After-hours work-related technology use and individuals' deviance: the role of other-initiated versus self-initiated interruptions

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Abstract

Purpose – The purpose of this study is to investigate the effect of after-hours work-related technology use on interpersonal, organizational and nonwork deviance through work–family conflict (WFC) by focusing on the moderating role of other- and self-initiated interruptions.

Design/methodology/approach – The online survey included 318 valid samples from employees working in different organizations in the Anhui provinces of the People's Republic of China. The authors applied Statistical Package for Social Sciences (SPSS) process macros for testing mediation and moderated mediation analysis while conducting path analytic procedures and bootstrapping analysis.

Findings – This study found that after-hours work-related technology use is positively associated with interpersonal, organizational and nonwork deviance through WFC. This positive relationship strengthens in the presence of other-initiated interruptions compared with self-initiated interruptions. The results show that as compared to self-initiated interruptions, other-initiated interruptions strengthen the relationship between after-hours work-related technology use and its outcomes in the forms of WFC and deviance.

Originality/value – After-hours work-related technology use is a ubiquitous phenomenon and got significant scholarly attention. However, its effect on WFC and individual deviant behaviors has never been studied. Moreover, the moderated-mediation role of self-initiated and other-initiated interruptions presents a unique and important development in the context of after-hours work-related technology use and deviant behavior.

Keywords After-hours work-related technology use, Work–family conflict, Interpersonal deviance, Organizational deviance, Nonwork deviance, Other-initiated interruptions, Self-initiated interruptions, Workplace deviance, Technology

Paper type Research paper

Introduction

When, where and how employees work have been changed fundamentally with the considerable advancement in communication technologies (Williams, 2019). After-hours work-related technology use (hereafter it refers to as AHWTU) is a highly topical and

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impactful issue in the current time. The evolution of technology in the past few years, such as affordable smartphones, tablets, laptops and fast Internet access have made our lives easier than before in many aspects; however, at the same time, it has blurred the lines between family and work (Chen and Karahanna, 2018; Duranova and Ohly, 2015; Boswell and Olson-Buchanan, 2007). These blurred boundaries have resulted in difficulties for employees to disconnect from work after working hours and caused negative consequences on work and personal life (Duranova and Ohly, 2015). Several companies (e.g. Atos, Puma, Volkswagen, and Bayerische Motoren Werke GmbH (BMW)) and countries (e.g. France Belgium, and Germany) have raised their voice to bound AHWTU due to the risks associated with this use (Gadeyne *et al.*, 2018). For example, individuals attending a dinner with friends, a child's annual school event, or a parent–teacher meeting are interrupted by their offices through a text message, a phone call, or an urgent email. Sometimes, these work-related interruptions do not require immediate action, but these interruptions still distract personal life that may lead to other severe negative outcomes.

Technology has facilitated flexible working, allowing individuals to increase working time and place flexibility even after working hours (Jarvenpaa and Lang, 2005; Cousins and Robey, 2015; Diaz *et al.*, 2012). Nevertheless, this picture is incomplete without considering the fact that a continuous attachment with work after working hours may cause several problems in individuals' lives, such as work–family conflict (WFC) (Kim and Hollensbe, 2018), which is mostly neglected in the extant literature (Chen and Casterella, 2018). The review of the literature on AHWTU has suggested various research gaps and limitations. First, few studies have highlighted the relationship of AHWTU with employee performance (Chen and Karahanna, 2018), turnover intentions (Ferguson *et al.*, 2016) and work–life balance (Adela and Casterella, 2019). However, knowledge on the adverse consequences of AHWTU on deviant behaviors is limited and needs further exploration. Therefore, we intend to fill this open research gap by investigating the relationship between AHWTU and deviant behaviors (i.e. organizational, nonwork and interpersonal deviance). Organizational deviance refers to a negative behavior targeted toward an organization (e.g. intentionally damaging company property, working slowly, illegally sharing trusted information, absenteeism, taking long breaks and damaging organizations' reputations). Nonwork deviance is described as an individual's deviant behavior outside an organization, and interpersonal deviance refers to a deviant behavior targeted toward other people (e.g. violence, gossips and interpersonal conflicts with others).

Second, the prior literature has mainly focused on emotional exhaustion (Karatepe and Tekinkus, 2006), cyberslacking (Luqman *et al.*, 2020) and technostress (Luqman *et al.*, 2017). The underlying mechanism of AHWTU in WFC has rarely been studied. WFC is referred to as the situation in which work hampers family responsibilities (Greenhaus and Beutell, 1985). The prior literature has provided evidence that WFC leads to decreased job satisfaction (Bedeian *et al.*, 1988), increased absenteeism (Goff *et al.*, 1990) and turnover intentions (Nohe and Sonntag, 2014). Nonetheless, to our best knowledge, WFCs in AHWTU have never been studied in the context of deviant behavior. Organizations should understand the effect of technology use in the workplace and develop strategies to overcome the negative consequences attributed to the use of technology. We thus expect that after-hours technology usage results in WFC that subsequently leads to deviant behavior.

Third, from recent research, the detrimental outcomes of technology usage can be mitigated by individual preferences (Kim and Hollensbe, 2017). Therefore, we further propose two key boundary conditions that are not yet examined, namely, other- and self-initiated interruptions, on the relationship between AHWTU and WFC. We anticipate that other-initiated interruptions strengthen the relationship between AHWTU and WFC because these types of interruptions are out of control and can occur anytime and anywhere (Chen and Karahanna, 2011). On the contrary, individuals are more likely to have

better control over their self-initiated interruptions. This study addresses the abovementioned research gap by utilizing the conservation of resources (COR) theory, from the organizational behavior literature to understand the proposed associations further (Hobfoll, 1989). The COR theory argues that strain outcomes are most likely to occur when resources are threatened or insufficient to meet demands (Penney *et al.*, 2011). To address the aforementioned gaps, we intend to explore the following research questions (RQ) in this study.

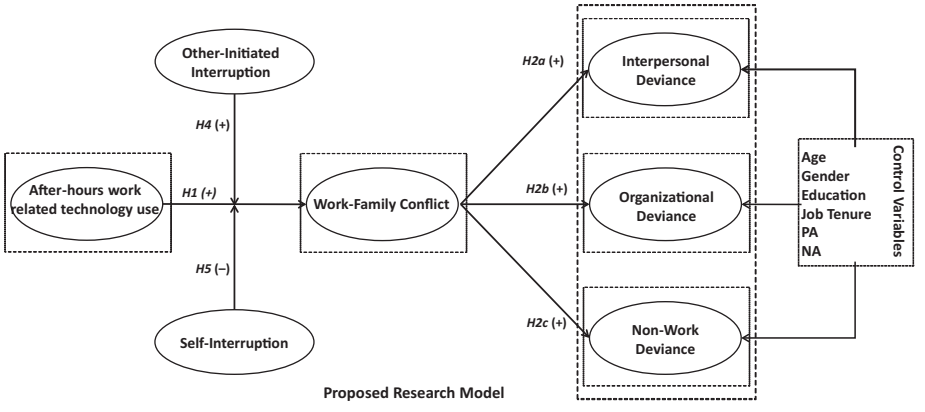
RQ1. What are the associations between AHWTU, WFC and deviant behavior among employees?

