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Work-related technoference at home and feelings of work spillover, overload, life satisfaction and job satisfaction
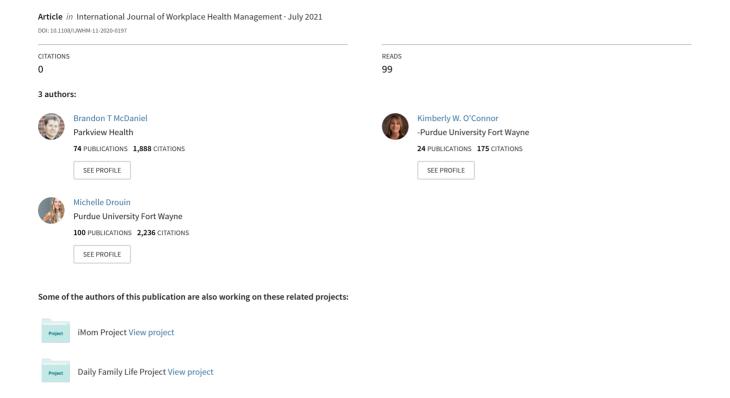
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Work-related technoference at home and feelings of work spillover, overload, life satisfaction and job satisfaction

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Abstract

Purpose – The purpose of this study is to examine whether work-related technology use outside of work and around family members could produce technoference or phubbing, where time spent with family members is interrupted by or intruded upon by technology use. The authors also examined its impact on work-to-family spillover, feelings of overload, life satisfaction and job satisfaction for workers.

Design/methodology/approach – Via an online survey, the authors assessed the frequency of technoference due to work, work-to-family spillover, feelings of overload, life satisfaction and job satisfaction. The authors' analytic sample included US parents (95 fathers and 88 mothers) who worked for pay and experienced technoference in their relationships, which was at least sometimes due to work.

Findings – Results reveal possible impacts of technoference related to work on employee feelings of work-to-family spillover, greater feelings of overload, lower life satisfaction and lower job satisfaction.

Research limitations/implications – Data are from a cross-sectional online survey, and results are correlational. Although the authors have theoretical/conceptual evidence for the impacts of technoference, it is possible that the direction of effects could be reversed or even bidirectional. Experimental/intervention work could further examine whether changes in technology use at home due to work improve employee well-being.

Practical implications – The authors' findings suggest that organizational policies which promote healthy boundaries and work-life balance are likely fundamental to employee well-being and that employers should be mindful of employees' work-related technology use at home.

Originality/value – This study examines technoference and phubbing due to work while at home, as opposed to focusing on the at-work context.

Keywords Work-life balance, Role overload, Psychological well-being, Job satisfaction, Phubbing

Paper type Research paper

Introduction

Technology use today is exceedingly prevalent, pervading nearly every aspect of modern life. Recent research by the Pew Research Center found that among US adults, aged 18–49, 99% own a cell phone, 97% have access to the internet and 44% say that they go online almost constantly (Miller, 2018; Perrin and Atske, 2021; Pew Research Center, 2019). Of course, wearables, portable devices, smart devices and a multitude of other commonly used technological tools are abundant, essentially enabling users to be reachable through their devices 24/7 (Fronimaki and Mavri, 2016).

Organizations, in particular, benefit from the near constant access they now have to their employees (Morandin *et al.*, 2018; Ragsdale and Hoover, 2016). This arguably brings both benefits and unexpected consequences to workers (Ayyagari *et al.*, 2011; Morandin *et al.*, 2018; Yang and Yin, 2020). For example, technology use has been linked to increased flexibility, productivity and positive social connection for workers (Boswell and Olsen-Buchanan, 2007; Ragsdale and Hoover, 2016). Additionally, technology has opened the door for many forms of unique types of work arrangements (i.e. telecommuting, flextime, remote work) (Hunter *et al.*, 2019; Kreiner *et al.*, 2009; Yang and Yin, 2020). However, ubiquitous access to employees can result in blurred lines between work and non-work domains, often leaving workers to struggle between balancing their work and personal lives (Hertlein, 2012; Morandin *et al.*, 2018; Ragsdale and Hoover, 2016). In the present study, we examine work-related technoference (the minor everyday intrusions and interruptions of devices in our personal interactions) (McDaniel and Coyne, 2016; McDaniel *et al.*, 2018), and its associations with work-to-family spillover, feelings of overload, life satisfaction and job satisfaction.

