Received: 4 June 2020 | Revised: 16 December 2021 | Accepted: 17 December 2021

DOI: 10.1111/peps.12497

PERSONNEL PSYCHOLOGY WILEY

ORIGINAL ARTICLE

Digital connectivity for work after hours: Its curvilinear relationship with employee job performance

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Abstract

Using digital technologies for work-related matters during nonwork time is an increasingly common behavior in contemporary workplaces. Despite the prevalence of digital connectivity (DCON) in today's organizations, its implications for employee job performance remain under-specified. Drawing on conservation of resources (COR) theory and the "too-much-of-a-good-thing" (TMGT) meta-theoretical principle, we theorize that DCON has an inverted U-shaped relationship with employee job performance through the mediation of social capital development (SCD) and emotional exhaustion (EE). The results of two studies with different designs support our theoretical expectations. Specifically, we found that increases in DCON associate with higher SCD, lower EE, and higher job performance up to an inflexion point, after which more DCON has detrimental effects. The theoretical and practical implications of the findings are fully discussed.

KEYWORDS
digital device use after work, emotional exhaustion, job performance, social capital development, work-related connectivity

1 | INTRODUCTION

Employee performance currently heavily depends upon digital technologies during and after work (Bharadwaj et al., 2013). Using these technologies, employees are able to finish or catch up on work while waking up, at the dinner

table, on vacation, shopping, or in bed (Blagoev & Schreyögg, 2019; Boswell et al., 2016; Cascio & Montealegre, 2016). The widespread use of digital technologies for work-related matters *during nonwork time*, termed digital connectivity (DCON) here, is becoming a prevalent behavior, especially since the outbreak of COVID-19, when many employees began working from home. The interface of technology and work has attracted two streams of research on DCON. The first concerns DCON's drivers, explaining which employees are most likely to remain connected to work when not officially at their job (Boswell et al., 2016). The variations in employee motivations underlying DCON inevitably raise a question that the second research stream concerns, yet has not answered fully — the threshold state of connectivity that enables effective performance (Kolb et al., 2008, 2012). Research on the consequences of DCON suggests that it can be both a behavior to cope with work demands and a behavior that displays personal choice (Fujimoto et al., 2016). The complexities involved in DCON hence open opportunities to explore the nature of its consequences for employee job performance.

The performance implication of DCON for employees and organizations – "the most crucial dependent variable" at work (Campbell & Wiernik, 2015, p. 47) – remains inconclusive. Job performance is a broad construct that includes in-role (i.e., performance of standard tasks and job activities) and extra-role (i.e., discretionary behaviors not required, yet beneficial for organizational effectiveness) performance (Bateman & Organ, 1983). From a conservation of resources (COR; Hobfoll, 1989) perspective, people strive to invest and conserve resources, and imbalances between resource gain and loss may influence their performance. Since the onset of digital technology advances in the 1980s, there has been a social expectation that the high functionality and connective capabilities of digital technologies would enhance productivity (Arnold, 2003). The technological features of DCON enhance employees' availability, reachability, and responsiveness to others' needs (e.g., Dery et al., 2014; Ter Hoeven et al., 2016), which is the basis for developing interpersonal relations and enabling social capital (Choi, 2016; Gardner et al., 2003) – an important resource gain that assists performance goal attainment. In today's competitive, fast-moving environment, most professionals carry at least one mobile device and choose to remain connected, suggesting that there are potential anticipated benefits that motivate this behavior. However, research findings remain mixed, with some studies suggesting that DCON is not necessarily as positive as early information systems researchers had hoped (Karr-Wisniewski & Lu, 2010; Lee & Barua, 1999; Panko, 1991). More recent management research considers the negative side of DCON, highlighting its depleting effect (e.g., due to interference with home; Derks & Bakker, 2014; Derks et al., 2015), although not all research finds such an effect (e.g., Fujimoto et al., 2016). Thus, the literature on the topic increasingly reveals contradictions involved in DCON (e.g., autonomy paradox; Mazmanian et al., 2013; connectivity paradox; Leonardi et al., 2010), raising questions about its implications for employee productivity.

Altogether, the benefits and costs of DCON are separately emphasized in prior research, leaving the unanswered question of how they concurrently shape key job-related outcomes, such as performance. From a COR perspective, the benefit and cost functions of DCON (i.e., those with positive and negative directionalities of influence on job performance, respectively) can be captured as resource gains and losses. Therefore, focusing on the resource-gain or -loss aspects of DCON in isolation of each other inevitably produces an incomplete picture of how DCON influences job performance. Further, as the level of DCON increases, the associated benefits and costs do not necessarily change by the same amount. According to the "too-much-of-a-good-thing" (TMGT) meta-theoretical principle (Pierce & Aguinis, 2013), the benefit and cost functions of DCON can be curvilinear when "at lower values of the antecedent [i.e., DCON], the incremental benefits outweigh the incremental costs and at higher values of the antecedent the incremental costs outweigh the incremental benefits" (Busse et al., 2016, p. 133). As a general principle, TMGT reinforces the main tenets of COR in capturing the simultaneous effects of resource-gain and -loss pathways that jointly influence job performance. Unfortunately, the potential curvilinearity of DCON's influence on performance remains under-theorized and lacks empirical testing (Boswell & Olson-Buchanan, 2007; Cascio & Montealegre, 2016; Kolb et al., 2012).

Thus, to advance theory, research, and practice on DCON, we develop and test a theoretical model that offers a nuanced understanding of *how* and *why* it affects employee job performance. We draw from the COR theory (Hobfoll, 1989) and TMGT framework to explain the influences of DCON on job performance through a competitive mediation approach (Busse et al., 2016). We view DCON as a resource investment behavior that employees undertake to

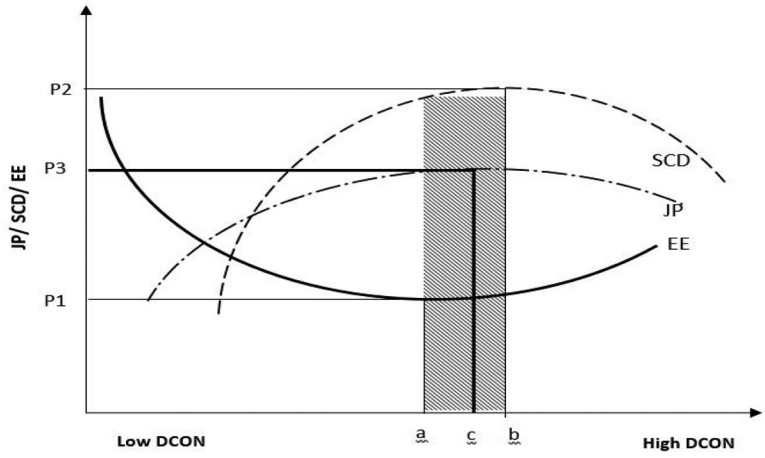

FIGURE 1 Curvilinear relationship between digital connectivity (DCON) and job performance (JP) through social capital development (SCD) and emotional exhaustion (EE)

enable goal attainment (Hobfoll, 2001). Using COR, we argue that DCON amplifies social capital development (SCD – a resource-gain path), which assists job performance, yet also depletes valuable resources, resulting in emotional exhaustion (EE – a resource-loss path), which hurts job performance. We also use TMGT to make nuanced COR-related predictions to argue that the rate of change of SCD and EE from changes in DCON is not constant. Our research model is depicted in Figure 1, which shows how the competing outcomes of SCD and EE engendered by DCON unfold to reach the inflexion points, after which increases in DCON become detrimental to job performance. The "middle ground" (point c) where job performance is optimal occurs where SCD is maximized (point b) and EE is minimized (point a) – that is, when the marginal gain in SCD equals the marginal loss in EE. We use two studies to progressively test our contention.

Our research makes three important contributions to the management literature. First, we extend research on digitalization by addressing job performance that is critical to employees, organizations, and the economy. Our research provides an integrated framework of how DCON relates to job performance and addresses research calls to better understand if or how much DCON supports employee overall performance (Cascio & Montealegre, 2016; Dery et al., 2014). Second, by identifying a curvilinear pattern of the DCON–job performance relationship, we challenge conventional linear assumptions and provide a novel resolution of the inconsistent findings on the influences of the use of communication technologies for work purposes. Third, we offer a more complete theoretical and empirical explanation of how DCON influences job performance by elaborating the underlying resource-gain and -loss mechanisms. Finally, we offer meaningful practical implications at the intersection of technology, work, and organization in an era of digital ubiquity.

2 | LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1 | COR theory in the "TMGT" principle

DCON has work-related purposes and occurs off-hours, and thus diverges from generic technology use or social interaction behaviors that do not specify communication medium and time context (Boswell & Olson-Buchanan, 2007). It is typically undertaken to supplement, not replace, tasks performed in a traditional workplace (Fenner & Renn, 2004). Research has revealed both normative pressures (Kolb et al., 2012; Wajcman & Rose, 2011) and volitional motivations

to remain connected outside work hours (Richardson & Benbunan-Fich, 2011; Schlachter et al., 2018). Although manifestations of DCON differ due to various motivations (e.g., finishing work after midnight or working on a new task while dining out), it involves human agency in regulating the self and choosing to use digital technology for work matters during nonwork time (Kolb et al., 2012; Schlachter et al., 2018). Thus, whether DCON is normatively imposed or chosen may vary by context, yet engagement in DCON occurs on a continuum, where DCON can set social expectations that one will continue to engage in it and, in the face of such normative pressures, one may also choose to scale back or up. This means that DCON goes beyond simply working long hours, and is a resource investment behavior tied to performance goal fulfillment (Boswell et al., 2016).

In light of COR's basic principles on resource investment (Hobfoll, 1989, 2001, 2011), resource gains and losses provide two important pathways to understand the resource investment behavior relevant to the theory. Accordingly, they inform our choice of mediators as we develop a model that captures the resource-gain and -loss effects of DCON and the resulting effect on job performance. First, employees are motivated to invest in gaining valuable resources because doing so protects against resource loss, offers comfort, and creates further resource gains (Hobfoll, 2014). The instrumental value of resources gained is viewed in context (Hobfoll et al., 2018). In the job performance domain, social capital is among the most central resources in addressing demands at work and supporting goal achievement (Hobfoll, 1989). Thus, we use SCD to capture the resource-gain pathway of DCON, which refers to the acquisition of social structure and relationships that can create value and have the potential to assist goal pursuit (Ng & Feldman, 2010). Based on COR, the investment behavior itself consumes resources. When DCON reaches a higher point, employees have consumed a significant amount of available resources, and further investment may lead to fewer or even negative returns (Hobfoll & Freedy, 1993).

Second, valuable resources are limited and, when expended to address demands in the work environment, people experience resource loss – actual or perceived (Hobfoll & Shirom, 2000). Resource loss has been studied primarily in the form of strains, such as EE (Hobfoll et al., 2018), which refers to the sense of "being over-extended and depleted of one's emotional resources" (Maslach et al., 2001, p. 399). Thus, we use EE to capture the resource-loss process because the competing demands associated with higher levels of DCON can drain valuable personal resources (Fonner & Roloff, 2012; Ter Hoeven et al., 2016). According to COR, psychological distress only occurs when people are challenged beyond their coping capacity, where resources gained do not adequately replenish resources used (Hobfoll & Freedy, 1993).

