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Mastering new technologies: Does it relate to teleworkers' (in)voluntariness and well-being?

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Abstract

Purpose – This study examines the associations among mastering new technologies, teleworkers' voluntariness and involuntariness, and employee well-being (i.e., work engagement and exhaustion). To the best of our knowledge, no studies have explored the relationships among these constructs in the same conceptual model.

Design/methodology/approach – Data were collected from a sample of 451 individuals performing telework in Portugal. AMOS was employed to test all hypotheses of the study.

Findings – The findings showed a positive relationship between mastering new technologies and teleworkers' voluntariness and a negative relationship between mastering new technologies and teleworkers' involuntariness. However, contrary to expectations, voluntariness in teleworking was not significantly related to either work engagement or exhaustion. However, consistent with the theoretical background of self-determination theory, involuntariness in teleworking was negatively related to work engagement and positively related to exhaustion.

Originality – This study contributes to the literature by addressing the analysis of telework-related variables that may impact workers' wellbeing. Implications for human resource management policies and knowledge management are discussed.

Keywords *Telework, New technologies, Voluntariness, Involuntariness, Employee well-being, Work Engagement, Exhaustion*

Paper type *Research paper*

1. Introduction

Globalization, digitalization, and demographic changes constitute significant challenges to contemporary societies (Lent, 2013; Schwab, 2017). Particularly in economics and management, globalization and digitalization generated several new and significant issues, since the emergence of new forms of capitalism (e.g., Rainnie and Dean, 2020; Srnicek, 2017; Thompson and Briken, 2017; van der Aalst *et al.*, 2019), that challenge traditional human resource management theoretical models (e.g., DiRomualdo *et al.*, 2018; Duggan *et al.*, 2020). Some researchers discuss “new” aspects of new technologies (Howcroft and Taylor, 2014). Furthermore, while some authors are more skeptical about the impact of technologies in the reduction of jobs with automation, unemployment, and lower wages (e.g., Brynjolfsson and McAfee, 2014; Ford, 2015; Frey and Osborne, 2017; Graham *et al.*, 2017; Kwek, 2020), other authors foresee the creation of more creative, flexible and well-paid opportunities (Autor, 2015; Rainnie and Dean, 2020; The World Bank, 2019). Thus, it is crucial to understand the role of technologies in work by adopting a critical perspective and exploring, with empirically grounded research, the effects of technologies on organizational results and employees' wellbeing (Howcroft and Taylor, 2014).

Particularly with the change of the millennium, telework appears to be one of the major research themes in the future of the work literature (Santana and Cobo, 2020). Telework is defined “as work that is performed from different locations (such as at home) that enable

workers to access their labor activities by the use of information and communication technologies” (Nakrošienė *et al.*, 2019, p. 87). The term telework is much associated with Jack Nilles and Allan Toffler’s works in the 1970s and 1980s (for a review see: Messenger and Gschwind, 2016), with authors predicting that the work of the future would be related to employees’ lives and homes with the support of the existing technology. The development of technology and the dissemination of new organizational forms have been investigated to explore its relationship with productivity, work-life balance and individual wellbeing (e.g., Gajendran and Harrison, 2007; Hornung *et al.*, 2008; Powell and Craig, 2015; Ruiller *et al.*, 2019). Despite the mostly informal working arrangements of employees (Aguilera *et al.*, 2016), COVID-19 has a significant impact on employment and working conditions (Hodder, 2020) and acts as a catalyst for the implementation and discussion of the impact of telework on work, organization and policies (OECD, 2020). As Hodder (2020) points out, issues of control and surveillance as well as adaptation and resistance to these new environments are central to the discussion about new technology, work and employment. Additionally, from a positive perspective, acknowledging workers’ agency and voluntariness in telework can allow us to understand their impact on wellbeing and guide future research. In this context, in this study, we intend to explore the relationship between the mastering of new technologies and teleworkers’ voluntariness and involuntariness. Moreover, since previous studies have shown, with samples of permanent and contingent workers, that voluntariness and involuntariness are crucial to explaining individuals’ attitudes, behaviors, and wellbeing (e.g., Chambel *et al.*, 2015; Lopes *et al.*, 2019), this study aims to expand previous research and test the relationship between voluntariness and involuntariness and work wellbeing (i.e., work engagement and exhaustion) with a sample of teleworkers. As Nunes (2005) noted, “the research objectives

[concerning the implementation of telework] are mostly concerned with the further implications to business and rearrangements of work processes, with a comparative lack of interest in terms of the perceived social advantages and disadvantages” to employees (p. 136). Moreover, studies addressing teleworkers’ wellbeing have shown inconsistent findings (Song and Gao, 2019). For instance, while some studies revealed a positive link between telework and work-life balance and job satisfaction, other studies indicated a positive link between telework and the level of individuals’ stress (Song and Gao, 2019). In the same vein, Charalampous *et al.* (2019) conducted a systematic literature review, including sixty-three studies employing quantitative, qualitative and mixed-method designs, and found both positive aspects and negative aspects of this way of working to five dimensions of wellbeing at work, namely, affective, cognitive, social, professional, and psychosomatic. Moreover, as Perry *et al.* (2018) noted, it remains unclear how telework affects workers’ well-being, due to the extent to which telework may function as a challenge stressor, contributing to increasing individuals’ job attitudes, performance, and motivation. On the other hand, telework induces high employee strain levels, creates a difficult environment in which individuals are unable to cope, and results in negative consequences, such as lower well-being at work.

