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The Use of Communication Technologies After Hours: The Role of Work Attitudes and Work-Life Conflict†

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Communication technologies have made it increasingly feasible for employees to stay connected to work when not in the office. Yet we have little understanding of the implications for important aspects of work and work life. This study investigates how the use of communication technologies beyond normal work hours relates to work-related attitudes and work-to-life conflict. Results found that employees with higher ambition and job involvement were more likely to use communication technologies after hours. Furthermore, use of communication technologies after hours was associated with the employee's work-to-life conflict as reported by the employee and a significant other of the employee.

Keywords: *work-life conflict; communication technology; work attitudes*

Increasingly sophisticated and affordable technologies have made it more feasible for employees to stay connected to work. Clearly this technology has facilitated telecommuting where workers perform some or all of their work outside of a traditional office setting, yet this

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technology also provides employees in traditional work settings with a means to stay connected to the job while away from the office during nonwork hours. For example, an employee may check or respond to voice mail and e-mail during the evenings or over the weekend. The use of such communication technologies has increasingly blurred the line between work and home. Yet we have little understanding of how use of these communication technologies outside normal working hours might relate to important aspects of work and work-life outcomes.

This study's purpose is to better understand the use of communication technologies (CTs) to perform job-related functions during nonwork time (i.e., "after hours"). We focus specifically on employees working in a traditional work structure rather than those engaged in telework whose use of CT is the primary means of maintaining their employment relationship. The specific CTs included in this study were cell phones, e-mail, voice mail, personal data assistants (PDAs), and pagers. These technologies were most relevant to our sample (discussed more below) and represent the typical technologies used to electronically connect individuals to the workplace (Fenner & Renn, 2004; "The New 'New Economy,'" 2003). We first explore the work-related attitudes associated with reported use of CT after hours. We then investigate the role of CT use after hours to an employee's work-life conflict as reported by the employee. For a subset of the sample, we also investigate work-life conflict as reported by a "significant other" of the employee. This latter constituent group is of particular interest because an employee's use of CT during nonwork time affects others in his or her personal life, and these individuals may ultimately influence employee reactions and behaviors. Indeed, there have been numerous calls to examine work-life issues from the perspective of the target employee's family members (e.g., Bellavia & Frone, 2005; Parasuraman & Greenhaus, 2002).

Use of Communication Technologies After Hours

CT has changed the media we use to communicate with each other in the workplace and has also changed our connection to work while not on company time. We may respond to cell phone calls during dinner, check our e-mail messages on vacation, or leave a colleague a voice mail before turning in for the night. Through computer-mediated CTs such as e-mail, cell phones, and PDAs, employees are able to stay connected to work even when not formally "on the job." Fenner and Renn referred to this as "technology-assisted supplemental work," arguing that technologies have "enabled an anytime-anywhere connectedness of employees to their work" (2004: 184). Of course, individuals may engage in job-related tasks after hours *without* the use of CT (e.g., completing a report Sunday afternoon for Monday's meeting). Yet CTs in particular have changed the temporal as well as structural aspects of work (Valcour & Hunter, 2005), helping to define the "new workplace" (Gephart, 2002) as employees become more and more connected to their jobs beyond the boundaries of the traditional workplace and workday.

Boundaries (e.g., physical, temporal, behavioral) serve to structure and demarcate the various roles an individual maintains in different domains. Yet CTs allow for greater work-life integration, thereby allowing the line between domains to blur (Batt & Valcour, 2003; Chesley, Moen, & Shore, 2003; Fenner & Renn, 2004; Valcour & Hunter, 2005). Drawing on boundary theory and related research on role integration (cf. Ashforth, Kreiner, & Fugate, 2000; Kossek,

Lautsch, & Eaton, 2005), this study examines individual differences associated with using CT after hours and the implications of such use for employees' work-life conflict.

Correlates of CT Use After Hours

Although individuals are likely to vary in their use of CT after hours, we know little about what distinguishes individuals who stay connected to work through CT from those who do not. Understanding the correlates of CT use after hours will not only help researchers develop theories of the role of CT in the workplace but also from a practical standpoint, will help managers better understand CT use (or not) among their workforce.

Because we are interested in the use of CT for work purposes during nonwork time, we focus on variables linked to an individual going beyond the boundaries of the traditional work context. That is, what types of individuals are more likely to allow work to cross the boundary into one's personal life? Boundary theory suggests individuals vary with respect to how much they choose to integrate their various roles (Ashforth et al., 2000; Kossek et al., 2005; Nippert-Eng, 1996). Individuals will tend to favor and ultimately engage in roles that are associated with positive reinforcement of their self-concept (Ashforth et al., 2000; Stryker, 1980). In other words, an individual will be more likely to engage in his or her work role, even when in another role domain, when the individual considers the work role to be an important component of himself or herself. This suggests individuals with higher identification and attachment with work-related elements are more likely to use CT for work purposes when in the nonwork domain. We focus on three constructs in this study—affective commitment, ambition, and job involvement—as potentially important in explaining an individual's CT use after hours. We see these constructs as particularly relevant, given the potential importance of employees' beliefs and attitudes toward job and career elements, to their willingness to *remain* connected to work during personal time.