Collectively, the resource-gain and -loss tenets of COR provide a theoretical basis that instantiates a competitive mediation framework embedded in the TMGT meta-theoretical principle. Specifically, to predict TMGT occurrence and make it methodologically manageable, Busse et al. (2016) conceptualize that the TMGT effect occurs when a desirable outcome variable (e.g., job performance) is affected by the benefit (e.g., resource gain) and cost (e.g., resource loss) functions of the antecedent (e.g., DCON) with opposite directionalities of influence. In other words, the TMGT effect can be observed when the antecedent–benefit relationship (i.e., benefit function) and antecedent–cost relationship (i.e., cost function) are "curved in opposite directions" (Busse et al., 2016, p. 149). The TMGT principle elucidates the nonlinear pattern of resource-gain and -loss processes that are implicit in COR. For the resource-gain tenet of COR, the investment required to achieve resource acquisition introduces a downward pressure on the general upward trend (Hobfoll & Freedy, 1993). This means that investment behavior, such as DCON, may not necessarily yield the expected returns all the time (Halbesleben & Buckley, 2004). For the resource-loss tenet of COR, the theory suggests that resource loss may follow a different trajectory that pertains to a fundamental allostatic load (McEwen & Stellar, 1993). EE only occurs after recovery does not replenish lost resources (Halbesleben et al., 2014). Indeed, empirical research has not always found the expected linear effects of DCON on EE, with some finding DCON has no effect on EE (Derks et al., 2014; Fujimoto et al., 2016) or even reduces EE (Rosenbloom & Eldror, 2017). Thus, using COR to concretize the TMGT effect, we describe below how DCON is likely to simultaneously promote resource gain and loss toward the attainment of performance goals in nonlinear ways.

2.2 | DCON and employee job performance: Non-linear consideration

Job performance is a broad construct with a common assumption that "employees typically engage in two sorts of performance: in-role and extra-role performance" (Schreurs et al., 2012, p. 262–263). Rather than overall job performance, the in-role and extra-role classification enables completeness and precision in understanding the performance of basic required duties and those beyond core task requirements. Given that extra-role performance benefits the effective functioning of an organization, without necessarily benefiting the employee directly (MacKenzie et al., 1991), investigating DCON's curvilinear influence for extra-role and in-role performance, rather than overall job performance, adds specificity. We thus split our hypotheses into DCON's effect on in-role and extra-role performance specifically.

COR theory suggests that people invest current resources to develop and obtain new resources that could potentially enable goal attainment (Halbesleben et al., 2014). DCON provides opportunities for employees to use current resources to rapidly respond to others, even during nonwork time, which facilitates developing social presence and a sense of physical presence (Leonardi et al., 2010). Indeed, DCON's prevalence in today's organizations is largely underpinned by an interpersonal perspective, with research noting social normative expectations of being constantly available and accessible (Bayer et al., 2016; Boswell et al., 2016; Butts et al., 2015; Wajcman & Dodd, 2017). The social interactions, free from the spatial and temporal constraints of traditional offices, provide faster, easier access to work flow and information, which helps clarify understandings of work goals to achieve in-role performance (Campbell & Wiernik, 2015; Ragsdale & Hoover, 2016). With DCON providing more options for collaboration and communication (Xie et al., 2018), the social connections may also facilitate a closer connection with the organization (Cavazotte et al., 2014; Diaz et al., 2012; Shi et al., 2018), which motivates employees to invest extra effort to improve the overall organizational functioning (i.e., extra-role performance).

However, COR theory proposes that resource investment does not always lead to anticipated returns (Halbesleben & Buckley, 2004). Resources follow the rule of replacement, so people invest current resources to gain new ones that assist goal attainment (Hobfoll et al., 2018). Individuals exchange nonwork time and extra attention in DCON to develop other resources that could be beneficial. However, as DCON increases, they reach a point where they have consumed significant time, attention, and other current resources, and further investment may lead to fewer or even negative returns (Hobfoll & Freedy, 1993). Research also notes that one outcome of communication technology use after work hours could be invasion of privacy and increased work overload (e.g., Ayyagari et al., 2011; Derks et al., 2015), which deplete psychological and physical resources, manifesting in EE (e.g., Wright et al., 2014). Emotional resource drain occurs when demands are overwhelming and extreme (Wright & Cropanzano, 1998; Zohar, 1997). Research shows that employees depleted of personal resources do not effectively perform prescribed tasks (Bakker & Heuven, 2006). Given that the enactment of extra-role performance may require more resources (e.g., Hui et al., 1999; MacKenzie et al., 1998), the inflection points could be different, with in-role performance occurring at higher levels of DCON. In summary, at low-to-moderate levels of DCON, individuals may achieve increased resource gains that outweigh resource losses, helping their performance, whereas from moderate-to-high levels of DCON, this balance may gradually be reversed, ultimately hindering their performance. Thus, we propose that, although DCON initially benefits employee job performance, too much DCON may result in an overall decline in both in-role and extra-role performance:

Hypothesis 1: An inverted U-shaped relationship characterizes the association between DCON and (a) in-role performance and (b) extra-role performance, such that increases in DCON correspond to higher levels of in-role and extra-role performance up to an inflexion point, after which more DCON is associated with lower job performance.

2.3 | SCD as a resource-gain pathway

We next examine the mechanisms that explain the curvilinearity between DCON and job performance, starting with the resource-gain pathway of SCD. Hobfoll (2014) notes that "as individuals strive to obtain, retain, and protect personal, social and material resources for the self, they create social structures that necessarily support this primary motivation" (p. 22). In line with the resource exchange principle in COR (Hobfoll, 1989, 2001), investment of personal resources in DCON could encourage practices and knowledge that gradually increase gains in social network ties and relational resources known as social capital (Adler & Kwon, 2002; Coleman, 1988; Forret & Dougherty, 2004). DCON offers a digital, after-hours communication context that supports employees both within and outside the DCON context, which facilitates the development of social capital at work more generally. We expect that such resource investment (i.e., DCON) precedes the gaining of another resource (i.e., SCD) in time and that DCON relates positively to SCD, but not indefinitely.

First, DCON improves the ease of communication over physical and temporal distance (Leonardi et al., 2010), enabling people to gain practice at connecting with others and possibly building confidence in doing so. The portability and functionality of DCON reduce the time and monetary cost of developing new relationships with people who employees have not met in person or strengthening relationships with those known before (Bian & Leung, 2014; Boase et al., 2006; Ellison et al., 2007). Second, the increased communication beyond normal work hours provides faster access to work-related information, enabling employees to gather more information on who to know or go to. The technological artifacts used in DCON allow spontaneous task management, information exchange, and assignment cooperation off-hours, which facilitate SCD. Third, DCON is about staying connected and taking responsive actions, which have been shown to develop trusting relationships with communication partners and promote SCD (Diaz et al., 2012; Li & Lin, 2016). Information system research indicates that DCON facilitates developing various properties of social capital by expanding connection base and social bonds (Bian & Leung, 2014; Campbell & Kwak, 2010; Ragsdale & Hoover, 2016; Rainie & Wellman, 2012; Remenyi et al., 1991), and enhancing connections with others through social interactions and cooperation among colleagues and clients (Li & Lin, 2018).

However, COR posits that individuals have limited capacities to process information (Hobfoll, 2014). Once consumption of current resources reaches an optimal level, further undertaking of DCON does not yield a linear upward trend in SCD (see Hobfoll & Freedy, 1993). Specifically, higher levels of DCON indicate intensified multiple demands that compete for employees' attention and action. Research suggests that higher levels of DCON disrupt information comprehension and reduce attention (Jeong & Hwang, 2012). Thus, at excessive amounts of DCON, the requisite attention and content quality needed in digital communications to subsequently perform SCD in a meaningful way are diminished. When employees manage a larger volume of emails, for instance, at higher levels of DCON, they may not be able to strategically and effectively manage resources needed for undertaking SCD, and their investment in DCON may result in negative returns in SCD. Moreover, there may only be so much social capital to be gained because, at a certain point, coworkers may resent those who work too much after hours, increasing their workload, coordination costs, and expectations for after-hour job productivity. Indeed, research shows that excessive time at work leads to resentment and conflict at work (Seybold & Salomone, 1994). We thus expect that DCON's contribution to SCD increases at a decreasing rate to reach an inflexion point, after which SCD begins to fall with more DCON.

SCD in turn is associated positively with job performance. Through engaging in SCD, employees nurture interactions with coworkers that provide psycho-social support and performance feedback (Bozionelos & Wang, 2006; Higgins & Kram, 2001), which have been shown to enhance task performance (Beehr et al., 2000) and organizational citizenship behavior intention (Sommer & Kulkarni, 2012). SCD also facilitates employees to be embedded in networks and helps them feel connected to organizations and cohesive with coworkers. As such, employees are more willing to help coworkers, contribute to the collective, and engage in extra-role behaviors (Beal et al., 2003; Bolino et al., 2002). Further, SCD mobilizes relationships in purposive actions to gain support, which can be deployed to the benefit of individuals in obtaining work opportunities that have value for helping achieve higher performance goals (in-role

performance). It also has motivational value for making extra-role suggestions to improve performance (Ren & Chadee, 2017; Ren et al., 2019).

Hypothesis 2: DCON has an inverted U-shaped association with SCD that mediates the relationship between DCON and (a) in-role performance and (b) extra-role performance, such that, as DCON increases, SCD and job performance also increase up to an inflexion point, after which more DCON is associated with lower SCD and job performance.

2.4 | EE as a resource-loss pathway

We next explain how EE serves as another pathway that mediates the curvilinear association between DCON and employee job performance. From a resource-loss perspective, DCON makes multiple competing demands that deplete limited self-control resources. By definition, EE results from excessive job demands (Maslach et al., 2001) and occurs only when job demands *exceed* capacities for emotional stress (Zohar, 1997). Unless the demands are substantial, EE is less likely to occur (Hobfoll & Freedy, 1993; Hobfoll & Lilly, 1993). Thus, we propose that EE is only triggered when DCON falls outside the capacity of personal resources to cope with excessive demands. Before this point, DCON can reduce EE and, beyond the point where EE sets in, DCON will be increasingly positively related to it.

Specifically, at lower levels, the investment behavior of DCON may not be depleting, as its relatively low demands could be well within the capacity of personal resources. At this level, employees are still energetic, and DCON generates new valuable resources that can help employees cope with potential emotionally stressful situations and allow them to feel invigorated and motivated, thereby reducing the occurrence of EE (Grant et al., 2014). Thus, at this stage, we expect that DCON does not create sufficient demands to deplete employees' resources, and instead may help decrease EE. However, as DCON continues to a point at which gained resources do not adequately replenish used resources or investment does not yield expected protection from further resource loss, further investment in DCON can lead to adverse emotional experience (Halbesleben et al., 2014; Hobfoll, 2001). Thus, DCON can only reduce EE to a certain point, beyond which it intensifies multiple competing demands that drive employees to feel the need to exert more resources, yet lack necessary or sufficient resources to replenish and recover. To restore the imbalance of resources and gain new resources for recovery, employees must first invest available resources, which places further pressure and leads to actual, or the threat of, resource loss (Hobfoll, 1989) and increased fatigue (Beal et al., 2005). In addition, excessive exposure to DCON can be distracting (Rennecker & Godwin, 2005). *Internet Trends* reported that people check their smartphones an average of 150 times a day (Cascio & Montealegre, 2016). Attempts to concentrate among growing distractions can drain limited psychological and physical resources (Muraven & Baumeister, 2000), thereby increasing EE. Further, at higher levels of DCON, employees have insufficient time to relax and recover from work, and thus may experience additional EE from DCON.

COR theory further suggests that, when employees' resources are stretched, they become emotionally exhausted and enter a defensive mode to preserve the self (Hobfoll et al., 2018). One way to preserve the self is to reduce work effort and mental energy for higher job performance (Halbesleben et al., 2014). Indeed, EE, as an emotional response to job stressors, generates a sense of inefficacy that affects employees' sustained efforts negatively when setting and pursuing performance-related goals (Maslach et al., 2001). Depleted employees have insufficient resources to deal effectively with tasks and responsibilities manifested as in-role performance (Bakker & Heuven, 2006). EE also limits their abilities to display extra-role performance because, as the work capacity becomes overburdened, a prevalent coping strategy is to conserve remaining resources by reducing efforts, thereby withholding extra-role performance, such as helping others and taking initiative (Bakker & Demerouti, 2007; De Cuyper et al., 2014; Halbesleben & Bowler, 2007). Together, we propose that only when DCON reaches a certain point do employees become emotionally exhausted and enter a defensive mode that lowers their job performance:

Hypothesis 3: DCON has a U-shaped association with EE, which mediates the association between DCON and (a) in-role performance and (b) extra-role performance, such that increases in DCON are associated with lower EE and higher job performance up to an inflexion point, after which more DCON is associated with higher EE and lower job performance.

