	.27	.07	**.88**								
13. Polychron.	4.01	1.26	-.06	-.20	.15	.12	.09	.04	.16	-.13	.08	-.11	.05	.24	**.88**							
14. Role integr.	4.37	1.37	.19	.21	.00	-.02	.03	.08	.03	.06	.13	.15	.18	.23	.01	**.76**						
15. Neuroticism	2.42	.92	-.27	-.12	-.19	-.04	-.13	.00	.14	-.08	.01	-.05	.00	-.07	-.17	-.14	**.93**					
16. Job control	4.65	1.28	.19	.31	-.01	.00	.24	.02	-.07	.00	.05	-.01	.29	.06	.06	.49	-.26	**.88**				
17. PDFW	4.28	1.41	-.27	-.13	-.08	-.21	.12	-.06	-.11	-.13	-.14	-.07	-.05	-.04	.05	-.35	-.15	.01	**.82**			
18. Well-being	22.2	5.51	.16	.21	.24	.03	.11	-.11	-.11	.19	.01	.07	-.05	.11	.03	.16	-.47	.31	.00	**.84**		
19. TLOC	5.09	1.11	-.08	-.10	-.03	.03	.01	.11	-.13	.04	-.09	-.02	-.11	-.02	.26	.08	-.20	.07	.04	.26	**.74**	
20. CB Freq.	7.81	5.94	.00	.11	.12	.02	.00	.04	.48	.21	.35	.12	.33	.38	.26	.21	-.05	.07	-.12	-.06	.01	**.91**
21. CB Duration	297	294	-.10	.01	.00	-.14	.10	-.06	.03	.05	.11	.05	.15	.16	.24	-.04	-.06	-.07	-.03	.07	-.06	.31

[a] Correlations greater than 0.19 are significant at $p < .05$; Alpha internal consistency.15 reliability coefficients for scales appear on the main diagonal in **bold**.

Correlation Analysis. I first tested the hypotheses by calculating a combined overall effect size (ES) among the samples for each of the predicted relationships (Hypotheses 1 – 10). I used Comprehensive Meta Analysis Version 2 software to conduct the analysis. The Pearson correlations (*r*) between variables were used to represent the ES. Each ES was weighted by its precision, so that the larger samples contributed more to the estimate of the population ES. I made no corrections for statistical artifacts (e.g., scale reliabilities), because the same scales were used for all three samples, and reliabilities were fairly consistent among them.

I checked for heterogeneity of effects in two ways. First, I used the traditional chi-square statistic to test the hypothesis that all of the observed heterogeneity was due to sampling error variance. The *Q* values were small (all < = 5.0) and not significant, indicating that there was little heterogeneity of effects. I also examined the I^2 statistic, which represents the amount of variability across studies that is attributable to between-study differences rather than to sampling error variability (Higgins, Thompson, Deeks, & Altman, 2003). Results further confirmed that there was little heterogeneity among the samples. I therefore used the fixed effects model. Table 7 reports the meta-analytic correlation matrix.

TABLE 7
Meta-Analysis Results: Combined Effect Sizes[a] for Samples A – C

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1. Age																						
2. Gender	.14																					
3. Marital status	.33	.14																				
4. Job level	.38	.20	.17																			
5. Full/part-time[b]	.17	.00	.10	.18																		
6. Occupation[b]	.02	-.18	.00	-.01	-.03																	
7. WED distrib.	.02	.09	.17	.24	-.18	.05																
8. Mobile distrib.	.01	.07	.04	-.02	.04	-.07	.09															
9. Laptop distrib.	.03	.05	.04	.03	-.12	-.04	.32	.11														
10. Image	-.14	.01	-.07	-.04	.04	.07	-.03	.02	.12													
11. Norm	-.12	.01	.02	-.01	.09	.05	.23	.05	.19	.10												
12. PIIT	-.29	.02	-.05	-.19	-.25	.00	.19	.03	.15	.04	.11											
13. Polychron.	.00	-.11	.06	.07	.03	.03	.16	.00	.05	-.07	.15	.20										
14. Role integr.	.12	.14	.02	.06	-.03	.02	.07	.09	.07	.00	.25	.14	.19									
15. Conscient.[c]	.20	.02	.15	.18	.17	.22	.11	-.15	-.03	-.15	.06	-.04	-.03	.09								
16. Extraversion[c]	-.10	-.04	-.15	.02	-.13	.07	.11	.11	.06	.08	.12	.15	.21	.08	-.08							
17. Neuroticism[d]	-.27	-.12	-.19	-.18	.11	.00	.14	-.08	.01	-.05	.00	-.07	-.17	-.14	n/a	n/a						
18. Job control	.30	.09	.08	.25	.20	.11	.09	.05	.14	-.07	.14	-.01	.13	.22	.19	.05	-.26					
19. PDFW	-.13	.07	-.04	-.15	.07	.02	-.19	-.08	-.14	-.04	-.21	-.06	-.11	-.28	-.03	.01	-.15	.02				
20. Well-being	.14	.09	.09	.04	.11	-.06	-.06	.02	-.09	.01	-.05	.04	.10	.07	.17	.04	-.47	.25	.17			
21. TLOC	.00	.04	-.02	-.15	-.02	.12	-.15	-01	-.09	-.08	-.15	.06	.14	.15	.17	.00	-.20	.10	.10	.20		
22. CB Dur.	-.08	-.10	-.04	-.06	.06	.07	.22	.07	.13	-.02	.25	.19	.24	.15	.11	.10	-.06	-.01	-.20	.02	.04	
23. CB Freq.	.08	.04	-.03	.13	-.04	.05	.47	.06	.29	.02	.31	.26	.28	.25	.10	.15	-.05	.10	-.25	.03	-.06	.36

[a] Based on fixed effects model; Correlations greater than 0.11 are signif. at $p < .05$; [b] Measured in samples A and C; [c] Measured in samples A and B; [d] Measured in sample C.

Hypotheses 1(a)-(c) and 2(a)-(b) examined the relationship between situational level factors and CB. Results from the meta-analysis revealed that for the situational correlates, the distribution of a TMC device to employees by their organization (i.e., the device was provided or paid for by the *employer*) was positively related to CB duration and frequency, depending on the device. Specifically, distribution of a WED was positively related to CB duration (r = .22, 95% CI = .104, .321) and frequency (r = .47, 95% CI = .376, .554), which supported Hypothesis 1(a). Distribution of a laptop was also positively related to CB duration (r = .13, 95% CI = .017, .241) and frequency (r = .29, 95% CI = .177, .386), which supported Hypothesis 1(c). In contrast, Hypothesis 1(b) was not supported since although the distribution of a mobile phone by an organization was positively related to CB duration (r = .07, 95% CI = -.042, .184) and frequency (r = .06, 95% CI = -.049, .177), these did not meet conventional levels of significance.

For the correlates related to social influence, the data revealed that subjective norms about connectivity was positively related to CB duration (r = .25, 95% CI = .142, .355) and frequency (r = .31, 95% CI = .200, .406), which supported Hypothesis 2(a). Hypothesis 2(b), however, was not supported since image with respect to WEDs was not significantly related to CB duration (r = -.02, 95% CI = -.131, .096) or frequency (r = .02, 95% CI = -.095, .133).

Hypotheses 3 – 6 examined the relationship between individual difference variables and CB. Results from the meta-analysis revealed that polychronicity was positively related to CB duration (r = .24, 95% CI = .127, .342) and frequency (r = .28, 95% CI = .170, .380) and provided support for Hypothesis 3. Role integration preference

was also positively related to CB duration (r = .15, 95% CI = .035, .257) and frequency (r = .25, 95% CI = .141, .354), which provided support for Hypothesis 4.

Hypotheses 5(a)-(c) examined the relationship between CB and three of the Big Five personality factors. I measured extraversion and conscientiousness with Samples A and B, and then measured neuroticism with Sample C only. Based on the meta-analysis with Samples A and B, extraversion was positively related to CB duration, approaching significance (r = .10, p = .16, 95% CI = -.039, .233), and was positively related to frequency (r = .15, 95% CI = .009, .279), which provided mixed support for Hypothesis 5(b). Conscientiousness was also positively related to CB duration and frequency, but did not meet conventional levels of significance (duration: r = .11, p = .13, 95% CI = -.033, .240; frequency: r = .10, p = .15, 95% CI = -.036, .236), and failed to support Hypothesis 5(a). Results from Sample C failed to support Hypothesis 5(c), since neuroticism was not related to CB duration (r = -.06, 95% CI = -.255, .140) or frequency (r = -.05, 95% CI = -.246, .150).