As noted above, individuals are likely to favor roles that provide positive reinforcement of their self-concept, and such favored roles are, in turn, more likely to be integrated into other role domains (Ashforth et al., 2000; Ashforth & Mael, 1989). We see affective attachment to an organization (i.e., affective commitment) as particularly reflective of an individual's identification with his or her work role. Affective commitment to the organization is predicated on identification or internalization of the firm's values, thus forming a "moral attachment" apart from the calculative or instrumental exchange of behaviors (cf. Buchanan, 1974). Affective commitment is thus likely to be associated with an employee's engagement in work-related behaviors beyond the traditional boundaries of the organization. Related to this, research suggests a link between an individual's affective attachment to an organization and behavior that is above and beyond the call of duty (e.g., O'Reilly & Chatman, 1986; Organ & Ryan, 1995). The general argument is that employees are inclined to give back to an organization to which they have a strong sense of identification. In effect, employees reciprocate in the form of prosocial behavior to the organization to which they feel attached (O'Reilly & Chatman, 1986). We suggest a similar argument regarding use of CT after hours. Specifically, individuals who feel affective attachment toward an organization are likely to put in extra effort to contribute to that organization and thus report greater use of

CT after normal working hours. From a boundary perspective, affective commitment, as reflective of the importance placed on work-related elements, should associate with enacting one's work role while in the nonwork domain.

Beyond one's feelings toward the organization, other individual differences related to one's job and career aspirations and interests more generally are also likely to associate with CT use after hours. In particular, prior research has shown an important role for job involvement and work centrality in fostering more discretionary types of work behaviors (e.g., Diefendorff, Brown, Kamin, & Lord, 2002), integration of work and nonwork roles (e.g., Olson-Buchanan & Boswell, 2006), and long work hours (e.g., Major, Klein, & Ehrhart, 2002). Job involvement is conceptualized as the importance or centrality of one's work role to an individual's self-concept (Kanungo, 1982). Schlosser's (2002) qualitative study on wireless technologies revealed an important role for self-identity in how individuals perceive and use technologies and in particular how individuals use technologies to complement their personae. This suggests individuals whose personal identification is linked closely to their work are more likely to use CTs even when involved in other domains (e.g., family). Fenner and Renn (2004) argue employees high in job involvement will be internally motivated to extend their workday through technological tools because they consider their work central to their existence. This is consistent with arguments that individuals are likely to integrate a favored role into other domains because they place high value on that aspect of themselves (Ashforth et al., 2000; Stryker, 1980). We expect a positive relationship between identification with, and interest in, one's job (i.e., job involvement; Kanungo, 1982) and the tendency to stay connected to work after hours.

Beyond one's identification with work, the desire to *succeed* in one's work (i.e., ambition, Desrochers & Dahir, 2000) is likely to play a role in motivating CT use after hours. Ambition is distinct from psychological attachment to or identification with the job, organization, or profession but rather reflects the importance placed on professional success. Desrochers and Dahir (2000) discussed ambition as a motivational factor to do what is necessary to advance in one's profession (either within or beyond the present employer). Ambition is often seen as an element of Type A behavior (e.g., Kivimaki & Kalimo, 1996), reflecting a constructive personal characteristic to seek high levels of achievement (cf. Hansson, Hogan, Johnson, & Schroeder, 1983). Ambitious individuals are likely to work long and hard, putting in the extra effort, striving to get ahead and achieve professional and personal success. Staying connected after hours may be seen as a means to get ahead in the organization or profession more generally. Again, the boundary literature would suggest that individuals placing higher importance on their career would be more likely to enact their work roles even when in another role domain. Accordingly, we expect ambition to be positively related to CT use after hours.

In sum, we expect CT use after hours to be positively related to affective commitment, job involvement, and ambition. While affective commitment reflects feelings about the employing organization, the latter variables reflect the importance placed on work and career elements to the individual more generally (beyond the context of the employing organization). The following hypothesis incorporates the above arguments regarding the correlates of CT use after hours.

Hypothesis 1: CT use after hours relates positively with (a) affective commitment, (b) job involvement, and (c) ambition.

Using CT After Hours and Work-to-Life Conflict

The proliferation of CTs has created the opportunity to work at any time and any place (Fenner & Renn, 2004). This allows for greater integration between work and life, and arguably greater control and flexibility over managing the demands of different domains (Batt & Valcour, 2003). Although CT is likely to allow for greater connectivity to and flexibility in managing work demands, such integration (or boundary blurring) may come at a price for an individual. Indeed, the popular press is replete with examples and discussions of cell phones, e-mail, and the like tying employees to their jobs, leaving little room to disengage (e.g., Robinson, 2006; Zambrowicz, 1998).

In this study, we focus specifically on the influence of using CT after hours on an employee's work-life conflict—as perceived by the employee and as perceived by a significant other of that employee. Work-life conflict can occur in two directions—work interference with life or family and life or family interference with work (Carlson, Kacmar, & Williams, 2000; Greenhaus & Beutell, 1985). Because of our focus on CT use for work during nonwork time, we focus specifically on how work demands may interfere with one's personal life. We refer to this construct as work-to-*life* (rather than work-to-*family*) conflict to emphasize the potential role of CT use interfering with one's personal life generally, including but not limited to "family."