2.5 | Overview of studies

Two multisource survey studies were used to test our hypotheses progressively. Study 1 established the proposed curvilinear relationship between DCON and job performance, with SCD and EE mediating the relationship. Study 2 examined whether the proposed mechanisms explained a unique contribution beyond other variables discussed in the literature by including an additional pathway. It also accounted for the cross-lagged effects between DCON and job performance to add further rigor and confidence to the findings.

3 | STUDY 1: METHODS

3.1 | Sample and procedure

The study was conducted in late 2018 in a large pharmaceutical company (>5000 employees) in East China, after obtaining consent for data collection from the head of the human resources department. The project obtained ethics approval from the first author's institution (BL-EC 8-19). The questionnaires used for data collection were developed in English and translated into Chinese using a back-translation process (Brislin, 1986) to ensure semantic equivalence. Prior to being administered, we undertook a pilot test with a small sample of 10 employees and their supervisors. Responses from the pilot tests served as a basis for adjusting the wording and language surrounding the use of technical concepts to ensure that participants had a correct understanding of the questionnaire items. To enhance the response rate, we: (1) offered a token incentive (a USB flash disk) to participants, (2) clearly explained that this project helped enable better understanding of the performance implications of DCON, and (3) explained that participation was completely confidential.

At Time 1, one author and two research assistants attended a general staff meeting to explain the research project and manage inquiries, which served as a basis for identifying issues and providing clarity on data-collection procedures. We collected multisource data from both employees and their supervisors. Only employees who had been with the company for at least 3 months at the time of the first round of data collection were eligible to participate. In this round, we used the employee directory and randomly identified a sample of 600 employees who fit the survey criteria. We sent them an invitation package comprising: (1) a letter explaining the study, (2) a survey assessing DCON and demographics, and (3) a prepaid return envelope addressed to the author. In total, 535 completed surveys were mailed to the author – a response rate of 89.17%. Using the contact details provided by participants at Time 1, we sent the 535 participants a second survey at Time 2 (1 month after Time 1) to assess SCD and EE. We used a 1-month interval, as extant research shows that nearly one-third of concurrent correlation is eliminated when variables are assessed after a 1-month delay (Ostroff et al., 2002). We received 478 completed surveys – a response rate of 89.34% at Time 2.

At Time 3, 1 month after Time 2, we returned to the site and invited supervisors ($n = 118$) with direct reporting responsibilities for the 478 employees who responded at Time 2 to rate employees' in-role and extra-role performance. The supervisors' invitation package included an introduction to this research project, an addressed prepaid envelope, and a short survey. In both employee and supervisor surveys, we added a conscientiousness-check item ("the current year is 1980") and removed careless responses that chose anything other than "disagree" or "strongly disagree." After matching the responses from supervisors and employees and excluding careless and incomplete

responses, the final sample retained for data analysis comprised 467 complete responses from 113 supervisors, with each supervisor rating an average of 4.13 employees ($SD = 0.97$). The employee sample comprised 209 men, with 63% aged younger than 30 years, 16.9% aged 31– 40 years, 16.3% aged 41 to 50 years, and the remainder aged 51 years or older. Among the participants, 45.8% held a master's degree, 22.3% held a doctoral degree, 14.6% held a bachelor degree, and the remainder (17.3%) had attained vocational education or below.

3.2 | Measures

Unless indicated otherwise, all items were anchored on a five-point Likert-type scale (1 = *strongly disagree*, 5 = *strongly agree*).

3.2.1 | Digital connectivity

We measured DCON as an additive index of the frequency with which participants used mobile digital devices (1 = *never*, 2 = *rarely*, 3 = *sometimes*, 4 = *very often*, 5 = *always*) to perform work during specific off-hour contexts. We adapted the scale developed by Richardson and Benbunan-Fich (2011) to the specific context of DCON in China by instructing participants to indicate how often they used digital technologies, such as mobile devices, to access social media platforms, such as We-Chat, Tencent QQ, or the company digital platform, to perform job-related duties (e.g., reviewing emails, communicating with colleagues or clients for work, or logging onto a network server) during 18 specific off-hours contexts, such as "while you are shopping," "while you are traveling," and "while you are having a meal at a restaurant." Self-reported frequency is a widely used approach in studies of technology use (e.g., Boswell & Olson-Buchanan, 2007; Schieman & Young, 2013), as it produces a fairly accurate measure of real technology usage (Richardson & Benbunan-Fich, 2011), with the two correlating well (e.g., $r = .59$) (Deane et al., 1998). We averaged responses to create an overall score of DCON ($\alpha = .93$).

3.2.2 | Social capital development[1]

At Time 2, SCD was measured using a six-item scale developed by Ng and Feldman (2010). This scale includes behavioral-oriented items used in prior research on social capital (e.g., Chumg et al., 2015; Huang et al., 2021; Li & Lin, 2018) to measure the social resource element of social network ties (e.g., "I spend a lot of time and effort networking with others"), and nonbehavioral-oriented items that measure the cognitive and relational resource element of social capital (e.g., "In my organization, I know a lot of important people and am well connected"). The Cronbach's alpha was .84.

3.2.3 | Emotional exhaustion

At Time 2, EE was measured with a four-item scale used by Wilk and Moynihan (2005). Sample items included: "I feel burned out from my work" and "I feel fatigued when I get up in the morning and have to face another day on the job" ($\alpha = .81$).

3.2.4 | Employee job performance

At Time 3, supervisors rated participants' performance, operationalized as (a) in-role and (b) extra-role. In-role performance was measured with the widely-used six-item scale developed by Williams and Anderson (1991), with sample items: "This employee fulfills the responsibilities specified in the job description" and "This employee meets the formal performance requirements of the job" ($\alpha = .91$). Extra-role performance was measured with the seven-item scale developed by Williams and Anderson (1991), with the sample item: "This employee helps others who have heavy workloads" ($\alpha = .88$).

3.2.5 | Control variables

We controlled for several variables that could confound the relationships being investigated (Carlson & Wu, 2012). Specifically, we included age (0 = ≤25, 1 = 26–30, 2 = 31–35, 3 = 36–40, 4 = 41–45, 5 = 46–50, 6 = 51–55, 7 = 56–60, 8 ≥ 61), as older employees may have more experience and task proficiency than younger employees (Allen et al., 2002; Kanfer & Ackerman, 2004; Waldman & Avolio, 1986). We included gender (0 = *men*, 1 = *women*), as gender studies show that men and women may differ in their work and burnout experiences (Bekker et al., 2005; Stake & Eisele, 2010). We also included education (0 = *below vocational education*, 1 = *vocational education*, 2 = *bachelor degree*, 3 = *master's degree*, 4 = *doctorate degree*), as more highly educated employees may display stronger learning ability to deal with work and hence perform better in virtual workplaces (Benson et al., 2004; Neisser et al., 1996; Ng & Feldman, 2009). In addition, as workload has been found to be a source of stressors in prior studies on technology use (e.g., Derks et al., 2015; Derks et al., 2016), we controlled for workload, which was measured by Spector and Jex's (1998) two items ($\alpha = .74$). A sample item was: "My work requires me to work very hard."

4 | STUDY 1: RESULTS AND DISCUSSION

We conducted confirmatory factor analyses (CFA) to examine the psychometric quality of study variables, including SCD, EE, in-role performance, extra-role performance, and workload. The hypothesized five-factor model fit the data well ($\chi^2(265) = 510.89$, $p < .001$, CFI = .94, TLI = .93, RMSEA = .05, SRMR = .05) and performed better than alternative models.[2] Table 1 presents the means, standard deviations, and correlations of variables. We examined the hypotheses by using a design-based modeling approach with corrections for clustering (i.e., parameter estimate standard errors based on cluster sampling design, TYPE = COMPLEX, ESTIMATOR = MLR in Mplus 7.0) because this analytical approach handles non-independent data structures (i.e., 113 supervisors rating 467 employees) when a research model is developed at a single level (Bliese et al., 2018; Hsu et al., 2018; Wu & Kwok, 2012).

We first built a model concerning the main effect of DCON on in-role and extra-role performance, with all control variables included. We grand-mean-centered DCON to create the quadratic term to capture the curvilinearity of our model. As Table 2 shows, statistically significant relationships were found for quadratic DCON with in-role performance ($B = -.15$, $SE = -.05$, $p = .001$, 95% CI = −.247 to −.059) and extra-role performance ($B = -.10$, $SE = .04$, $p = .013$, 95% CI = −.177 to −.021). Support for curvilinearity was further established, as the slopes at both ends of the data ranges were significantly different from zero (Haans et al., 2016). For in-role performance, the slope at the maximum value of DCON was negative and significant ($\beta = -074$, $p < .01$) and the slope at the minimum value of DCON was positive and significant ($\beta = .45$, $p < .01$). For extra-role performance, the slopes at the maximum ($\beta = -.40$, $p < .01$) and minimum ($\beta = .37$, $p < .01$) values of the data range also had the expected signs. In addition, Figure 2 shows the nature of the relationships between DCON and in-role and extra-role performance, which support Hypotheses 1(a) and 1(b), respectively.

TABLE 1 Descriptive statistics of study 1

	1	2	3	4	5	6	7	8	9
1. DCON	**.93**								
2. SCD	.13**	**.84**							
3. EE	−.00	−.03	**.81**						
4. In-role performance	.04	.42**	−.14**	**.91**					
5. Extra-role performance	.12*	.54**	−.10*	.43**	**.88**				
6. Age	−.01	−.02	−.06	−.03	−.13**				
7. Gender	−.10*	−.01	−.13**	.04	.03	.05			
8. Education	−.02	.13**	−.05	.01	.06	.04	.00		
9. Workload	−.01	.03	.32**	.11*	.16**	−.08	−.10*	−.02	**.74**
Mean	1.31	3.45	2.47	3.92	3.61	1.66	.55	2.70	3.03
SD	0.78	0.64	0.86	0.65	0.63	1.91	.50	1.07	0.83

$N = 467$. Abbreviations: DCON: after-hours work-related use of digital technology; SCD: social capital development; EE: emotional exhaustion.
Bold numbers are reliability estimates.
*$p < .05$.
** $p < .01$.

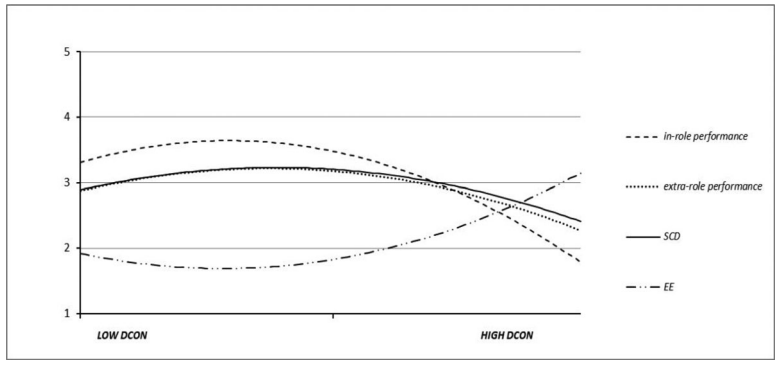

FIGURE 2 Curvilinear relationships between digital connectivity (DCON), social capital development (SCD), emotional exhaustion (EE), and in-role and extra-role job performance – Study 1

Next, we tested the hypothesized mediation relationships by adding SCD and EE as mediators in Model 2. As shown in Table 2, the indirect relationship between quadratic DCON and in-role performance via SCD was significant ($B = -.04$, $SE = .02$, $p = .046$, 95% CI = −.073, −.001), supporting Hypothesis 2(a). The indirect relationship between quadratic DCON and extra-role performance via SCD ($B = -.05$, $SE = .02$, $p = .047$, 95% CI = −.092, −.001) supported Hypothesis 2(b). The indirect relationship between quadratic DCON and in-role performance via EE ($B = -.01$, $SE = .01$, $p = .038$, 95% CI = −.028, −.001) and extra-role performance via EE ($B = -.01$, $SE = .01$, $p = .037$, 95% CI = −.024, −.001) supported Hypotheses 3(a) and 3(b), respectively[3].