Considering the abovementioned issues, we approached the topic of telework and asked the following research questions. First, the subjective individual evaluation of having adequate knowledge, skills, and ability to use information and communication technologies for teleworking has an impact on individuals’ voluntariness and involuntariness in teleworking? Second, do individuals’ voluntariness and involuntariness in teleworking contribute to explaining their well-being and have an impact on the exhaustion and work

engagement of teleworkers? In responding to these questions, this study has the potential to contribute to both theory and practice. First, to the best of our knowledge, no studies have analyzed the relationship between individuals' perception of mastering new technologies, teleworkers' voluntariness and involuntariness, and workers' well-being in the same conceptual model. As such, this study aims to contribute to human resource management (HRM), organizational behavior (OB), telework literature, and knowledge management. Second, although previous studies have shown the relationship among some work characteristics (e.g., job autonomy – see, Perry *et al.*, 2018; organizational social support and teleworker support – see, Bentley *et al.*, 2016), individual differences (e.g., openness to experience – Anderson *et al.*, 2015; workers' self-discipline – Wang *et al.*, 2021) and teleworkers' well-being by highlighting the relationship between teleworkers' voluntariness and involuntariness and workers' well-being, this study aims to contribute to the literature about human motivation, particularly by using the theoretical background of self-determination theory (Ryan and Deci, 2019). Furthermore, self-determination theory is a broad and widely applied theory of human motivation (e.g., health care, education, and work), and several researchers, following the seminal work of Edward Deci and Richard Ryan, are trying to advance and accumulate new knowledge (Ryan and Deci, 2019). Thus, studies such as this research, conducted in the very specific context of teleworking, are fundamental to understanding the applicability of this theoretical background to empirical data. Based on the results obtained, it will be possible to indicate a set of human resource management policies that could be implemented by managers.

Structurally, in addition to this introduction, this paper presents a review of the relevant literature that sustains hypothesis development, including the current definitions of each of

the variables composing the conceptual model under study, namely, mastering new technologies, teleworkers' voluntariness and involuntariness, and workers' well-being. Next, in the Methods section, the research procedure, sample characteristics, applied measures and data analysis procedure are described. We then present and discuss the empirical results. In the conclusion, a summary of the main findings is highlighted, including the theoretical and practical implications of the study. Additionally, the study limitations and future research directions are also pointed out.

2. Theoretical Background and Hypothesis Development

2.1. Linking mastering new technologies to teleworkers' voluntariness and involuntariness

The use of information and communication technologies (ICT) in individuals' working lives is changing more than ever before (Ekberg *et al.*, 2016). In particular, as previously noted, the COVID-19 global pandemic created new challenges to individuals' working lives, among which several individuals experienced telework for the first time (Moço *et al.*, 2020). Before the COVID-19 global pandemic, the literature about telework stressed the importance of ICT literacy and how it relates to individual outcomes, such as worker productivity and job stress (e.g., Nakrošienė *et al.*, 2019). However, to the best of our knowledge, no studies have related individuals' perception of mastering new technologies to individuals' levels of voluntariness and involuntariness in opting for telework.

In this study, mastering new technologies concerns the subjective individual evaluation of whether the knowledge, skills, and abilities regarding the use of information

and communication technologies are adequate for teleworking (Saks and Ashforth, 1997). This conceptualization builds upon the person-job fit literature (Saks and Ashforth, 1997), and consistent with this theoretical background, the higher the person-job fit and the higher the individuals' perception of mastering new technologies are, the more positive results workers will present, such as higher voluntariness and lower involuntariness in opting for telework. Note that ICT are likely to have a key role in workers' increases in anxiety when individuals perceive their mastering of new technologies to be low (Wilson and Greenhill, 2004). Thus, in these situations, it could be hypothesized that the lower the mastering of new technologies is, the lower the personal preference (i.e., voluntariness) in opting for a work arrangement where the use of new technologies is crucial –, i.e., telework – and can act as a stressor for the individual, increasing their anxiety at work (Wilson and Greenhill, 2004).