Work-life boundaries and work-to-family spillover

Prior studies have found that permeability between employees' work and personal lives can have a negative impact, with blurred boundaries often associated with work-family conflict that is caused by work-to-family "spillover" (work-related tasks, behaviors or emotions that interfere with workers' family lives) (Boswell and Olson-Buchanan, 2007; Chesley, 2005; Derks and Bakker, 2014; Yang and Yin, 2020). Though a handful of studies indicate that work-to-family spillover can be positive and lead to work-to-family enrichment (largely because of the additional familial resources gained from work) (e.g. Carlson *et al.*, 2006; Ghislieri *et al.*, 2017), most of the research in this area supports the idea that spillover from persistent work-related tasks into the familial environment tend to be in a negative form (Schlachter *et al.*, 2018). Some studies have focused specifically on technology-related work-to-family spillover and its impact on workers. For example, research done by Chesley (2005), which examined workers employed by organizations in upstate New York, found that increases in spillover associated with communications technology use explained increases in personal distress and lower family satisfaction in workers.

Additionally, employers and employees may not always perceive work-home boundaries similarly. One survey from Workplace Trends (2015) found that about two-thirds of surveyed human resources professionals say that their employees have a good work-life balance, whereas half of employees say that they do not, with employees noting specifically that they do not have enough time per week to perform personal activities. Often, it is the workers' ability to remotely connect to the workplace that leads to increased expectations of availability and after-hour work demands by the employer (Mellner, 2016). Also known as the "autonomy paradox," technology-enabled intensification of job responsibilities, coupled with expectations of longer working hours, can result in more organizational control in employees' personal lives (Steidelmuller *et al.*, 2020, p. 998). For employees, perceived work-life boundary violations have been linked to emotional exhaustion, depressive symptoms, lower life satisfaction (defined as an individual's subjective quality of life assessment) (McDaniel and

Coyne, 2016; Shin and Johnson, 1978) and lower job satisfaction (Cardenas *et al.*, 2004; van
Steenbergen *et al.*, 2007). Based on this literature, we hypothesized:

H1. Greater technoference at home due to work is associated with greater work-to-family
spillover.

Role conflict, role integration/segmentation and role overload
Other studies suggest that work-related technology use after work hours may contribute to
role conflict, or conflict that occurs when the demands of one role directly interfere with an
individual's ability to complete the tasks associated with another role (Hecht, 2007). This may
be due to the number of interruptions a worker may face while attempting to perform work
and life roles contemporaneously, or it may be because the worker is unlikely to fully
disengage from one role in order to perform the other role (Boswell and Olson-Buchanan,
2007; Fenner and Renn, 2010). Additionally, some workers may believe that answering work-
related calls or texts in their personal time is a social norm (Rainie and Keeter, 2006).

Ilies *et al.* (2009) examined employee preferences for role integration and segmentation (i.e.
whether or not workers choose to commingle their work and family lives), and found that the
extent to which employees integrate their work and family roles is positively related to the
strength of the spillover of job satisfaction onto positive or negative affect in their personal
lives. For example, employees with highly integrated work and family roles (e.g. someone
who cannot turn off his/her mobile device during a family vacation) experience higher levels
of negative affect and lower levels of positive affect when they are dissatisfied with their work
than do workers with a more segmented role approach. Conversely, employees who prefer
highly integrated roles also have higher levels of positive affect and lower levels of negative
affect when they are satisfied with their work (Ilies *et al.*, 2009).

Pervasive technology use has also been linked to role overload, which occurs when an
individual has multiple roles within a given domain, each with its own set of demands (Hecht,
2007; Lazarus and Folkman, 1984). Often associated with the concept of scarcity, role
overload can occur when the work and non-work domains overlap and simultaneously
compete for what the employee perceives to be scarce resources, such as time and energy
(Harris *et al.*, 2012). The scarcity of resources, or even the threat of losing these resources, can
lead to worker stress, which can then lead to negative outcomes (Harris *et al.*, 2012).