Hypothesis 6 predicted a positive relationship between CB and PIIT, a domain-specific personality factor related to technology. Data suggested that PIIT was positively related to CB duration (r = .19, 95% CI = .079, .298) and frequency (r = .26, 95% CI = .146, .359) and supported Hypothesis 6.

Next, I examined the relationships between CB and perceived job control and PDFW (Hypotheses 7 – 8). Results from the meta-analysis revealed that CB duration was not related to perceived job control (r = -.01, 95% CI = -.120, .107). Although there was a positive relationship between frequency and job control, it did not meet conventional levels of significance (r = .10, p = .078, 95% CI = -.011, .214) and Hypothesis 7 was

ultimately not supported. In contrast, Hypothesis 8 was supported, since the data revealed that both CB duration (r = -.20, 95% CI = -.308, -.090) and frequency (r = -.25, 95% CI = -.356, -.143) were negatively related to PDFW.

Finally, I examined the relationships between job control, PDFW, and psychological well-being (Hypotheses 9 – 10). The data revealed that job control was positively related to well-being (r = .25, 95% CI = .139, .353), which supported Hypothesis 9(a). PDFW was also positively related to well-being (r = .17, 95% CI = .001, .327), which supported Hypothesis 9(b). Hypothesis 10 predicted that PDFW would have a stronger relationship with well-being than job control. No support was found for Hypothesis 10, since the correlation between job control and well-being (r = .25) was greater than that between PDFW and well-being (r = .17), and the difference did not meet conventional levels of significance (difference in r = .08, t = 1.028, 95% CI -.073, .233).

The meta-analysis enabled me to test Hypotheses 1 – 10 by using the bivariate correlations to calculate an estimated population ES. The results, however, did not take into account the intercorrelation among the study variables. Nor did it enable me to test Hypotheses 11(a)-(b), which explored the moderation effect of TI-LOC. I therefore performed additional analyses to further test the model hypotheses. I used multiple regression to examine the moderation effect of TI-LOC, and then tested the entire model using meta-analytic structural equation modeling (SEM).

Multiple Regression Analysis. Hypothesis 11(a) predicted that TI-LOC would moderate the relationship between CB and perceived job control. I used hierarchical multiple regression to examine the moderation effect and performed regressions for each

sample separately. This enabled me to examine the effects independently between the groups and control for additional variables in Samples A and C (e.g., occupation and industry). As recommended by Cohen, Cohen, West, & Aiken (2003), I standardized the control (e.g., age, job level, occupation), CB and TI-LOC variables by centering them. I created an interaction term by multiplying the centered CB duration and frequency variables by the centered TI-LOC variable. I first entered the control variables into the equation, then the main predictors CB and TI-LOC, and finally the interaction terms. After entering the interaction term, I calculated the R-squared (Cohen & Cohen, 1983) to assess the incremental contribution to the equation. Table 8 displays the results.

TABLE 8
Moderation of the Effect of CB on Job Control by TI-LOC

	Sample A Job Control			*Sample B* Job Control			*Sample C* Job Control		
	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3
Indep. Variables	ß	ß	ß	ß	ß	ß	ß	ß	ß
Age[a]	.26*	.21	.20	.32*	.29*	.29*	.00	.00	.00
Gender	-.16	-.14	-.11	.01	-.01	-.01	.24*	.25*	.21
Marital status	.13	.18	.19	-.11	-.12	-.11	-.08	-.09	-.08
Job level[a]	-.19	-.17	-.16	.25*	.31*	.32*	.25*	.23	.23
Occupation[a]	.12	.07	.06	n/a	n/a	n/a	.12	.11	.14
PT/FT	.12	.15	.14	n/a	n/a	n/a	.21	.22*	.23*
CB Duration[a]		.07	.21		-.08	-.11		-.09	-.08
CB Frequency[a]		.09	.10		.10	.10		.05	.04
TI-LOC[a]		.20	.21		.18*	.19*		.06	.05
CB Dur x TI-LOC			-.20			.13			.04
CB Frq x TI-LOC			.03			-.04			.08
R^2	.20	.25	.27	.21	.24	.25	.23	.24	.25
f^2	.25	.33	.37	.27	.32	.33	.29	.31	.33
Total F	2.37*	2.03	1.76	7.63*	5.12*	4.20*	4.00*	2.74*	2.30*
ΔR^2		.05	.02		.03	.01		.01	.01
Δf^2		.08	.04		.05	.01		.02	.02
ΔF		1.27	.66		1.61	1.0		.39	.48
df	57	54	52	117	114	112	82	79	77

[a] Centered variables; PT/FT = Part-time/Full-time work; TI-LOC = Technology Interruptions Locus of Control; * $p < .05$

For all samples, after controlling for the main effects of CB duration and frequency and TI-LOC, the interaction terms explained little incremental variance in perceived job control. The ΔR^2 was .02 for Sample A, .01 for Sample B, and .01 for Sample C. Therefore, no support was found for Hypothesis 11(a).

Hypothesis 11(b) predicted that TI-LOC would moderate the relationship between CB and PDFW. I followed similar procedures as outlined above to test the moderation effect, and regressed the centered predictor variables in the equation on PDFW. Table 9 displays the results for both samples.

TABLE 9
Moderation of the Effect of CB on PDFW by TI-LOC

	Sample A PDFW			*Sample B* PDFW			*Sample C* PDFW		
Indep. Variables	Step 1 ß	Step 2 ß	Step 3 ß	Step 1 ß	Step 2 ß	Step 3 ß	Step 1 ß	Step 2 ß	Step 3 ß
Age[a]	.11	.05	.06	-.15	-.17	-.16	-.23	-.23	-.22
Gender	.07	-.10	-.14	-.05	-.04	-.04	-.03	-.01	-.07
Marital status	-.15	-.06	-.07	.10	.05	.05	-.02	.00	.02
Job level[a]	-.25	-.19	-.19	-.01	.10	.08	-.17	-.18	-.15
Occupation[a]	.12	.20	.20	n/a	n/a	n/a	-.05	-.05	-.05
PT/FT	.03	-.02	-.02	n/a	n/a	n/a	.19	.19	.20
CB Duration[a]		-.44*	-.55*		-.17	-.15		-.07	-.04
CB Frequency[a]		-.12	-.15		-.27*	-.27*		-.13	-.18
TI-LOC[a]		.23	.23		.09	.08		.02	.03
CB Dur x TI-LOC			.17			-.12			-.08
CB Frq x TI-LOC			-.08			.03			.24
R^2	.09	.30	.32	.02	.17	.18	.12	.15	.19
f^2	.10	.43	.47	.02	.20	.22	.14	.18	.23
Total F	.93	2.60*	2.21*	.69	3.22*	2.68*	1.85	1.52	1.62
ΔR^2		.21	.02		.14	.01		.03	.04
Δf^2		.33	.04		.18	.02		.04	.05
ΔF		5.50*	.61		6.47*	.83		.88	1.92
df	57	54	52	117	114	112	82	79	77

[a] Centered variables; PT/FT = Part-time/Full-time work; TI-LOC = Technology Interruptions Locus of Control; * $p < .05$

