Journal of Business Research 126 (2021) 341–349

Contents lists available at ScienceDirect

Journal of Business Research

journal homepage: www.elsevier.com/locate/jbusres

Technology distraction at work. Impacts on self-regulation and work engagement

Mehmet A. Orhan [a], Sylvaine Castellano [b,*], Insaf Khelladi [c], Luca Marinelli [d], Filippo Monge [e]

[a] Paris School of Business, France
[b] EM Normandie Business School, Metis Lab, France
[c] Léonard de Vinci Pôle Universitaire Research Center, 92 916 Paris La Défense, France
[d] Università Politecnica delle Marche, Italy
[e] University of Turin, Italy

ARTICLE INFO

Keywords:
Digital transformation
Parallel communication
Technology distraction
Technology interruption
Technology intrusion

ABSTRACT

Workplace technology interruption and distraction are complex to analyze. In completing their daily tasks, employees receive a plethora of emails, text messages on their smartphones, and app notifications from both professional and personal counterparts. These parallel communications pose new managerial opportunities and workplace challenges.

While such microbreaks foster communicative potential and information access, past research has discussed the issue of technology overload. The present article contributes to parallel communications regarding digital transformation in the workplace.

Based on an original dataset of 369 employees, we examine the issue of technology distraction and interruption in the workplace. The results show that parallel communications positively influence job performance and negatively affect self-regulation and work engagement. The findings enrich the literature on digital transformation. They have practical implications for managers and firms implementing specific arrangements to nurture and embrace successful digital ecosystems.

1. Introduction

Over the past decade, digital transformation has deeply influenced people, businesses, and systems (Huarng, Yu, & Lai, 2015; Ferraris, Erhardt, & Bresciani, 2019). This revolution poses new managerial opportunities and challenges (Bresciani, Ferraris, & Del Giudice, 2018; Scuotto, Del Giudice, Tarba, Petruzzelli, & Chang, 2019). The transformation of the workplace, which accelerated during the COVID-19 crisis as many workers switched to remote working thanks to the advancements in digital technologies, has brought many questions about organizational processes, including employee well-being and performance (Kniffin et al., 2020; Rudolph et al., 2020; Charalampous, Grant, Tramontano, & Michailidis, 2019). The ever-increasing role technology plays in determining individual and organizational performance has moved to the heart of business and management research (Sardi, Sorano, Garengo, & Ferraris, 2020; Papa, Chierici, Ballestra, Meissner, & Orhan, 2020).

The workplace is significantly impacted by ever-evolving internet technologies (Graham and Dutton, 2019), shaping the way we communicate at work. Communication technologies have become a commodity for any typical knowledge worker since the nature of jobs has steadily been transformed from manufacturing centered to more versatile and service oriented (Barley, Bechky, & Milliken, 2017). In addition, the affordability of telecommunication technologies and the prevalence of wireless networks has created a "*hyperconnected temporary society*" in which constant connectivity has become a norm in all areas of life as well as in the workplace (Mazmanian, 2013; Wajcman & Rose, 2011). Such constant connectivity questions human resources management (HRM) practices, as companies, through their intra- and interorganizational relationships and processes (Scuotto, Santoro, Bresciani, & Del Giudice, 2017), are becoming more service, knowledge, and innovation intensive (Papa, Dezi, Gregori, Mueller, & Miglietta, 2018).

Information and communication technologies (ICT) have deeply remodeled the work structure, becoming critical to organizational

* Corresponding author.
E-mail addresses: m.orhan@psbedu.paris (M.A. Orhan), scastellano@em-normandie.fr (S. Castellano), insaf.khelladi@devinci.fr (I. Khelladi), filippo.monge@unito.it (F. Monge).

https://doi.org/10.1016/j.jbusres.2020.12.048
Received 30 June 2020; Received in revised form 17 December 2020; Accepted 19 December 2020
Available online 16 January 2021

efficiency, effectiveness (Rennecker & Godwin, 2005), collaboration and interaction in networked enterprises (Barjis, Gupta, & Sharda, 2011). Communication technologies are widely used to organize work activities. However, "*if communicative technologies are expected to increase work organization by minimizing communication delays, the use of the same technologies could also be expected to increase work disorganization*" Rennecker and Godwin (2005, p. 261).

The boom of such technologies explains the fragmentation and interruption of contemporary knowledge workers' workdays (Wajcman & Rose, 2011). Technologies have allowed for increased productivity, communicative potential, and information access. However, they also chronically distract workers in multiple ways, impeding their time and attention (Barjis et al., 2011). For instance, it takes on average more than 23 min to fully recover from a distraction (Mark, Gudith, & Klocke, 2008). Technology (i.e., mobile applications, information, communication, and interruption) overload is increasingly widespread in the digital workplace (Yin, Ou, Davison, & Wu, 2018), with the increase in job demands, causing burnout (Schaufeli, Taris, & Van Rhenen, 2008).

There is a lack of consensus on whether communication technologies unavoidably lead to increased connectivity and responsiveness (Mazmanian, 2013). Although communication technologies interrupt individuals' work performance, most changes in work activities originate from individuals themselves (Wajcman & Rose, 2011). Involuntary interruptions, distractions, and intrusions in the workplace – from coworkers, supervisors and managers – can be overwhelming (Puranik, Koopman, & Vough, 2020). Other types of notifications from friends, social circles, and extended networks can also occur.

Past research has explored workplace interruption and distraction. First, interruptions from different sources were studied separately; when taken together, the focus was on their frequency (McCurdie, Sanderson, & Aitken, 2018; Speier, Vessey, & Valacich, 2003). Second, the 'bring your own device' (BYOD) context – in which users make their own personal devices available for company use – has brought additional layers of complexity. While over 71% of companies worldwide changed at least one process to allow BYOD (Qing, 2013), BYOD in the workplace can also be considered to mean 'bring your own distraction'. Although IT (security) risks and challenges have been addressed in the literature, behavioral implications are rather understudied. Sociobehavioral challenges and risks include blurred lines between work and life contexts; emails and instant messages are commonly received by knowledge workers and telecommuters (e.g., Fonner & Roloff, 2012; Sykes, 2011). Furthermore, in a typical workday, communication with agents internal and external to the organization causes the suspension of work activities, which we call the "*parallel communication barrier*".

Overall, past research has shown that work interruptions (1) impede goal progress on the interrupted task and (2) impair self-regulation toward one's work goals (Mitchell, Harman, Lee, & Lee, 2008). In addition, microbreaks have a significant indirect effect on job performance only for workers with low work engagement but not for highly engaged workers (Kim, Park, & Headrick, 2018). Finally, work engagement reduces the effects of interruptions and increases work performance.

This paper addresses the call to advance the literature on technology interruption and distraction and its central role in the functioning and performance in the workplace. Indeed, studies regarding the role of interruption overload on workers' tasks and reactions are still scarce (Yin et al., 2018). Additionally, firms need ways to decrease the time that knowledge workers use on pointless tasks and maximize their time used on productive tasks (Palvalin, Lönnqvist, & Vuolle, 2013), thereby better managing their counterproductive behaviors (Serenko & Bontis, 2016).