It is important to emphasize that we are focused specifically on CT use during nonwork time (i.e., "supplemental work"; Fenner & Renn, 2004) rather than using CT for personal activities during work time. An example of the latter would be an employee who is enabled to attend her daughter's volleyball game on Thursday afternoon because having a cell phone will alert her to work issues that may arise. In these situations, CT may help an employee balance work and life demands by allowing one to attend to personal issues while maintaining connectivity to work during traditional work time. Yet by focusing specifically on CT use during nonwork time, we can better discern how the demands of work might interfere with one's personal life even though CT use may at times allow employees to meet such work demands while in the nonwork domain.

Work-life conflict is a form of interrole conflict whereby the role demands of one domain interfere with meeting the demands of a role in another domain (e.g., Greenhaus & Beutell, 1985; Kahn, Wolfe, Quinn, Snoek, & Rosenthal, 1964). The rational model of work-life conflict holds that conflict in a role (e.g., family) increases in proportion to amount of time spent in another role (e.g., work). In support of this, prior research has found an important role for amount of work time and/or workload in predicting work-family conflict (e.g., Gutek, Searle, & Klepa, 1991; Wallace, 1997). For example, Major et al. (2002) found that total hours spent on work positively related to work interference with family, which in turn positively related to reported depression and somatic health complaints (e.g., headaches, trouble breathing). The general argument is that long work hours contribute to work-family conflict by making it difficult for an employee to fulfill the requirements of and/or drained from his or her family role (e.g., Edwards & Rothbard, 2000; Greenhaus, Parasuraman, Granrose, Rabinowitz, & Beutell, 1989; Major et al., 2002). Interestingly, prior research linking time spent on work activities to work-life stress has generally not distinguished time spent working at home beyond normal work hours. For example, Major et al. (2002) included both time

spent working in a regular workday and time spent doing job-related work at home in their overall measure of work time. Chesley et al. (2003) focused specifically on technology use to manage the work-family interface yet did not distinguish between CT use at home versus use at work. Yet the potential role of working while in the home environment is arguably distinct from time spent working at the office.

CT use after hours may be particularly likely to associate with work-to-life conflict because an individual is not only spending time working, thus detracting from personal time, but these technologies (e.g., cell phones, pagers) hold the potential to interrupt or distract an individual at any time (e.g., Friday evening during a daughter's dance recital, en route for vacation) and any place (e.g., restaurant, church). Boundary theory and the issue of role integration specifically are thus quite relevant. Several researchers (Ashforth et al., 2000; Hall & Richter, 1988; Kossek et al., 2005) have suggested that greater integration of roles (e.g., work and family), or permeable boundaries, have adverse consequences. For example, Ashforth et al. (2000) argued that permeability of roles allows for unannounced interruptions, increases confusion about what role to enact at a given time, and prevents full disengagement from one role to immerse in a current role. Hall and Richter argued that "boundary permeability epitomizes role conflict" (1988: 217) in that individuals are attending to two domains, with their separate norms and expectations, simultaneously. Others have discussed how the interference that occurs when the thoughts and behaviors specific to one domain (e.g., work) cross the boundaries into another domain (e.g., family) can lead to reactions such as work-life conflict (e.g., Edwards & Rothbard, 2000). As argued by Fenner and Renn, the individual "is not readily available, either psychologically or physically, to pursue those responsibilities deemed to be of importance by the nonwork or family role" (2004: 191). This is supported by anecdotal evidence suggesting the difficulty telecommuters often have separating work and family activities (e.g., Kurland & Bailey, 1999). Accordingly, we expect that the greater the use of CT after hours, the more one's work role intrudes in, and detracts from, one's personal life, leading to work-to-life conflict.

However, work-to-life conflict is likely perceived not only by the individual connected to work after hours (i.e., the employee) but also by those individuals connected with that individual. That is, individuals involved in the employee's personal life may serve witness to the intrusion and distraction created by CT use. Interestingly, employees may derive some level of benefit from the intrusion as suggested by recent research by Brett and Stroh (2003) showing that managers work extreme hours because of psychological as well as financial rewards received for doing so. Employees' significant others, on the other hand, may experience the intrusion of CTs yet are less directly in receipt of accompanying rewards and professional gratification. Understanding how individuals in the employee's personal life react to that employee being connected to work after hours provides additional insights and a more complete picture of the work-life consequences (Bellavia & Frone, 2005). Indeed, recent research (e.g., Fortner, Crouter, & McHale, 2004; Grandey, Cordiero, & Crouter, 2005) has argued the importance of examining the employee's work-to-life conflict as reported by those in the employees' personal life in addition to the employee himself or herself.

Hypothesis 2a: CT use after hours relates positively with employee work-to-life conflict.

Hypothesis 2b: CT use after hours relates positively with employee work-to-life conflict as reported by the employee's significant other.

We also included control variables when investigating the role of CT use after hours to work-to-life conflict. First, as noted, time spent working has been shown to affect stress-related outcomes (e.g., Major et al., 2002). Specifically relevant to the present study is time spent working *in general* "after hours." An individual may spend time working after his or her traditional work hours, and this may be at the expense of one's personal life; yet in the present study we are specifically interested in the role of *CT use* after hours. Accordingly, we control for hours spent working after hours to specifically tease out (and provide a rather conservative test of) the role of CT use after hours over and above working during nonwork time more generally.