RQ2. Does WFC mediate the relationship between AHWTU and deviant behavior?

RQ3. Do other- and self-initiated interruptions moderate the relationship between AHWTU and WFC?

This study draws upon the COR theory to understand the effect of AHWTU on deviant behaviors by incorporating the mediating role of WFC and the moderating roles of other- and self-initiated interruptions. To empirically test the model, we have collected data from 318 respondents through multiple waves. The findings can provide a useful lens for us to understand the effects of work-related technologically mediated interruptions and interruption management after working hours. Our study has substantial contributions to the literature on technology use and employee outcomes.

First, this study contributes to fostering the timely and ongoing debate about whether the use of technology reduces or enhances employee productivity in the workplace (Ter *et al.*, 2016). It also highlights the dark side of technology use, which is an essential yet neglected area. Second, the research findings can be useful to organizations, human resources, technology service providers and policymakers to explore how to reduce employee WFC by focusing on AHWTU, thereby reducing organizational, nonwork and interpersonal deviant behaviors at work. The results provide information on how AHWTU causes behavior and psychological conditions adversely. Third, this research has made important contributions to the limited theoretical framework of the AHWTU literature by utilizing the COR theoretical framework to understand the dark side of technology use after working hours. Lastly, the boundary role of other- and self-initiated interruptions will provide knowledge on when AHWTU results in severe negative outcomes. Figure 1 explains the model of this study.



Note(s): *H3** Mediating Mechanism, *H4* demonstrate Moderated Mediation

Figure 1. Proposed research model

Literature review and hypothesis development

Literature review

The rapid development of technology has immensely changed the working environment. The extant literature has massively discussed this domain. Such development has enabled knowledge workers to work from anywhere and at any time (Bauwens *et al.*, 2020). These technological dynamics have affected the working surroundings in numerous other ways. The most prevalent effect is the use of technology (e.g. mobile phones, laptops and email) after-hours for work purposes. Khosrow-Pour (2017) supported the argument that technology has facilitated the trend of time and place flexibility for employees. It has permitted the integration of life and works by providing control to manage the demands of several domains and flexibility (Batt and Valcour, 2003; Diaz *et al.*, 2012).

Few scholarships have discussed the consequences of AHWTU (e.g. Duranova and Ohly, 2015). This situation has integrated family and work domains, leading to negative outcomes, such as enhancing distress and decreasing family satisfaction for employees (Van *et al.*, 2020). Moreover, it is giving the impression of constant availability of employees. Technology use and 24/7 availability of employees can reduce the nonwork and work domain boundaries (Jarvenpaa and Lang, 2005; Kim and Hollensbe, 2018). Prior studies have also found the psychological detachment resulting from technology use related to after-hours work (Ohly and Latour, 2014; Derks *et al.*, 2014; Duranova and Ohly, 2015). Employees' continuous availability and engagement in AHWTU exert pressure on them (Currie and Eveline, 2011; Cavazotte *et al.*, 2014; Kim and Hollensbe, 2018).

Contrary outcomes of being available after hours due to technology exist. For example, Khosrow-Pour (2017) discussed that technology usage allows employees to have control and flexibility that result in balancing work and life. Control and flexibility are the job characteristics related to job satisfaction, thus reducing the work–life conflict (Yu *et al.*, 2018). On the contrary, employees' constant availability could lead to blurred work and family boundaries, reduced employees' ability to take off and consequently reduced employee's well-being (Van Zoonen *et al.*, 2020; Williams, 2019). Few scholars have suggested that several employees perceive that technology use enables them to occupy in work tasks continuously even after working hours that results in work–life conflicts (Kim and Hollensbe, 2018; Cousins and Robey, 2015) and mixed work–life boundaries (Bauwens *et al.*, 2020). However, AHWTU needs additional insights into work–family domains from an interruption perspective.

Technology use may aggravate WFC (Gadeyne *et al.*, 2018; Xie *et al.*, 2018), but it depends on the manageability of interruptions. The prior literature has suggested that technologies, including emails, messages, calls and other Internet resources, are used for work-related tasks even after working hours. Yet, individuals do not have equal control over all these aforementioned mediums. Individuals try to control the interruptions of work–life boundaries, such as by not answering calls or switching phones off when they intend to avoid the interruptions (Chang and Tang, 2015). Employees can check emails and other online features associated with the workplace as per their convenience and create minimal intrusion, but phone calls and messages require an immediate response (Adkins *et al.*, 2014). People intentionally do not use mobile technologies at night or on weekends for reasons related to health and work–family boundaries (Cousins and Robey, 2015), resulting in deviant behavior. Nevertheless, the extant literature has rarely discussed technology interruptions from a deviance perspective.

The literature has massively discussed deviant behaviors in diverse ways. For instance, in general, deviant behaviors include employee deviance, organizational resistance, workplace deviance, employee misconduct, workplace retaliation, dysfunctional behavior and service dysfunction (Park *et al.*, 2019; Pletzer *et al.*, 2019; Lawrence and Robinson, 2007; Bennet and Robinson, 2000; Kidder, 2005). The symbiotic relationship of employees with their organization of mutual reciprocity leads to a healthy environment when the employees are

satisfied. Scholars have reported minimal work deviance when employees are satisfied with their work environment (Baharom *et al.*, 2017). However, AHWTU is boundary-crossing conduct, with the expected impact on individual personal life which is bidirectional (i.e. home to work and work to home). Despite the numerous finding in terms of outcomes of WFC (such as emotional exhaustion (Yener *et al.*, 2020; Towers *et al.*, 2006), negative emotions (Baharom *et al.*, 2017) and psychological detachment (Chen and Karahanna, 2018), this picture is incomplete without discussing the spillover effect of WFC into work domain. It is imperative to consider especially in information and communication technology (ICT)-enabled modern workplaces how technology work–life interference induces deviances. Relatively limited empirical papers have discussed AHWTU and deviant behaviors in consideration of other factors that are pertinent to this investigation (e.g. Khosrow-Pour, 2017; Jarvenpaa and Lang, 2005). The current study rigorously investigated to examine the relationship of AHWTU with employees' deviant behaviors (i.e. interpersonal, organizational and nonwork deviance as explained earlier), about which the literature is silent.

COR theory

The COR theory facilitates the elucidation of the antecedents and consequences of AHWTU. Hobfoll (1989) provided a focal presumption that individuals endeavor to look after, maintain, and assemble their resources that they find worthful and experience pressure and stress in case of undermining, risk of loss, or no gain of such resources once they have invested in them. The COR theory assumes that employees pursue AHWTU to manage the resources that were undermined at work and dedicate additional effort as compensation to evade stress (Duranova and Ohly, 2015). Dettmers (2017) explained that this condition bears the psychological cost of emotional exhaustion due to the additional compensatory effort. Hence, individuals who do not prefer AHWTU for work-related tasks may accept it for the conservation of their resources and replenish their energy by separating themselves from the routine job tasks.