The objective of this article is to analyze the influence of technology interruption and distraction on performance in the workplace in response to a call for further studies on the effect of parallel communication on work performance (Addas & Pinsonneault, 2018). Using an original survey of 369 employees working for large companies (500+ employees), this study advances the understanding of the mechanisms, namely, self-regulation and work engagement, of such dynamics, particularly on how and when individuals decide to direct their attention toward opposing demands and needs (Leroy, Schmidt, & Madjar, 2020). Likewise, this study deepens the understanding of the use of technology and the emerging patterns, which depend on how individuals endorse that technology within a given context (Mazmanian, 2013).

The paper is structured as follows. Section 1 presents the theory and hypotheses. Sections 2 and 3 provide the empirical analysis and discuss the findings and implications, respectively. Section 4 presents the conclusion, limitations, and avenues for future research.

2. Literature review

2.1. Technology interruptions, distractions, and intrusions as parallel communication in the workplace

Technology overload is the "*device proliferation and/or information overload that causes cognitive and physical burdens on human beings due to the use of multiple gadgets with multiple functions to accomplish multiple tasks in everyday activities*" (Grandhi, Jones, & Hiltz, 2005) and includes three components: information overload, interruption overload and system feature overload (Karr-Wisniewski & Lu, 2010). In the communication technology context, interruption overload is the degree to which users of such technologies face an overload of disruption from impromptu communication technology interactions or the discontinuity of work activities because of interactions not initiated by them (Yin et al., 2018). Individuals using communication technologies commonly face two types of disruptions, namely, delays and interruptions, which affect work disorganization and task accomplishment (Rennecker & Godwin, 2005). Interruption is "*a synchronous interaction which was not initiated by the subject, was unscheduled, and resulted in the recipient discontinuing their current activity.*" (O'Conaill & Frohlich, 1995). It refers to "*any distraction that makes an individual stop his/her planned activity to respond to the interruption's initiator.*" (Jackson, Dawson, & Wilson, 2001). Distraction is defined as an "*intermittent interruption – externally-generated, randomly occurring, discrete event that breaks continuity of cognitive focus on a primary task*" (Corragio, 1990). It represents "*uncontrollable, unpredictable stressors"* producing information overload (Cohen, 1980). It typically "*requires immediate attention and insists on action*" (Covey, 1989). Distractions are provocative stimuli that "*[direct] attention away from an ongoing activity*", while interruptions are severe attentional distractions that "*can place greater demands on cognitive processing resources than available capacity can handle*" (Speier et al., 2003). Both distractions and interruptions cause cognitive disruptions (Sykes, 2011).

Currently, work is mainly done through communication technologies that aggravate distractions (Rennecker & Godwin, 2005). Portable devices offer tremendous opportunities for individuals to connect anywhere and at any time (Mazmanian, 2013). However, individuals relentlessly receive messages and alerts on their desktops, laptops, tablets, and smartphones, provoking digital overload, distraction and a loss of concentration (Rosen & Samuel, 2015). Such endless communication flow incites frequent interruptions (Stich, Tarafdar, & Cooper, 2018). Simply turning off communication technologies is no longer a viable option in the current digital age (Rosen & Samuel, 2015).

Experiencing a technology depends on how an individual understands its nature, role, and possible applications (Mazmanian, 2013). As such, technologies themselves are not always the problem, but their use might be. Reasons such as addiction and anxiety, which includes FOMO (fear of missing out), FOBO (fear of being offline), and nomophobia (fear of being without a mobile phone), explain why individuals allow themselves to be distracted and thus incapacitated by technologies (Rosen & Samuel, 2015).

Prior studies emphasize the role of technology overload in increasing job stress and reducing individual productivity and job satisfaction

(Tarafdar, Tu, Ragu-Nathan, & Ragu-Nathan, 2011). The constant connectivity through these technologies questions the norms of individuals' availability (Mazmanian, 2013). Being constantly connected prompts individuals to waste time, attention and energy on superfluous information and interactions, generating little value from their busyness (Rosen & Samuel, 2015). Past research has emphasized other long-term negative effects of constant connectivity – increased stress, burnout, and work-life imbalance – resulting in decreased time dedicated to reflection and in-depth analysis (Mazmanian, 2013) and lower productivity and engagement both at work and in private (Rosen & Samuel, 2015).

Studies exploring the negative impact of interruptions resulting from communication technology usage in the workplace remain scarce (Garrett & Danziger, 2008). Impromptu communication technology interactions contribute to technology and work overload (Stich et al., 2018) and impact job performance (Wajcman & Rose, 2011).

Past studies have focused on the effect of interruption timing, duration, and complexity on work performance while linking interruptions to negative and positive effects on performance (Rennecker & Godwin, 2005). Consequently, organizations have recommended microbreaks (i.e., short, informal respite activities taken voluntarily between tasks) as a management strategy to improve work outcomes (Kim et al., 2018). These breaks consist of socializing activities such as engaging with emails, text messaging, and chatting on social media. Employees can be energized by and even proactively seek social interactions to increase their energy at work. However, it is unclear whether short breaks and respite activities in the workplace promote or impede performance (Kim et al., 2018).

In the workplace, the permanent connectivity caused by communication technologies increases the level of processing information demands while prompting individuals' feeling of cognitive overload (Yin et al., 2018). The use of communication technologies is time consuming, pushing workers to do useless or irrelevant things (Stich et al., 2018). Interruption overload causes repeated attention distractions in the workplace (Yin et al., 2018).

Technology is a major source of multitasking (Zhang & Rau, 2016), but multitasking does not always prove to be successful (Rosen & Samuel, 2015). Switching tasks requires time to become engaged in the next task, producing a time loss, especially for complex and/or unfamiliar tasks (Rennecker & Godwin, 2005). Almost all interruptions are disturbing (Jackson et al., 2001), with only a few increasing productivity (Mano & Mesch, 2010). Information overload has an inverted U-shaped relationship with performance (Yin et al., 2018).

Overall, the use of communication technologies raises a paradoxical concern. It improves work performance by reducing communication delays and simultaneously increases work interruptions (Rennecker & Godwin, 2005). Despite some intuition that microbreaks may have positive effects, there is little evidence that they benefit job performance (Kim et al., 2018). The loss of time and energy resulting from interruptions has a negative effect on productivity (Addas & Pinsonneault, 2015) and thus work performance. The higher the level of interruption overload is, the lower workers' productivity (Yin et al., 2018). Nevertheless, constant connectivity resulting from communication technologies motivates individuals to engage in new work strategies (Wajcman & Rose, 2011) that may be productive. Hence, technology overload can lead to greater effectiveness and innovation in the workplace (Tarafdar, Cooper, & Stich, 2019), improving productivity in knowledge work (Palvalin et al., 2013). Accordingly, technology distraction has been found to be related to both increased and decreased work performance. Hence, we state the following hypotheses:

H1a: Parallel communication (as a proxy for distractions) is positively associated with performance.

H1b: Parallel communication (as a proxy for distractions) is negatively associated with performance.