The results of Study 1 supported our hypothesized relationships, as illustrated in Figure 2. Despite encouraging results, Study 1 did not examine whether our proposed mechanisms provided a unique contribution relative to other theoretically relevant mechanisms discussed in prior research on the influence of technology use in the workplace. We addressed the robustness of our theoretical model in Study 2 as follows. First, we included work schedule autonomy as an additional mechanism that could influence the association between DCON and job performance (see Tennakoon

TABLE 2 Summary of results of study 1

	Model 1		Model 2			
	In-role performance	Extra-role performance	SCD	EE	In-role performance	Extra-role performance
Control variables						
Age	−.01 (.02)	−.04* (.02)	−.01 (.02)	−.01 (.02)	−.01 (.01)	−.04** (.01)
	[−.044, .025]	[−.075, −.010]	[−.048, .032]	[−.049, .026]	[−.035, .019]	[−.065, −.015]
Gender	.02 (.06)	.05 (.06)	−.02 (.06)	−.13 (.07)	.02 (.05)	.05 (.06)
	[−.095, .139]	[−.077, .171]	[−.146, .097]	[−.274, .007]	[−.091, .122]	[−.063,.154]
Education	.03 (.03)	.05* (.02)	.10*** (.03)	−.06 (.03)	−.02 (.02)	−.00 (.02)
	[−.025, .081]	[.007, .099]	[.042, .148]	[−.122, .009]	[−.065, .029]	[−.036, .033]
Workload	.10** (.04)	.13** (.05)	.03 (.04)	.31*** (.05)	.13*** (.03)	.15*** (.04)
	[.024, .173]	[.031, .221]	[−.051, .104]	[.212, .417]	[.061, .192]	[.064, .227]
Predictors						
DCON	.05 (.04)	.11** (.04)	.12** (.04)	−.03 (.05)	.00 (.04)	.05 (.03)
	[−.034, .138]	[.033,.190]	[.044, .186]	[−.120, .071]	[−.078, .082]	[−.008, .108]
Quadratic DCON	−.15** (.05)	−.10* (.04)	−.09* (.04)	.12** (.04)	−.10* (.04)	−.04 (.03)
	[−.247, −.059]	[−.177, −.021]	[−.174, −.006]	[.029, .203]	[−.179, −.024]	[−.094, .013]
Mediators						
SCD					.41*** (.05)	.51*** (.05)
					[.312, .510]	[.425, .600]
EE					−.12*** (.03)	−.11*** (.03)
					[−.187, −.058]	[−.164, −.050]
R^2	.06	.08	.06	.12	.24	.37

	Estimate	s.e.	95% C.I.
Sum of indirect effects of quadratic DCON to in-role performance	−.05*	.02	−.091, −.012
Quadratic DCON → social capital development→ in-role performance	−.04*	.02	−.073, −.001
Quadratic DCON → emotional exhaustion → in-role performance	−.01*	.01	−.028, −.001
Sum of indirect effects of quadratic DCON to extra-role performance	−.06*	.02	−.107, −.011
Quadratic DCON → social capital development → extra-role performance	−.05*	.02	−.092, −.001
Quadratic DCON → emotional exhaustion → extra-role performance	−.01*	.01	−.024, −.001

$N = 467$. Abbreviations: DCON: after-hours work-related use of digital technology; SCD: social capital development; EE: emotional exhaustion

Unstandardized estimates, standard error, and 95% confidence intervals were reported.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

et al., 2013). This helps to address contradictory findings in prior research (e.g., Fujimoto et al., 2016; Jarvenpaa & Lang, 2005; Mazmanian et al., 2013; Schlachter et al., 2018; Xie et al., 2018). Second, Study 2 accounted for the time-lagged effect between DCON and job performance by controlling Time 1 job performance and Time 3 DCON, which helped better unpack the directional association between DCON and job performance (McArdle, 2009; Wu et al., 2016).

5 | STUDY 2: METHODS

5.1 | Sample and procedure

We recruited professional employees and their supervisors from a large financial institute (>2000 employees) in Northwest China in 2019, after obtaining consent from the deputy general manager. The project obtained ethics approval from the first author's institution (BL-EC 8-19). At Time 1, one of the authors and two research assistants visited the institute and distributed invitation packages to 380 employees, who were randomly selected from the employee directory by the research team. The package included a short survey assessing DCON, in-role and extra-role performance, and demographics. A total of 368 responses were mailed to us – a response rate of 96.84%. At Time 2, 1 month after Time 1, the research team revisited the institute and contacted the 368 employees with a second survey assessing their SCD, EE, and work schedule autonomy, of which 358 responses were mailed and used for the next round of data collection. With assistance from the human resources manager of the institute, we obtained the contact details of supervisors who were direct reports of these 358 employees. At Time 3, 1 month after Time 2, we returned and asked employees to provide information on DCON and their supervisors ($N = 88$) to provide information on the corresponding employees' performance. In total, 78 supervisors rated 313 employees' performance. Similar to Study 1, to boost the response rate, we provided participants a token incentive (a USB flash disk) for their participation in the research. We also used the similar procedure in Study 1 to check careless responses.

Of the 313 employees, 51.8% were female, and 48.9% were aged younger than 30 years, 39.9% were aged 31–40 years, 9.3% were aged 41–50 years, and the remainder were 51 years or older. Among these participants, 36.6% had a master's degree, 1% had a doctoral degree, 59.9% had a bachelor degree, and the remainder had undertaken vocational education or below.

5.2 | Measures

We used the same scales as in Study 1 to measure variables, including DCON (Time 1: $\alpha = .91$; Time 3: $\alpha = .94$), in-role performance (Time 1: $\alpha = .91$; Time 3: $\alpha = .94$) and extra-role performance (Time 1: $\alpha = .85$; Time 3: $\alpha = .94$), SCD ($\alpha = .94$), EE ($\alpha = .94$), and workload ($\alpha = .84$). *Work schedule autonomy* was measured with a three-item scale ($\alpha = .88$) developed by Breaugh (1989), with sample items: "I have control over the scheduling of my work" and "I have some control over the sequence of my work duties (when I do what)."

6 | STUDY 2: RESULTS AND DISCUSSION

We first undertook CFA with the following study variables: Time 1 and Time 3 in-role performance and extra-role performance, Time 2 SCD, EE, work schedule autonomy, and workload. The eight-factor model produced acceptable fit ($\chi^2(751) = 1460.76$, $p < .001$, CFI = .92, TLI = .92, RMSEA = .06, SRMR = .05) and performed better than alternative models.[4] Table 3 presents descriptive statistics. The same approach as Study 1 was applied, using design-based modeling approach to deal with nested data structure because of cluster sampling. Similarly, we first

TABLE 3 Descriptive statistics of study 2

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. DCON(T1)	**.91**												
2. T2 SCD	−.26**	**.94**											
3. T2 EE	.22**	−.55**	**.94**										
4. T2 WSA	−.07	−.10	−.06	**.88**									
5. T3 in-role performance	−.25**	.54**	−.44**	.03	**.94**								
6. T3 extra-role performance	−.15**	.50**	−.45**	.02	.60**	**.94**							
7. T3 DCON	−.01	−.06	−.06	.11	−.02	.05	**.91**						
8. T1 in-role performance	.25**	−.05	.06	−.02	−.09	−.08	−.03	**.91**					
9. T1 extra-role performance	.27**	−.01	.04	.01	−.01	−.06	.02	.55**	**.85**				
10. Age	−.03	−.07	.01	.07	−.05	.01	−.04	.15**	.01				
11. Gender	−.06	.00	.02	−.03	−.01	.01	.01	.00	−.07	−.02			
12. Education	.11*	.07	−.04	.03	.02	.02	−.12*	.07	.05	−.22**	−.08		
13. Workload	−.03	−.10	.13*	.28	−.01	−.04	.12*	.01	−.01	.05	.11	−.06	**.84**
Mean	2.58	3.01	2.35	3.54	4.00	3.94	2.42	3.94	3.40	31.96	.48	1.32	3.27
SD	0.64	1.08	1.22	0.87	1.08	0.98	0.57	0.80	0.82	7.35	.50	0.79	0.68

$N = 313$. Abbreviations: DCON: after-hours work-related use of digital technology; SCD: social capital development; EE: emotional exhaustion; WSA: work schedule autonomy.
Bold numbers are reliability estimates.
* $p < .05$.
** $p < .01$.

estimated the model concerning the hypothesized curvilinear relationship between DCON and job performance, in which Time 3 in-role performance and extra-role performance were regressed on Time 1 DCON. In addition, to further examine the lagged effect and directional associations of DCON with performance outcomes, we included Time 1 DCON's influence on Time 3 DCON, while the influences of Time 1 in-role and extra-role performance were also considered. Table 4 presents parameter estimates. Relationships between quadratic Time 1 DCON with Time 3 in-role performance ($B = -.52$, $SE = .13$, $p < .001$, 95% CI $= -.773$ to $-.264$) and extra-role performance ($B = -.48$, $SE = .10$, $p < .001$, 95% CI $= -.672$ to $-.294$) were negative and statistically significant. For in-role performance, the slope at the maximum value of DCON was negative and significant ($B = -2.66$, $p < .01$) and the slope at the minimum value of DCON was positive and significant ($B = 1.31$, $p < .01$). For extra-role performance, the slopes at the maximum ($B = -2.26$, $p < .01$) and minimum ($B = 1.44$, $p < .01$) values of the data range also had the expected signs. The nature of the relationships is depicted in Figure 3. Altogether, Hypotheses 1(a) and (b) were supported.

The information in Table 4 also shows the indirect relationship between quadratic DCON and in-role performance via SCD ($B = -.25$, $SE = .06$, $p < .001$, 95% CI $= -.357$ to $-.137$) and extra-role performance via SCD ($B = -.21$, $SE = .05$, $p < .001$, 95% CI $= -.311$ to $-.111$), which supported Hypotheses 2(a) and 2(b). The indirect relationship between quadratic DCON and in-role performance via EE ($B = -.09$, $SE = .04$, $p = .030$, 95% CI $= -.166$ to $-.008$) and extra-role performance via EE ($B = -.10$, $SE = .04$, $p = .006$, 95% CI $= -.177$ to $-.030$) supported Hypotheses 3(a) and 3(b)[5], respectively.