A handful of quantitative studies have specifically examined work-related technology role
overload, which occurs when technology-related job requirements are excessive and/or when
computers increase employees' overall workload (Harris *et al.*, 2012). Prolonged connectivity,
also called "techno-invasion," exists when mobile and wireless computing devices make users
feel as if they are constantly under supervision or on call, or that their workday extends into
all other areas of their life (Tarafdar *et al.*, 2007). Because of employees' ever-present access to
technology, employers' expectations for quantity and quality of work may increase, which
can also lead to role overload (Boyer-Davis, 2018; Harris *et al.*, 2012). This type of overload has
been associated with negative psychological (e.g. job dissatisfaction, anxiety), physical (e.g.
sick days) and behavioral outcomes (e.g. decreased productivity) (iResearchnet.com, n.d.;
Karr-Wisniewski and Lu, 2010). We therefore propose the following hypothesis:

H2. Greater technoference at home due to work is associated with greater feelings of
overload.

Work-to-family conflict, technoference in relationships and life satisfaction
Researchers have also examined the relationship between role overload and work-to-family
conflict (Frone *et al.*, 1997). Frone *et al.* (1997) found that subjects who felt overload in their
work domain (and consequently devoted more time to work) also had an increased perception
of work-to-family conflict. This is particularly true for those workers who prefer a true

separation between their work and family roles (Butts *et al.*, 2015; Derks *et al.*, 2016). Harris *et al.* (2012) found that technology-related role overload also resulted in work-to-family conflict, though such conflict may be moderated by coworker/peer-to-peer support. Carlson *et al.* (2017) found that technology-based role overload, along with job monitoring by employers, reduces job satisfaction and employee commitment. These negative outcomes have also been positively correlated to increases in employee turnover (Carlson *et al.*, 2017).

Personal relationships may also be impacted by work-related technology. Boswell and Olson-Buchanan (2007) measured work-life conflict from the perspective of the employee and the employee's significant other and found that communication technology use after hours had an even greater impact on the significant other's perception of work-life conflict than it had on the employee. Additionally, the overuse use of technology has been correlated to anxious dependence in relationships (Cheever *et al.*, 2014), poor interpersonal communication (Chotpitayasunondh and Douglas, 2018) and technology-related anxiety when individuals are separated from their devices (Rosen *et al.*, 2013).

One key piece that could explain why individuals may feel less satisfied with their work and personal lives is the intrusion of their technology into their face-to-face interactions and time spent with their romantic partners and/or family members. Technoference (i.e. interruptions of devices in personal interactions; McDaniel and Coyne, 2016; McDaniel *et al.*, 2018) and phubbing (the snubbing of others for phone use; Roberts and David, 2016) have indeed been linked with greater relationship dissatisfaction, relationship conflict over technology use and poorer individual well-being. This is likely due to the negative ways in which these technology interruptions change the synchrony of interactions between partners, the quality of the leisure time they spend together, as well as partners' perceptions of whether their partner values their time spent together (e.g. McDaniel and Coyne, 2016; McDaniel *et al.*, 2020; McDaniel *et al.*, 2018; Roberts and David, 2016). For example, both McDaniel and Coyne (2016) and Roberts and David (2016) found that perceived partner phubbing undermined the relationship satisfaction of the phubbed partner, which in turn reduced their reported life satisfaction. Additionally, McDaniel *et al.* (2018) found that greater technoference is related to greater conflict over technology use, lower relationship satisfaction and poorer perceptions of co-parenting (the extent to which parents support or fail to support one another's parenting) quality. McDaniel *et al.* (2020) further found in a daily diary study of 145 couples that partners were less satisfied with their time together on days when one or one's partner utilized solo technology during time spent together.

To date, no known studies have examined the question of whether the negative impact of *work-related* partner phubbing and/or technoference extends beyond the couple to the entire family unit. However, Ilies *et al.* (2009) found in their role integration/segmentation study that the employee's affective state is also transmitted to spouses and other family members (Ilies *et al.*, 2009). This finding is significant, as it serves as empirical evidence that employees' work lives not only impact the lives of their significant others, but it also impacts the lives of other family members as well. This suggests that the relationship problems associated with partner phubbing and technoference might also extend to the family. Considering these negative relational outcomes, in addition to the research by McDaniel and Coyne (2016) and Roberts and David (2016), which found an association between partner phubbing and lower life satisfaction, we hypothesized:

H3. Greater technoference at home due to work is associated with lower life satisfaction.