2.2. Disentangling the role of work engagement and self-regulation as outcomes of distraction and predictors of performance

Theory and research have advanced the understanding of self-regulation over the past two decades (Baumeister & Heatherton, 1996). Self-regulation has become a well-researched area in the field of psychology, pedagogy, social cognitive theory, and adjacent disciplines (Gavora, Jakešová, & Kalenda, 2015). Self-regulation, a complex, multifaceted process (Baumeister & Heatherton, 1996), is defined as the ability to act according to an internal plan with no external support or reward and, more specifically, as the ability to implement planned actions and pursue them to achieve personal goals (Brown et al., 1999).

Overall, self-regulation is the ability to develop, implement, and flexibly maintain planned behavior to achieve one's goals (Carey, Neal, & Collins, 2004). It refers to one's ability to control one's own thoughts, emotions, and actions (Heatherton and Tice, 1994). Self-regulation has also been considered an immensely adaptive capacity (Kuhl, Kazén, & Koole, 2006). Self-regulation skills subsume goal-directed behavior and the short-term delay of gratification for long-term gains (Carey et al., 2004). Such skills facilitate goal-directed behavior; they allow a person to delay gratification in the short term to achieve the desired outcomes (Neal & Carey, 2005). Self-regulation skills include goal setting, monitoring, and controlling cognition, motivation, and behavior, and they can help an individual to navigate, organize, and combine information into viable mental models (Zimmerman, 2008).

Past research has analyzed how self-regulated behavior develops and functions and how it is organized (Gavora et al., 2015). We focus herein on its antecedents and consequences. An emergent question concerns self-regulation in online and hypermedia environments (Zimmerman, 2008). Self-regulatory strategies such as switching off one's phone or email for a while can represent steps to limit distractions (Van Eerde, 2000). Nevertheless, the opposing effect still needs further investigation. For instance, academic research has not yet examined the influence of technology distraction and parallel communication on self-regulation.

Despite the substantial progress in studying how self-regulation can function, little effort has been devoted to the direct examination of self-regulation failures (Baumeister & Heatherton, 1996). Increased technology distraction represents micro and repeated factors that question self-regulation over time. In addition, self-regulatory strength can be temporarily depleted as workers become exhausted from several simultaneous demands. In particular, we state that technology distraction can diminish a worker's strength and therefore undermine some patterns of self-control. Patterns of self-regulation might break down when people are distracted by emails and other forms of parallel communication, which might deplete their self-regulatory capacities. Accordingly, technology distractions could be related to decreased self-regulation. Hence, we state the following hypothesis:

H2: Parallel communication (as a proxy for distractions) is negatively associated with self-regulation.

The link between self-regulation and performance was investigated more than two decades ago in the educational field (Zimmerman, 2008). DeShon, Kozlowski, Schmidt, Milner, and Wiechmann (2004) adopted a multilevel approach (i.e., team and self-regulatory processes) to explain performance. Panadero and Romero (2014) examined the performance issue in a self-regulation learning context. Scientific insights into self-regulation processes are directly relevant to disciplines that seek to promote job performance. As such, effective self-regulation fosters high job performance (Kuhl et al., 2006), curbs counterproductive behaviors (Serenko & Bontis, 2016), and improves work performance. In the technology use context, communication technologies favor interruptions. As such, individuals fail to maintain their ongoing tasks and engage in self-regulation behavior to improve their work experience and performance (Adler & Benbunan-Fich, 2013). Accordingly, self-regulation could be related to increased job performance. Hence, we state the following hypothesis:

H3: Self-regulation is positively associated with performance.

Research on employee engagement is scarce in the academic literature (Saks, 2006; Schaufeli, Salanova, González-Romá, & Bakker, 2002), although there has been a growing interest in the topic since the early 2000s (Bakker, Schaufeli, Leiter, & Taris, 2008). Engagement evolved as the opposite experience of burnout (Schaufeli et al., 2002). Consequently, studies on burnout have stimulated recent research on work engagement (Bakker et al., 2008). Nonetheless, the meaning of the employee engagement concept is unclear (Macey & Schneider, 2008).

Work engagement has been defined in numerous ways (Saks, 2006). It has been viewed as a positive, fulfilling work-related state of mind characterized by vigor, dedication, and absorption (Schaufeli & Bakker, 2004; Schaufeli, Bakker, & Salanova, 2006). It has also been viewed as emotional and intellectual commitment to the organization or the amount of discretionary effort exhibited by employees in their jobs (Saks, 2006). Employee engagement has both attitudinal and behavioral components (Macey & Schneider, 2008). This engagement also refers to a persistent and pervasive affective-cognitive state that is not focused on any particular object, event, individual, or behavior (Schaufeli & Bakker, 2004). Work engagement is likely to remain relatively stable over time (Mauno, Kinnunen, & Ruokolainen, 2007).

Little is known about the antecedents and consequences of work engagement (Saks, 2006). Previous studies have investigated the drivers of work engagement (Bakker & Demerouti, 2008), with some adopting the viewpoint of occupational stress models such as the job-demand-resource model (Mauno et al., 2007). The antecedents of engagement can be found in the conditions under which people work (Macey & Schneider, 2008). Workers are more engaged at work in situations when they are more psychologically available (Saks, 2006). In addition to the task itself, one's working conditions have been a target of practice and research (Macey & Schneider, 2008). Engagement means to be psychologically present when occupying and performing an organizational role (Saks, 2006).

Engaged employees have high levels of energy, are enthusiastic about their work and are often fully immersed in their jobs such that "time flies" (Bakker et al., 2008). If availability is a positive predictor of engagement (Saks, 2006), any factor disrupting such availability negatively affects the worker's vigor and dedication in performing his/her task or role. Nevertheless, communication technology usage is linked to stress related to interruptions (Fonner & Roloff, 2012), affecting the relationship between these technologies and employees' engagement (Chesley, 2014). Accordingly, technology distraction could be related to decreased work engagement. Hence, we state the following hypothesis:

H4: Parallel communication (as a proxy for distractions) is negatively associated with work engagement.

Several studies have claimed that engagement predicts employee outcomes, organizational success, and financial performance (Saks, 2006). It is important to consider how engagement might influence different aspects of job performance (Rich, Lepine, & Crawford, 2010). To date, few studies have examined the link between work engagement and job performance outcomes (Bakker & Demerouti, 2008). Engagement analyzes how individuals employ themselves in the performance of their job (Saks, 2006). Engagement, conceptualized as the investment of an individual's complete self into a role, provides a comprehensive explanation of performance relationships (Rich et al., 2010). Engaged employees often experience positive emotions (i.e., happiness, joy, and enthusiasm), create their own job and personal resources, and transfer their engagement to others (Bakker & Demerouti, 2008). Such employees perform well and are willing to go the extra mile (Bakker et al., 2008). In addition, engaged employees have a sense of energetic and effective connection with their work activities, seeing themselves as able to deal with the demands of their jobs well (Schaufeli et al., 2006).

Past research has supported the positive link between work engagement and performance (Bakker et al., 2008). Employee engagement drives bottom-line results (Macey & Schneider, 2008). Work engagement is predictive of job performance (Bakker et al., 2008). Accordingly, in the technology use context, work engagement could be related to increased job performance. Hence, we state the following hypothesis:

H5: Work engagement is positively associated with performance.