Under the COR theory, the AHWTU is presumed to be related to the attainment of time and energy resources, self-efficacy, and psychological detachment, inducing negative and positive outcomes regarding employees' well-being (Duranova and Ohly, 2015). Prior studies have presented empirical evidence by showing that the intervening effect of psychological detachment between AHWTU and WFC is greater than that of job control as a mediator and supports the principle that the loss of resources is prominent than their gain (Richardson and Thompson, 2012; Ward and Steptoe-Warren, 2014).

Our conceptualization is aligned with the basic tenant of the COR theory, particularly the relationship that we propose between AHWTU and the three forms of deviance. For example, we can explain that AHWTU is likely to result in loss of psychological resources and physical resources (i.e. time, energy and emotional), leading to adverse outcomes, such as WFC and thereby deviances. An individual can be involved in deviant behavior in an organization, in his interpersonal relationships, and in nonwork dealings to regain his lost resources. For instance, an individual under stress caused by AHWTU may go to the office late, increase his absenteeism from the job, cheat on the company, supervisor, and/or customers, and make lies to family friends and/or coworkers. Such an individual can be involved in any deviant behavior because he does not have sufficient resources to perform well or in an attempt to reduce his stress and gain resources for dealing with such a situation.

COR is a theory of job stress that emphasizes the role of resources in preventing psychological and behavioral strain outcomes (Halbesleben and Buckley, 2004; Hobfoll, 1989, 2001). Krischer *et al.* (2010) and Tunstall *et al.* (2006) concluded that employees who engaged in deviant behaviors in response to organizational stressors experienced lower levels of emotional exhaustion. Indeed, the COR theory asserts that individuals are motivated to obtain resources as well as prevent resource loss. Deviant behaviors are

instrumental in helping employees to reduce the psychological strain associated with resource loss faced due to AHWTU. Along with the consistency of COR theory, these findings suggest that employees may leverage deviant behaviors to conserve resources and reduce the psychological strain associated with AHWTU. Based on the interruption literature (e.g. Chen and Karahanna, 2018), we theorize that self-initiated and other-initiated interruptions amplified the WFC and other personal life responsibilities. Guided by the previous technology-mediated interruptions that influence the life balance of the employee across the domain, this study examined the moderating role of both self-initiated and other-initiated interruptions. It is evident from the prior literature that technology-mediated communication perhaps intrudes on the personal life and triggers inter-role conflict (Towers *et al.*, 2006), because of incapacity of managing demand from the work and home (Dettmers, 2017). The conflict caused by technological interruptions (i.e. other-initiated and self-initiated interruptions) at home, impinge resources of an individual which therby enhances the possibility of deviance (Park *et al.*, 2019; Kidder, 2005). Therefore, we integrated the role of other-initiated and self-initiated interruptions in our proposed model which is also consistent with the COR theory. For example, determinants of work–life conflicts such as technology, individual characteristics, and work demand blurred the track between work and home, which continuously demand one's resources such as time and energy.

Hypothesis development

After-hours use of technology has a potential association with work–life conflicts. This work-related technology use causes distraction in any place and at any time. The prior literature has suggested that the strong integration of individuals' roles related to their work and personal life results in adverse outcomes (Kossek *et al.*, 2005). A WFC arises when the thoughts of one domain, that is, work, enter into the boundaries of other domains, that is, family (Edwards and Rothbard, 2000). This phenomenon is one of the inter-role conflicts.

On the contrary, researchers have found that technology use facilitates the work–life balance, wherein employees can manage their work and meet family responsibilities simultaneously. However, when this usage is extended to after-hours work, an individual's roles clash, and work–life conflicts arise. WFC antecedents have three categories: work-related, family-related and individual characteristics (Byron, 2005). This conflict ascends when the demands from family and work become unharmonious and the choice to participate in one domain (work) creates a trade-off in the shape of not participating in the other domain (family) (Greenhaus and Beutell, 1985; French *et al.*, 2018). WFC is bidirectional. It is bidirectional in a way that family responsibilities are intruded by work obligations and work obligations are intruded by family responsibilities (Bauwens *et al.*, 2020). Several prior studies have reported the negative outcomes of WFCs, such as health problems, absenteeism, decreased job satisfaction, excessive stress and turnover intention (Obrenovic *et al.*, 2020; Allen and Martin, 2017; Martins *et al.*, 2002). Managers face several problems due to these negative outcomes, including inefficiency in the use of time and financial cost (Chen and Roberts, 2019; Kossek and Lautsch, 2012). Furthermore, when employees find themselves unable to meet their work-related tasks or family responsibilities, it results in deviant behaviors.

A workplace deviant behavior is an employee's behavior when he willingly contravenes organizational standards and his organizational well-being is intimated (Robinson and Bennett, 1995). It is categorized into two types. One is organizational deviance that involves such employees' deviant behaviors as uninformed coming late to work, sabotage, working slowly and theft. The other is interpersonal deviance that is toward other employees that include bullying, rude attitude, aggression, playing pranks and making fun of other employees.

Different factors, including abusive supervision and an individual's personality, cause workplace deviant behaviors (Rasheed *et al.*, 2020; Baharom *et al.*, 2017; Park *et al.*, 2019; Pletzer *et al.*, 2019). Nonwork deviance, a third form of deviance, is becoming popular in the modern literature because it is referred to as the deviant behaviors targeted toward other people, not the work (Yam *et al.*, 2017). From the aforementioned discussion, WFC can result in job stress that leads to deviant behaviors. For instance, in an earlier study, Santos and Eger (2014) argued that an increase in job stress leads to deviance, such as anxiety, dissatisfaction and absenteeism. By contrast, Krischer *et al.* (2010) argued that individuals might perform deviant behaviors because they may take such behaviors as instrumental in reducing stress. However, the prior literature lacks in discussing WFCs and workplace deviant behaviors. Hence, we propose the following hypothesis:

H1. A positive relationship exists between AHWTU and WFC.

H2. A positive relationship exists between WFC and workplace deviance in three forms: (2a) interpersonal deviance, (2b) organizational deviance and (2c) nonwork deviance.

H3. WFC mediates the positive relationship between AHWTU and deviance in its entire three forms: (2a) interpersonal deviance, (2b) organizational deviance and (2c) nonwork deviance.

Interruptions can be differentiated based on their source, such as who initiates the interruptions. Chen and Karahanna (2011) categorized interruptions into two types: other- and self-initiated interruptions. Self-initiated interruptions are internally generated technologically mediated interruptions that halt the cognitive focus on a continuing task. For example, checking an email on smartphones in a restaurant during dinner or while watching a movie with the family. Other-initiated interruptions are externally generated technologically mediated occurrences that break the cognitive concentration on a continuing task. For example, receiving a call related to work while playing with children). The difference between the two kinds of interruptions can be the source of understanding of their different effects (Chen and Karahanna, 2011). For example, self-initiated interruptions are in the control of an individual because he/she can choose the time and place for such interruptions initiated by him (Rennecker and Godwin, 2005). For instance, writing a work-related report on a weekend evening, reservation of a meeting room for a monthly staff meeting, electronically checking the progress of a project, or checking work-related pending emails can be done with flexibility and at an easily available free time. On the contrary, other-initiated interruptions are not in the control of individuals; they can occur anytime and anywhere. For example, individuals have to attend an urgent call from a boss, check an urgent email with such notification on the phone or respond to customer feedback immediately. The timing and place of other-initiated interruptions cannot be controlled (Chen and Karahanna, 2011). Both types of interruptions (other- and self-initiated) can lead to destructive outcomes, such as WFC and deviance. The effects of other-initiated interruptions are likely to be more detrimental than those of self-initiated. For instance, Chen and Karahanna (2011) reported in their study an insignificant relationship between self-initiated interruptions and nonwork performance.