Technology-related worker stress and job satisfaction
As discussed, conflict over technology use has been linked to depression, as well as decreased overall life satisfaction (McDaniel and Coyne, 2016; Shin and Johnson, 1978). Similarly, "technostress," or the psychological stress that is caused by technology use, has been linked to lower levels of job satisfaction, employee commitment, productivity, commitment to the

organization and poor job performance (Bouckenooghe *et al.*, 2013; Tarafdar *et al.*, 2007; Walz, 2012). One theoretical cause for technostress is information overload (Walz, 2012). Research on information overload indicates that job satisfaction decreases when employees experience an unmanageable influx of information from their mobile devices and other work-related technology (Yin *et al.*, 2018).

Life satisfaction has also been linked to job satisfaction, with numerous studies pointing to a reciprocal causal relationship between these two constructs (Unanue *et al.*, 2017). Higher life satisfaction has been associated with many highly desirable outcomes for employers, such as reduced absenteeism and turnover and increased worker productivity (Unanue *et al.*, 2017). However, some studies show that the opposite may also be true. For example, Aziri (2011) showed that low levels of job satisfaction may have the potential to negatively influence employee commitment, absenteeism and intention to quit. Moreover, presenteeism or the idea that, though workers may be physically present and working yet are unproductive due to a physical or mental health condition, has been negatively linked to both work engagement and job satisfaction (Cote *et al.*, 2021; Lack, 2011). Recent research by Cote *et al.* (2021) examined the impact of presenteeism on employees' attitudinal and motivational responses toward work. They found that, while presenteeism is negatively linked to both work engagement and job satisfaction, worker perceptions of organizational support can help moderate these negative effects. This is serves as a reminder to organizations that supervisory support is key when dealing with worker health, well-being and overall job satisfaction.

Prior research on technostress by Ayyagari *et al.* (2011) also examined presenteeism, which they defined in their study as "the degree to which technology allows workers to be reachable outside working hours" (Ayyagari *et al.*, 2011, p. 840). They found that presenteeism was associated with stressors such as work-home conflict, work overload, invasion of privacy, job insecurity and role ambiguity (a lack of information and unpredictability about the consequences associated with a role) (Ayyagari *et al.*, 2011). Similar studies on "digital presenteeism" (sometimes also called "e-presenteeism," where workers are physically absent from work but are digitally present and working from home), have found that remote workers may be unproductive due to the pressures associated with their constant, technology-enabled connection to work (Granito, 2016; Ranosa, 2020; Rigg *et al.*, 2021). Other studies have found that remote workers may experience more stress as compared to their colleagues who regularly interact in a physical work environment, work more hours than they would in an office setting, and also experience physical and mental health problems due to the stress associated with constant connectivity (Dundin *et al.*, 2020; ILO, 2017; Ranosa, 2020). Based on the literature cited above, we hypothesized:

H4. Greater technoference at home due to work is associated with lower job satisfaction.

Method
Participants and procedure
Participants in the current study were from the Daily Family Life Project, a longitudinal study of parenting and family relationships. We recruited 183 families ($N = 366$ parents) via announcements on listservs, flyers in community buildings (e.g. public libraries, pediatrician offices, preschools) and contacts made via a family research database in a Northeastern US state. Flyers and information provided to possible participants stated that we were interested in understanding their experiences as a parent (i.e. no focus on technology was mentioned). Data were taken from the baseline time point, where participants (both mothers and fathers within families) completed an online survey. Data were from before the COVID-19 pandemic. Participants completed informed consent before participating in any part of the study. As the focus of the current paper was on technoference specifically due to work, we utilized data from only those participants who currently worked for pay (*M work hours* = 37.59, SD = 14.61) *and*

who stated the technoference they experienced was due to work at least sometimes or more often, leaving a sample of 95 fathers and 88 mothers. In this analytic sample, participants were on average 32.84 years old (SD = 4.82 years). Most were married (94%) and in a long-term relationship (M = 10.51 years, SD = 4.25); all had children, with 50% having more than one child; most were Caucasian (89%). Median family income was $75,000 ($M$ = $82,675, SD = $42,196), and 76% had a Bachelor's degree or higher. As the study was online, participants were from the following US regions: 59% Northeast, 15% West, 13% Midwest, and 13% South.