3. Empirical part

3.1. Data collection and sample

To test our conceptual model (Fig. 1), we administered a 16-item questionnaire. The data were collected in fall 2019 by graduate students holding full-time employment. We gathered 369 valid responses from employees working in diverse organizations in the private sector, representing a variety of fields, positions, and industries.

3.2. Measures

We measured our constructs with self-response multi-item scales (Table 1). To measure the self-regulation (SR) construct, we relied on earlier studies (Brown et al., 1999; Carey et al., 2004) and adapted the scales to the context of our study. For the work engagement (WE) scale, we used the absorption subdimension from the Utrecht Work Engagement Scale (Schaufeli et al., 2006). Absorption refers to "being totally and happily immersed in one's work" and "having difficulties detaching oneself from it so that time passes quickly, and one forgets everything else that is around." Parallel communication (PC), on the other hand, measures one's ability to handle multiple communications simultaneously (Sarker, Sarker, Chatterjee, & Valacich, 2010; Tang, Wang, & Norman, 2013). We measured this construct with two items assessing one's communication with internal and external parties in the organization during a typical workday. Finally, perceived work performance (PPERF) was measured with two items. The use of a single-item scale is prevalent and widely used in the literature (Meriläinen, Kõiv, & Honkanen, 2019). We included another item assessing one's performance in the workplace to improve the reliability score. All items were measured on 7-point Likert-type scales.

The Cronbach's alpha scores indicated acceptable ranges for further statistical analysis (Table 2). We also performed a confirmatory factor analysis. The goodness of fit statistics indicated that the model fits well with the data collected (Tucker–Lewis index (TLI) = 0.92; comparative fit index (CFI) = 0.94; root mean square error of approximation (RMSEA) = 0.05; $\chi 2 = 196$, df = 98, $\chi 2/df = 2$, $p < 0.001$ (Table 3).

One issue with self-reported measures is common method bias. As the nature of our data is cross-sectional, we used Harman's single factor test and exploratory factor analysis to check whether common method bias is an issue (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). When a single latent factor for all items accounts for the majority of the total variance explained, common method bias is a problem that needs to be addressed. The results of the single-factor test in our study indicate that the total variance explained by all items remained at 22.3%. Therefore, common method bias is not a relevant concern for the present study, as the result was less than50%.

3.3. Results

3.3.1. Main and indirect effects

To test our hypotheses, we used a generalized linear multimediation model through a path analysis on jamovi, an open-access, free statistical software tool. By doing so, we followed the procedure recommended in past research. Multimediation models are especially useful for exploring complex relationships (Rialti, Zollo, Ferraris, & Alon, 2019). We first tested the main effects to estimate perceived performance as the dependent variable. In support of H2, H3, H4, and H5, we find significant effects in the hypothesized directions. Namely, parallel communication, as a proxy for technology distractions, negatively affects self-regulation ($\beta = -0.542$; $p < 0.001$) and work engagement ($\beta = -0.116$; $p = 0.046 < 0.05$). In addition, the model results show a positive

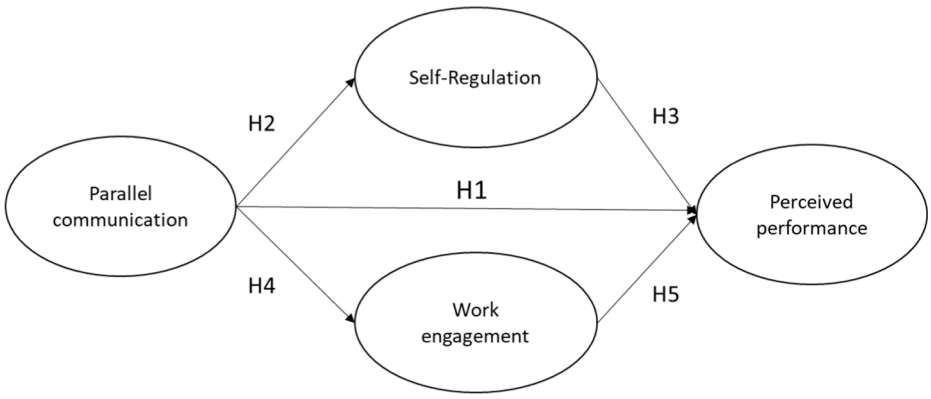

Fig. 1. Conceptual model.

Table 1
Items for variables measured.

Latent variables with items	Scale Reliability	Selected references
Self-Regulation [a]	0.81	Brown et al., 1999; Carey et al., 2004
SR1. I get easily distracted from my plans at work (R)		
SR2. Sometimes I find myself spending too much time using social media including messaging apps (R)		
SR3. Sometimes the amount of messages I receive makes me unproductive (R)		
SR4. It's hard for me to notice when I've had enough (social media use etc.) (R)		
SR5. Little issues or distractions throw me off course. (R)		
SR6. I have trouble following through with things once I've made up my mind to do something. (R)		
SR.7 I have so many conflicting tasks (including non-work related ones) at work that it's hard for me to focus on any one of them. (R)		
Work Engagement [a]	0.70	Schaufeli et al. (2006)
WE1. When I am working, I forget everything else around me		
WE2. I feel happy when I am working intensely		
WE3. I am immersed in my work		
WE4. I get carried away when I'm working		
WE5. It is difficult to detach myself from my job (R)		
Parallel Communication [a]	0.79	Sarker et al., 2010; Tang et al., 2013
PC1. In a typical workday, I engage in several online conversations at the same time		
PC2. In a typical workday, I communicate with multiple people outside my work at the same time		
Perceived performance	0.72	Meriläinen et al., 2019
PPERF1. I consistently show an outstanding performance at work. [a]		
PPERF2. My overall performance is can be rated as: [b]		

Notes: (R) = Reverse coded item; [a] Seven-point Likert-type rating scales (1 = *Strongly disagree*, 7 = *Strongly agree*). [b] Seven-point Likert-type rating scale (1 = *Very poor*, 2 = *Poor*, 3 = *Fair*, 4 = *Average*, 5 = *Good,* 6 = *Very ood,* 5 = *Excellent*).

association between perceived work performance and self-regulation ($\beta = 0.256$; $p < 0.001$) as well as work engagement ($\beta = 0.269$; $p < 0.001$). Surprisingly, H1 is not supported by our model. Parallel communication was found to be positively associated with perceived work performance ($\beta = 0.124$; $p = 0.038 < 0.05$). Fig. 2 presents the significant direct paths of the mediation model.

Table 4 summarizes the results of the mediated model. The total, direct, and indirect effects of parallel communication on perceived performance are presented accordingly. The results indicate an intriguing pattern. Even though the respondents revealed that parallel communication is positively associated with perceived performance, this relationship does not hold in the conceptualized model due to the mediated effects of self-regulation and work engagement. The total effect of parallel communication on perceived performance, which is mediated by self-regulation and work engagement, was not found to be statistically significant. These results further support that there is no evident overall effect of distractions in the workplace, as the respondents believed that they could handle multiple, parallel communications, which could have increased their overall perceived performance. However, the positive effects of the beliefs regarding multitasking disappear when parallel communication negatively affects self-regulation and work engagement.