We also included an array of demographic variables as controls. First, prior research suggests gender differences in experienced job demands, technology use, and work-life conflict (e.g., Duxbury & Higgins, 1991). Related, an individual's family structure and demands may influence CT use, reactions, and work-life conflict (e.g., Chesley et al., 2003; Standen, Daniels, & Lamond, 1999). We thus included sex, marital status, and parental status as control variables. Finally, because this study included a range of jobs within an organization, including managers and lower level staff employees, and those positions within the organization may have implications for the nature of job demands as well as reactions to such job demands, we control for managerial status. As discussed below, this also allowed us to explore whether the relationship between CT use after hours and work-to-life conflict depends on the nature of one's job.

Method

Procedure and Sample

Survey packets were sent to all nonacademic staff employees ($n = 938$) of a public university. Each survey packet included a cover letter, the survey, and reply envelope. The cover letter explained the survey process and assured confidentiality of the responses. Managers and administrators (subsample $n = 130$) were also given a separate survey for a significant other to complete. A *significant other* was defined as anyone (18 years or older) in a good position to assess the employee's work and personal life (e.g., spouse, adult child, romantic partner). University administration was uncomfortable with our surveying significant others of lower level employees (in part because of union concerns) and thus limited our sampling of significant others to the population of managers and administrators. However, the Human Resources (HR) department believed that there was a balance of CT users and nonusers within this subsample and that focusing on managers and/or administrators would help maximize the response rate of significant others given the importance of these issues to managerial-level employees in particular. The surveys were distributed via the university mail system but were returned by respondents (and significant others) directly to an author not affiliated with the university. A total of 360 employee surveys (38% response rate) and 35 significant-other surveys (27% response rate) were returned. All of the significant-other surveys had matched employee survey data. Although this was a small number of significant-other respondents, results below demonstrate that it was sufficient to produce statistically significant and theoretically supported relationships.

As noted above, we focused on all nonacademic staff positions at the university rather than limiting our analyses to a specific employee group. Twenty-two percent of the respondents

were managers or administrators. Respondents were primarily Caucasian (63%), female (67%), married (73%), and between the ages of 41 and 55 (57%). Thirty-eight percent had at least one dependent child living at home. The respondent sample was generally representative of the organization population. For example, 55% of the employees in this organization are between the ages of 41 and 55, 55% are Caucasian, and 60% are female. Although our respondents are somewhat more likely to be female and Caucasian, we do not believe the magnitude of the differences substantively bias the results. The significant-other respondents were primarily the employee's spouse (87%), female (70%), and workedoutside the home (84%).

Measures

CT use after hours. Respondents were asked to report the frequency (1 = *never*, 5 = *very often, i.e., several times a day*) with which they use an array of CTs to perform their job during nonwork hours. Our measure was based on Batt and Valcour's (2003) measure of flexible technology use but adapted to include newer technologies and those of most relevance to the present sample. We assessed the use of five specific CTs: cell phones, e-mail, voice mail, PDAs, and pagers. The five specific technologies of focus were verified with the university's HR director as representative of CTs potentially used by employees. Consistent with Batt and Valcour, responses to the individual technologies were averaged to create an overall index of reported CT use after hours (α= .72).

Although there was variance in job duties among our respondents, which may affect use and reactions to CT use (an issue we empirically examine below), the university had firmly set working hours (i.e., 8-5) for all employees minimizing concerns that our measure of CT use after hours might assess CT use as part of some employees' formal job requirement. Our discussions with the HR director gave us confidence that employees had the resources and ability to complete their work during the set working hours, yet CT use for work after hours would vary across individuals but at an individual employee's discretion. However, as an additional check, we assessed on the survey whether employees felt they were "expected" to use CT during nonwork hours. Only 13% of respondents indicated some degree of expectation to use CT after hours, and controlling for this variable in the analyses did not substantively change the results.

*Affective commitment***.** This was measured with Meyer and Allen's (1997) six-item scale. Example items include the following: "I do not feel a strong sense of belonging to this university" (reverse coded) and "This university has a great deal of personal meaning for me" (1 = *strongly disagree*, 5 = *strongly agree*) (α = .80).

Job involvement. This was measured with a reduced version (i.e., 6 of the original 10 items) of Kanungo's (1982) scale. Example items include the following: "The most important things that happen to me involve my job" and "I like to be absorbed in my job most of the time" " (1 = *strongly disagree*, 5 = *strongly agree***;** α = .72).

*Ambition***.** This was assessed with Desrochers and Dahir's (2000) two-item Professional Ambition Scale and Hansson et al.'s (1983) single-item general measure of ambition. An example item includes: "It is important that I succeed in my profession" (1 = *strongly disagree*, 5 = *strongly agree*). The three items were averaged to create the scale ($\alpha = .85$).

Work-to-life conflict. We assessed work-to-life conflict using Gutek et al.'s (1991) four-item Work Interference With Family Scale. Although this scale was originally labeled as a measure of work-*family* conflict, the original items (used in the present study) reflect an individual's personal life more generally, making it appropriate for our purposes. An example item includes: "My work takes up time that I'd like to spend with family/friends" (1 = *strongly disagree*, 5 = *strongly agree*). We assessed employee work-life conflict as reported by the employee ($\alpha = .84$) and as reported by the employee's significant other ($\alpha = .87$). The items on the significant-other survey were worded to elicit the individual's perspective regarding his or her significant other's (i.e., employee's) work-life conflict (e.g., "My significant other's work takes up time that I'd like him/her to spend with me").