Measures

Technoference. Participants responded to a modified version of the *Technology Device Interference Scale* (TDIS; McDaniel and Coyne, 2016), a four-item measure that asks how many times various devices interrupt a conversation or activity participants are engaged in with their partner. For the current study, we focused on the three devices on this measure from which technoference from work could be possible, namely "cellphone/smartphone," "computer" and "tablet." Additionally, we modified the instructions to focus "on a typical day" and the scale points ranged from 0 (None) to 6 (More than 20 times). Items were averaged to produce an overall technoference score. The interruption could be due to notifications from the device itself, one's own device use, or a partner's device use. As these items create a formative construct (i.e. they contribute to the overall rate of technoference, but it is not necessary for there to be a high amount of technoference coming from all devices simultaneously, i.e. it is not necessarily expected that high consistency would exist between the items), Cronbach's alpha is not an appropriate measure of reliability.

If the participant rated that interruptions had occurred to some extent on at least one of the above devices, then participants were asked how frequently the interruption was related to work. Response options included 0 (Never), 1 (Rarely), 2 (Sometimes), 3 (Often), 4 (Very Often) and 5 (Always). In the current study, we limited the sample to include only those who rated that their experienced technoference was "sometimes" or more often due to work.

Work-to-family spillover. Participants responded to how frequently two items (from Grzywacz and Marks, 2000) occurred, including (1) "Your job makes you feel too tired to do the things that need attention at home" and (2) "Stress at work makes you irritable at home." Response options ranged from 1 (Never) to 5 (All of the time). The two items were averaged to produce an overall score, with higher scores representing greater negative work-to-family spillover (r = 0.49, p < 0.001).

Overload. Participants responded to 13 items regarding feeling overloaded (Reilly, 1982), such as "There are too many demands on my time" and "I cannot ever seem to get caught up." Response options ranged from 1 (Strongly disagree) to 5 (Strongly agree). Items were averaged with higher scores indicating greater feelings of overload (Cronbach's alpha = 0.92).

Life satisfaction. Participants responded to five items assessing their satisfaction with their life (Diener *et al.*, 1985), such as "In most ways my life is close to ideal" and "I am satisfied with my life." Response options ranged from 1 (Strongly disagree) to 7 (Strongly agree). Items were averaged with higher scores representing greater life satisfaction (Cronbach's alpha = 0.89).

Job satisfaction. This was measured via a single item, "In general, how satisfied are you with your current job?" Response options ranged from 1 (Not at all satisfied) to 5 (Very satisfied).

Analysis plan

We first ran descriptives and bivariate correlations between our main study variables in SAS 9.4. We then examined our hypotheses by running a series of four multilevel models (MLM), one for each outcome (work-to-family spillover, role overload, life satisfaction, job satisfaction). MLM was utilized to properly account for the nested nature of the data (i.e. mothers and fathers nested within families). In each model, we entered control variables

(gender, age, income, ethnicity and work hours) and our main predictor, frequency of overall technoference (via phones, computers and tablets). Recall that because of how we limited our sample, this technoference must have been at least sometimes or more often due to work. We also tested for moderation of the technoference effects by gender, but found no evidence of gender moderation.

Results
In the current sample, recall that we focused on US participants who currently worked for pay and who had experienced at least a little bit of technoference due to work. Within this group, we found that on average they sometimes experienced negative work-to-family spillover, were somewhat satisfied with their job, were neutral in regard to feeling overloaded, and slightly agreed with feeling satisfied with their life. Descriptive statistics and bivariate correlations are displayed in Table 1. Across participants, 42% rated that the technoference they experienced was due to work sometimes, 31% often, 22% very often and 5% always. In terms of the frequency of technoference, 93% stated that a mobile phone interrupted them at least once a day on a typical day, 54% stated the same about a computer, and 37% stated the same about a tablet (see Table 2). Bivariate correlations revealed the expected associations between technoference and the outcome variables, namely that greater technoference was associated with greater work spillover, greater overload, lower life satisfaction and lower job satisfaction.

Unstandardized beta estimates from our multilevel models are presented in Table 3. We now present the significant associations.

H1: Negative work-to-family spillover
We found support for our hypothesis in that greater technoference was associated with greater negative work-to-family spillover ($b = 0.14$, $p < 0.05$). We also found that males reported lower spillover ($b = -0.25$, $p < 0.05$), while those working more hours reported greater spillover ($b = 0.02$, $p < 0.001$).