4. Discussion and implications

From a theoretical perspective, this study contributes to the literature and sheds light on the untapped concept of parallel communication and its role in work interruptions. Recent research has indicated that work interruptions negatively affect individual work performance (Puranik et al., 2020; Mitchell et al., 2020). The unexpected nature of work interruptions, particularly technology interruptions due to constant connectivity, is a new reality and challenge for many employees. As a result of constant connectivity, individuals are expected to respond quickly whenever digital communication occurs (Feldman & Greenway, 2020). These shifting expectations have several implications. The source of interruptions is no longer restricted to formal, organizational ties but also comes from personal, informal networks. Even though constant connectivity has clear advantages for employees and organizations, technology distractions are an apparent disadvantage. We identify that attempts to maintain multiple, simultaneous online communications come in the form of technology distractions affecting self-regulation and work engagement, which in return influence performance.

This article introduces a prevalent issue, technological distractions in the workplace, to the management literature by elaborating on the observable and unobservable effects of handling multiple online communications. In this study, we contribute to the following findings. First, even though there is a self-perception that employees can handle multiple tasks while working, the effects of being able to handle multiple online conversations on performance are not as obvious as those expected by the respondents. These findings are in line with the existing literature supporting the argument that media multitasking through increased communication technology use has detrimental effects on performance outcomes although the respondents believed that media multitasking increased the performance based on the results. These biased beliefs were also previously documented in the literature (Ophir, Nass, & Wagner, 2009; Mark, Czerwinski, & Iqbal, 2018). Second, we

Table 2
Descriptive statistics, correlations between constructs and reliability.

	Correlations				
Variable	1	2		3	4
1. Self regulation	**0.81**				
2. Work engagement	0.15**	**0.70**			
3. Parallel communication	−0.54***	−0.12**		**0.79**	
4. Perceived performance	0.23***	0.29***	−0.05		**0.72**
M	3.90	4.45		3.89	5.05
SD	1.17	0.81		1.61	0.98

Notes: *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$. The diagonal elements in bold represent the Cronbach's alpha coefficients.

Table 3
Confirmatory factor analysis.

Factor	Standardized factor loadings
Self-Regulation [a]	0.646***
SR1.	0.636***
SR2.	0.637***
SR3.	0.643***
SR4.	0.730***
SR5.	0.487***
SR6.	0.551***
SR7.	
Work Engagement [a]	
WE1.	0.504***
WE2.	0.566***
WE3.	0.538***
WE4.	0.647***
WE5.	0.584***
Parallel Communication [a]	
PC1.	0.745***
PC2.	0.872***
Perceived performance	
PPERF1	0.712***
PPERF2.	0.806***

Notes: *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.
TLI = 0.92; CFI = 0.94; RMSEA = 0.05; $\chi 2 = 196$, df = 98, $\chi 2/df = 2$, $p < 0.001$.

also show that self-regulation and work engagement are strong predictors of perceived performance and negatively affected by parallel communication. Consistent with past research (Ophir et al., 2009; Mark et al., 2018), parallel communication acts as a cognitive, work-related distractor that interferes with self-control. These interferences also negatively influence the work engagement and productivity of knowledge workers (Palvalin et al., 2013), as distractions and interruptions make more difficult to focus on and detach from the tasks performed. As a result, our model revealed that the total effect of multitasking on perceived performance is somewhat difficult to determine.

Our study illustrates that it is becoming increasingly challenging to separate the blurred boundaries between work and personal life, which constitutes a challenge not only for employees but also for managers because electronic distractions and interruptions are increasingly commonplace in the workplace. Constant connectivity is an expected norm not only in work life but also in private life. However, constant connectivity comes with costs, as regulating the self with associated distractions is impossible to resist. Our results suggest that employees who report higher parallel communication also perceive that they perform better because multitasking ability creates the perception that more tasks could be simultaneously managed. However, managing multiple connections while working clearly creates barriers to employees' full engagement and control of their ICT use. HR managers should acknowledge such behaviors and adapt their HR practices to

Table 4
Indirect and total main effects.

Type	Effect	Estimate	SE	β	
Indirect		PC ⇒ SR ⇒ PPERF	−0.084	0.020	−0.139***
		PC ⇒ WE ⇒ PPERF	−0.019	0.010	−0.031
Component		PC ⇒ SR	−0.395	0.035	−0.542***
		SR ⇒ PPERF	0.213	0.045	0.256***
		PC ⇒ WE	−0.059	0.029	−0.116*
		WE ⇒ PPERF	0.322	0.070	0.269***
Direct		PC ⇒ PPERF	0.075	0.036	0.124*
Total		PC ⇒ PPERF	−0.028	0.032	−0.046

Notes: *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

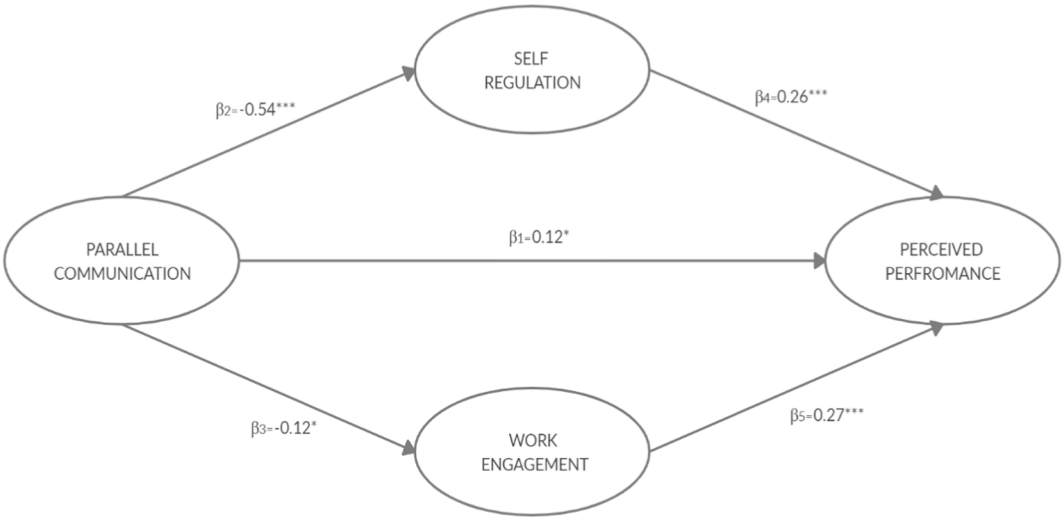

Fig. 2. Results for the main effects.

change the expectation of constant connectivity. As such, managers should promote and reward norms that favor a better work-life balance and provide support and reassurance for work performance and career development rather than relying solely on employees' self-regulation and self-awareness of their work habits and limits.