Other-initiated interruptions frequently occur unexpectedly and are considered disruptive for an individual's routine performance (Khizar *et al.*, 2020; Demerouti *et al.*, 2001; Jett and George, 2003; Lin *et al.*, 2013). The consequences of such interruptions are expected to be severe, including frustration, decreased involvement in an ongoing activity, perceived anxiety and stress (Jett and George, 2003). Our assumptions regarding the moderating role of other- and self-initiated interruptions are consistent with the COR theory (Hobfoll, 1989), which implies that loss of resources leads to negative outcomes for individuals. We believe that other-initiated interruptions, compared with self-initiated interruptions, can lead to more

loss of psychological resources for individuals, which may cause more severe consequences. Lin *et al.* (2013) argued that interruptions negatively affect an individual's resources, such as time, self-regulation, and cognitive resources, leading to strain. Other-initiated interruptions more severely reduce an individual's psychological resources compared with self-initiated interruptions; therefore, they are likely to strengthen the relationship between AHWTU and behaviorist negative outcomes.

H4. The relationship between AHWTU and work-life conflict is moderated by self-initiated versus other-initiated interruptions, in which the relationship is stronger when the interruptions are other-initiated versus self-initiated.

H5. The indirect relationship between AHWTU and deviance, (a) organizational, (b) interpersonal and (c) nonwork, through WFC is moderated by self-initiated versus other-initiated interruptions, in which the mediated relationship is stronger when the interruptions are other-initiated versus self-initiated.

Method

Procedure and participants. We surveyed to collect data for this study, in three phases in the People's Republic of China. We created an online survey link and distributed it among employees working in different organizations in the Anhui Province of China through emails/WeChat groups. For data collection, the first author of the study distributed the survey link with the help of his Chinese friends and Executive Master of Business Administration (EMBA) students of an eastern China university who were working in various organizations. The sample belongs to manufacturing-, insurance-, banking-, education-, finance- and hospitality-related organizations. The first phase of the survey was conducted in March 2019, in which we delivered a total of 700 surveys and received 443 responses (63.3% response rate). In this survey, we inquired our participants to rate the measures of after-hours technology usage, other- and self-initiated interruptions, positive affect, negative affect, and demographic information, such as age, gender, education, and work experience. Six weeks after the completion of the first phase of our survey, we conducted a second phase, in which we contacted 443 people who responded to our first phase; here, we received 355 responses. In the second phase, we asked our participants to rate the measure of WFC. Another six weeks later, during the third phase of our data collection, we requested the 355 participants to rate the measures of organizational, nonwork and interpersonal deviance. At the end of the third phase, we had 318 matched responses. We utilized participants' email IDs as a code to match the three-time surveys. At the beginning of the data collection, we ensured our participants about the confidentiality of their identity and provided information. To enhance the response rate, we announced a reward of RMB 10 cash prize in the form of a WeChat red envelop for each time they responded to the survey questionnaire and RMB 2500 cash reward for one participant selected through balloting at the end of the three phases of data collection. Of the 318 respondents, 52.2% were males, 42.5% were in the age group of 26–30 years, 52.5% were university graduates and 43.4% were having a job tenure of 2–3 years (Table 1).

Measures. The original scales used for collecting data for this study were in the English language.

According to the back translation method by Brislin (1980), we translated the English language questionnaire items into the Chinese language.

After-hours technology use. We used a five-item scale from the studies of Boswell and Olson-Buchanan (2007) and Batt and Valcour (2003) to assess our participants' after-hours work-related use of technology. Individuals were asked to rate "the frequency with which they use different types of technology (e.g. smartphone or landline phone, laptop, computer,

Category		Frequency	Percentage (%)
Gender	Male	166	52.2
	Female	152	47.8
Age (years)	18–25	135	42.5
	26–30	97	30.5
	31–35	63	19.8
	36–40	23	7.2
Education	High school or below	41	12.9
	College	118	37.1
	University	159	50.0
Experience	Less than 1 year	39	12.3
	1–2 years	138	43.4
	2–3 years	75	23.6
	3–4 years	50	15.7
	4–6 years	16	5.0

Table 1. Demographics information

tablet, iPad, and any other device) at home for their work purpose". The questions were designed on a five-point Likert scale, where 1 = *never* and 5 = *very often*. Cronbach's alpha (CA) reliability of the scale in our study was 0.87.

WFC. We assessed the WFC of our respondents with a five-item scale from Stephens and Sommer (1996). A sample item is "My work takes up time that I feel I should spend with my family." The questions were designed on a five-point Likert scale, where 1 = *strongly disagree* and 5 = *strongly agree*. The internal reliability of the scale in this study was 0.79.

Deviance. Deviance was measured with the scales from the studies of Yam *et al.* (2017) and Bennett and Robinson (2000). *Interpersonal deviance* was measured with a seven-item scale. A sample item was "made fun of someone at work." *Organizational deviance* was measured with 12 items. A sample item was "come in late to work without permission." *Nonwork deviance* was measured with seven items. A sample item for this scale was "made fun of someone outside work." All questions were designed on a five-point Likert scale, where 1 = *strongly disagree* and 5 = *strongly agree*. The internal consistencies of the scales were 0.93, 0.91 and 0.86.

Interruptions. Interruptions were measured with two scales from the study of Chen and Karahanna (2011): other- and self-initiated interruptions. To measure other-initiated interruptions, we asked the participants the question, "during non-work hours, how frequently are you interrupted by coworkers/other work contacts about work-related matters through technologies, such as email, phone call, text message, social media message, or any other technology." To measure self-initiated interruptions, we asked the participants the question, "to what extent do you initiate interruptions yourself during non-work hours to handle work through technologies, such as email, phone call, text message, social media message, or any other technology." Questions were designed on a five-point Likert scale, where 1 = *never* and 5 = *very often*. The CA reliability of the scale in our study was 0.85 and 0.82. (See Appendix for complete items)

Control variables. We also controlled for age, gender, education, job tenure, positive affect and negative affect, considering that these variables showed an association with the main variables of our study in the previous research.

Analysis and results

We applied the structural equation modeling (SEM) and SPSS PROCESS macros for testing our model (Preacher *et al.*, 2007). For hypothesis testing, we adopted the SEM technique by

using Amos 21, as it is more suitable for investigating theoretical relationships because of its higher statistical power (Sarstedt and Mooi, 2019), whereas SPSS PROCESS macros were used to examine moderated mediation models.