H2: Overload
We found support for our hypothesis in that greater technoference was associated with greater feelings of overload ($b = 0.15$, $p < 0.05$). We also found that males showed lower feelings of overload ($b = -0.38$, $p < 0.01$), as did those of higher income ($b = -0.003$, $p < 0.05$), while those working more hours showed greater overload ($b = 0.01$, $p < 0.05$).

H3: Life satisfaction
We found support for our hypothesis in that greater technoference was associated with lower life satisfaction ($b = -0.20$, $p < 0.05$). We also found that those of higher income showed greater life satisfaction ($b = 0.007$, $p < 0.01$).

H4: Job satisfaction
We found support for our hypothesis in that greater technoference was associated with lower job satisfaction ($b = -0.24$, $p < 0.01$), while none of the control variables were significant.

Discussion
The present study expands upon the existing technoference literature by specifically focusing on technoference in relationships that is due to work (i.e. we limited our sample to include individuals who indicated that the technoference they experienced was at least sometimes due to work). Overall, we found that – in a sample of individuals who experienced

	1 Technoference	2 Age	3 Income	4 Work hours	5 Negative work spillover	6 Overload	7 Life satisfaction	8 Job satisfaction
1. Technoference	1							
2. Age	0.03	1						
3. Income	0.02	0.34***	1					
4. Work hours	0.01	0.22**	0.12	1				
5. Negative work-to-family spillover	0.18*	0.09	0.04	0.34***	1			
6. Overload	0.15*	−0.03	−0.13	0.06	0.53***	1		
7. Life satisfaction	−0.16*	−0.10	0.19**	−0.11	−0.24**	−0.38***	1	
8. Job satisfaction	−0.21**	−0.03	0.06	−0.09	−0.30**	−0.17*	0.35***	1
Mean	1.14	32.84	82.67	37.59	2.71	3.24	5.40	4.12
Standard deviation	0.82	4.82	42.20	14.61	0.64	0.78	1.11	0.95

Note(s): ***$p < 0.001$, **$p < 0.01$, *$p < 0.05$

Table 1.
Descriptives and bivariate correlations between main study variables

technoference due to work at least sometimes – those who experienced technoference more often showed greater negative work-to-family spillover and felt more overloaded and worse about their life and current job.

Our findings support prior spillover theory research, which suggests that a relatedness indeed exists between work and family life (Zedeck, 1992), and reinforces the notion that constant connectivity, especially when it interrupts or intrudes upon interactions, has the potential to negatively impact individuals' lives at home and their overall well-being. Previous research has also shown that negative work-to-family spillover is associated with psychological strain, as well as poor physical and emotional health (Butts *et al.*, 2015; Chesley, 2005; Derks and Bakker, 2014; Walz, 2012). This is due to factors such as cognitive stress, stress on relationships, pressure to be available 24/7 and role conflict, all of which have linked to decreased overall well-being in employees (Gozu *et al.*, 2015; Lutz *et al.*, 2020; McDaniel and Coyne, 2016). Therefore, the present study is significant, as it demonstrates that even minor everyday work-related intrusions or interruptions from our devices may also be related to overall employee well-being.

Not only does technoference due to work relate to well-being, but it is also linked with dissatisfaction with one's job. To date, previous research on technostress and role overload has shown a connection to job dissatisfaction, as well as decreased productivity and worker commitment, and increased employee turnover (Karr-Wisniewski and Lu, 2010). This is likely due to the fact that constant connectivity and technology-related information overload can lead to worker stress (Walz, 2012). However, the present study demonstrates that

	Frequency of technoference by device		Frequency the technoference rated previously was due to work			
	"Once a day"	"2 to 3 times" or more often	Sometimes	Often	Very often	Always
Cellphone/ smartphone	36%	57%				
			42%	31%	22%	5%
Computer	28%	26%				
Tablet	27%	10%				

Note(s): This is among those who currently worked for pay and who had experienced at least a little bit of technoference due to work