Finally, in terms of the social dimension, the effects of technology overload, multitasking and constant connectivity should not be minimized (Grandhi et al., 2005). ICT usage changes not only the way people work but also the way people think about the work culture (Tarafdar et al., 2011). Handling multiple communications can be a source of stress, burnout, and other negative feelings and counterproductive behaviors (Serenko & Bontis, 2016) because both work engagement and self-regulation are linked not only to job performance and satisfaction but also to positive and fulfilling work-related feelings (Bakker et al., 2008). FOMO, FOBO and nomophobia are acknowledged as 21st century digital diseases (Rosen & Samuel, 2015), triggering addictions, anxieties, and mental health issues. Research in the last decade has demonstrated the negative impact of media multitasking on memory and attention performance (Uncapher & Wagner, 2018). As such, if employees cannot regulate their behavior and focus on work due to constant distractions, their sense of achievement, involvement with work, and performance satisfaction will be negatively impacted. Similarly, without fully engaging with work activities due to both relevant and irrelevant technology interruptions, it becomes difficult to experience the positive feelings associated with work. Therefore, managers, employees and society at large need to be aware of anxiety-producing and addictive technology use and their distractive impacts on personal and work-related outcomes.

5. Conclusion, limitations, and avenues for future research

The overarching purpose of this article was to investigate the effect of parallel communication, as a proxy for distractions, on work performance. The study, which was conducted with a sample of 369 employees, emphasized the role of self-regulation and work engagement as mechanisms for individuals to deal with the effect of communication technologies on job performance. This research helps to unpack the role of technology distraction on performance in the workplace in order to better understand the underlying mechanisms that make knowledge workers' activities pointless or productive (Palvalin et al., 2013). This research also contributes to disentangling knowledge workers' counterproductive behaviors (Serenko & Bontis, 2016) by unveiling the influence of self-regulation and work engagement on their performance outcomes (Leroy et al., 2020).

The present study suffers from some limitations that also represent avenues for future research. First, the data collected use self-reported measures and questionnaires, which may involve possible biases. In addition, technology interruptions and distractions are highly contextual in nature, with effects closely linked to the type of workplace and the tasks at hand (Tarafdar et al., 2019). Future studies could explore other contexts (i.e., telework), job positions (technical vs. managerial), and sectors (manufacturing vs. services). Second, the present research did not consider the types of interruption sources. Future research could investigate contrasting sources, such as face-to-face vs. virtual interruptions (Nees & Fortna, 2015) and instant message vs. email interruptions (Tan & Richardson, 2011), and their associations with work performance. Third, the present study did not consider the types of interruptions (i.e., intrusions, distractions, breaks, surprises, and multitasking) (Leroy et al., 2020). It might be worth investigating how the effects of self-regulation and work engagement on performance may differ depending on these types. Finally, the current research investigated the effects of parallel communication and its related mechanisms on individual performance. Future studies could examine such effects by considering the individual-to-group processes to deepen the understanding of the impact of parallel communication in group contexts (Addas & Pinsonneault, 2018) or even considering other types of organizations (knowledge-intensive enterprises and small and medium-sized enterprises) (Scuotto et al., 2017).

References

Addas, S., & Pinsonneault, A. (2015). The many faces of information technology interruptions: A taxonomy and preliminary investigation of their performance effects. *Information Systems Journal, 25*(3), 231–273.

Addas, S., & Pinsonneault, A. (2018). E-mail interruptions and individual performance: Is there a silver lining? *MIS Quarterly, 42*(2), 381–406.

Adler, R. F., & Benbunan-Fich, R. (2013). Self-interruptions in discretionary multitasking. *Computers in Human Behavior, 29*(4), 1441–1449.

Bakker, A. B., & Demerouti, E. (2008). Towards a model of work engagement. *Career development international., 13*(3), 209–223.

Bakker, A. B., Schaufeli, W. B., Leiter, M. P., & Taris, T. W. (2008). Work engagement: An emerging concept in occupational health psychology. *Work & stress, 22*(3), 187–200.

Barjis, J., Gupta, A., & Sharda, R. (2011). Knowledge work and communication challenges in networked enterprises. *Information Systems Frontiers, 13*(5), 615–619.

Barley, S. R., Bechky, B. A., & Milliken, F. J. (2017). The changing nature of work: Careers, identities, and work lives in the 21st century. *Academy of Management Discoveries, 3*(2), 111–115.

Baumeister, R. F., & Heatherton, T. F. (1996). Self-regulation failure: An overview. *Psychological Inquiry, 7*(1), 1–15.

Bresciani, S., Ferraris, A., & Del Giudice, M. (2018). The management of organizational ambidexterity through alliances in a new context of analysis: Internet of Things (IoT) smart city projects. *Technological Forecasting and Social Change, 136*, 331–338.

Brown, J. M., Miller, W. R., Lawendowski, L. A. (1999). The self-regulation questionnaire. In: VandeCreek, L.; Jackson, TL., editors. Innovations in clinical practice: A sourcebook. 17. Sarasota, FL: ProfessionalResource Press/Professional Resource Exchange; 1999. p. 281-292.

Carey, K. B., Neal, D. J., & Collins, S. E. (2004). A psychometric analysis of the self-regulation questionnaire. *Addictive Behaviors, 29*(2), 253–260.

Charalampous, M., Grant, C. A., Tramontano, C., & Michailidis, E. (2019). Systematically reviewing remote e-workers' well-being at work: A multidimensional approach. *European Journal of Work and Organizational Psychology, 28*(1), 51–73.

Chesley, N. (2014). Information and communication technology use, work intensification and employee strain and distress. *Work, Employment and Society, 28*(4), 589–610.

Cohen, S. (1980). Aftereffects of stress on human performance and social behavior: A review of research and theory. *Psychological Bulletin, 88*(1), 82–108.

Corragio, L. (1990). *Deleterious Effects of Intermittent Interruptions on the Task Performance of Knowledge Workers: A Laboratory Investigation, PhD Dissertation*. University of Arizona, College of Business and Public Administration.

Covey, S. R. (1989). The 7 Habits of Highly Effective People: An Extraordinary Step-by-step Guide to Achieving the Human Characteristics that Really Create Success. Simon and Schuster.

DeShon, R. P., Kozlowski, S. W., Schmidt, A. M., Milner, K. R., & Wiechmann, D. (2004). A multiple-goal, multilevel model of feedback effects on the regulation of individual and team performance. *Journal of Applied Psychology, 89*(6), 1035.

Feldman, E., & Greenway, D. (2020). It's a matter of time: The role of temporal perceptions in emotional experiences of work interruptions. *Group & Organization Management*. https://doi.org/10.1177/1059601120959288.

Ferraris, A., Erhardt, N., & Bresciani, S. (2019). Ambidextrous work in smart city project alliances: Unpacking the role of human resource management systems. *The International Journal of Human Resource Management, 30*(4), 680–701.

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.

Garrett, R. K., & Danziger, J. N. (2008). On cyberslacking: Workplace status and personal Internet use at work. *CyberPsychology & Behavior, 11*(3), 287–292.

Gavora, P., Jakešová, J., & Kalenda, J. (2015). The Czech validation of the self-regulation questionnaire. In 5th International Conference on Education & Educational Psychology (ICEEPSY). Elsevier Science BV. https://doi.org/10.1016/j.sbspro.2015.01.113.