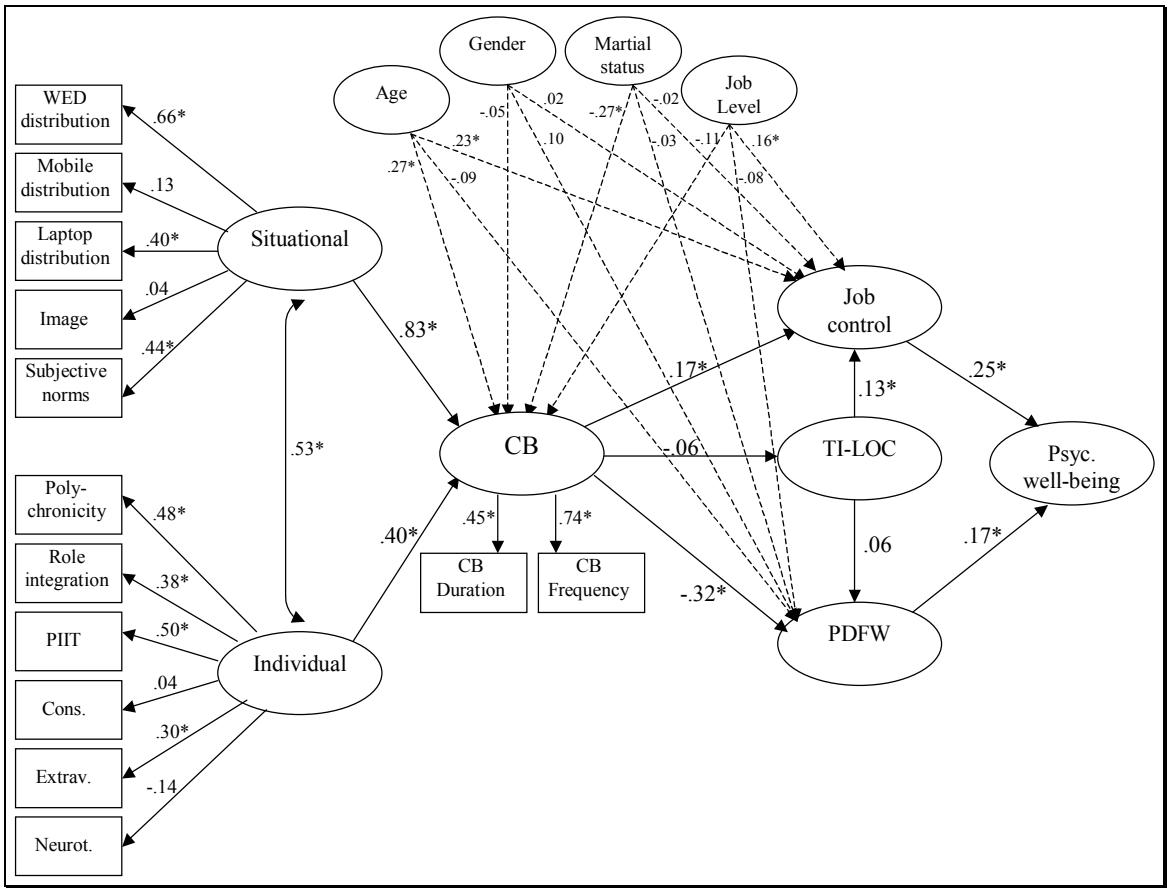
For all samples, after controlling for the main effects of CB duration and frequency and TI-LOC, the interaction terms explained little incremental variance in PDFW. The ΔR^2 was .02 for Sample A, .01 for Sample B, and .04 for Sample C. Therefore, no support was found for Hypothesis 11(a).

Structural Equation Modeling. To test the complete hypothesized model, I evaluated the meta-analytic correlation matrix via SEM. Such meta-analytic path analyses have been successfully applied to employee turnover (Hom, Caranikas-Walker, Prussia, & Griffeth, 1992), training motivation (Colquitt, LePine & Noe, 2000) and workplace climate (Carr, Schmidt, Ford, & DeShon, 2003). I used Lisrel Version 8.53 software (Jöreskog & Sörbom, 2002) to conduct the analyses. Based on the recommendations of Hu and Bentler (1999), I evaluated model fit using a variety of fit indices, including the root-mean-square error of approximation (RMSEA), the standardized root mean residual (SRMR), the comparative fit index (CFI), and the ratio of X^2/df, which reduces sensitivity of the chi-square to sample size. Browne and Cudek (1993) maintained that RMSEA values below 0.05 show a good fit, and values between 0.05 and 0.08 show acceptable fit. For the SRMR, values of 0.08 or less indicate a well-fitting model, and for the CFI, values of .90 or above indicate a model with acceptable fit (Hu & Bentler, 1999). Values of $X^2/df = 2.0$ or 3.0 indicate reasonable fit (Bollen, 1989).

I first tested the complete hypothesized model, including the control variables. I followed the recommendation of Cheung and Chan (2005) and applied the total sample size of all three studies ($N = 286$) as the sample size for fitting the models. This number was reduced from the original sample size (N=304) due to pairwise deletion, since cases

with missing data (e.g., gender, marital status, job level) were excluded. I used the observed CB duration and frequency constructs to create a CB latent variable (LV). Results for Model 1 are depicted in Figure 2. Although the overall chi-square value was significant [X^2 (161, N=286) = 447.87, p < .001], the ratio of X^2/df was 2.8, which indicated reasonable fit. Other fit indices, however, suggested less than adequate fit: RMSEA = .079, SRMR = 0.086, and CFI = .70.

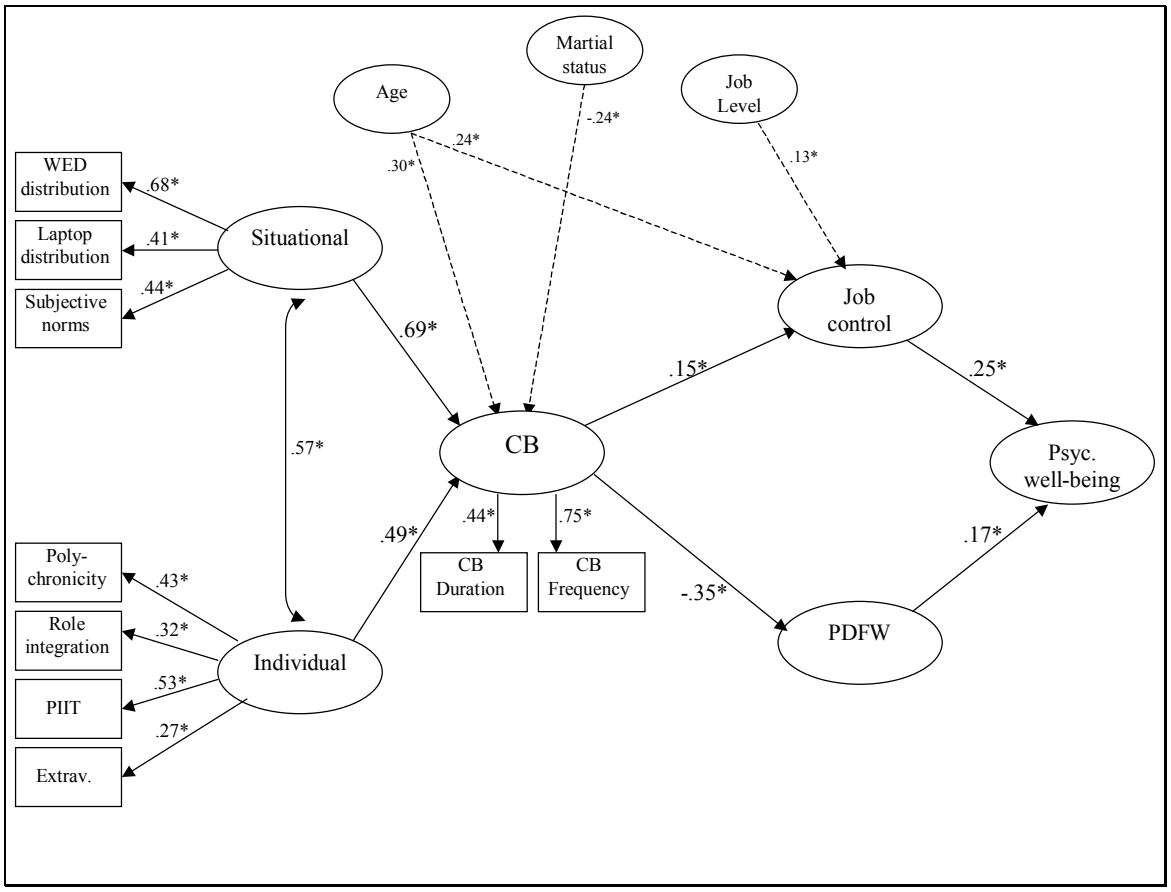
FIGURE 2
Model 1: Hypothesized CB Model, All Variables



Model 1: Model with all variables. X^2 (161, N=286) = 447.87, p < .001; X^2/df = 2.8; RMSEA = .079; SRMR = 0.086; CFI = 0.70. Standardized regression coefficients, * p < .05.