Table 2.
Frequency of technoference by device and due to work

Fixed effects	Model 1: Negative work-to-family spillover *b*	Model 2: Overload *b*	Model 3: Life satisfaction *b*	Model 4: Job satisfaction *b*
Intercept	2.83***	3.44***	5.39***	4.04***
Gender	−0.25*	−0.38**	−0.05	0.19
Age	0.006	0.005	−0.04*	−0.008
Family income	−0.0003	−0.003*	0.007**	0.002
Race/ Ethnicity	−0.04	−0.15	0.26	−0.03
Work hours	0.02***	0.01*	−0.007	−0.009
Technoference	0.14*	0.15*	−0.20*	−0.24**

Note(s): ***$p < 0.001$, **$p < 0.01$, *$p < 0.05$. Gender was coded 0 = female and 1 = male. Race/Ethnicity was coded 0 = Caucasian, 1 = other race. Except for the above mentioned variables, all other variables were grand mean centered. Family income was in \$1,000 units

Table 3.
Unstandardized estimates for the multilevel models of technoference due to work predicting outcomes

technoference may also lead to similar negative job-related outcomes. Interestingly, recent longitudinal research by Keller *et al.* (2019), found that higher levels of work interruptions (technology-related or otherwise) while at work may predict lower job satisfaction over time. Longitudinal exploration of how after-hours technoference may impact job satisfaction over time may be worthy of future research.

Although not originally a focus of the current study, our results suggest that gendered work-family differences exist, as higher levels of work-to-family spillover and role overload were reported by women. This is in line with prior research on gender, which indicates that women often experience higher levels of role overload, stress, and depression as a result of boundary permeability and may actually perceive company requirements related to after-hours work and technology differently than men (Ghislieri *et al.*, 2017; McElwain *et al.*, 2005). That said, there is also evidence from Sweden that when exposed to the same occupational contexts, men and women develop depression and burnout at relatively equal rates (SBU, 2014). Hence, it may not be that men and women are inherently different; rather it may be that they have different career and employment contexts which are associated with different rates of depression and burnout. These disparate findings might also suggest some cross-cultural differences in the ways in which men and women perceive and respond to work-related commitments. This is a direction for future research.

Previous gender research also suggests that women may benefit more than men when they are given control over their work and family boundaries and that female employees' work engagement is positively influenced under such circumstances (Straub *et al.*, 2017). A recent study by Shanine *et al.* (2019) examined boundary theory (how individuals create and maintain boundaries between work and family) among US entrepreneurs and the impact that their work-life boundary preferences had on business performance. This study found gender differences, such that a preference for integration between work and family enhanced the business performance of men, and a segmented role preference enhanced the business performance for women. Only when women had at-home businesses did a preference for integration between work and family yield a better business performance (Shanine *et al.*, 2019). Considered together, these studies suggest that gender may also be a significant factor when examining after hours work, technology and boundary management.

Finally, this study also contributes to the growing body of literature that focuses on overall work-life balance. Our research supports the notion that negative outcomes can arise for employees due to work-related technoference. This is consistent with prior research showing that constant connectivity may not give workers sufficient recovery time (Derks and Baaker, 2014); may increase personal distress (Chesley, 2005); and may lead to role and interpersonal conflict (Gozu *et al.*, 2015). Thus, the present study should serve as a reminder to organizations that work-life balance is essential to a maintaining a healthy and productive workforce.

Practical implications
This study adds to our understanding of work-related technoference in several ways. First, the results can help inform organizational policy and practice regarding technology going forward. However, organizations should also be careful not to overly prescribe exact practices that may inadvertently create dissatisfaction in some workers (Rothbard *et al.*, 2005). This is because prior research suggests that the effectiveness of organizational boundary management practices may depend highly on individual employee work preferences (Bogaerts *et al.*, 2018; Rothbard *et al.*, 2005). Recent research by Herttuala *et al.* (2020) further suggests that individual factors, such as the ability to manage time, delegate tasks, and ask for help are important factors for maintaining worker well-being. Supervisors should therefore be empowered to discuss and/or create flexible work arrangements with

individual employees (who desire such arrangements) in order to create a work environment that fits employee needs, yet still maintains protection for the organization against potential discrimination claims (Bogaerts *et al.*, 2018). One possible way to accomplish this would be to establish performance metrics based upon employee productivity rather than attendance. Supervisors should also model their own balanced approaches regarding after-hours, work-related technology use, as research shows that supervisors who exhibit segmentation behaviors themselves have employees who will feel empowered to do the same (Koch and Binnewies, 2015).