The overall patterns of the curvilinear model of the effects of DCON on in-role and extra-role job performance via SCD and EE from Study 2, as illustrated graphically in Figure 3, provided support for our conceptual model in Figure 1. The results from Study 2 were also consistent with those of Study 1 and supported the hypothesized relationships, after controlling for time-lagged effects and an additional mechanism.[6] Controlling

TABLE 4 Summary of results of study 2

	Model 1						Model 2		
	T3 in-role performance	T3 extra-role performance	T3 DCON	T2 SCD	T2 EE	T2 WSA	T3 in-role performance	T3 extra-role performance	T3 DCON
Control variables									
Age	−.01 (.01)	.00 (.01)	−.00 (.01)	−.01 (.01)	−.00 (.01)	.01 (.01)	−.01 (.01)	.01 (.01)	−.00 (.01)
	[−.022, .007]	[−.009, .016]	[−.013, .005]	[−.022, .008]	[−.021, .017]	[−.006, .022]	[−.019, .009]	[−.008, .018]	[−.013, .005]
Gender	−.10 (.13)	−.02 (.11)	.01 (.07)	−.05 (.11)	.07 (.14)	−.08 (.09)	−.00 (.01)	.01 (.09)	.01 (.07)
	[−.346, .150]	[−.238, .193]	[−.123, .147]	[−.259, .169]	[−.200, .346]	[−.263, .102]	[−.273, .147]	[−.165, .183]	[−.123, .147]
Education	.03 (.07)	.04 (.06)	−.08* (.04)	.10 (.06)	−.07 (.08)	.08 (.07)	−.06 (.12)	−.01 (.05)	−.08* (.04)
	[−.105, .155]	[−.070 .144]	[−.160, −.005]	[−.020, .211]	[−.232, .086]	[−.058, .216]	[−.134, .088]	[−.109, .095]	[−.160, −.005]
Workload	−.02 (.08)	−.06 (.07)	.11* (.05)	−.17* (.08)	.24* (.10)	.37*** (.08)	.06 (.07)	.02 (.07)	.11* (.05)
	[−.168, .134]	[−.196, .074]	[.006, .215]	[−.328, −.009]	[.040, .445]	[.217, .519]	[−.075, .192]	[−.128, .168]	[.006, .215]
T1 in-role performance	−.02 (.06)		−.04 (.05)	−.02 (.07)	.06 (.08)	−.04 (.07)	−.03 (.06)		−.04 (.05)
	[−.135, .096]		[−.128, .056]	[−.150, .111]	[−.110, .225]	[−.174, .092]	[−.142, .083]		[−.127, .056]
T1 extra-role performance		−.07 (.07)	.05 (.05)	.09 (.08)	−.06 (.09)	.05 (.07)		−.08 (.05)	.05 (.05)
		[−.196, .057]	[−.051, .141]	[−.066, .239]	[−.235, .122]	[−.089, .190]		[−.188, .028]	[−.050, .140]
Predictors									
DCON	−.15 (.13)	.07 (.10)	.05 (.07)	−.09 (.11)	.11 (.15)	−.09 (.10)	−.10 (.11)	.12 (.08)	.05 (.06)

(Continues)

TABLE 4 (Continued)

	Model 1						Model 2		
	T3 in-role performance	T3 extra-role performance	T3 DCON	T2 SCD	T2 EE	T2 WSA	T3 in-role performance	T3 extra-role performance	T3 DCON
	[−.396, .098]	[−.118, .266]	[−.078, .176]	[−.310, .141]	[−.180, .393]	[−.281, .098]	[−.327, .119]	[−.042, .277]	[−.079, .177]
Quadratic DCON	−.52*** (.13)	−.48*** (.10)		−.68*** (.11)	.59*** (.10)	.01 (.06)	−.18 (.14)	−.17 (.10)	
	[−.773, −.264]	[−.672, −.294]		[−.901, −.459]	[.404, .784]	[−.109, .120]	[−.457, .092]	[−.359, .023]	
Mediators									
T2 SCD							.36*** (.06)	.31*** (.06)	
							[.237, .491]	[.195, .426]	
T2 EE							−.15* (.06)	−.17** (.06)	
							[−.274, −.019]	[−.288, −.059]	
T2 WSA							.06 (.06)	.04 (.06)	
							[−.057, .169]	[−.083, .153]	
R^2	.19	.14	.04	.29	.20	.10	.35	.31	.04

(Continues)

TABLE 4 (Continued)

	Estimate	s.e.	95% C.I.
Sum of indirect effects of quadratic DCON to in-role performance	−.33***	.07	−.478, −.190
Quadratic DCON → social capital development→ in-role performance	−.25***	.06	−.357, −.137
Quadratic DCON → emotional exhaustion → in-role performance	−.09*	.04	−.166, −.008
Sum of indirect effects of quadratic DCON to extra-role performance	−.31***	.07	−.443, −.185
Quadratic DCON → social capital development→ extra-role performance	−.21***	.05	−.311, −.111
Quadratic DCON → emotional exhaustion → extra-role performance	−.10**	.04	−.177, −.030

$N = 313$. Abbreviations: DCON: after-hours work-related use of digital technology; SCD: social capital development; EE: emotional exhaustion; SCD: social capital development; WSA: work schedule autonomy.

Unstandardized estimates, standard error, and 95% confidence intervals were reported.

*$p < .05$.

**$p < .01$.

***$p < .001$.

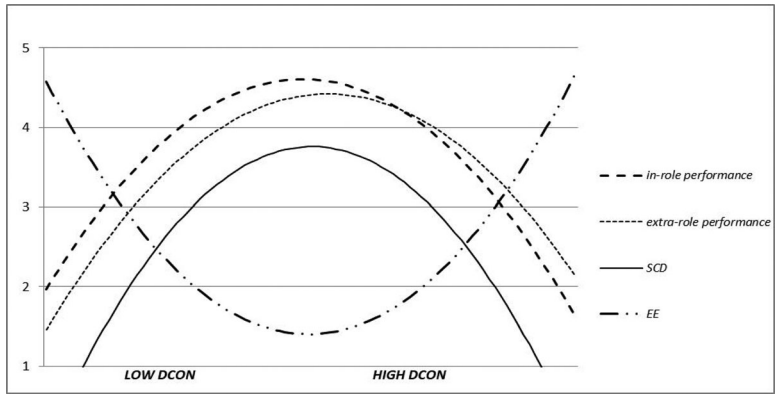

FIGURE 3 Curvilinear relationships between digital connectivity (DCON), social capital development (SCD), emotional exhaustion (EE), and in-role and extra-role job performance – Study 2

for prior job performance and examining the time-lagged effect of Time 1 job performance on Time 3 DCON helped examine the directional association from DCON to job performance. It is interesting to note that work schedule autonomy did not significantly mediate the DCON–job performance relationship. This finding suggests that the influence of DCON on employee perceived autonomy to decide where and when to work is not salient. There may be opposing positive and negative influences of DCON on autonomy, resulting in an overall nonsignificant relationship. Employees can arguably have autonomy to choose where and when to work with the functionality of communication technologies; however, they have increased pressure to stay engaged at work and diminished control over their time. The "autonomy paradox" (Mazmanian et al., 2013) might explain this null effect.

7 | GENERAL DISCUSSION

The rapid penetration of digital technologies in businesses was accentuated by the onset of the COVID-19 pandemic, during which a large number of employees suddenly began working from home during lockdowns. However, theoretical and empirical research to date remains ambiguous regarding whether DCON improves or harms employee work-related outcomes. To our knowledge, no extant research has directly examined the effect of DCON on job performance. We offer theoretically enriched, research-based answers to capture the organizational realities connected with digitalization. Using two field studies, we found a similar pattern of results, largely supporting theoretical expectations and showing that, overall, DCON has a nonlinear effect on employee job performance via SCD and EE.

7.1 | Theoretical contributions

Our work is original in that we address an emerging yet largely under-specified organizational phenomenon in which job performance is contextualized in an increasingly "always-connected" digitalization environment. To date, the growing research in work-related technology use specifically during nonwork times implicitly assumes linear associations between technology use and employee outcomes. With DCON triggering organizational and public policies attempting to regulate its use, researchers from different disciplines continue to debate its benefits and costs. A recent technology review suggests that organizational psychology and behavior research "bears some

responsibility for understanding the effects of technology on work and organizations" (Cascio & Montealegre, 2016, p. 350), concluding that "the critical issue to consider is not technology in and of itself, it is how to create and use psychological theory and research to deepen our understanding about how to manage the impact and implementation of emerging development" (Cascio & Montealegre, 2016, p. 369). Extant research focusing on attitudinal and psychological responses at the interface of work and home domains, although being insightful, has not sufficiently addressed job performance, which is closely related to organizational survival. Building on COR and the TMGT effect, our findings enrich knowledge of the complex influence of DCON on performance outcomes, clarify the seeming ambiguities of DCON influences, and provide new insights into technology-mediated antecedents of job performance in contemporary business and societal environments.

Further, by theorizing a curvilinear relationship between DCON and job performance, we challenge commonly assumed linear relationships between technology use and employee outcomes. Accordingly, we suggest researchers expand their conceptualizations of DCON to include nonconventional relationships. Our theorizing of DCON from the COR and TMGT lens helps explain mixed findings of previous research regarding DCON influences. When employees engage in low-to-moderate levels of DCON, more resources are gained than lost and performance benefits; when DCON becomes "too much," it harms in-role and extra-role performance. Given the pervasiveness of digital technologies in most workplaces, understanding the TMGT effect of DCON on job performance helps individuals, teams, and organizations avoid too much or too little DCON.

Moreover, we contribute to explaining the underlying mechanisms that transform the influence of DCON on job performance. Research offers differing views regarding the costs and benefits of DCON, yet devotes little attention to integrating them and providing a unified explanation of how they are jointly responsible for DCON's effect on job performance. Our work provides empirical evidence for the utility of the competing mediation framework proposed for TMGT (Busse et al., 2016), which has only recently gained empirical attention (e.g., Vergauwe et al., 2018). We show that DCON has an inverted U-shaped effect on SCD – a benefit-related pathway for job performance. Given that work is increasingly connected and requires networking for social interaction, DCON enables employees to develop networked resources and gain new social capital. However, our research suggests that employees should leverage DCON to optimize subsequent SCD; otherwise, too much DCON undermines resource gain. In parallel, DCON has a U-shaped relationship with EE – a cost-related pathway. We found that DCON exacerbates EE when it goes beyond a threshold where the demands on personal resources increase to a point that emotional reserves are depleted, again making curvilinearity meaningful. By specifying the functional nature of the DCON–SCD and DCON–EE relationships, we provide a more fine-grained understanding for managing DCON effects.

Further, we extend the application of COR by explicitly considering the TMGT effect to show that the resource-gain and -loss pathways of DCON exhibit curvilinearity. This helps consolidate conceptual and empirical ambiguities in the DCON literature. Despite the communication capacities enabled by digitalization, technologies themselves do not determine how technology use is experienced (Mazmanian, 2013). It is through their effect on the resource-gain and -loss processes that technology use has performance implications.

7.2 | Practical implications

Our findings have practical implications for organizations and employees. First, a direct application is to enhance organizations' and employees' awareness that DCON has a curvilinear relationship with employee job performance. Organizations commonly expect employees to be constantly available for immediate handling of work issues, even outside work hours (Boswell et al., 2016), yet our results suggest that organizations risk potential damage if they fail to recognize that too much DCON may be detrimental to employee performance. We thus advise organizations to work with employees to identify when DCON is too much and clarify expectations regarding when to respond and when to refrain from responding to off-hours work-related messages. Prior studies similarly suggest that organizations should ensure supervisors avoid inundating subordinates with emails during off-hours (e.g., Derks et al., 2015).

In addition, we note that the optimal level of DCON is likely to be context-specific, and suggest companies to determine such level based on their own circumstances. The human resources department may regularly survey employees to gauge how extensively they use DCON, how they interpret organizational norms related to DCON, and how they feel about DCON. Survey results might suggest job redesign to accommodate work flexibility and allow recovery from EE.

Second, our findings show that organizations and employees can use DCON as an opportunity to develop valuable social networks and information, yet they also need to understand that too much DCON may intensify multiple work demands that may damage their performance. Thus, employees need to be mindful that too much or too little DCON may not be helpful for developing social relationships. Third, our results also reveal that DCON triggers EE once it reaches a threshold. Consequently, organizations may strategize with their employees to ensure time to recover from EE, especially after they undergo significant DCON. Organizational and leadership interventions – such as communicating explicitly with employees regarding their work–home boundaries, attending to employee emotional stress associated with DCON, and providing additional resources for employees to better accomplish job performance – would be helpful to replenish employees' emotional energy at work.