In an effort to improve the fit of the model to the data, I tested a second model in which I removed paths with non-significant standardized regression coefficients. I therefore removed the paths from mobile phone distribution and image to the Situational LV, and from conscientiousness and neuroticism to the Individual LV. I also removed the insignificant paths from the control variables to CB, job control and PDFW and the paths related to TI-LOC. Results for Model 2 are depicted in Figure 3. This improved the overall fit of the model, as indicated by a reduction in the chi-square ΔX^2 (85, N=286) = 285.56. Other fit indices also improved and indicated that this model is consistent with the data: X^2/df = 2.1, RMSEA = .063, SRMR = 0.066, and CFI = 0.88.

FIGURE 3
Model 2: Model with Significant Paths



Model 2: Model with only significant path coefficients. X^2 (76, *N*=286) = 162.31, p < .001; X^2/df = 2.1; RMSEA = .063; SRMR = 0.066; CFI = 0.88. Standardized regression coefficients, * p < .05.

I examined the standardized path coefficients and compared the relationships to those found in the meta-analysis of bivariate correlations and regression analyses. For the situational variables, results were consistent in that subjective norms about connectivity and the distribution of WEDs and laptops were all related to CB (H1a, 1c, 2b), whereas image and the distribution of mobile phones were not related (H1b, 2a). For the individual difference variables, results were also consistent with earlier analyses.

Polychronicity, role integration preference, PIIT, and extraversion were all related to CB (H3, 4, 6, 5b), but conscientiousness and neuroticism were not related (H5a, 5b).

For the second part of the model, the SEM findings were generally consistent with the meta-analysis and regression results. CB was negatively related to PDFW (H8), and both PDFW and perceived job control were related to psychological well-being (H9a, 9b). The SEM models suggested, however, that CB was positively related to job control (H7), as indicated by the significant path coefficient in Model 2 (β=.15, $p < .05$). This particular finding was inconsistent with the results from the earlier analyses, and I address this discrepancy in the Discussion. Table 10 provides a summary table of the results according to whether the hypotheses were supported.

TABLE 10
Hypotheses Summary Table

H #	Independent Variable	Dependent Variable	Direction	Supported
1(a)	WED distribution	CB	+	**Yes**
1(b)	Mobile phone distrib.	CB	+	No
1(c)	Laptop distribution	CB	+	**Yes**
2(a)	Subjective norm	CB	+	**Yes**
2(b)	Image	CB	+	No
3	Polychronicity	CB	+	**Yes**
4	Role integration pref.	CB	+	**Yes**
5(a)	Conscientiousness	CB	+	No
5(b)	Extraversion	CB	+	Mixed
5(c)	Neuroticism	CB	+	No
6	PIIT	CB	+	**Yes**
7	CB	Job control	+	No
8	CB	PDFW	–	**Yes**
9(a)	Job control	Psyc. well-being	+	**Yes**
9(b)	PDFW	Psyc. well-being	+	**Yes**
10	Relationship of H9(b) stronger than H9(a)			No
11(a)	Relationship of H7 moderated by TLOC			No
11(b)	Relationship of H8 moderated by TLOC			No

DISCUSSION

In the present study, I developed and tested a model of CB, defined as an organization member's use of TMC devices to engage with work or work-related colleagues during non-work time. I empirically examined the situational and individual difference correlates of CB, and applied COR theory to examine the relationship between CB and psychological variables related to well-being. I tested the model among three samples: a cross-sectional mixed sample (N=67), a single organization sample (N=139), and a stratified random sample of university alumni (N=98). I found that, on average, respondents engaged in CB for approximately 30 minutes before work, 1 – 1.5 hours after work, and 1.5 – 2 hours on their days off. Based on a standard five-day workweek, this translates into an additional 10 – 14 hours of labor that is being conducted outside of the office, during traditional non-work time.

I performed three different statistical analyses to test the hypotheses. First, I meta-analytically combined the bivariate correlations among the samples to calculate an estimated population effect size. The meta-analysis results enabled me to test Hypotheses 1 – 10, but the data did not take into account the intercorrelation among study variables. I therefore performed additional analyses to further test the hypotheses. I used multiple regression to examine the moderation effect of TI-LOC (Hypotheses 11a-11b), and then tested the complete model using meta-analytic structural equation modeling (SEM).

Situational Correlates

Early research on TMC within organizations identified a relationship between systems use and factors related one's organizational environment (Kling & Gerson, 1977; Steinfeld, 1986; Svenning, 1982). I therefore explored the relationship between CB and situational factors related to one's organization. The data revealed that the distribution of certain types of TMC devices by an employer was a key variable that influences CB. Specifically, the distribution of WED and laptops was strongly related to CB, but the distribution of standard mobile phones was not related. One explanation for this finding may be that organizations are more likely to provide WED and laptops to their employees than standard mobile phones. Results from Table 3 revealed that, among the three samples, WED distribution ranged from 20 – 58% and laptop distribution ranged from 19 – 39%, whereas mobile phone distribution ranged from 9 – 18%. Although at least 80% of respondents in each sample owned a mobile phone, the majority had purchased the devices for themselves. Therefore, the phones may likely be used to communicate with family and friends rather than with work colleagues and clients.

Another explanation may be that for work-related tasks, WEDs and laptops are more functional than standard mobile phones. These devices enable organization members to review and respond to email communication, log-on to network servers, and access and update work documents. Therefore a greater variety of work can be done with them versus a standard, voice-only mobile phone. Furthermore, WEDs and laptops are provided to employees for the specific purpose of connecting to the workplace from home or while traveling, so that work may be performed anywhere and any time. Although individuals may purchase these devices on their own, when the organization

distributes them and pays the monthly access fees there may be greater motivation to use them.

I performed an additional analysis to determine whether individuals who purchased WEDs or laptops themselves engaged in CB to the same extent. In other words, does owning a WED or laptop correlate with CB if you purchased it yourself? Results form the meta-analysis of the bivariate correlations revealed that the relationship between WED ownership and CB was stronger for individuals who received the device from the organization (duration: r = .22, 95% CI = .104, .321; frequency: r = .47, 95% CI = .376, .554) than for individuals who purchased one on their own (duration: r = .02, 95% CI = -.092, .135; frequency: r = .01, 95% CI = -.103, .124). Likewise, the relationship between laptop ownership and CB was stronger for individuals who received the laptop from their organization (duration: r = .13, 95% CI = .017, .241; frequency: r = .29, 95% CI = .177, .386) than for individuals who purchased one on their own (duration: r = .02, 95% CI = -.093, .134; frequency: r = -.12, 95% CI = -.226, -.002). This suggests that ownership alone does not significantly influence an organization member's CB, but rather the distribution of these devices by the employer.

Closely related to both CB and organizational distribution was subjective norm, defined as "a person's perception that most people who are important to him think that he should perform the behavior in question" (Fishbein & Ajzen, 1975, p. 302). Results from the meta-analysis revealed that subjective norms about connectivity were significantly correlated with CB duration (r = .25, 95% CI = .142, .355) and frequency (r = .31, 95% CI = .200, .406), but also significantly correlated with both WED distribution (r = .23, 95% CI = .119, .334) and laptop distribution (r = .19, 95% CI = .073, .293). This data

supports earlier qualitative research that found behavioral norms about checking email quickly developed after BlackBerries were issued to an entire organization (Mazmanian et al., 2006). This suggests that perhaps the norms develop after the TMC devices are distributed to organization members. Feldman (1984) noted, "norms are formed and enforced only with respect to behaviors that have some significance for the group" (p. 47). Thus, CB may be viewed as important behavior for individuals who receive WEDs and laptops from the organization.

Regarding other social influence factors, results did not support a relationship between CB and image related to WEDs. This suggests that organization members do not engage in CB to try to "identify" with important others who have WEDs or enhance their social status in the organization. Rather, as discussed above, they do so because of behavioral norms and expectations within the organization. This finding, however, may be a result of how I operationalized the image construct, which was based on Moore and Benbasat's (1991) definition, "the degree to which use of an innovation is perceived to enhance one's … status in one's social system" (p. 195). For the current study, I focused on image as it related to using a WED (e.g., "People in my organization who use a wireless email device have a high profile"). Perhaps if I had focused on image as it relates to being connected to the organization – regardless of device used – there may have been a relationship. For example, does checking your email during off-hours enhance your social status within the organization?