Measurement model

Considering that the constructs used in our study were adopted from previous studies, we assessed the constructs' validity as follows: Factor loadings, CA, composite reliability (CR) and average variance extracted (AVE) were used to assess the value of convergent validity (Karaiskos *et al.*, 2010). Confirmatory factor analysis indicates that all item loadings are above 0.70. Next, we calculated CA, CR and AVE to assess the reliability and validity of the data (Karaiskos *et al.*, 2010). The values for AVE and CR should be 0.50 and 0.70, respectively, or greater (Fornell and Larcker, 1981). Our results showed the range of CR values between 0.88 and 0.94 and range between 0.57 and 0.77 for the AVE value (Table 2). Both the values of CR and AVE are well above the suggested values, thus representing valid measures. The range of values for CA is between 0.79 and 0.93 for the variables used in our study, which are above the suggested value of 0.70 (Nunnally, 1994).

The discriminant validity of the measurement model was evaluated by comparing the square root of AVE for each construct with the inter-construct correlations (Fornell and Larcker, 1981). The square root of AVE for each construct is greater than all related inter-construct correlations (see Table 3). Therefore, the discriminant validity of all scales is established. Meanwhile, the possible concerns of multicollinearity among the constructs were examined through the scores for variance inflation factor (VIF). The recommended threshold value of VIF is 10, and our results showed the range of VIF scores from 1.01 to 1.79, which is acceptable (Hair *et al.*, 2010). Thus, there is no issue of multicollinearity. Harman's Single-factor test was employed to assess the common-method variance (CMV) (Podsakoff *et al.*, 2003). If a single factor accounts for more than 50% of the variance, it is considered a high level of CMV threat (Harman, 1976). The findings suggest the most significant factor accounts for 27.775% of the variance. High correlations among variables are the other evidence of CMV ($r > 0.90$) (Pavlou and El Sawy, 2006). Table 3 shows the results of inter-construct correlation; there is no unusually high correlation in the sample. Common-method bias is not a serious concern in this study.

Root mean square error of approximation (RMSEA), minimum discrepancy per degree of freedom (CMIN/DF), incremental fit index (IFI), Tucker–Lewis index (TLI) and comparative fit index (CFI) were calculated to measure the overall fit indices for the proposed model (see Table 4). All the resulting values are well within the acceptable range. The value of IFI is 0.958, CFI is 0.953, CMIN/DF is 1.695 and TLI is 0.914; all these values are greater than the

Table 2. Results of confirmatory factor analysis (CFA)

Constructs	Items	Factor loadings	Cronbach's alpha	Composite reliability	Average variance extracted
After-work hour technology use	06	0.848–0.723	0.87	0.92	0.64
Work–family conflict	05	0.809–0.741	0.79	0.88	0.61
Organizational deviance	12	0.825–0.655	0.91	0.92	0.57
Interpersonal deviance	07	0.870–0.785	0.93	0.94	0.67
Nonwork deviance	07	0.916–0.781	0.86	0.94	0.77
Other-initiated interruptions	04	0.853–0.813	0.85	0.90	0.69
Self-initiated interruptions	06	0.856–0.810	0.82	90	0.68

Table 3.
Correlations matrix and descriptive statistics

	X	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1. After-work hour technology use	3.60	1.07	*0.800*												
2. Work–family conflict	4.74	1.32	0.365**	*0.781*											
3. Organizational deviance	3.95	1.24	0.018	0.186**	*0.754*										
4. Interpersonal deviance	5.21	1.28	0.313**	0.509**	0.274**	*0.818*									
5. Nonwork deviance	4.30	1.48	0.182**	0.292**	−0.023	0.187**	*0.877*								
6. Other-initiated interruptions	4.74	1.38	0.278**	0.630**	0.196**	0.472**	0.290**	*0.830*							
7. Self-initiated interruptions	3.65	0.97	0.607**	0.369**	0.043	0.256**	0.064	0.172**	*0.824*						
8. Positive affect	3.84	1.00	0.177**	0.363**	0.071	0.206**	0.044	0.374**	0.092	*NA*					
9. Negative affect	3.73	1.03	0.167**	0.243**	0.013	0.160**	0.107	0.192**	0.195**	0.121*	*NA*				
10. Gender	1.48	0.500	0.122*	0.112*	0.105	0.138*	0.091	0.123*	0.137*	0.005	−0.062	*NA*			
11. Age	1.92	0.953	0.179**	0.153**	0.039	0.106	0.075	0.039	0.156**	0.070	0.138*	0.043	*NA*		
12. Education level	2.37	0.702	0.120*	0.150**	0.110*	0.091	0.108	0.167**	0.059	0.057	0.112*	−0.075	0.012	*NA*	
13. Job tenure/ experience	2.58	1.50	−0.217**	0.026	0.014	−0.088	−0.073	0.044	−0.161**	−0.014	0.000	−0.018	−0.160**	0.127*	*NA*

Note(s): $^{**}p < 0.01$, $^{*}p < 0.05$ (two and one-tailed, respectively). Italic diagonal elements are the square root of the average variance extracted of each construct; Pearson correlations are shown below the diagonal

Table 4.
Summary of alternate model fit indices

Model test	CMIN/DF < 5	GFI > 0.9	AGFI > 0.9	NFI > 0.9	IFI > 0.9	CFI > 0.9	RMSEA <0.1
Measurement model	χ^2 (1417.146), df = 788, χ^2/df = 1.798	0.928	0.908	0.910	0.957	0.956	0.050
Hypothesized model	χ^2 (28.812), df = 17, χ^2/df = 1.695	0.980	0.948	0.900	0.958	0.953	0.047
Alternate Model-1 Direct path from after-work hour technology use to organizational deviance ($\beta = -0.076$, $p > 0.05$)	χ^2 (136.463), df = 24, χ^2/df = 5.686	0.911	0.834	0.834	0.576	0.556	0.122
Alternate Model-2 Direct path from after-work hour technology use to interpersonal deviance ($\beta = 0.113$, $p > 0.05$)	χ^2 (135.738), df = 24, χ^2/df = 5.656	0.914	0.838	0.530	0.578	0.558	0.121
Alternate Model-3 Direct path from after-work hour technology use to nonwork deviance ($\beta = 0.142$, $p < 0.05$)	χ^2 (132.858), df = 24, χ^2/df = 5.536	0.913	0.837	0.589	0.776	0.592	0.123

suggested estimates of 0.90 (Hair *et al.*, 2010). The value of RMSEA is 0.047 which is lower than 0.10 (Anderson and Gerbing, 1988).

Structural model

The structural model was tested using the data collected for the validated measures. Overall fit indices for the proposed model were also calculated through RMSEA, CMIN/DF, IFI, TLI, CFI (see Table 4). All the resulting values are well within the acceptable range. The value of IFI is 0.957, CFI is 0.956, CMIN/DF is 1.798, and TLI is 0.914 all these values are greater than the suggested estimates of 0.90 (Hair *et al.*, 2010). The value of RMSEA is 0.050 which is lower than 0.10 (Anderson and Gerbing, 1988).

Hypothesis testing

We utilized the coefficient of determination (R^2) and the significance levels of each path coefficient to evaluate the structural model. AHWTU is positively related to WFC ($\beta = 0.449$, $p = 0.001$) (see Figure 2), supporting our H1. WFC reveals a significant positive relationship with the three forms of deviance, namely, interpersonal deviance ($\beta = 0.316$, $p = 0.001$), organizational deviance ($\beta = 0.164$, $p = 0.01$), and nonwork deviance ($\beta = 0.443$, $p = 0.001$), which supports our H2a, H2b, and H2c.