Respondents reported the *hours spent working during "nonwork" time* in a typical week, *sex* (1 = *female*, 0 = *male*), *marital status* (1 = *married*, 0 = *not married*), *parental status* (1 = *dependent under 18*, 0 = *no dependents*), and *position* (1 = *managerial*, 0 = *other staff*).

Results

Descriptive statistics are shown in Table 1. The pattern of correlations provided initial support for many of the hypotheses. Specifically, CT use after hours positively correlated with employee work-to-life conflict as reported by the employee ($r = .29$, $p < .01$) and as reported by the employee's significant other ($r = .33$, $p < .05$). Furthermore, CT use after hours positively correlated with ambition ($r = .24$, $p < .01$) and job involvement ($r = .23$, $p < .01$). However, CT use after hours was not significantly correlated with affective commitment ($r = .07$, *ns*). The hypotheses were tested with multivariate analyses.

We regressed CT use after hours on affective commitment, job involvement, and ambition (see Table 2). In partial support of Hypothesis 1, ambition ($\beta = .18$, $p < .01$) and job involvement ($\beta = .18$, $p < .01$) were positively related to CT use after hours. However, consistent with the bivariate results, affective commitment was not significantly related to CT use after hours. The results were consistent when demographic variables and hours spent working during nonwork time were controlled in the analyses, suggesting an important role for job involvement and ambition (but not affective commitment) in relation to CT use after hours even controlling for sex, family demands, and the demands of the job more generally ($\Delta R^2 = .04$, $p < .01$).

Hypothesis 2 proposed a positive relationship between CT use after hours and work-to-life conflict. In support of this hypothesis (see Table 3), CT use after hours positively related to employee work-to-life conflict as reported by the employee ($\beta = .15$, $p < .05$) and as reported by the significant other ($\beta = .37$, $p < .05$). These relationships were found after controlling for hours spent working during nonwork hours and demographic variables, suggesting

Table 1
Descriptive Statistics and Interitem Correlations

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10
1. CT use after hours	2.08	0.81	—									
2. Commitment	3.29	0.71	.09	—								
3. Ambition	3.90	0.67	.24**	.15**	—							
4. Job involvement	2.93	0.62	.24**	.32**	.33**	—						
5. Work-life conflict (employee)	2.85	0.91	.25**	–.25**	.04	.14*	—					
6. Work-life conflict (significant other)	3.21	0.97	.33*	–.04	.10	.03	.50**	—				
7. Hours spent working during nonwork time	5.23	6.60	.46**	–.04	.16**	.20**	.37**	.24	—			
8. Sex (1 = female)	0.67	0.47	–.20**	.01	–.06	.02	.03	.11	–.18**	—		
9. Marital status (1 = married)	0.73	0.44	.09	.04	.02	–.03	.11*	.25	.09	–.14*	—	
10. Dependent status (1 = one or more dependent)	0.38	0.49	.07	.08	.20	.01	–.04	–.10	–.05	–.18**	.20**	—
11. Position (1 = manager)	0.22	0.41	.23**	.16**	.11*	.22**	.08	—	.31**	–.19**	.14**	–.08

Note: CT = communication technology.
*$p < .05$
**$p < .01$

Table 2
CT Use After Hours Regressed on Individual Characteristics

Variable	*B*	*SE B*	β
Commitment	.00	.07	.00
Ambition	.23	.07	.18**
Job involvement	.23	.08	.18**
R^2	.09		
F	10.03**		

Note: CT = communication technology.
**$p < .01$

an important role for CT use after hours in relation to work-to-life conflict over and above reported job and family demands more generally. Note that position was not included as a control in the analyses for significant others because the subsample of respondents included only those in managerial positions (i.e., position was constant). CT use after hours explained an *additional* 2% of the variance in work-to-life conflict as reported by the employee and an *additional* 13% of the variance in work-to-life conflict as reported by the significant other. Although the incremental variance explained may seem modest (particularly for work-life conflict as reported by the employee), these relationships were above any role for simply working "after hours."

Table 3
Work-Life Conflict Regressed on CT Use After Hours

	Work-Life Conflict (reported by employee)			Work-Life Conflict (reported by significant other)		
Variable	*B*	*SE B*	β	*B*	*SE B*	β
Step 1						
Hours spent working during nonwork time	.05	.01	.36**	0.04	.02	.34
Sex	.19	.12	.10	0.50	.44	.23
Marital status	.08	.13	.04	1.48	.73	.37*
Dependent status	–.06	.12	–.03	–0.12	.42	–.06
Position	–.04	.14	–.02	—	—	—
Step 2						
Hours spent working during nonwork time	.04	.01	.30**	0.02	.02	.23
Sex	.22	.12	.11*	0.62	.41	.28
Marital status	.07	.13	.03	1.43	.68	.36*
Dependent status	–.07	.12	–.04	–0.07	.39	–.04
Position	–.06	.14	–.03	—	—	—
CT use after hours	.16	.07	.15*	0.50	.23	.37*