7.3 | Limitations and future directions

Despite efforts to increase the validity and reliability of these studies, we acknowledge several limitations that provide avenues for future investigation. First, drawing from COR, we theorized SCD and EE as mechanisms that capture the benefits and costs of DCON in relation to job performance. There are likely other relevant mediators (e.g., positive affect, work anxiety) and consequences (e.g., job satisfaction) to investigate in future research. For instance, because DCON may provide opportunities to develop social capital and achieve greater performance goals, employees are likely to feel supported, satisfied, and valued, which may lead to job satisfaction. In addition, research shows that EE is a likely response to workplace anxiety and mediates the relationship between workplace anxiety and job performance (Cheng & McCarthy, 2018). Thus, it would be informative to test the nature of the relationship between DCON and work anxiety.

Second, although we focused on examining the consequences of DCON, we acknowledge that DCON can be enacted by various drivers, which may influence the observed relationships. Although we controlled for workload to account for pressure employees perceive from work, future research could more explicitly explore whether DCON has different effects among employees who feel pressured to spend time connecting after-hours, compared with those who do so of their own accord. Other boundary conditions (e.g., an individual's technology proficiency) could also be explored to better understand the effects of DCON in different contexts.

Third, we relied on an established scale to operationalize SCD. We acknowledge that SCD and behaviors of developing social capital are often treated interchangeably with overlapping measurement items (e.g., Chumg et al., 2015; Ng & Feldman, 2010). Our study results can be replicated in the supplementary analysis, and future research could develop a scale that explicitly differentiates behavioral and nonbehavioral elements. Alternatively, future research could develop and use a new scale that captures different types of resources into which social capital taps, and investigate how DCON influences each of these resources.

Finally, we acknowledge limitations associated with the research design. For instance, this is a between-person design, not able to test within-person changes. In addition, as this research aimed to consolidate empirical evidence in the available literature to better understand the nature of DCON's performance implications, we used quantitative designs that may not have captured employees' experience holistically, as in qualitative designs. A fruitful research direction would be to use alternative methodological designs or build upon different ontological and epistemological assumptions (e.g., social constructionism) to develop new theories regarding the effects of DCON on performance.

8 | CONCLUSION

With two studies, we have added to a small yet growing debate regarding the performance implications of DCON and provided more nuanced and balanced insights than those in this literature underlined by implicit linear assumptions. Considering the curvilinearity of DCON–job performance opens new avenues for research into technology–human interfaces. The underlying mechanisms studied for curvilinearity in this study also acknowledge the influences of connectivity that allow employees more or less resources toward performance goal pursuits. As DCON becomes more widespread, particularly in a post-COVID-19 work environment, where using digital technologies is likely to become a more dominant feature of the workplace, we encourage future research to continue assessing its complex influences on other work-related outcomes.

ACKNOWLEDGMENT

Guiyao Tang's work on this article was supported in part by research grant from the National Natural Science Foundation of China (No. 72072101).

DATA AVAILABILITY STATEMENT

The outputs and data that support the findings of this study are available on request from the authors. The data are not publicly available due to privacy or ethical restrictions.

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ENDNOTES

[1] Given that this measure contains both behavioral and nonbehavioral oriented wording, we conducted supplementary analysis by using a pared-down version of the scale without behavioral-oriented items (n = 3). In both studies, the results of hypothesis testing (i.e., the significance level of the hypothesized relationships) using the pared-down scale remained unchanged.

[2] Alternative models included a four-factor model in which in-role and extra-role performance loaded on one factor ($\chi^2(269) = 1378.79$, CFI = .72, TLI = .69, RMSEA = .09, SRMR = .09); a two-factor model where all predictor variables (items rated by employees) loaded on one factor, and dependent variables (items rated by supervisors) loaded on one factor ($\chi^2(274) = 2329.45$, CFI = .49, TLI = .44, RMSEA = .13, SRMR = .19); and a one-factor model ($\chi^2(275) = 2253.04$, CFI = .51, TLI = .46, RMSEA = .12, SRMR = .13).

[3] We examined the instantaneous indirect effects (Hayes & Preacher, 2010), which further showed that the patterns of these findings supported our prediction. The results of the instantaneous indirect effects are in the Online Supplement S1.

[4] Alternative models included a six-factor model where in-role and extra-role performance loaded on two factors for Time 1 and Time 3, respectively ($\chi^2(764) = 2796.06$, CFI = .78, TLI = .76, RMSEA = .09, SRMR = .07); a two-factor model where predictor variables loaded on one factor and dependent variables loaded on one factor ($\chi^2(778) = 5922.09$, CFI = .44, TLI = .41, RMSEA = .15, SRMR = .16); and a one-factor model ($\chi^2(779) = 6806.52$, CFI = .34, TLI = .31; RMSEA = .16, SRMR = .16).

[5] Similar to Study 1, we conducted supplementary analyses to examine the instantaneous indirect effect of DCON on job performance via SCD and EE. The results in Online Supplement S2 further supported our hypotheses relationships.

[6] To further support our theoretical argument that, as per COR theory, resource investment (i.e., DCON) precedes the gaining of another resource (i.e., SCD) over time, we undertook a supplementary analysis by controlling Time 1 SCD for Time 2 SCD. Support for our hypothesized relationships was still obtained, further supporting our research model. In addition, controlling for Time 1 EE on Time 2 EE did not affect the results.

REFERENCES

Adler, P., & Kwon, S. (2002). Social capital: Prospects for a new concept. *The Academy of Management Review*, *27*(1), 17–40. https://doi.org/10.2307/4134367

Allen, P. A., Lien, M., Murphy, M. D., Sanders, R. E., Judge, K. S., & McCann, R. S. (2002). Age differences in overlapping-task performance: Evidence for efficient parallel processing in older adults. *Psychology and Aging*, *17*(3), 505–519. https://doi.org/10.1037/0882-7974.17.3.505

Arnold, M. (2003). On the phenomenology of technology: The "Janus-faces" of mobile phones. *Information and Organization*, *13*(4), 231–256. https://doi.org/10.1016/S1471-7727(03)00013-7

Ayyagari, R., Grover, V., & Purvis, R. (2011). Technostress: Technological antecedents and implications. *MIS Quarterly*, *35*(4), 831–858. https://doi.org/10.2307/41409963

Bakker, A. B., & Demerouti, E. (2007). The job demands-resources model: State of the art. *Journal of Managerial Psychology*, *22*(3), 309–328. https://doi.org/10.1108/02683940710733115

Bakker, A. B., & Heuven, E. (2006). Emotional dissonance, burnout, and in-role performance among nurses and police officers. *International Journal of Stress Management*, *13*(4), 423–440. https://doi.org/10.1037/1072-5245.13.4.423

Bateman, T. S., & Organ, D. W. (1983). Job satisfaction and the good soldier: The relationship between affect and employee "citizenship.". *Academy of Management Journal*, *26*(4), 587–595. https://doi.org/10.2307/255908

Bayer, J. B., Campbell, S. W., & Ling, R. (2016). Connection cues: Activating the norms and habits of social connectedness: Connection cues. *Communication Theory*, *26*(2), 128–149. https://doi.org/10.1111/comt.12090

Beal, D. J., Cohen, R. R., Burke, M. J., & McLendon, C. L. (2003). Cohesion and performance in groups: A meta-analytic clarification of construct relations. *Journal of Applied Psychology*, *88*(6), 989–1004. https://doi.org/10.1037/0021-9010.88.6.989

Beal, D. J., Weiss, H. M., Barros, E., & MacDermid, S. M. (2005). An episodic process model of affective influences on performance. *Journal of Applied Psychology*, *90*(6), 1054–1068. https://doi.org/10.1037/0021-9010.90.6.1054

Beehr, T. A., Jex, S. M., Stacy, B. A., & Murray, M. A. (2000). Work stressors and coworker support as predictors of individual strain and job performance. *Journal of Organizational Behavior*, *21*(4), 391–405.

Bekker, M. H. J., Croon, M. A., & Bressers, B. (2005). Childcare involvement, job characteristics, gender and work attitudes as predictors of emotional exhaustion and sickness absence. *Work and Stress*, *19*(3), 221–237. https://doi.org/10.1080/02678370500286095

Benson, G. S., Finegold, D., & Mohrman, S. A. (2004). You paid for the skills, now keep them: Tuition reimbursement and voluntary turnover. *Academy of Management Journal*, *47*(3), 315–331. https://doi.org/10.2307/20159584

Bharadwaj, A., El Sawy, O. A., Pavlou, P. A., & Venkatraman, N., University of Southern California, Boston University, Emory University, & Temple University. (2013). Digital business strategy: Toward a next generation of insights. *MIS Quarterly*, *37*(2), 471–482. https://doi.org/10.25300/MISQ/2013/37:2.3

Bian, M., & Leung, L. (2014). Smartphone addiction: Linking loneliness, shyness, symptoms and patterns of use to social capital. *Media Asia*, *41*(2), 159–176. https://doi.org/10.1080/01296612.2014.11690012

Blagoev, B., & Schreyögg, G. (2019). Why do extreme work hours persist? Temporal uncoupling as a new way of seeing. *Academy of Management Journal*, *62*(6), 1818–1847. https://doi.org/10.5465/amj.2017.1481

Bliese, P. D., Maltarich, M. A., & Hendricks, J. L. (2018). Back to basics with mixed-effects models: Nine take-away points. *Journal of Business and Psychology*, *33*(1), 1–23. https://doi.org/10.1007/s10869-017-9491-z

Boase, J., Horrigan, J. B., Wellman, B., & Rainie, L. (2006). *The strength of internet ties*. Pew Internet & American Life Project. https://www.pewresearch.org/internet/2006/01/25/the-strength-of-internet-ties/

Bolino, M., Turnley, W., & Bloodgood, J. (2002). Citizenship behavior and the creation of social capital in organizations. *The Academy of Management Review*, *27*(4), 505–522. https://doi.org/10.2307/4134400

Boswell, W. R., & Olson-Buchanan, J. B. (2007). The use of communication technologies after hours: The role of work attitudes and work-life conflict. *Journal of Management*, *33*(4), 592–610. https://doi.org/10.1177/0149206307302552

Boswell, W. R., Olson-Buchanan, J. B., Butts, M. M., & Becker, W. J. (2016). Managing "after hours" electronic work communication. *Organizational Dynamics*, *45*(4), 291–297. https://doi.org/10.1016/j.orgdyn.2016.10.004

Bozionelos, N., & Wang, L. (2006). The relationship of mentoring and network resources with career success in the Chinese organizational environment. *International Journal of Human Resource Management*, *17*(9), 1531–1546. https://doi.org/10.1080/09585190600878345

Breaugh, J. A. (1989). The work autonomy scales: Additional validity evidence. *Human Relations (New York)*, *42*(11), 1033–1056. https://doi.org/10.1177/001872678904201105

Brislin, R. W. (1986). The wording and translation of research instruments. In W. J. Lonner & J. W. Berry (Eds.), *Cross-cultural research and methodology series* (pp. 137–164). Sage.