Our results provide support for WFC as a mediating mechanism in the indirect relationships between AHWTU and organizational deviance (estimate of the indirect effect = 0.078, 95%, CI [0.036, 0.151]), interpersonal deviance (estimate of the indirect effect = 0.131, 95%, CI [0.070, 0.206]), and nonwork deviance (estimate of the indirect effect = 0.199, 95%, CI [0.129, 0.285]). These results validate our H3 (Table 5).

We further calculated the conditional direct effect of AHWTU on interpersonal, organizational and nonwork deviance (at −1SD and +1SD) across levels of our moderators, that is, other- and self-initiated interruptions. Other-initiated interruptions moderate the relationship between AHWTU and WFC positively ($\beta = 0.163$, $p = 0.01$, 95% CI [−0.093, −0.93]) (supporting H4). Self-initiated interruptions moderate the relationship between AHWTU and WFC negatively ($\beta = -0.265$, $p = 0.01$, 95% CI [−0.093, −0.148]) (supporting H5); the detail of the moderation effects is shown in Figures 3 and 4. With respect to R^2, a variance of 44.3% is explained for WFC, and 43.9% of the variance in organizational

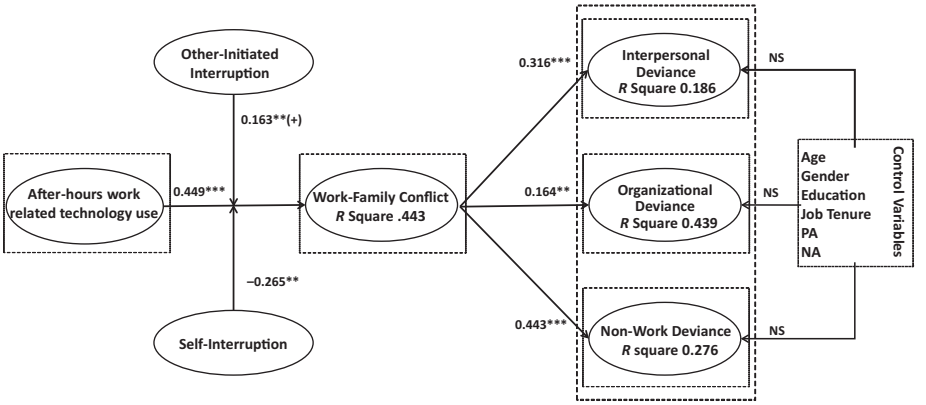


Figure 2. Test of the research model

Note(s): *H3** Mediating Mechanism, *H6* and *H7* demonstrate Moderated Mediation
Significant at: *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$, NS = non-significant

Table 5.
A mediation analysis

Independent variables	Mediators	Dependent variable	Indirect effect (*standard error*)	Bootstrapping results lower bias-corrected confidence interval	upper bias-corrected confidence interval
After-hour technology use	Work–family conflict	Organizational deviance	0.078 (0.029)*	0.036	0.151
		Interpersonal deviance	0.131 (0.034)**	0.070	0.206
		Nonwork deviance	0.199 (0.041)***	0.129	0.285

Note(s): Bootstrapping method for mediation. Significant at *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

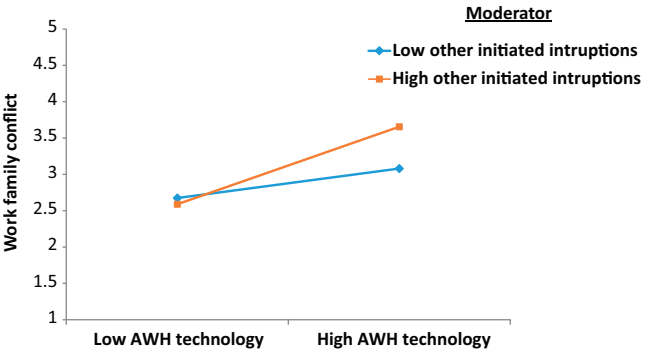


Figure 3.
Moderating effects of other-initiated interruption on the after-work hour technology use and work–family conflict

Note(s): AFH = after work hour technology

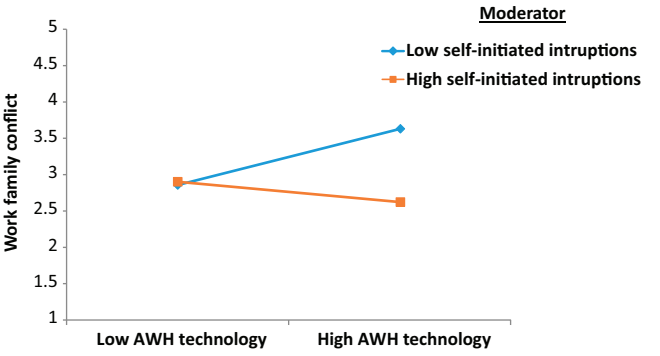


Figure 4.
Moderating effects of self-initiated interruption on the after-work hour technology use and work–family conflict

Note(s): AFH = after work hour technology

deviance, 18.6% is explained for interpersonal deviance; and 27.6% of the variance in nonwork deviance are explained in our research model. All six control variables, namely, age, gender, education, job tenure, positive affect and negative affect, show insignificant influences on any type of deviant behavior (Figure 2).

For the moderated mediation model, we calculated the conditional indirect effect of AHWTU on interpersonal deviance, organizational deviance, and nonwork deviance through

WFC (at −1SD and +1SD) across levels of other- and self-initiated interruptions. Table 6 reveals that the conditional indirect effect of AHWTU on organizational deviance through work–life conflict is stronger when other-initiated interruptions are high (+1SD) (magnitude indirect effect = 0.099, 95% CI [0.102, 0.141]) than when they are low (−1SD) (magnitude indirect effect = 0.084, 95% CI [0.099, 0.112]). The conditional indirect effect of AHWTU on interpersonal deviance through work–life conflict is strong when other-initiated interruptions are high (+1SD) (magnitude indirect effect = 0.198, 95% CI [0.157, 0.198]) than when they are low (−1SD) (magnitude indirect effect = 0.103, 95% CI [0.088, 0.114]). The conditional indirect effect of AHWTU on nonwork deviance through work–life conflict is strong when other-initiated interruptions are high (+1SD) (magnitude indirect effect = 0.088, 95% CI [0.143, 0.179]) than when they are low (−1SD) (magnitude indirect effect = 0.051, 95% CI [0.103, 0.165]).