Note: CT = communication technology. For work-life conflict reported by employee, $R^2 = .12$ for Step 1; $\Delta R^2 = .02$ for Step 2 ($p < .01$). For work-life conflict reported by significant other, $R^2 = .21$ for Step 1; $\Delta R^2 = .13$ for Step 2 ($p < .05$).
*$p < .05$
**$p < .01$

We conducted several post hoc analyses to further explore the nature of the relationships. First, the bivariate results (see Table 1) revealed several significant relationships between the individual characteristics (i.e., commitment, job involvement, ambition) and work-to-life conflict, suggesting that the relationship between CT use and work-to-life conflict might be spurious. A post hoc analysis revealed that controlling for the individual characteristics examined in this study, CT use remained significantly related to work-life conflict as reported by the employee ($\beta = .18$, $p < .01$) and as reported by the significant other ($\beta = .39$, $p < .05$). A related issue is whether CT use after hours mediates the relationships between affective commitment, job involvement, and ambition and work-life conflict. We conducted the analyses, finding that CT use did not fully mediate these relationships with work-life conflict. Results of these analyses are available from the authors upon request.

We also examined whether sex interacted with CT use after hours in relation to work-life conflict. Research on gender role stereotypes might suggest that given family time is generally considered more of a woman's domain whereas work time is more a man's domain, women engaged in work during home time may be more adversely affected. Analysis of this issue revealed no moderating role for sex ($p > .10$).

A final post hoc analysis examined the nature of one's job in reactions to CT use after hours. As noted, this study included employees across jobs within the organization, yet we may expect differing effects on work-to-life conflict based on position. Managerial employees may

experience less work-to-life conflict associated with CT after hours relative to nonmanagers because of higher expectations/norms surrounding workloads as well as greater autonomy and control present in their jobs. Accordingly, we examined the interaction of position and CT use after hours in relation to work-to-life conflict (as reported by the employee only because position was constant for the subsample of significant-other respondents). The interaction term was significant ($\beta = .45$, $p < .05$; $\Delta R^2 = .02$, $p < .01$). Examination of the interaction revealed that those in managerial positions experienced a *stronger* positive relationship between CT use and work-to-life conflict. Although the relationship between CT use after hours and work-to-life conflict was positive (and significant) for nonmanagers, the magnitude of the relation was significantly less. Furthermore, and as one would expect, managerial employees also reported greater use of CT after hours ($M = 2.43$ and 1.98; $F = 19.10$, $p < .01$). Implications of these finding are discussed below.

Discussion

Gephart noted in his introduction to a recent special issue on organization behavior in the electronic age, "The presence and extensive use of computers and telecommunications media is one of the defining aspects of new work" (2002: 334). Yet we have only begun to understand the role of CTs and the implications of this new workplace for individuals and organizations. Technological advances have led to an increased use of CT for work and nonwork purposes, during the workday and long after the traditional workday comes to an end. The present study is the first to explore individual differences in CT use after hours as well as how its use is related to outcome measures. Results of this study suggest individual differences related to ambition and job involvement are particularly important in explaining CT use after hours. Interestingly, we found no role for an employee's affective commitment. In addition, and consistent with expectations, CT use after hours associated positively with an employee's work-to-life conflict as reported by the employee as well as a significant other of the employee.

Implications for Research and Practice

Results of this study showed that individuals vary in their reported use of CT after hours and, in particular, that reported use varies based on an employee's ambition and level of job involvement. Staying connected to work after hours may be viewed as a way to get ahead and progress in one's career within the organization and beyond and a way to remain on top of one's work. On the other hand, we found no relationship between CT use after hours and affective commitment toward the organization. We argued that employees with more affective attachment to the organization would feel inclined to put in the extra effort to stay connected to that organization. Yet there may be another mechanism (and reverse causal relation) at play such that higher reported use of CT after hours leads to lowered affective commitment because of a feeling of frustration or burnout. The nonsignificant relationship found for affective commitment suggests that perhaps both mechanisms may be at play. Regardless, it appears that individuals engage in use of CT after hours for themselves and their work and career interests and aspirations rather than because they have an affective attachment to the organization.

These findings help managers have a better understanding of who is most likely to use (or not) CT beyond the traditional boundaries of the workday. Fostering a sense of identification with the job and/or broader career elements perhaps through employee development or involvement programs may help promote greater use of CT after hours, to the extent that is desirable. On the other hand, highly involved and ambitious employees' greater use of CT after hours may come at a price given the positive relationship found between CT use after hours and work-life conflict (discussed next). Such employees may need to be encouraged to disengage from their work (e.g., set limits for checking work e-mail or answering work-related calls).

As expected, CT use after hours positively related to work-to-life conflict as reported by the employee and his or her significant other. It is interesting that employees choose to stay connected to work even though this work time conflicts with the time they would like to spend with friends or family. Perhaps the link between the use of CT after hours and work-life conflict is not immediately apparent to employees. That is, they may choose to use CT after hours to stay on top of their work or to prevent major work problems from developing, not realizing (or underestimating) that this practice may take an additional toll on their personal lives. An alternative explanation is that these employees have little choice in staying connected to work after hours. However, this was not the case at this organization, and our own assessment indicated little role for "being expected to use CT after hours" in explaining the results.