Individual Correlates

In addition to situational factors, I examined several individual difference variables that I predicted would relate to CB. These were polychronicity, role integration preference, conscientiousness, extraversion, neuroticism and PIIT. Results from the meta-analysis revealed that polychronicity (duration: r = .24, 95% CI = .127, .342; frequency: r = .28, 95% CI = .170, .380), PIIT (duration: r = .19, 95% CI = .079, .298; frequency: r = .26, 95% CI = .146, .359) and role integration preference (duration: r = .15, 95% CI = .035, .257; frequency: r = .25, 95% CI = .141, .354) were significantly correlated with CB. The data therefore supports the notion that two individuals from the same organization who receive a WED may engage in varying levels of CB based on individual differences. Those with preferences toward multitasking and/or preferences for work-family role integration would be more likely to engage in CB, as would those who are more comfortable and adventurous using technology.

The positive relationship between polychronicity and CB suggests that connected people prefer to multitask. WED and laptops – the technology most associated with CB – are ideal tools for polychronics because they enable multitasking. They allow individuals to communicate by mixing various media within the same device. For example, a person may be responding to an email with a WED and also receive a phone call or text message to the same device at the same time. In addition, WED and laptops are highly portable. The proliferation of free WIFI access in places like coffee shops, restaurants, shopping malls, and public parks means that when people carry such TMC devices, they can easily connect to the workplace from virtually anywhere, and thus multitask while eating a meal or traveling to work.

In order to learn more about the nature of multitasking activities respondents were engaged in, I examined the data related to the CB frequency measure (see Appendix D). I had asked respondents to report the frequency (never, rarely, sometimes, very often and always) with which they engaged in CB during a particular event (e.g., exercising, meal at a restaurant, party, etc.). I summed the "sometimes," "very often," and "always" responses together for each event to rank them. Results revealed that for WEDs, individuals most frequently used them while traveling (29%), on vacation in the United States (26%), commuting (25%), shopping (18%), on vacation abroad (11%), during a professional sporting event (11%), during a family/friend party (10%), during a meal at a restaurant (9%) and during a meal at home (9%). For laptops, people most frequently used them while traveling (42%), on vacation in the United States (38%), on vacation abroad (17%), shopping (8%), and commuting (4%).

This data reveals two interesting findings. First, organization members reported engaging in CB more frequently during generic "downtime" (e.g., traveling, commuting, shopping) as opposed to during specific events (e.g., a child's soccer game, dinner with friends, a date). This suggests that respondents made the most of downtime by monitoring emails on the commute home, or while waiting at the airport, as opposed to checking emails during a child's soccer game. Engaging in CB during such downtime activities may actually enable organization members to disconnect during important non-work events (e.g., at a parent-teacher conference or religious service). It also brings up another question – should the commute home be considered work or non-work time? The current study treated it as non-work time, but perhaps organization members who engage in CB view it as another extension of the workday.

The second interesting finding from the examination of the frequency data was the extent of people who use their WEDs and laptops to engage in CB during vacations, both in the United States and abroad. This represents the ultimate form of role integration – conducting work during one's vacation. This particular finding, however, may have greater implications for PDFW and well-being, which I discuss later in the paper. The results did show that role integration preference was related to CB. By definition, CB represents a blurring or integration of work and non-work tasks/roles. Therefore, organization members who do not mind receiving and answering work-related emails while at home may be less likely to turn off their WEDs during the evenings or on weekends. In contrast, individuals who prefer more distinct boundaries would be more likely to turn off their WEDs and laptops, or at least not check them as frequently. This suggests that even if employees are provided with WEDs and laptops, it is their responsibility to manage their CB.

The other individual difference variables I examined were personality traits. I examined three higher-level factors from the Big Five model (e.g., conscientiousness, extraversion, neuroticism), as well as PIIT, a lower-level personality trait found to be an important predictor of technology adoption and use (Jones et al., 2002; Lewis et al., 2003; Lu et al., 2005). Among the Big Five traits, I found a small relationship per Cohen's (1992) classifications between extraversion and CB frequency (r = .15, 95% CI .009, .279) and a relationship that approached significance for CB duration (r = .10, p = .16, 95% CI -.039, .233). This was based on samples A and B only. Conscientiousness and neuroticism, however, were not correlated with CB. One explanation for these findings may be range restriction within the samples. For samples A and B, the mean score (and

standard deviation) for conscientiousness was 3.86 (.60) and 4.02 (.53), respectively. There was little variance in these scores, particularly for the larger sample B (n=139). This may have reduced the correlation between conscientiousness and CB, which was small but approached significance (duration: r = .11, p = .13, 95% CI -.033, .240; frequency: r = .10, p = .15, 95% CI -.036, .236). Neuroticism, which I measured in sample C only, may have also suffered from range restriction, but to a lesser extent. The mean score (and standard deviation) was 2.42 (.93).

A second explanation may be that these higher-level personality factors were too broad to find a larger relationship. Extraversion, for example, encompasses the subdimensions of sociability, energy, and assertiveness (Ones et al., 2005). A small but significant relationship was found between extraversion and CB frequency. Perhaps it was the subfactor of assertiveness that was driving that relationship, versus energy. There is often a tradeoff in research between using the broad traits to measure basic relationships, versus using more specific subfactors. In the current study, I examined both. Although the broad personality factors did not significantly correlate with CB, the domain specific personality factor PIIT did relate to both CB duration (r = .19, 95% CI .079, .298) and frequency (r = .26, 95% CI .146, .359). PIIT represents the willingness of an individual to try out new IT. Based on the meta-analysis, this variable was also significantly related to WED distribution (r = .19, 95% CI .076, .295) and laptop distribution (r = .15, 95% CI .033, .256). This finding suggests that perhaps organization members who enjoy interacting with new IT are more likely to request these devices from their employers.

Psychological Variable Correlates

I examined the relationship between CB and psychological variables related to well-being, drawing from COR theory (Hobfoll, 1988, 1989, 2001). Researchers have used COR to examine the processes of burnout and stress in organizations (Hobfoll & Freedy, 1993; Freedy & Hobfoll, 1994; Lee & Ashforth, 1996; Wright & Cropanzano, 1998; Taris et al., 2001), and it has grown into a theory of motivation (Westman et al., 2005). Based on COR, I predicted that individuals would engage in CB because it helps to build important resources related to their jobs. For the current study, I focused on perceived job control. Furthermore, I predicted that a potential downside of CB is that the constant connection to the organization may impede an individual's ability to psychologically detach from work, representing resource loss. Finally, I predicted that both job control and PDFW would be positively related to psychological well-being, but that the inability to psychologically detach from work (i.e., resource loss) would have a stronger relationship than job control (i.e., resource gain).

Results from the meta-analysis revealed that CB was not related to perceived job control (duration: r = -.01, 95% CI -.120, .107; frequency: r = .10, 95% CI -.011, .214). This was initially surprising, given that prior research had found a relationship between using WEDs and perceptions of control (Allen & Shoard, 2005; Mazmanian et al., 2006). Specifically, when WEDs were introduced to organizations, employees reported feeling a "sense of control" by their newfound ability to monitor email messages. One explanation for this discrepancy may be that these prior studies, which were qualitative, examined the effect immediately after the introduction of WEDs to the organization. This is a limitation in the current study, since I did not measure how long organization members had the

devices. Perhaps perceptions of job control do increase initially, right after the TMC devices are distributed to organization members. Employees may be excited to receive the latest WEDs or laptops, and may feel these technologies are going to enable them to work more efficiently and effectively. This may be an illusion of control, however, and over time organization members may begin to realize that the technology does not change their workload or provide the control they had hoped it would.

Another explanation may be related to how I operationalized perceived job control. I adapted a measure from Kossek et al.'s (2006) job control scale, which reflected aspects of job autonomy and flexibility. I conducted an exploratory factor analysis (EFA) of all this scale to determine whether the items loaded on one construct. I used principal component analysis with Oblimin rotation and combined data from all three samples. Results suggested that this variable loaded on two factors. Three items loaded together on one factor reflecting *autonomy* (e.g., "I have a great deal of autonomy in my job," "My job permits me to decide on my own about how to go about doing the work," and "I have little opportunity for independence and freedom in how I do the work at my job.") and the four remaining items loaded on a second factor reflecting *flexibility* (e.g., "In my job, I am able to decide on my own about WHERE the work is done," "In my job, I am able to decide on my own about WHEN the work is done," "I have the freedom to work wherever is best for me – either at work or at home," and "I do not have control over when I work.")