Busse, C., Mahlendorf, M. D., & Bode, C. (2016). The ABC for studying the too-much-of-a-good-thing effect: A competitive mediation framework linking antecedents, benefits, and costs. *Organizational Research Methods*, *19*(1), 131–153. https://doi.org/10.1177/1094428115579699

Butts, M. M., Becker, W. J., & Boswell, W. R. (2015). Hot buttons and time sinks: The effects of electronic communication during nonwork time on emotions and work-nonwork conflict. *Academy of Management Journal*, *58*(3), 763–788. https://doi.org/10.5465/amj.2014.0170

Campbell, J. P., & Wiernik, B. M. (2015). The modeling and assessment of work performance. *Annual Review of Organizational Psychology and Organizational Behavior*, *2*(1), 47–74. https://doi.org/10.1146/annurev-orgpsych-032414-111427

Campbell, S. W., & Kwak, N. (2010). Mobile communication and civic life: Linking patterns of use to civic and political engagement. *Journal of Communication*, *60*(3), 536–555. https://doi.org/10.1111/j.1460-2466.2010.01496.x

Carlson, K. D., & Wu, J. (2012). The illusion of statistical control: Control variable practice in management research. *Organizational Research Methods*, *15*(3), 413–435. https://doi.org/10.1177/1094428111428817

Cascio, W. F., & Montealegre, R. (2016). How technology is changing work and organizations. *Annual Review of Organizational Psychology and Organizational Behavior*, *3*(1), 349–375. https://doi.org/10.1146/annurev-orgpsych-041015-062352

Cavazotte, F., Heloisa Lemos, A., & Villadsen, K. (2014). Corporate smart phones: Professionals' conscious engagement in escalating work connectivity. *New Technology, Work, and Employment*, *29*(1), 72–87. https://doi.org/10.1111/ntwe.12022

Cheng, B. H., & McCarthy, J. M. (2018). Understanding the dark and bright sides of anxiety: A theory of workplace anxiety. *Journal of Applied Psychology*, *103*(5), 537–560. https://doi.org/10.1037/apl0000266

Choi, Y. (2016). The impact of social capital on employees' knowledge-sharing behavior: An empirical analysis of U.S. federal agencies. *Public Performance & Management Review*, *39*(2), 381–405. https://doi.org/10.1080/15309576.2015.1108795

Chumg, H., Cooke, L., Fry, J., & Hung, I. (2015). Factors affecting knowledge sharing in the virtual organisation: Employees' sense of well-being as a mediating effect. *Computers in Human Behavior*, *44*, 70–80. https://doi.org/10.1016/j.chb.2014.11.040

Coleman, J. S. (1988). Social capital in the creation of human capital. *The American Journal of Sociology*, *94*, S95-S120. https://doi.org/10.1086/228943

De Cuyper, N., Castanheira, F., De Witte, H., & Chambel, M. J. (2014). A multiple-group analysis of associations between emotional exhaustion and supervisor-rated individual performance: Temporary versus permanent call-center workers. *Human Resource Management*, *53*(4), 623–633. https://doi.org/10.1002/hrm.21608

Deane, F. P., Podd, J., & Henderson, R. D. (1998). Relationship between self-report and log data estimates of information system usage. *Computers in Human Behavior*, *14*(4), 621–636. https://doi.org/10.1016/S0747-5632(98)00027-2

Derks, D., & Bakker, A. B. (2014). Smartphone use, work-home interference, and burnout: A diary study on the role of recovery. *Applied Psychology*, *63*(3), 411–440. https://doi.org/10.1111/j.1464-0597.2012.00530.x

Derks, D., Bakker, A. B., Peters, P., & van Wingerden, P. (2016). Work-related smartphone use, work–family conflict and family role performance: The role of segmentation preference. *Human Relations (New York)*, *69*(5), 1045–1068. https://doi.org/10.1177/0018726715601890

Derks, D., van Duin, D., Tims, M., & Bakker, A. B. (2015). Smartphone use and work-home interference: The moderating role of social norms and employee work engagement. *Journal of Occupational and Organizational Psychology*, *88*(1), 155–177. https://doi.org/10.1111/joop.12083

Derks, D., van Mierlo, H., & Schmitz, E. B. (2014). A diary study on work-related smartphone use, psychological detachment and exhaustion: Examining the role of the perceived segmentation norm. *Journal of Occupational Health Psychology*, *19*(1), 74–84. https://doi.org/10.1037/a0035076

Dery, K., Kolb, D., & MacCormick, J. (2014). Working with connective flow: How smartphone use is evolving in practice. *European Journal of Information Systems*, *23*(5), 558–570. https://doi.org/10.1057/ejis.2014.13

Diaz, I., Chiaburu, D. S., Zimmerman, R. D., & Boswell, W. R. (2012). Communication technology: Pros and cons of constant connection to work. *Journal of Vocational Behavior*, *80*(2), 500–508. https://doi.org/10.1016/j.jvb.2011.08.007

Ellison, N. B., Steinfield, C., & Lampe, C. (2007). The benefits of facebook "friends:" social capital and college students' use of online social network sites. *Journal of Computer-Mediated Communication*, *12*(4), 1143–1168. https://doi.org/10.1111/j.1083-6101.2007.00367.x

Fenner, G. H., & Renn, R. W. (2004). Technology-assisted supplemental work: Construct definition and a research framework. *Human Resource Management*, *43*(2–3), 179–200. https://doi.org/10.1002/hrm.20014

Fonner, K. L., & Roloff, M. E. (2012). Testing the connectivity paradox: Linking teleworkers' communication media use to social presence, stress from interruptions, and organizational identification. *Communication Monographs*, *79*(2), 205–231. https://doi.org/10.1080/03637751.2012.673000

Forret, M. L., & Dougherty, T. W. (2004). Networking behaviors and career outcomes: Differences for men and women? *Journal of Organizational Behavior*, *25*(3), 419–437. https://doi.org/10.1002/job.253

Fujimoto, Y., Ferdous, A. S., Sekiguchi, T., & Sugianto, L. (2016). The effect of mobile technology usage on work engagement and emotional exhaustion in Japan. *Journal of Business Research*, *69*(9), 3315–3323. https://doi.org/10.1016/j.jbusres.2016.02.013

Gardner, S. D., Lepak, D. P., & Bartol, K. M. (2003). Virtual HR: The impact of information technology on the human resource professional. *Journal of Vocational Behavior*, *63*(2), 159–179. https://doi.org/10.1016/S0001-8791(03)00039-3

Grant, A. M., Berg, J. M., & Cable, D. M. (2014). Job titles as identity badges: How self-reflective titles can reduce emotional exhaustion. *Academy of Management Journal*, *57*(4), 1201–1225. https://doi.org/10.5465/amj.2012.0338

Haans, R. F. J., Pieters, C., & He, Z. (2016). Thinking about U: Theorizing and testing U- and inverted U-shaped relationships in strategy research. *Strategic Management Journal*, *37*(7), 1177–1195. https://doi.org/10.1002/smj.2399

Halbesleben, J. R. B., & Bowler, W. M. (2007). Emotional exhaustion and job performance: The mediating role of motivation. *Journal of Applied Psychology*, *92*(1), 93–106. https://doi.org/10.1037/0021-9010.92.1.93

Halbesleben, J. R. B., & Buckley, M. R. (2004). Burnout in organizational life. *Journal of Management*, *30*(6), 859–879. https://doi.org/10.1016/j.jm.2004.06.004

Halbesleben, J. R. B., Neveu, J., Paustian-Underdahl, S. C., & Westman, M. (2014). Getting to the "COR": Understanding the role of resources in conservation of resources theory. *Journal of Management*, *40*(5), 1334–1364. https://doi.org/10.1177/0149206314527130

Hayes, A. F., & Preacher, K. J. (2010). Quantifying and testing indirect effects in simple mediation models when the constituent paths are nonlinear. *Multivariate Behavioral Research*, *45*(4), 627–660. https://doi.org/10.1080/00273171.2010.498290

Higgins, M. C., & Kram, K. E. (2001). Reconceptualizing mentoring at work: A developmental network perspective. *The Academy of Management Review*, *26*(2), 264–288. https://doi.org/10.5465/AMR.2001.4378023

Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *The American Psychologist*, *44*(3), 513–524. https://doi.org/10.1037/0003-066X.44.3.513

Hobfoll, S. E. (2001). The influence of culture, community, and the nested-self in the stress process: Advancing conservation of resources theory. *Applied Psychology*, *50*(3), 337–421. https://doi.org/10.1111/1464-0597.00062

Hobfoll, S. E. (2011). Conservation of resource caravans and engaged settings: Conservation of resource caravans. *Journal of Occupational and Organizational Psychology*, *84*(1), 116–122. https://doi.org/10.1111/j.2044-8325.2010.02016.x

Hobfoll, S. (2014). Resource caravans and resource caravan passageways: A new paradigm for trauma responding. *Intervention (Amstelveen, Netherlands)*, *12*, 21–32. https://doi.org/10.1097/WTF.0000000000000067

Hobfoll, S. E., & Freedy, J. (1993). Conservation of resources: A general stress theory applied to burnout. In W. B. Schaufeli, C. Maslach, & T. Marek (Eds.), *Professional burnout: Recent developments in theory and research* (pp. 115–129). Taylor & Francis.

Hobfoll, S. E., Halbesleben, J., Neveu, J., & Westman, M. (2018). Conservation of resources in the organizational context: The reality of resources and their consequences. *Annual Review of Organizational Psychology and Organizational Behavior*, *5*(1), 103–128. https://doi.org/10.1146/annurev-orgpsych-032117-104640

Hobfoll, S. E., & Lilly, R. S. (1993). Resource conservation as a strategy for community psychology. *Journal of Community Psychology*, *21*(2), 128–148. https://doi.org/10.1002/1520-6629(199304)21:2:128::AID-JCOP2290210206:3.0.CO;2-5

Hobfoll, S. E., & Shirom, A. (2000). Conservation of resources theory: Applications to stress and management in the workplace. In R. Golembiewski (Ed.), *Handbook of organizational behavior* (pp. 57–81). Dekker.

Hsu, H., Lin, J. J. H., & Skidmore, S. T. (2018). Analyzing individual growth with clustered longitudinal data: A comparison between model-based and design-based multilevel approaches. *Behavior Research Methods*, *50*(2), 786–803. https://doi.org/10.3758/s13428-017-0905-7

Huang, S., Yu, Z., Shao, Y., Yu, M., & Li, Z. (2021). Relative effects of human capital, social capital and psychological capital on hotel employees' job performance. *International Journal of Contemporary Hospitality Management*, *33*(2), 490–512. https://doi.org/10.1108/IJCHM-07-2020-0650

Hui, C., Law, K. S., & Chen, Z. X. (1999). A structural equation model of the effects of negative affectivity, leader-member exchange, and perceived job mobility on in-role and extra-role performance: A Chinese case. *Organizational Behavior and Human Decision Processes*, *77*(1), 3–21. https://doi.org/10.1006/obhd.1998.2812

Jarvenpaa, S. L., & Lang, K. R. (2005). Managing the paradoxes of mobile technology. *Information Systems Management*, *22*(4), 7–23. https://doi.org/10.1201/1078.10580530/45520.22.4.20050901/90026.2

Jeong, S., & Hwang, Y. (2012). Does multitasking increase or decrease persuasion? effects of multitasking on comprehension and counterarguing. *Journal of Communication*, *62*(4), 571–587. https://doi.org/10.1111/j.1460-2466.2012.01659.x

Kanfer, R., & Ackerman, P. L. (2004). Aging, adult development, and work motivation. *The Academy of Management Review*, *29*(3), 440–458. https://doi.org/10.5465/AMR.2004.13670969

Karr-Wisniewski, P., & Lu, Y. (2010). When more is too much: Operationalizing technology overload and exploring its impact on knowledge worker productivity. *Computers in Human Behavior*, *26*(5), 1061–1072. https://doi.org/10.1016/j.chb.2010.03.008

Kolb, D. G., Caza, A., & Collins, P. D. (2012). States of connectivity: New questions and new directions. *Organization Studies*, *33*(2), 267–273. https://doi.org/10.1177/0170840611431653

Kolb, D. G., Collins, P. D., & Lind, E. A. (2008). Requisite connectivity: Finding flow in a not-so-flat world. *Organizational Dynamics*, *37*(2), 181–189. https://doi.org/10.1016/j.orgdyn.2008.02.004

Lee, B., & Barua, A. (1999). An integrated assessment of productivity and efficiency impacts of information technology investments: Old data, new analysis and evidence. *Journal of Productivity Analysis*, *12*(1), 21–43. https://doi.org/10.1023/A:1007898906629

Leonardi, P. M., Treem, J. W., & Jackson, M. H. (2010). The connectivity paradox: Using technology to both decrease and increase perceptions of distance in distributed work arrangements. *Journal of Applied Communication Research: Communication and Distance*, *38*(1), 85–105. https://doi.org/10.1080/00909880903483599

Li, L., & Lin, T. T. C. (2016). Exploring work-related smartphone dependency among young working adults in China: A qualitative approach. *International Journal of Communication*, *10*, 2915–2933.