It is important to emphasize that these results were over and above any role for family demands as well as number of hours spent working during "nonwork" hours more generally. By controlling for this latter variable, we provide a particularly conservative test of the role of CT use after hours and specifically that there is a role for *using CT after hours* beyond simply *working after hours*. Thus, an employee who stays connected to work after hours through CT appears particularly prone to experiencing work-to-life conflict, perhaps because of the potential for spontaneous interruptions during personal time as well as the potential for interruption wherever the individual may be (e.g., at a restaurant, on vacation, at a child's school function).

Post hoc analyses exploring the moderating role of position within the organization revealed that greater use of CT after hours associated more strongly with work-to-life conflict for employees in managerial positions compared to lower-level staff employees. This is contrary to our initial expectations, as we expected that the nature of managerial work would render CT use after hours more expected and acceptable and thus arguably less intrusive for such employees. Yet our findings suggest the opposite; even though both groups experienced work-to-life conflict associated with CT use after hours, there was a stronger relationship for managerial-level employees. Note that, as one would expect, managerial and/or supervisory employees did report greater use of CT after hours, suggesting that this is a more common practice for such employees. Yet higher use does not completely explain why the nature of the relationship to work-to-life conflict would necessarily be stronger. It may be that managerial employees using CT after hours have a more difficult time transitioning back to their personal lives after responding to work issues given they have greater responsibility and/or "ownership" of the work, whereas lower level employees can more easily address the issue and then refocus on their personal lives. In effect, CT use may trigger for managers an increased investment in work activities likely leading to rumination about work and distraction from personal activities, placing them at higher risk for work-to-life conflict. Prior research showing a higher level of psychological involvement in work among managerial

employees (e.g., Li, Bechhofer, Stewart, McCrone, Anderson, & Jamieson, 2002) would provide some support for this contention. Indeed, much of the discussion in the literature surrounding the challenges workers face in balancing work and personal lives despite the increased flexibility and control afforded by technological advances has focused on managerial and professional employees (Valcour & Hunter, 2005). Of course, replication of our finding is needed given this study was conducted in one organization and examined a relatively small number of managers ($N = 78$).

An important strength of this study was examining employee work-life conflict from the perspective of the employee's significant other. Not only do our findings suggest that significant others' perspective of work-life conflict is consistent with employees' perspectives; they are interesting in their own right. Indeed, CT use after hours appears even more important to work-to-life conflict from the significant other's perspective than the employee's perspective (13% vs. 2% incremental variance explained). These findings may be explained by an employee deriving (or at least perceiving) some level of benefit or gratification from staying connected to work after hours, whereas significant others are likely to feel only an intrusion. Related, employees may be underestimating the toll that staying connected to work is taking on their personal life. Although the significant others may not be employees of the organization, their perspective of the employee's work-life conflict may have important implications for an organization. For example, these individuals may be the person to whom an employee turns when encountering a difficult situation at work or contemplating leaving the organization. In addition, if one's significant other views the employee's CT use as a stressor, this is likely to eventually have an effect on that employee's stress level, attitudes toward the job and organization, and work motivation.

Finding a link between CT use after hours and work-life conflict suggests that organizations need to recognize the toll that staying connected after hours may have on an employee's personal life. The connectivity and flexibility afforded by CT appears to come at the price of heightened work-life conflict. This study thus contributes to other recent work showing the importance of employee "recovery time" from work (e.g., Sonnentag, 2003). Organizations may be wise to formally (e.g., policies regarding e-mail correspondence on weekends) or informally (e.g., encouraging managers to model behavior by not e-mailing subordinates after hours) limit the use of CT after hours. Alternatively, given the prevalence of and norms surrounding CT use, it may be more effective (and realistic) for organizations to mitigate the potential work-life conflict associated with CT use with programs aimed at helping employees strike a balance. This reinforces the importance of work-life and/or family initiatives such as flexible work arrangements, child care benefits, and personal leave policies to organizational effectiveness and employee well-being (cf. Kossek & Ozeki, 1998; Perry-Smith & Blum, 2000).

Limitations and Future Research

This study focused on "traditional" employees' use of CTs. Future research could investigate the role of CT use on employee work-life stress making comparisons between teleworkers and traditional workers. Arguably, CT use may contribute to a blurring of the lines between work and nonwork for both employee groups, yet CT use after hours may have

additional negative effects for those employees who do not incur the benefits provided by telecommuting. Related, some of the factors shown important in predicting use of, and reactions to, virtual work/telework such as support resources, social relations, and reasons for the arrangement (e.g., Venkatesh & Johnson, 2002; Wiesenfeld, Raghuram, & Garud, 2001) would be important to examine in the context of CT use after hours in traditional work settings.

Research is also needed to uncover additional consequences, including the benefits, of CT use. For example, future research could investigate the effects on task performance and related process outcomes (e.g., workplace communication). This is particularly important given the enhanced flexibility and control afforded to employees through CTs (Batt & Valcour, 2003; Greenhaus et al., 1989), yet the deleterious impact of work-family conflict on both core and discretionary behaviors (cf. Bragger, Rodriquez-Srednicki, Kutcher, Indovino, & Rosner, 2005; Tompson & Werner, 1997). Thus, what are the relative trade-offs of integrating work and life domains in terms of blurring boundaries yet enhancing flexibility? Our study focused on CT use during nonwork time, but, of course, technologies also allow employees to attend to family demands while in the work domain, suggesting potentially positive effects on balancing work and nonwork demands. Chesley et al.'s (2003) study on technology use found evidence of both positive and negative work-family spillover. Related, it would be interesting to know for what precise purposes are employees using CT and the potential differing effects. For example, is there greater stress and work-life conflict when employees are disrupted from their personal life (e.g., incoming calls) versus when employees engage CT at their own convenience (e.g., check e-mail)? Although the present study provided an initial examination of the link between CT use after hours and work-life conflict, *how* CT is used and *who* controls the interaction are likely to play a key role and would be important to examine as moderators in future research.