I conducted an additional analysis to determine whether the *flexibility* dimension of the perceived job control variable was related to CB. I calculated a revised job control score for each sample, using only those four items reflecting the flexibility factor. Results

from the meta-analysis of the three samples revealed that the flexibility dimension of job control was related to CB frequency (r = .12, 95% CI .003, .227) but not CB duration (r = .04, 95% CI -.073, .154). This suggests that the use of WEDs and laptops may be related to flexibility aspects of job control, since they enable individuals to work "either at work or at home." Technology use, however, is less likely to be related to job autonomy, which reflects the extent to which a job allows the freedom, independence, and discretion to schedule work, make decisions, and select the methods used to perform tasks (Hackman & Oldham, 1975).

Although no relationship was found between CB and perceived job control in the correlation or regression analyses, the meta-analytic SEM results suggested a small but significant relationship between these variables (β=.15, $p < .05$). The statistical significance of such standardized regression coefficients, however, is highly dependent on sample size. I followed the recommendation of Cheung and Chan (2005) and used the total sample size of all studies (N=286) for the meta-analytic SEM. The regression analyses, in contrast, were conducted separately for each study, and therefore the sample sizes were smaller. One explanation for the discrepancy in results may be that the larger SEM sample size provided greater statistical power to detect a relationship between CB and perceived job control. As a result of these mixed findings, I suggest that future studies are needed to further investigate and better understand the relationship between CB and perceived control. For example, additional research is needed to better understand what particular aspects of job control (i.e., control over flexibility of scheduling, control over time) may be related to CB. Also, an intervention study that

measures aspects of job control before and after the introduction of WEDs would clarify whether there is a causal relationship between CB and job control.

Results did reveal that CB was negatively related to PDFW (duration: r = -.20, 95% CI -.308, -.090; frequency: r = -.25, 95% CI -.356, -.143). This suggests that individuals who engage in CB are less likely to detach from the demands of work during evenings, weekends and vacations. The data also provided specific evidence that organization members are not detaching from work during vacation time. A number of respondents reported using their WEDs and laptops to engage with work or work-related colleagues during vacations, both in the United States and abroad. This is a particularly alarming finding, since a large body of research on respites has consistently found that time away from work provides a restorative benefit and promotes recovery from stress-generated strain (Caplan & Jones, 1975; Davidson et al., 2004; Eden, 1990; Etzion et al., 1998; Westman & Eden, 1997; Westman & Etzion, 2001, 2002). Strain outcomes may be both psychological (e.g., burnout, satisfaction) as well as behavioral (e.g., performance, absenteeism) (Westman et al., 2005). In the short term, CB may increase perceptions of productivity and efficiency. Results from this study, however, suggest that organization members who engage in CB are less able to mentally detach from the demands of work once they leave the office. Over time, they may therefore be at risk for developing strain outcomes. The relationship between PDFW and psychological well-being is discussed below.

As predicted, psychological well-being was significantly related to both job control (r = .25, 95% CI .139, .353) and PDFW (r = .17, 95% CI .001, .327). The data, however, did not support the COR theory principle that resource loss has a greater effect

on well-being than resource gain (Hobfoll, 20001). The relationship between job control and well-being was larger than that between PDFW and well-being, although this difference was not significant. One possible explanation for this finding may be that the study was cross-sectional and all measures were taken at the same time. It is therefore difficult to assess whether over time the chronic resource demands (e.g., inability to psychologically detach from work) had a greater effect on well-being than the resource gains (e.g., increased job control). As I discussed earlier, I did not ask participants to report how long they have owned their TMC devices, so I cannot take that into consideration when testing the hypotheses.

An alternative explanation may be that the PDFW variable does not specifically measure resource loss. Rather, it reflects inability to replenish resources. According to COR theory, people must invest resources in order to protect against resource loss (Hobfoll, 2001). One way to replenish resources is to take time away from the demands of work. The PDFW variable reflects "an individual's sense of being away from the work situation" (Etzion et al., 1998, p 579), which relates to resource replenishment. Resource loss, in contrast, has been examined in prior studies in terms of workload, work pressure, role ambiguity and role conflict (Lee & Ashforth, 1996). Future studies may wish to examine whether CB is related to these aspects of job demands, and whether they have a stronger relationship with psychological well-being than job control or other resources.

Finally, one might challenge whether job control and PDFW are equivalent resources. In other words, are they of similar weight and/or value such that one can adequately compare the effects of their relationships with well-being? This is a limitation of COR theory and the current study. Although COR (Hobfoll, 1988, 1989, 2001)

recognizes different categories of resources (e.g., objects, personal characteristics, conditions and energies), the theory does not specifically address whether particular resources are more valuable than others. Studies that have used the COR-Evaluation measure to assess resources – a list of 74 resources equivalent to a life events scale – have found developmental differences in how the resources were valued (Hobfoll, Lilly & Jackson, 1991; Hobfoll & Lilly, 1993). For example, student samples valued issues of identity (e.g., self-esteem, accomplishing goals) whereas community samples valued issues related to finances and family health (Hobfoll et al., 1991). This suggests that individuals may value resources differently. Thus, if I place a greater value on perceived job control than on psychologically detaching from work, then perhaps it would have a stronger relationship with psychological well-being for me. Additional studies are needed that attempt to quantify the value individuals place upon resource gains, as well as resource losses.

Moderation of TI-LOC

With the final set of hypotheses, I examined whether TI-LOC moderated the relationship between CB and job control and PDFW. Based on prior research on TMI (McFarlane, 2002), I proposed that individuals may differ in the extent to which they perceive TMI as being manageable and within their control (i.e., internal TI-LOC) or unmanageable and outside of their control (i.e., external TI-LOC). I predicted this trait would moderate the relationships between CB and (a) job control and (b) PDFW. Results from hierarchical multiple regression analysis revealed that there was no moderation effect.

This finding may have resulted because I created a new scale to measure TI-LOC, based on Spector's (1988) work LOC scale. Spector's scale consists of 16 items that reflect LOC as it relates to one's job (e.g., "Most people are capable of doing their jobs well if they make the effort," "It takes a lot of luck to be an outstanding employee on most jobs"). I adapted these items to reflect LOC as it relates to TMI ("If I make the effort, I am capable of responding to all my emails and instant messages," "It takes a lot of luck to be able to reply to all my emails in a given day"). Reliability for the scale ranged from .74 - .82 among the three samples. Assessment of coefficient alpha, however, only speaks to the internal consistency of the scale.

I conducted an EFA of all this scale to determine whether the items loaded on one construct. I used principal component analysis with Oblimin rotation and combined data from all three samples. Results suggested that this variable loaded on two factors. Five of the seven items loaded together on one factor that reflects the ability to *manage* and *respond* to emails and instant messages (e.g., "I often find it difficult to manage my incoming email and instant messages," "I am generally able to respond to email and instant messages at my own pace," "I am usually able to manage my email in-box"). These items may be more closely related to one's self-efficacy for managing TMI, (i.e., the belief that one is capable of managing and responding to emails). The remaining two items loaded together on a second that emphasized the *interruptive* nature of emails (e.g., "In general, I am easily distracted by email and instant messages," and "I consider myself fortunate if I'm able to read all my emails in a timely manner"). Based on these results, it is evident that more research needs to be conducted to further develop the construct validity of TI-LOC.

Aside from potential measurement issues related to the TI-LOC construct, another explanation for the lack of moderation effect may be that based on the data, organization members were generally engaging in CB during downtime activities (e.g., traveling, commuting) as opposed to during important events (e.g., child's soccer game, dinner with friends). Perhaps receiving TMI during such downtime activities is not perceived as an interruption. For example, receiving an email from a colleague on a WED during your commute home is probably perceived as less disruptive than receiving the same email during your child's soccer game. Thus, there is less need to manage TMI during downtime, and therefore may be no negative implications for performance or well-being. In addition, I did not ask how respondents were notified of TMI. For example, WED users may be notified differently based on how they program their device (e.g., audible tone or song, buzzer, blinking light). If the device is in one's pocket, an audible ring tone or buzz is more distracting than a blinking light. I was unable to control for these distinctions in the current study.

Finally, perhaps there was no moderation effect because TI-LOC was unrelated to CB. Results from the meta-analysis found no relationship between CB and TI-LOC (duration: r = .04, 95% CI -.073, .154; frequency: r = -.06, 95% CI -.171, .056). This suggests that whether or not individuals perceive they are able to manage their TMI does not have any bearing on whether they engage in CB. TMI are a product of CB. In other words, the more you engage in CB the more likely you experience TMI during non-work time. Perhaps it is the *number* of TMI one receives in a specified time period that moderates the relationships between CB and job control and PDFW, as opposed to one's

perception that they can manage them. Future studies may want to examine the number and type of interruptions as they relate to job control and PDFW.