Graham, M., & Dutton, W. H. (Eds.). (2019). Society and the internet: How networks of information and communication are changing our lives. Oxford University Press.

Grandhi, S. A., Jones, Q., & Hiltz, S. R. (2005). Technology overload: is there a technological panacea? AMCIS 2005 Proceedings, 493. https://aisel.aisnet.org/amcis2005/493.

Heatherton, T., & Tice, D. M. (1994). *Losing control: How and why people fail at self-regulation*. San Diego, CA: Academic Press Inc.

Huarng, K. H., Yu, T. H. K., & Lai, W. (2015). Innovation and diffusion of high-tech products, services, and systems. *Journal of Business Research, 68*(11), 2223–2226.

Jackson, T. W., Dawson, R., & Wilson, D. (2001). The cost of email interruption. *Journal of Systems and Information Technology, 5*(1), 81–92.

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.

Kim, S., Park, Y., & Headrick, L. (2018). Daily micro-breaks and job performance: general work engagement as a cross-level moderator. *Journal of Applied Psychology*. https://doi.org/10.1037/apl0000308.

Kniffin, K. M., Narayanan, J., Anseel, F., Antonakis, J., … van Vugt, M. (2020). COVID-19 and the workplace: Implications, issues, and insights for future research and action. *American Psychologist*. https://doi.org/10.1037/amp0000716.

Kuhl, J., Kazén, M., & Koole, S. L. (2006). Putting self-regulation theory into practice: A user's manual. *Applied Psychology, 55*(3), 408–418.

Leroy, S., Schmidt, A., & Madjar, N. (2020). Interruptions and task transitions: Understanding their characteristics, processes, and consequences. *Academy of Management Annals., 14*(2), 661–694.
Macey, W. H., & Schneider, B. (2008). The meaning of employee engagement. *Industrial and Organizational Psychology, 1*(1), 3–30.
Mano, R. S., & Mesch, G. S. (2010). E-mail characteristics, work performance and distress. *Computers in Human Behavior, 26*(1), 61–69.
Mark, G., Czerwinski, M., & Iqbal, S. T. (2018). April). Effects of individual differences in blocking workplace distractions. In *In Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems* (pp. 1–12).
Mark, G., Gudith, D., & Klocke, U. (2008). The cost of interrupted work: more speed and stress. In Proceedings of the SIGCHI conference on Human Factors in Computing Systems, April, 107-110. https://doi.org/10.1145/1357054.1357072.
Mauno, S., Kinnunen, U., & Ruokolainen, M. (2007). Job demands and resources as antecedents of work engagement: A longitudinal study. *Journal of Vocational Behavior, 70*(1), 149–171.
Mazmanian, M. (2013). Avoiding the trap of constant connectivity: When congruent frames allow for heterogeneous practices. *Academy of Management Journal, 56*(5), 1225–1250.
McCurdie, T., Sanderson, P., & Aitken, L. M. (2018). Applying social network analysis to the examination of interruptions in healthcare. *Applied Ergonomics, 67*, 50–60.
Meriläinen, M., Kõiv, K., & Honkanen, A. (2019). Bullying effects on performance and engagement among academics. *Employee Relations., 41*(6), 1205–1223.
Mitchell, T. R., Harman, W. S., Lee, T. W., & Lee, D. Y. (2008). Self-regulation and multiple deadline goals. In R. Kanfer, G. Chen, & R. D. Pritchard (Eds.), *Work motivation: Past, present, and future:197–231*. New York: Routledge.
Neal, D. J., & Carey, K. B. (2005). A follow-up psychometric analysis of the self-regulation questionnaire. *Psychology of Addictive Behaviors, 19*(4), 414–422.
Nees, M. A., & Fortna, A. (2015). A comparison of human versus virtual interruptions. *Ergonomics, 58*, 852–856.
O'Conaill, B., & Frohlich, D. (1995). Timespace in the workplace: Dealing with interruptions. In *In Conference companion on Human factors in computing systems* (pp. 262–263).
Ophir, E., Nass, C., & Wagner, A. D. (2009). Cognitive control in media multitaskers. *Proceedings of the National Academy of Sciences, 106*(37), 15583–15587.
Palvalin, M., Lönnqvist, A., & Vuolle, M. (2013). Analysing the impacts of ICT on knowledge work productivity. *Journal of Knowledge Management, 17*(4), 545–557.
Panadero, E., & Romero, M. (2014). To rubric or not to rubric? The effects of self-assessment on self-regulation, performance and self-efficacy. *Assessment in Education: Principles, Policy & Practice, 21*(2), 133–148.
Papa, A., Chierici, R., Ballestra, L. V., Meissner, D., & Orhan, M. A. (2020). Harvesting reflective knowledge exchange for inbound open innovation in collaborative complex networks: An empirical verification in Europe. *Journal of Knowledge Management*. https://doi.org/10.1108/JKM-04-2020-0300.
Papa, A., Dezi, L., Gregori, G. L., Mueller, J., & Miglietta, N. (2018). Improving innovation performance through knowledge acquisition: The moderating role of employee retention and human resource management practices. *Journal of Knowledge Management, 24*(3), 589–605.
Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of applied psychology, 88*(5), 879–903.
Puranik, H., Koopman, J., & Vough, H. C. (2020). Pardon the interruption: An integrative review and future research agenda for research on work interruptions. *Journal of Management, 46*(6), 2020. https://doi.org/10.1177/0149206319887428.
Qing, L. Y. (2013). BYOD on rise in Asia, but challenges remain. ZDNet. Retrieved on June 29th, 2020 from http://www.zdnet.com/byod-on-rise-in-asia-but-challenges-remain-7000010660/.
Rennecker, J., & Godwin, L. (2005). Delays and interruptions: A self-perpetuating paradox of communication technology use. *Information and Organization, 15*(3), 247–266.
Rialti, R., Zollo, L., Ferraris, A., & Alon, I. (2019). Big data analytics capabilities and performance: Evidence from a moderated multi-mediation model. *Technological Forecasting and Social Change, 149*, Article 119781.
Rich, B. L., Lepine, J. A., & Crawford, E. R. (2010). Job engagement: Antecedents and effects on job performance. *Academy of Management Journal, 53*(3), 617–635.
Rosen, L., & Samuel, A. (2015). Conquering digital distraction. *Harvard Business Review, 93*(6), 110–113.
Rudolph, C. W., Allan, B., Clarke, …, Zacher, H. (2020). Pandemics: Implications for research and practicein industrial and organizational psychology. Industrial and Organizational Psychology. https://doi.org/10.31234/osf.io/k8us2.
Saks, A. M. (2006). Antecedents and consequences of employee engagement. *Journal of Managerial Psychology, 21*(7), 600–619.
Sardi, A., Sorano, E., Garengo, P., & Ferraris, A. (2020). The role of HRM in the innovation of performance measurement and management systems: A multiple case study in SMEs. Employee Relations: The. *International Journal.*. https://doi.org/10.1108/ER-03-2020-0101.
Sarker, S., Sarker, S., Chatterjee, S., & Valacich, J. (2010). Media effects on group collaboration: An empirical examination in an ethical decision-making context. *Decision Sciences, 41*(4), 887–931.
Schaufeli, W. B., & Bakker, A. B. (2004). Job demands, job resources, and their relationship with burnout and engagement: A multi-sample study. *Journal of Organizational Behavior, 25*(3), 293–315.
Schaufeli, W. B., Bakker, A. B., & Salanova, M. (2006). The measurement of work engagement with a short questionnaire: A cross-national study. *Educational and Psychological Measurement, 66*(4), 701–716.
Schaufeli, W. B., Salanova, M., González-Romá, V., & Bakker, A. B. (2002). The measurement of engagement and burnout: A two sample confirmatory factor analytic approach. *Journal of Happiness studies, 3*(1), 71–92.
Schaufeli, W. B., Taris, T. W., & Van Rhenen, W. (2008). Workaholism, burnout, and work engagement: Three of a kind or three different kinds of employee well-being? *Applied Psychology, 57*(2), 173–203.
Scuotto, V., Del Giudice, M., Tarba, S., Petruzzelli, A., & Chang, V. (2019). International social SMEs in emerging countries: Do governments support their international growth? *Journal of World Business*. https://doi.org/10.1016/j.jwb.2019.05.002.
Scuotto, V., Santoro, G., Bresciani, S., & Del Giudice, M. (2017). Shifting intra-and inter-organizational innovation processes towards digital business: An empirical analysis of SMEs. *Creativity and Innovation Management, 26*(3), 247–255.
Serenko, A., & Bontis, N. (2016). Understanding counterproductive knowledge behavior: Antecedents and consequences of intra-organizational knowledge hiding. *Journal of Knowledge Management, 20*(6), 1199–1224.
Speier, C., Vessey, I., & Valacich, J. S. (2003). The effects of interruptions, task complexity, and information presentation on computer-supported decision-making performance. *Decision Sciences, 34*(4), 771–797.
Stich, J. F., Tarafdar, M., & Cooper, C. L. (2018). Electronic communication in the workplace: Boon or bane? *Journal of Organizational Effectiveness: People and Performance, 5*(1), 98–106.
Sykes, E. R. (2011). Interruptions in the workplace: A case study to reduce their effects. *International Journal of Information Management, 31*(4), 385–394.
Tan, M. K. S., & Richardson, A. (2011). Please do not disturb: Managing interruptions and task complexity. *Proceedings of the Pacific Asia Conference on Information Systems* (page 187).
Tang, F., Wang, X., & Norman, C. S. (2013). An investigation of the impact of media capabilities and extraversion on social presence and user satisfaction. *Behaviour & Information Technology, 32*(10), 1060–1073.
Tarafdar, M., Cooper, C. L., & Stich, J. F. (2019). The technostress trifecta-techno eustress, techno distress and design: Theoretical directions and an agenda for research. *Information Systems Journal, 29*(1), 6–42.
Tarafdar, M., Tu, Q., Ragu-Nathan, T. S., & Ragu-Nathan, B. S. (2011). Crossing to the dark side: Examining creators, outcomes, and inhibitors of technostress. *Communications of the ACM, 54*(9), 113–120. https://doi.org/10.1145/1995376.1995403.
Uncapher, M. R., & Wagner, A. D. (2018). Minds and brains of media multitaskers: Current findings and future directions. *Proceedings of the National Academy of Sciences, 115*(40), 9889–9896.
Van Eerde, W. (2000). Procrastination: Self-regulation in initiating aversive goals. *Applied Psychology, 49*(3), 372–389.
Wajcman, J., & Rose, E. (2011). Constant connectivity: Rethinking interruptions at work. *Organization Studies, 32*(7), 941–961.
Yin, P., Ou, C. X. J., Davison, R. M., & Wu, J. (2018). Coping with mobile technology overload in the workplace. *Internet Research, 28*(5), 1189–1212.
Zhang, Y., & Rau, P. L. P. (2016). An exploratory study to measure excessive involvement in multitasking interaction with smart devices. *Cyberpsychology, Behavior, and Social Networking, 19*(6), 397–403.
Zimmerman, B. J. (2008). Investigating self-regulation and motivation: Historical background, methodological developments, and future prospects. *American Educational Research Journal, 45*(1), 166–183.