Li, L., & Lin, T. T. C. (2018). Examining how dependence on smartphones at work relates to Chinese employees' workplace social capital, job performance, and smartphone addiction. *Information Development*, *34*(5), 489–503. https://doi.org/10.1177/0266666917721735

MacKenzie, S. B., Podsakoff, P. M., & Ahearne, M. (1998). Some possible antecedents and consequences of in-role and extra-role salesperson performance. *Journal of Marketing*, *62*(3), 87–98. https://doi.org/10.2307/1251745

MacKenzie, S. B., Podsakoff, P. M., & Fetter, R. (1991). Organizational citizenship behavior and objective productivity as determinants of managerial evaluations of salespersons' performance. *Organizational Behavior and Human Decision Processes*, *50*(1), 123–150. https://doi.org/10.1016/0749-5978(91)90037-T

Maslach, C., Schaufeli, W. B., & Leiter, M. P. (2001). Job burnout. *Annual Review of Psychology*, *52*(1), 397–422. https://doi.org/10.1146/annurev.psych.52.1.397

Mazmanian, M. (2013). Avoiding the trap of constant connectivity: When congruent frames allow for heterogeneous practices. *Academy of Management Journal*, *56*(5), 1225–1250. https://doi.org/10.5465/amj.2010.0787

Mazmanian, M., Orlikowski, W. J., & Yates, J. (2013). The autonomy paradox: The implications of mobile email devices for knowledge professionals. *Organization Science*, *24*, 1291–1600.

McArdle, J. J. (2009). Latent variable modeling of differences and changes with longitudinal data. *Annual Review of Psychology*, *60*(1), 577–605. https://doi.org/10.1146/annurev.psych.60.110707.163612

McEwen, B. S., & Stellar, E. (1993). Stress and the individual: Mechanisms leading to disease. *Archives of Internal Medicine (1960)*, *153*(18), 2093–2101. https://doi.org/10.1001/archinte.1993.00410180039004

Muraven, M., & Baumeister, R. F. (2000). Self-regulation and depletion of limited resources: Does self-control resemble a muscle? *Psychological Bulletin*, *126*(2), 247–259. https://doi.org/10.1037/0033-2909.126.2.247

Neisser, U., Boodoo, G., Bouchard, T. J. Jr, Boykin, A. W., Brody, N., Ceci, S. J., Halpern, D. F., Loehlin, J. C., Perloff, R., Sternberg, R. J., & Urbina, S. (1996). Intelligence: Knowns and unknowns. *The American Psychologist*, *51*(2), 77–101. https://doi.org/10.1037/0003-066X.51.2.77

Ng, T. W. H., & Feldman, D. C. (2009). How broadly does education contribute to job performance? *Personnel Psychology*, *62*(1), 89–134. https://doi.org/10.1111/j.1744-6570.2008.01130.x

Ng, T. W. H., & Feldman, D. C. (2010). The effects of organizational embeddedness on development of social capital and human capital. *Journal of Applied Psychology*, *95*(4), 696–712. https://doi.org/10.1037/a0019150

Ostroff, C., Kinicki, A. J., & Clark, M. (2002). Substantive and operational issues of response bias across levels of analysis: An example of climate-satisfaction relationships. *Journal of Applied Psychology*, *87*(2), 355–368. https://doi.org/10.1037/0021-9010.87.2.355

Panko, R. R. (1991). Is office productivity stagnant? *MIS Quarterly*, *15*(2), 191–203. https://doi.org/10.2307/249380

Pierce, J. R., & Aguinis, H. (2013). The too-much-of-a-good-thing effect in management. *Journal of Management*, *39*(2), 313–338. https://doi.org/10.1177/0149206311410060

Ragsdale, J. M., & Hoover, C. S. (2016). Cell phones during nonwork time: A source of job demands and resources. *Computers in Human Behavior*, *57*, 54–60. https://doi.org/10.1016/j.chb.2015.12.017

Rainie, L., & Wellman, B. (2012). *Networked: The new social operating system*. MIT Press.

Remenyi, D. S. J., Money, A., & Twite, A. (1991). *A guide to measuring and managing IT benefits*. NCC Blackwell Limited.

Ren, S., & Chadee, D. (2017). Influence of work pressure on proactive skill development in China: The role of career networking behavior and guanxi HRM. *Journal of Vocational Behavior*, *98*, 152–162. https://doi.org/10.1016/j.jvb.2016.11.004

Ren, S., Yang, F., & Wood, R. (2019). How work-related capabilities influence job performance: A relational perspective. *International Journal of Human Resource Management*, *30*(7), 1157–1180. https://doi.org/10.1080/09585192.2017.1288154

Rennecker, J., & Godwin, L. (2005). Delays and interruptions: A self-perpetuating paradox of communication technology use. *Information and Organization*, *15*(3), 247–266. https://doi.org/10.1016/j.infoandorg.2005.02.004

Richardson, K., & Benbunan-Fich, R. (2011). Examining the antecedents of work connectivity behavior during non-work time. *Information and Organization*, *21*(3), 142–160. https://doi.org/10.1016/j.infoandorg.2011.06.002

Rosenbloom, T., & Eldror, E. (2017). Perfectionism as a moderator of the association of work connectivity behavior after-hours (WCBA) and burnout. *North American Journal of Psychology*, *19*(2), 461–476.

Schieman, S., & Young, M. C. (2013). Are communications about work outside regular working hours associated with work-to-family conflict, psychological distress and sleep problems? *Work and Stress*, *27*(3), 244–261. https://doi.org/10.1080/02678373.2013.817090

Schlachter, S., McDowall, A., Cropley, M., & Inceoglu, I. (2018). Voluntary work-related technology use during non-work time: A narrative synthesis of empirical research and research agenda. *International Journal of Management Reviews: IJMR*, *20*(4), 825–846. https://doi.org/10.1111/ijmr.12165

Schreurs, B. H. J., Hetty van Emmerik, I., Günter, H., & Germeys, F. (2012). A weekly diary study on the buffering role of social support in the relationship between job insecurity and employee performance. *Human Resource Management*, *51*(2), 259–279. https://doi.org/10.1002/hrm.21465

Seybold, K. C., & Salomone, P. R. (1994). Understanding workaholism: A review of causes and counseling approaches. *Journal of Counseling and Development*, *73*(1), 4–9. https://doi.org/10.1002/j.1556-6676.1994.tb01702.x

Shi, Y., Zhang, H., Xie, J., & Ma, H. (2018). Work-related use of information and communication technologies after hours and focus on opportunities: The moderating role of work-family centrality. *Current Psychology (New Brunswick, N.J.)*, *40*(2), 639–646. https://doi.org/10.1007/s12144-018-9979-3

Sommer, K. L., & Kulkarni, M. (2012). Does constructive performance feedback improve citizenship intentions and job satisfaction? The roles of perceived opportunities for advancement, respect, and mood. *Human Resource Development Quarterly*, *23*(2), 177–201. https://doi.org/10.1002/hrdq.21132

Spector, P. E., & Jex, S. M. (1998). Development of four self-report measures of job stressors and strain: Interpersonal conflict at work scale, organizational constraints scale, quantitative workload inventory, and physical symptoms inventory. *Journal of Occupational Health Psychology*, *3*(4), 356–367. https://doi.org/10.1037/1076-8998.3.4.356

Stake, J. E., & Eisele, H. (2010). Gender and personality. In J. C. Chrisler & D. R. McCreary (Eds.), *Handbook of gender research in psychology: Gender research in social and applied psychology* (pp. 19–40). Springer.

Senarathne Tennakoon, K. L. U., da Silveira, G. J. C., & Taras, D. G. (2013). Drivers of context-specific ICT use across work and nonwork domains: A boundary theory perspective. *Information and Organization*, *23*(2), 107–128. https://doi.org/10.1016/j.infoandorg.2013.03.002

Ter Hoeven, C. L., van Zoonen, W., & Fonner, K. L. (2016). The practical paradox of technology: The influence of communication technology use on employee burnout and engagement. *Communication Monographs*, *83*(2), 239–263. https://doi.org/10.1080/03637751.2015.1133920

Vergauwe, J., Wille, B., Hofmans, J., Kaiser, R. B., & De Fruyt, F. (2018). The double-edged sword of leader charisma: Understanding the curvilinear relationship between charismatic personality and leader effectiveness. *Journal of Personality and Social Psychology*, *114*(1), 110–130. https://doi.org/10.1037/pspp0000147

Wajcman, J., & Dodd, N. (2017). Introduction: The powerful are fast, the powerless are slow. In J. Wajcman & N. Dodd (Eds.), *The sociology of speed: Digital, organizational, and social temporalities* (pp. 1–12). Oxford University Press.

Wajcman, J., & Rose, E. (2011). Constant connectivity: Rethinking interruptions at work. *Organization Studies*, *32*(7), 941–961. https://doi.org/10.1177/0170840611410829

Waldman, D. A., & Avolio, B. J. (1986). A meta-analysis of age differences in job performance. *Journal of Applied Psychology*, *71*(1), 33–38. https://doi.org/10.1037/0021-9010.71.1.33

Wilk, S. L., & Moynihan, L. M. (2005). Display rule "regulators": The relationship between supervisors and worker emotional exhaustion. *Journal of Applied Psychology*, *90*(5), 917–927. https://doi.org/10.1037/0021-9010.90.5.917

Williams, L. J., & Anderson, S. E. (1991). Job satisfaction and organizational commitment as predictors of organizational citizenship and in-role behaviors. *Journal of Management*, *17*(3), 601–617. https://doi.org/10.1177/014920639101700305

Wright, K. B., Abendschein, B., Wombacher, K., O'Connor, M., Hoffman, M., Dempsey, M., Krull, C., Dewes, A., & Shelton, A. (2014). Work-related communication technology use outside of regular work hours and work life conflict: The influence of communication technologies on perceived work life conflict, burnout, job satisfaction, and turnover intentions. *Management Communication Quarterly*, *28*(4), 507–530. https://doi.org/10.1177/0893318914533332

Wright, T. A., & Cropanzano, R. (1998). Emotional exhaustion as a predictor of job performance and voluntary turnover. *Journal of Applied Psychology*, *83*(3), 486–493. https://doi.org/10.1037/0021-9010.83.3.486

Wu, C., Liu, J., Kwan, H. K., & Lee, C. (2016). Why and when workplace ostracism inhibits organizational citizenship behaviors: An organizational identification perspective. *Journal of Applied Psychology*, *101*(3), 362–378. https://doi.org/10.1037/apl0000063

Wu, J., & Kwok, O. (2012). Using SEM to analyze complex survey data: A comparison between design-based single-level and model-based multilevel approaches. *Structural Equation Modeling*, *19*(1), 16–35. https://doi.org/10.1080/10705511.2012.634703

Xie, J., Ma, H., Zhou, Z. E., & Tang, H. (2018). Work-related use of information and communication technologies after hours (W_ICTs) and emotional exhaustion: A mediated moderation model. *Computers in Human Behavior*, *79*, 94–104. https://doi.org/10.1016/j.chb.2017.10.023

Zohar, D. (1997). Predicting burnout with a hassle-based measure of role demands. *Journal of Organizational Behavior*, *18*(2), 101–115.

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How to cite this article: Ren, S., Hu, J., Tang, G., & Chadee, D. (2023). Digital connectivity for work after hours: Its curvilinear relationship with employee job performance. *Personnel Psychology*, *76*, 731–757. https://doi.org/10.1111/peps.12497