Implications

Today's overworked and overstressed workforce is clamoring for more work-life balance and greater flexibility. Technology seems like the perfect answer. The assumption is that WEDs and laptops provide employees with more flexibility and enable them to work from home or out of the office when necessary. A tradeoff, however, occurs, since this technology brings work into the home. In the days before mobile technologies, the boundary between work and non-work time was more distinct, separated by physical space. Results from the current study suggest that this boundary is now more fluid, and the onus is on organization members to actively manage it. Employees who prefer the integration of work and home lives may not initially mind this blurring of work and non-work time. After all, it's more efficient to review a few emails during the morning commute than read the paper. But where does an individual draw the boundary, if at all? Reviewing emails on the morning commute may turn into checking email when you first wake up, before you go to bed, on the weekends, and even during vacations. Such boundary crossing may likely have implications for work family conflict, and future studies are needed to examine the relationship between CB and work family outcomes.

It is likely, though, that mobile technologies will not disappear from organizational life, nor should they. WEDs and laptops by themselves do not drive CB, people do. Although the distribution of these devices greatly influences employees'

likelihood to engage in CB, some individuals are more inclined to use technology after hours than others. Thus, organization members should be mindful of the preferences and personalities of their colleagues and clients. In the days before WEDs and laptops, a workaholic boss or co-worker could work well into the evening hours, but it would be rare for him call the home of a subordinate or colleague. Today, it is easy for this same workaholic to send an email. While this initially seems less intrusive than a phone call to the house, portable TMC devices (e.g., WEDs, laptops) allow for this message to be received at the home. Even if the person does not read the email until the next day, they likely notice the day and time it was sent. Expectations, or norms, quickly develop whereby employees feel "it's normal to receive emails after 9pm from my clients and co-workers." I recommend that organizations, or at the very least work groups, create communication policies with regard to using technology after hours. Rather than relying on subjective norms about connectivity, employees should understand what is expected of them with regard to responding to email during non-work time.

From an occupational health perspective, the current study was one of the first to empirically examine the influence of modern communications technology on respite time. The results were not encouraging, as findings revealed that organization members who engaged in CB were less likely to psychologically detach from work. In other words, individuals continued to be occupied with work-related duties during the evenings, weekends, and even vacations. Although CB was not directly related to psychological well-being (duration: $r = .02$, 95% CI -.095, .132; frequency: $r = .03$, 95% CI -.086, .141), there appeared to be an indirect relationship through PDFW. The direct relationship between CB and PDFW suggests that over time, individuals who engage in

CB may be at risk for developing psychological (e.g., burnout, satisfaction) and/or behavioral (e.g., performance, absenteeism) outcomes. Organizations should therefore be aware of the potential downside of CB, particularly as it relates to the performance and psychological health of their employees. Future intervention studies are needed to more fully examine the direct relationship between CB and outcomes related to health and well-being.

Finally, the current study examined CB as it relates to engaging with work or work-related colleagues during non-work time. The flipside of this definition is using technology to engage with personal matters while at work (e.g., online shopping, vacation planning, or stock trading; emailing and instant messaging with family and friends). The current study did not examine how much time individuals use technology to engage with personal matters while at work. A new stream of research is beginning to explore this so-called "cyber-slacking" (Block, 2001; Lim, Teo, & Loo, 2002). Results from an online survey on Vault.com found that 90% of employees surfed the Internet for recreational purposed during work hours, and 84% of employees sent non-work related email (Lim, et al., 2002). Perhaps the amount of time individuals devote to such activities during the workday is positively related to CB. In other words, an organization member who spends every Monday morning updating his Fantasy Football statistics may engage in CB that evening because he was unable to complete his work during the work day. Future studies may find that the boundary of work and non-work time is not just becoming more fluid, it's actually disappearing altogether, as individuals move through the day transitioning from work to non-work tasks continuously.

Limitations

The current study has several limitations. First, the cross-sectional design limits the ability to find direct causal relationships. The model, as depicted in Figure 1, implied that the situational and individual difference variables were *antecedents* of CB, and that the psychological variables (e.g., job control, PDFW, well-being) were *consequences* of CB. The study design and analyses, however, only allowed for the examination of general relationships between variables. For example, I cannot conclude that WED distribution *causes* CB. Rather, I can only say that they are related to each other. Furthermore, since I collected the data from each sample via one questionnaire at the same time, the results suffer from common method bias. I therefore recommend that future researchers conduct intervention studies that measure variables both before and after the distribution of MCT (and WEDs in particular) to organization members.

Second, the findings may not be generalizable to other populations, across other settings. I gathered data from three samples, and although they behaved similarly, each one had its limitations. Sample A respondents were a mixed sample, and therefore were not representative of any particular larger population. Sample B respondents, in contrast, were from a single organization in the northeastern United States. While the results from this sample may be generalizable to similar departments within comparable media organizations from the same city, I cannot rule out that unknown factors specific to this organization may have confounded the results. Finally, Sample C respondents were from a stratified random sample of university alumni. The group who responded to my survey, however, was slightly younger than those sampled by the university, and therefore non-

response bias may have confounded the results (Rogelberg, Luong, Sederburg, & Cristol, 2000).

A third potential limitation relates to the definition and measurement of CB. I defined CB as, "an organizational member's use of TMC devices to engage with work or work-related colleagues during non-work time (e.g., mornings before work, evenings after work, weekends, vacation)." This definition does not include instances when an organization member leaves the office during the workday to attend a child's soccer game and uses their BlackBerry to monitor messages. If the boundaries between work and non-work time are becoming more fluid, then perhaps the terms "before work" and "after work" are less distinct. Furthermore, I measured CB duration by asking survey participants to report how often they used the TMC devices to perform job-related duties "before work, after work, and during days off." Respondents, however, may consider the terms "before work" and "after work," differently. For example, is responding to emails on the morning train considered "before work" time, or is this just an extension of the workday? If technology allows organization members to begin working before they leave the house, when do people feel their workday begins? Future studies are needed to address these nuances. For example, respondents could be asked to rank the list of 20 activities in terms of what is most considered "work" versus "non-work" time.

Other scales with potential measurement issues included perceived job control and TI-LOC. As I addressed in the Discussion, results from EFA revealed that both of these loaded on two separate factors. Rather than use a traditional measure of perceived job control (i.e., Ganster, 1989), I chose the Kossek et al. (2006) scale because it was designed to "capture the newer forms of flexibility that professionals have as noted in the

work and family literature" (p. 356). This scale measured aspects of perceived autonomy and perceived flexibility, but the data revealed that these dimensions may be differentially related to CB. With regard to TI-LOC, results suggested that perhaps the scale I constructed did not adequately measure the construct. I intended the scale to measure one's perception of whether TMI were within one's control (i.e., less distracting and more manageable) versus whether TMI were caused by "outside forces" beyond one's control (i.e., more distracting and thus difficult to manage). After analyzing the results, however, it appeared that this scale measured a construct more akin to self-efficacy for managing one's email in-box. Further refinement of these scales is therefore needed to further assess their construct validity, content validity and reliability.

There are additional limitations regarding the use of meta-analytic SEM to test the entire model. A major advantage of combining meta-analytic techniques with SEM is that it provides a powerful way to test theories that are unlikely to be feasibly tested by any single study (Carr, et al., 2003). Given the complexity of the model (e.g., number of variables), a sample with less than 100 cases would not be large enough to test it (Kline, 2005). For the current paper, I synthesized results from three separate studies, which resulted in greater statistical power. Meta-analytic SEM, however, is generally used when conducting a systematic review of a much larger number of studies (Viswesvaran & Ones, 1995). Furthermore, after examining the fit of the complete hypothesized model (Figure 2), I made post hoc modifications to improve the fit. The revised model (Figure 3) included only the significant paths, and therefore may have capitalized on chance (i.e., sampling error). Lastly, I did not create models for each sample independently, and

cannot systematically compare the model across two or more distinct samples. Future studies are needed to continue building the model by fitting it to additional populations.