This study investigated individual-difference variables related to one's attitude toward work and the organization as correlates of CT use after hours, although a great deal of variance in CT use remains unexplained. Future research should seek to uncover additional variables that might explain why an individual would stay connected to work after hours. For example, what is the role of attitudes toward technology? Fenner and Renn (2004) suggested that the effects of individual differences such as job involvement might depend on the perceived usefulness of, and satisfaction with, technologies. Also, although the performance effects of CT use may be important to investigate (as noted above), it would also be interesting to examine the reverse causal relation—that is, are high performers more likely to use CT after hours—given the positive role found here for individual differences in ambition and job involvement in relation to CT use after hours.

This study focused on employees across an organization rather than a specific job group. We took this approach to enhance the generalizability of our findings and also because of our reasoning that CT use after hours has potential implications for all employees. Although we controlled for position in the analyses, our post hoc analyses also revealed a differing role for CT use after hours on work-to-life conflict dependent on whether the respondent held a managerial position. Given this finding and the potential for differences in demands, expectations, and norms across jobs (Valcour & Hunter, 2005), it would be important for future research to more closely examine how CT use after hours varies across job types, industries, and organizational cultures and the respective effects of such differences.

Related, the jobs sampled in this study (university staff employees) are not the types of jobs one typically thinks of where CT would be most used and perhaps most useful. Although the "job" is typically done within normal working hours, this was not always the case as reflected in the reported use of, and variance in (although quite moderate), CT after hours. Although this did not preclude us from finding interesting results in support of our hypotheses and suggests this study may provide a somewhat conservative test of the role of CT use after hours, the nature of the sample should be taken into account when evaluating the results. We might expect greater use of CT after hours in sales, technology, and professional jobs. Of course, if CT use after hours is more the norm in such jobs, there may actually be less variance and/or different relationships with variables such as work-life conflict (e.g., work-life conflict may be lower if there is greater acceptance or expectations for the use of CT after hours). Interestingly, the sample of focus in this study arguably reflects that CT has allowed and perhaps even perpetuated employees to be connected in jobs where there is traditionally a limited expectation to be connected after work hours. Although the use of CTs after hours was viewed as a growing issue at this organization, the generalizability of our findings to jobs and organizations with higher expectations and greater need for CT use after hours needs to be examined.

A limitation of this study was the cross-sectional design. We investigated the correlates of CT use, implying that ambition and job involvement lead to CT use after hours. Although this may make sense conceptually, the specific direction of the effect remains unclear. For example, do employees with higher job involvement engage in more CT use after hours, or are individuals who use CT after hours more likely to feel a heightened sense of involvement? Similarly, do employees with greater work-to-life conflict start using CT more to accommodate work requirements and reduce the work-to-life conflict? Another problem associated with cross-sectional research is bias because of common-method variance. We incorporated an assessment of an employee's work-to-life conflict from a separate group of respondents (i.e., a significant other of the employee) to reduce this problem. The relations between CT use and work-to-life conflict as reported by the significant others were quite consistent with (and even stronger than) the results relying on the employees' report of work-to-life conflict, suggesting percept-percept bias was not a significant threat to the findings of this research. Furthermore, the primary variable of interest, use of CTs, was relatively objective to report, thus reducing the likelihood of inflated relations involving this variable (Podsakoff & Organ, 1986). Nonetheless, it would be interesting to examine the determinants and effects of CT use over time in future research.

An important finding from this research was the relationship between employees' CT use after hours and their work-to-life conflict from a significant other's perspective. This relation was quite strong, producing statistically significant relationships despite the moderate number of significant-other responses. Unfortunately, this moderate sample size prevented us from conducting more sophisticated analyses, such as how the perceptions of employees and their significant others interact to affect work-to-life conflict or the role of the significant others' own work situation. Also, because our analysis was restricted to a sample of managerial employees and their significant others, the generalizability of the findings to other employee groups remains unclear. We also cannot directly compare employee and significant-other reports given the sampling disparities across the variables. Nonetheless, the

statistically significant and strong results found in this study for work-to-life conflict as reported by employees' significant others support the importance of continued research investigating reactions of individuals other than the employee to more fully understand the potential consequences of CT use.

In sum, the present research investigated the important, yet not well-understood, issue of employee use of CTs, exploring the correlates as well as the implications for work-life outcomes of using such technologies during nonwork time. Although use of CTs "after hours" associated positively with an employee's career aspirations and attitudes, it also associated with heightened work-to-life conflict. As use of CTs to stay connected to work proliferates in our society, continued research is needed to help us understand the potential benefits (e.g., productivity) as well as the possible costs to an employee's personal life and well-being.

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