Conversely, the conditional indirect effect of AHWTU on organizational deviance, interpersonal deviance, and nonwork deviance through WFC is weak when self-initiated interruptions are high (+1SD) than when they are low (−1SD). The conditional indirect effect of AHWTU on organizational deviance through work–life conflict is weak (magnitude indirect effect = −0.930, 95% CI [−0.243, −0.156]) when self-initiated interruptions are high (+1SD) than when they are low (−1SD) (magnitude indirect effect = 0.084, 95% CI [−0.156, −0.101]). The conditional indirect effect of AHWTU on interpersonal deviance through work–life conflict is weak when self-initiated interruptions are high (+1SD) (magnitude indirect effect = −0.187, 95% CI [−0.199, −0.111]) than when they are low (−1SD) (magnitude indirect effect = 0.097, 95% CI [−0.157, −0.099]). The conditional indirect effect

Dependent variable	Effect OI	Effect SI	SE OI	SE SI	LLSI-OI	95% CI LLSI-SI	ULCI-OI	LLCI-SI
Conditional effects at specific value of moderator (OI and SI) at ±1SD								
Organizational deviance								
(+1SD)	0.163	−0.104	0.023	0.031	0.169	−0.422	0.241	−0.343
(−1SD)	0.124	−0.088	0.021	0.032	0.134	−0.231	0.189	−0.202
Interpersonal deviance								
(+1SD)	0.213	−0.255	0.022	0.032	0.209	−0.208	0.231	−0.191
(−1SD)	0.113	−0.187	0.020	0.033	0.121	−0.213	0.209	−0.111
Nonwork deviance								
(+1SD)	0.187	−0.211	0.023	0.031	0.251	−0.156	0.299	−0.098
(−1SD)	0.098	−0.177	0.022	0.032	0.204	−0.188	0.243	−0.164
Conditional indirect effects at a specific value of the moderator (OI and SI) at ±1SD								
Organizational deviance								
(+1SD)	0.099	−0.930	0.021	0.030	0.102	−0.243	0.141	−0.156
(−1SD)	0.084	−0.064	0.022	0.031	0.099	−0.156	0.112	−0.101
Interpersonal deviance								
(+1SD)	0.198	−0.187	0.021	0.031	0.157	−0.199	0.198	−0.111
(−1SD)	0.103	−0.097	0.021	0.030	0.088	−0.157	0.114	−0.099
Nonwork deviance								
(+1SD)	0.088	−0.111	0.022	0.032	0.143	−0.088	0.179	−0.022
(−1SD)	0.051	−0.099	0.020	0.033	0.103	−0.101	0.165	−0.061

Note(s): OI, other-initiated interruption, SI, self-initiated interruption; LLCI, bias-corrected lower limit confidence interval; ULCI, bias-corrected upper limit confidence interval

Table 6. Moderated mediation

of AHWTU on nonwork deviance through work–life conflict is weak when self-initiated interruptions are high (+1SD) (magnitude indirect effect = −0.111, 95% CI [−0.088, −0.022]) than when they are low (−1SD) (magnitude indirect effect = −0.099, 95% CI [−0.101, −0.061]).

The moderating effects of other- and self-initiated interruptions on the relationship between AHWTU and WFC are plotted in Figures 3 and 4.

Discussion

This study was conducted to investigate an important relationship between AHWTU and individuals' deviance in its three forms, that is, interpersonal, organizational and nonwork. The results reveal that AHWTU is positively related to WFC, which in turn is associated with all forms of deviance. Interruptions, such as other-initiated versus self-initiated, were also found to moderate the relationships between our independent and dependent variables. In particular, we determined that other-initiated interruptions strengthen the direct relationship between after-hours work-related technology usage and its outcomes in the forms of WFC and deviance. At high levels of self-initiated interruptions, the abovementioned direct and indirect relationships were found to be weak.

These findings are consistent with the assumptions of the COR theory, which state that as a result of resource loss, job stress negatively affects employee outcomes in the organizations (Hobfoll, 1989). The COR theory emphasizes the role of resources in preventing psychological and behavioral strain outcomes (Halbesleben and Buckley, 2004; Hobfoll, 1989, 2001). In the light of our findings and the theoretical support provided in the COR theory, we can explain that AFWTU, as a stressor with resource loss, contributes to increasing WFC that subsequently results in negative employee outcomes in work and nonwork domains, such as organizational, interpersonal and nonwork deviance. Our findings are also consistent with the past empirical studies. For instance, Bushman *et al.* (2001) argued that individuals view acts of harmful behaviors as a way of feeling well in response to a provocation. Other studies (Krischer *et al.*, 2010; Spector and Fox, 2002) have reported that these (counterproductive) behaviors make an individual feel well in response to an uncontrollable stress situation.

Our study not only explores the important relationship between AHWTU and employee deviance in its three forms but also answered the question of how after-hours work technology use at home is related to negative consequences by investigating WFC as a mediating variable. Technologically affected work-related interruptions may lead to negative psychological and behavioral reactions because they cause a lack of resources among individuals. They also negatively affect an individual's work and nonwork domains. Specifically, we found that an individual may face WFC as a consequence of his/her AHWTU at home. This WFC leads to his/her deviant behavior in his/her work and nonwork domains. The COR theory helps us understand why an individual is inclined to deviant behavior as a result of after-hours work-related technology usage and WFC. Hobfoll (1989) argued that individuals strive to maintain or gain the resources that are lost or threatened to be lost. Deviant behavior in its different forms could be a way to regain psychological resources lost due to after-hours work-related technology usage and WFC at home. For instance, coming late in the office, stealing company property, minimal engagement in office work, fighting with other people and cheating the family could be ways of regaining lost resources or counterproductive behaviors as a result of decreased available resources. Our findings are consistent with those of past empirical research that has shown that the use of communication technology after working hours results in negative outcomes in individuals' personal life (Derks *et al.*, 2016; Diaz *et al.*, 2012; Fenner and Renn, 2010). Similarly, the COR theory and the resource scarcity principle explain our findings, for example, investing personal resources in using work-related technology at home may result

in decreased resources available for the family (Greenhaus and Beutell, 1985) that may lead to WFC.

Considering that our model regards AHWTU as an interruption that leads to negative outcomes for individuals, we questioned whether all types of interruptions serve a similar role and when does AHWTU result in severe consequences. Our results show that other-initiated interruptions strengthen the relationship between AHWTU and its outcomes in the forms of WFC and deviance. The detrimental effects of other-initiated interruptions can be explained by the reason that these types of interruptions not only consume the slack resources available but also create a situation in which the perception of lost control triggers adverse reactions. Other-initiated interruptions are not in the control of an individual; therefore, they may happen at any time and anywhere and cause severe consequences. For example, a phone call from a boss while a person is attending a parent-teacher meeting in his child's school, an email or a text message from the organization while the individual is watching a movie with family and many other similar other-initiated interruptions may cause severe consequences. In case of a self-initiated interruption, an employee has relatively high control, for example, if he has to answer an email, text or call from his workmates, he can choose the time and place. Hence, this type of interruption causes soft consequences. Our findings are consistent with those of past research that has argued that lost control is associated with negative employee reactions (Allen and Greenberger, 1980; Dupré and Barling, 2006; Shoss *et al.*, 2016).

Theoretical contribution

Our study contributes to the scholarly literature in three important ways. First, we discussed the negative side of AHWTU which is a relatively lesser studied domain in comparison to the bright side of technology use. To the best of our knowledge, however, no research has examined AHWTU as an antecedent to employee's deviant behavior by utilizing conservation of resource theory. We consider AHWTU as a trigger to the process that affects employee's deviant behavior. By doing so, we contribute to the knowledge on both the antecedents of deviance behavior and outcomes of AHWTU. Second, we examine how and why technologically mediated work-related interruptions increase deviance behavior by incorporating the role of WFC. Therefore, this study not only advances extant research about the effects of such work-related technologically mediated interruptions on employee's deviant behavior but enhances our understanding of the underlying mechanism (WFC) through which such an effect might occur. Moreover, to enhance the understanding of this prevailing phenomena we have incorporated the role of the kind of interruptions (other-initiated vs self-initiated) that explains the boundary conditions under which such detrimental effects of AHWTU can increase or decrease. The previous literature has focused on supervisor expectations and norms set by colleagues (Derks *et al.*, 2015), perception of boundary control (Mellner, 2016), integration and segmentation preference (Gadeyne *et al.*, 2018; Xie *et al.*, 2018; Derks *et al.*, 2016), and work–family centrality (Shi *et al.*, 2021), as a boundary condition to understand the effects of AHWTU.