One final limitation is that I used a web-based survey to study "connectedness." In essence, individuals had to be online and engaging with technology to learn about the study and answer the questionnaire. I did not collect any data via paper and pencil methods. The results may therefore inadvertently represent a greater proportion of organization members who are "connected." The goal of the current study, however, was exploratory in nature. I intended to use the data to begin developing a model of CB that can be expanded upon and further refined in future studies. Results from the three samples suggested there was variation in CB among respondents, even if these groups were more "connected" than the general population. I therefore believe the results provided sufficient evidence to begin building a CB model that is generalizable to the larger population of working adults. Future studies are needed to see if these results translate to additional segments of the population, and if there are other situational (e.g., external clients with access to MCT) and individual difference variables (e.g., organizational commitment, job satisfaction) that should be included in the model.

APPENDIX A

Email sent to Sample A

Technology Usage Survey

Kate McPadden, a former employee and now a PhD candidate at Baruch, has approached us about participating in her doctoral research project on Workplace Connectivity Behavior. By participating in Kate's research we'll learn more about how technology is affecting our work lives and work life balance with an eye toward what helps us, how we feel about it and what tools we might need for the future. I think this would be valuable information and insight to have in our ongoing efforts to make TCM a "best place to work." But I need your help.

Click on the link below and fill out the accompanying survey.

This is a secure website sponsored by Baruch University. You will not be asked to identify yourself and your participation and input are completely confidential. TCM will not have access to any individual level data. If you have any difficulty accessing the survey, you can contact Kate directly at: katherine_mcpadden@baruch.cuny.edu

http://www.surveymonkey.com/s.aspx?sm=oPJD6J9qdZ3HGZceXLflHQ_3d_3d

It will take about 10 minutes of your time. Participants who complete the survey by November 30th will be entered into a raffle to win a $100 Gift Certificate to Amazon.com. It's that simple.

Thanks in advance for your participation.

Brian

APPENDIX B

Email sent to Sample B

Thank you for participating in this important research project. If you would like to participate even further, there is a chance to win a $100 Amazon.com Gift Certificate.

We invite you to take part in the XXX College Technology Behavior Survey, being conducted by members of XXX's Department of Management. The purpose of the study is to investigate how individuals use technology (e.g., BlackBerries, cell phones, and laptops) to engage with work and work-related colleagues during non-work time (e.g., evenings, weekends, vacation).

Benefits of Study:

- You could win a $100 Amazon.com Gift Certificate! All participants who complete the survey will be entered into a raffle drawing.
- Your responses will be anonymous and confidential.
- Your participation will help to advance the study of technology-mediated communication behavior.

How to Participate:
Click on the link below and fill out the accompanying survey (it will take about 10-15 minutes of your time):

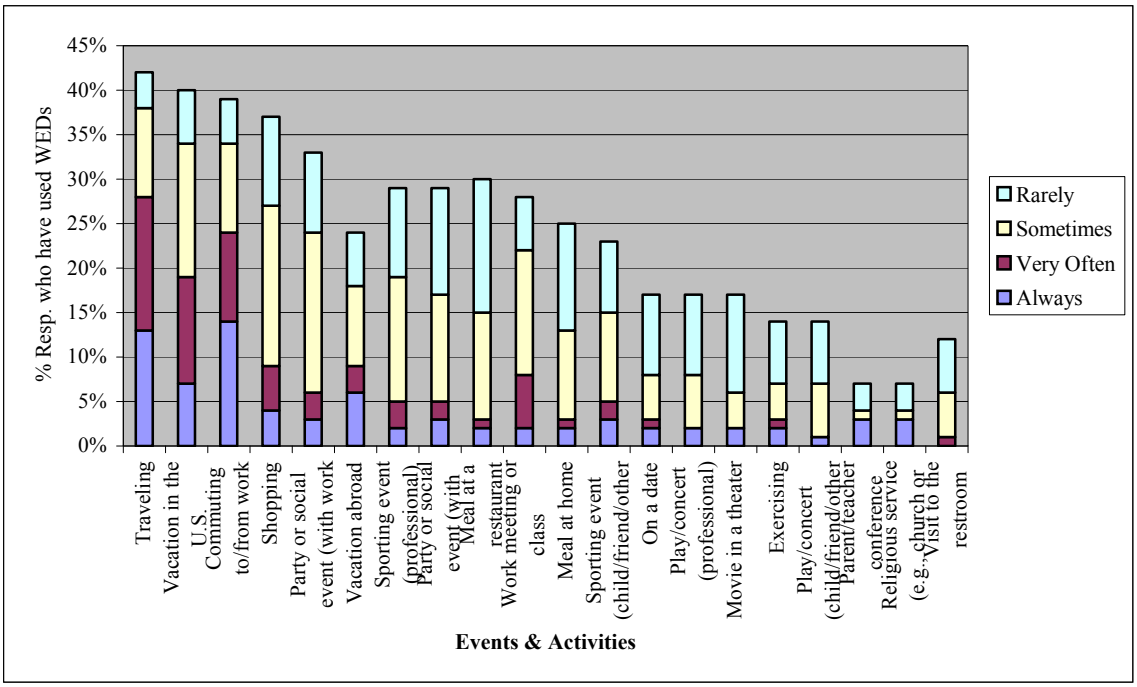
APPENDIX C

CB Frequency: Activities and Events

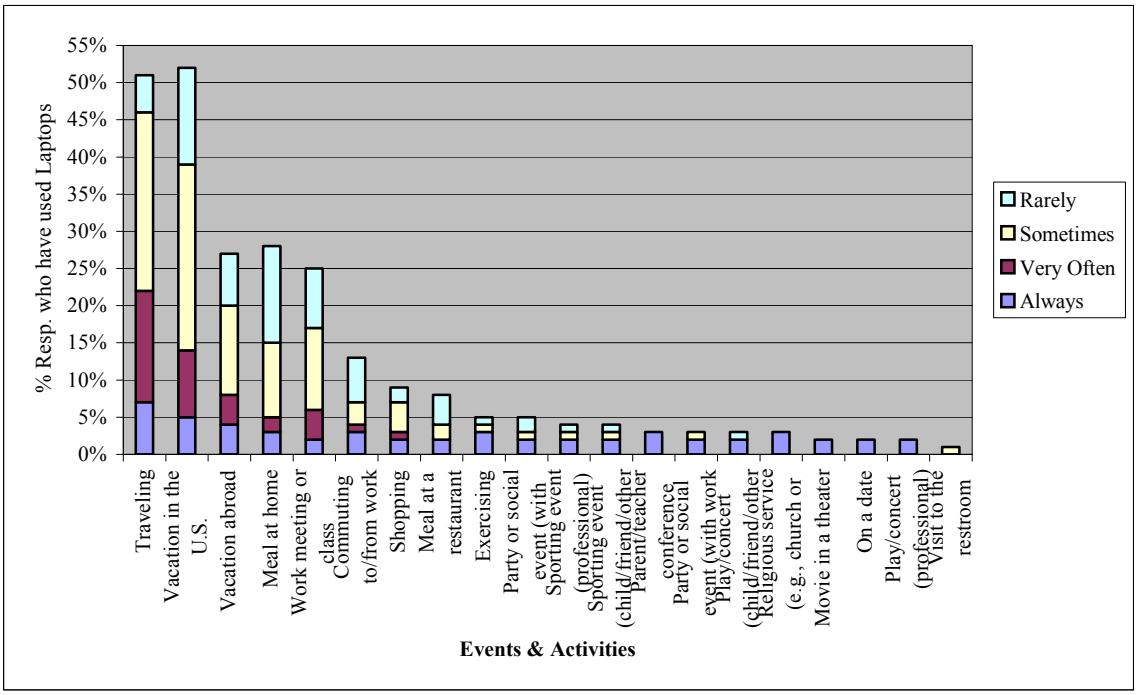
1. Exercising
2. Shopping
3. Traveling
4. Commuting to/from work
5. Meal at home
6. Meal at a restaurant
7. Movie in a theater
8. On a date
9. Play/concert (professional)
10. Play/concert (child/friend/other loved one)
11. Sporting event (professional)
12. Sporting event (child/friend/other loved one)
13. Party or social event (with work colleagues/clients)
14. Party or social event (with family/friends)
15. Parent/teacher conference
16. Religious service (e.g., church or synagogue)
17. Vacation in the U.S.
18. Vacation abroad
19. Visit to the restroom
20. Work meeting or class

APPENDIX D

CB Frequency Results: Wireless Email Devices



CB Frequency Results: Laptop Computers



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