Mehmet A. Orhan (m.orhan@psbedu.paris) Mehmet A. Orhan, PhD is an Associate Professor of Management and Organizational Behavior at the Paris School of Business in France. He received his doctoral degree in organizational psychology from Tilburg University in the Netherlands. His research interests include behavioral issues linked to remote working, digital communication, and virtuality in organizations.

Sylvaine Castellano (scastellano@em-normandie.fr) Sylvaine Castellano is the Research Dean at EM Normandie Business School, Metis Lab. She holds a Ph.D in Management from the University of Luxembourg. Her research interests include institutional and competitive processes, virtual and entrepreneurial dynamics; mainly in the wine and the luxury industries. Her publications are related to the concepts of reputation and e-reputation, legitimacy, heritage and retro-industries. Her work was published in journals such as Journal of Business Research, IEEE, Journal of Technology Transfer, TFSC, Management Decision, Corporate Reputation Review. She also wrote and coordinated books in entrepreneurship and online reputation.

Insaf Khelladi (insaf.khelladi@devinci.fr) Insaf Khelladi is an Associate Professor at EMLV Business School - Léonard de Vinci Pôle Universitaire Research Center, 92 916 Paris La Défense, France. She holds a Ph.D in Management & an MBA from Université Côte d'Azur. Her research interests evolve around the underlying cognitive processes in the online, offline and human-machine interaction contexts, and their inherent consequences on individual (consumer, individual investor), group (virtual teams, entrepreneurial teams, generational cohort), organizational (corporate e-reputation, Champagne houses) and industry (wine) level. She published in journals such as TFSC, IEEE Transactions on Engineering Management, International Marketing Review, Management Decision, and Journal of Technology Transfer.

Luca Marinelli (lucamarinelli@gmail.com) Luca Marinelli holds a Ph.D in business administration at Università Politecnica delle Marche. He is post-doc research fellow at the Department of Management of Università Politecnica delle Marche. He is lecturer of Social Media Marketing at the Executive Master in Digital Marketing and Social Media of Luiss

Business School. His topics of research are SMEs' digital transformation, shopping behavior analytics in retail, and social media marketing.

Filippo Monge (filippo.monge@unito.it) Filippo Monge graduated in Business Economics from the University of Torino and he completed his studies at LSE (London). He worked as a Junior Researcher in the Italian Government Destination Marketing Programs. Since 1995 he served on the boards of directors of private and public companies and organizations and in 1996 he started as lecturer at SAA- School of Management of University of Torino. He is currently an adjunct professor (tenure) of Marketing and BA, University of Torino and he was visiting professor (2005-2007) at MEDAC, University of Malta. From 2010 to 2012 he was a member of National Council for Economy and Labour (government) and in 2016 he was awarded ANCE GOLD MEDAL for his services (R&D) to construction economics. His main areas of research include tourism, real estate& construction, banking, and nonprofit sectors.