Interestingly, one recent study by Buchler *et al.* (2020) that examined employees from two global corporations found that constant connectivity is negatively related to employee well-being *regardless* of workers' boundary segmentation preferences. Their results also showed that the negative association between technology-enabled after-hours work, psychological detachment, and employee well-being exists for workers who prefer role segmentation, as well as for workers who prefer role integration (Buchler *et al.*, 2020). A growing number of countries world-wide have likewise recognized the relationship between psychological detachment and worker well-being by enacting "Right to Disconnect" laws (e.g. France, Spain, Italy, India and the Philippines, among others). These laws give workers the legal right to disconnect from technology-enabled, work-related communications during non-working hours, and in some instances (e.g. Luxembourg) even during paid vacations. The goal of these laws is to reduce worker stress, anxiety, depression and burnout (Way, 2019).

Second, this study can also help employers understand that employees need time to detach from work for their overall well-being, as our results show that both male and female workers can experience negative effects from technoference. Research on psychological detachment, or the act of distancing oneself from work mentally and physically, has shown that the ability to disconnect from work is essential to employee well-being. In particular, high levels of workload (including technology-related after-hours work) has been shown to predict low levels of psychological detachment – which has in turn been linked to stress, burnout and low life satisfaction (Mellner, 2016; Sonnentag and Fritz, 2015). Supervisors should be aware of employee workload and also be trained to recognize signs of employee stress and role overload. Though our findings showed that the strength of the association between technoference and the outcome variables in our study were the same for both men and women, women and those of lower income in our study also reported greater spillover and role overload. Therefore, certain groups of workers may already be experiencing greater levels of stress as compared to their coworkers, and the need to detach and recover from work may be even more essential for these employee populations.

Third, this study reinforces the importance of lessening the conflict between employees' work and family roles. Prior research by Hammer *et al.* (2011) emphasizes the importance of training supervisors to support workers' goals of work-life balance. Such support from supervisors has been found to be key in maintaining worker well-being and also in reducing instances of presenteeism (Cote *et al.*, 2021; Herttuala *et al.*, 2020). However, the present study should signal to organizations that supervisors also need to be trained on healthy boundaries regarding after-hours technology use, as our results demonstrate that greater technoference is negatively related to employees' life and job satisfaction. As discussed, these two variables have previously been associated with undesirable outcomes for organizations – higher rates of absenteeism, poorer worker productivity and increased employee turnover (Unanue *et al.*, 2017). Decreases in work-related technoference therefore not only lay the foundation for a more satisfied workforce, but it can also lead to increases in organizations' bottom lines.

As our study was conducted in the US, where there are not yet widely-accepted initiatives for limited work weeks or after-hours emails with employees, it is unknown whether these relationships will still exist in communities and cultures with more restrictions aimed at maintaining a work-life balance. This is a promising avenue for future study. Additionally, in

response to the COVID-19 pandemic, many organizations around the world transitioned rapidly from traditional workplaces to remote work environments. Organizations would likely benefit from exploration of worker perceptions of technoference, boundary management/blurred boundaries, work-to-family spillover, among other technology-related topics specific to the COVID-19 pandemic.

Limitations and conclusion
The data from this study comes from a cross-sectional online survey of US parents, meaning the results are correlational in nature, and although we feel we have theoretical and conceptual evidence for the likely impacts of technoference on outcomes it is possible that the directions of effects could be reversed or even bidirectional at times. Cross-cultural experimental and intervention work could further examine these relationships and whether changes in technology use at home due to work causes employee well-being to improve. We also did not examine the sector of work to which the men and women in this sample belonged. It is possible that different sectors of employment have varying technological demands that affect both technoference and life satisfaction. Future studies should further explicate these relationships. Additionally, the results likely apply most directly to individual workers in long-term committed relationships with children, and future work should expand this research to examine a greater diversity of workers. Overall, results reveal possible impacts of technoference related to work on employee feelings and well-being, which could negatively impact a variety of work-related outcomes. We suggest that employees should examine their technology use in their home to decide whether they feel this use is appropriate and whether it is negatively impacting themselves or their relationships, and employers should examine their workplace culture and policies to see whether they are inadvertently decreasing the satisfaction and well-being of their workforce.

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