Finally, this study is based on the conservation of resource theory which provides a novel theoretical perspective to study work-related technologically mediated interruptions. Conservation of resource theory provides strong theoretical support to explain the relationship between AHWTU and deviant behavior. The findings suggest that AHWTU is positively related to deviant behavior because AHWTU ingests individuals' valued resources (i.e. time, energy and emotional resources) and thus individuals are left with fewer resources to perform family responsibilities that cause WFC which in turn will enhance an employee's deviant behaviors because individuals indulge in such behaviors to conserve resources and reduce the psychological strain associated with WFC due to AHWTU.

Practical implications

This research study has important practical implications for organizations, managers and individuals. The findings suggest that the experience of being interrupted by work via technology after working hours may have unforeseen and far-reaching effects on an employee's organizational and personal life. An employee's use of work-related technology at home has negative consequences in the form of WFC, which leads to his/her deviant behavior inside and outside the organization. Accordingly, we suggest that managers should consider placing boundaries around interruptions after working hours. For example, Derks *et al.* (2015) conclude that subordinates try to fulfill the constant availability expectations established by their managers. Therefore, managers should be consciously involved in the process of setting expectations, that is, employees should not feel obligated to come in or respond to each work-related technologically mediated interruption after working hours or possibly over the weekend. Managers should also educate subordinates about the downsides of AHWTU and realize that their behavior is a role model for their subordinates (Derks *et al.*, 2015). Thus, managers should lead by example by setting the boundaries between work and personal life, and by selectively addressing work-related interruptions. As it is evident by Fenner and Renn (2010) that employees aim to fulfill organizational expectations, this approach would be fruitful to change the expectations of constant availability in the minds of employees and to prevent WFC and deviant behaviors inside and outside the organizations.

In light of the findings of this study, we suggest that organizational norms about AHWTU should be consciously developed. Cramton (2001) identified the importance of group operating norms in facilitating collaboration and communication through technology in geographically dispersed teams. The ubiquity of mobile communication technologies has contributed to new organizational norms with a low tolerance for communication delays even after working hours. Consequently, employees are inclined to give privileged treatment to interruptions from work and expect the same from their coworkers. Organizations must examine their prevailing norms related to AHWTU carefully and develop norms that mitigate the negative consequences of such interruptions and promote a healthy work–life interface.

Understanding how AHWTU affects both work and family domains enables employees to make better decisions regarding the use of work-related technology after working hours.

As it is evident that work-related interruptions have negative effects on work and nonwork domains, individuals should be aware of the ways to mitigate these negative effects and deal with such negative consequences by limiting such interruptions. In a world of constant connectivity, people should know how to scrutinize the multiple work interruptions that occur in their domain and prioritize the interruptions that truly deserve their attention. Organizations can offer counseling and training programs to their employees aimed at dealing with after-hours work-related technology interruptions. Such training and counseling sessions may help the employees deal with potential WFC issues that are related to their usage of technology at home. In the current time, the usage of technology is increasing in individuals' lives; the problems associated with technology usage are expected to increase further (Anderson and Rainie, 2018; Lee *et al.*, 2014; Tarafdar *et al.*, 2015). Our research findings are hence highly relevant to the current problems individuals, managers and organizations are facing.

Limitations and directions for future research

Although our research design with time-lag data enhances the strength of our study, the findings of our study should be interpreted in light of their limitations. First, our model was tested with a sample from a single country, which is characterized as a collectivistic culture; therefore, the generalization of our results is limited. Future studies can test our model in other countries and cultures. Second, we investigated WFC as an underlying mechanism in

the relationship between AHWTU and deviance. However, we believe that other alternative explanations may arise. For instance, work–life balance and life satisfaction can be investigated as potential mediators in this relationship. Third, we comprehensively investigated the three types of deviance as the ultimate outcomes in our model. AHWTU may be related to other outcomes, such as low performance, decreased engagement and high turnover intentions. Fourth, our study explored the role of other- and self-initiated interruptions in weakening the positive relationship between AHWTU and its negative outcomes. Future researchers can investigate other- and self-initiated interruptions as independent variables in a model evaluating employee outcomes in organizations. Moreover, developing and investigating other boundary conditions on the relationship between after-hours work technology use and its negative outcomes will be valuable.

Conclusion

Interruptions from work have made significant inroads into the nonwork domain of employees due to the ubiquitous nature of most communication technologies that blur the boundaries between work and family life. This study has highlighted the important consequences of AHWTU at home in the forms of WFC and deviance (work, nonwork and interpersonal). Specifically, the findings of this study help us comprehend the role of other- and self-initiated interruptions in a worker's life. Other-initiated interruptions carry more severe consequences for individuals compared with their self-initiated interruptions.

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Appendix

Table A1. Measurement items

After-hours work-related technology use

Please rate the frequency with which you use different kind of technology for work purpose at home

1 Smartphone or landline
2 Laptop
3 Tablet
4 I-pad
5 Any other

Work–family conflict

1 My work keeps me from my family more than I would like
2 My work takes up time that I feel I should spend with my family
3 The demands of my job make it difficult for me to maintain the kind of relationship with my spouse and children that I would like
4 The tension of balancing my responsibilities at home and work often causes me to feel emotionally drained
5 I act differently in responding to interpersonal problems at work then I do at home

Interpersonal deviance

1 Make fun of someone at work
2 Say something hurtful to someone at work
3 Make an ethnic, religious, or racial remark at work
4 Curse at someone at work
5 Publicly embarrassed someone at work

Organizational deviance

1 Take property from work without permission
2 Spend too much time fantasizing or daydreaming instead of working
3 Falsify receipt to get reimbursed for more money than you spent on business expenses
4 Take an additional or longer break than is acceptable at your workplace
5 Come in late to work without permission
6 Litter your work environment
7 Neglect to follow your boss's instructions
8 Intentionally worked slower than you could have worked
9 Discuss confidential company information with an unauthorized person
10 Use an illegal drug or consumed alcohol on the job
11 Put little effort into your work
12 Drag out work in order to get overtime

Nonwork deviance

1 Make fun of someone outside of the workplace
2 Say something hurtful to someone outside of the workplace
3 Make an ethnic, religious, or racial remark outside of the workplace
4 Curse at someone outside of the workplace
5 Play a mean prank on someone outside of the workplace
6 Publicly embarrassed someone outside of the workplace

Other-initiated vs. self-initiated interruption

1 During non-work hours, how frequently are you interrupted by colleagues/other work contacts about work related matters via technology
2 To what extent do you initiate interruptions yourself during non-work hours to handle work-related matters via technology