In current research, voluntariness refers to individuals' perception of deliberate choice in performing telework and implies a personal preference (De Cuyper and De Witte, 2008), while involuntariness concerns the choice of a less preferred work situation accompanied by an individual's feelings of being pressured to opt for telework (Delanoeije and Verbruggen, 2019; Ellingson *et al.*, 1998). For instance, an individual opts for telework because it allows him or her to gain more “freedom” (i.e., voluntary teleworker) or because he or she feels it is the only way to keep active on the labor market (i.e., involuntary teleworker). Although both types of motivation or reasons for opting for telework may appear incompatible, previous studies with nonteleworker samples have shown (e.g., González *et al.*, 2012; Moran *et al.*, 2012; Sobral *et al.*, 2015; Sobral *et al.*, 2019; Van den Broeck *et al.*, 2013) that workers may display both types of motivation or behavioral regulation by using latent profile analysis (LPA) as the method to build a motivation profile

typology. However, as predicted by self-determination theory (Ryan & Deci, 2019), autonomous motivation (i.e., voluntary motivation) and controlled motivation (i.e., involuntary motivation) relate to qualitatively different outcomes. More precisely, although both voluntariness and involuntariness reflect reasons or motives for opting for telework, these reasons or motives differ in terms of their qualitative aspect –, i.e., voluntariness implies a feeling of autonomy and self-determination in engaging in a specific action (voluntariness), and involuntariness implies a feeling of being controlled by external forces and contingencies (involuntariness) (Bernhard-Oettel *et al*, 2012; Lopes and Chambel, 2014). According to self-determination theory, the quality of these reasons or motivations will be translated into different qualitative work outcomes, such as workers’ well-being (Ryan and Deci, 2019). As such, it is important to understand how different contextual or individual variables – such as the subjective perception of mastering new technologies – will relate to voluntariness and involuntariness teleworking.

Considering the literature review, the following hypothesis was formulated:

H1. Mastering new technologies will be significantly and positively related to (H1a) voluntariness and significantly and negatively related to (H1b) involuntariness performing telework.

2.2. Linking teleworker voluntariness and involuntariness to workers’ well-being

When individuals genuinely prefer teleworking (i.e., higher voluntariness) and feel that they were not forced to opt for this employment arrangement (i.e., lower involuntariness), it may contribute to increasing individuals’ work engagement and reducing individuals’ exhaustion at work. This argument can be drawn from self-

determination theory (Deci and Ryan, 2000). Consistent with this theoretical background, individuals' reasons to initiate and persist on a specific course of action can vary in the degree of their autonomous or controlled nature, and the quality of these reasons has an impact on individuals' results, such as their attitudes, behaviors, and well-being at work (Deci and Ryan, 2000). As such, a worker who acts with a full sense of volition, freedom and choice (i.e., higher voluntariness) experiences more positive states and has better outcomes than a worker who acts with an experience of pressure and control that is derived from forces perceived to be external to the self (i.e., higher involuntariness) (Deci and Ryan, 2008). Consequently, behavior that is based on more voluntary reasons will foster greater well-being outcomes than behavior that is based on involuntary reasons (Ryan and Deci, 2000). Previous studies conducted with samples of permanent and contingent workers have shown a positive relationship between voluntariness and work engagement (Chambel *et al.*, 2015a; Haivas *et al.*, 2013; Lopes *et al.*, 2019). Additionally, there is empirical evidence showing a negative relationship between voluntariness and burnout (Chambel *et al.*, 2015a; Fernet *et al.*, 2015). Concerning involuntariness, some studies also found a negative relationship with positive indicators of well-being at work and observed a positive relationship with negative indicators of well-being at work (Chambel *et al.*, 2015a; Fernet *et al.*, 2015).

Regarding the analysis of work-related well-being, several constructs are utilized in the literature. However, happiness at work, job satisfaction, work engagement (high well-being indicators), and burnout and workaholism (very low well-being indicators) are concepts more broadly used to evaluate work-related well-being (Fisher, 2014; Hakanen *et al.*, 2019). Among the abovementioned constructs to analyze workers' well-being, current research focuses on work engagement and exhaustion (i.e., a burnout dimension, see

Maslach *et al.*, 2001). Work engagement concerns a fulfilling state of mind characterized by vigor, dedication, and absorption. Vigor consists of having high levels of persistence and energy while working. Dedication encompasses being strongly involved at work and in individuals' feelings of enthusiasm, inspiration, and pride. Absorption refers to being fully focused and deeply absorbed in work in such a way that time passes fast, and the individual loses his or her sense of time (Beek *et al.*, 2012). Exhaustion refers to feelings of being overextended and depleted of one's physical and emotional resources (Maslach *et al.*, 2001).

Considering the literature review, the following hypotheses were formulated:

H2. Voluntariness performing telework will be significantly and positively related to (H2a) work engagement and significantly and negatively related to (H2b) exhaustion at work.

H3. Involuntariness performing telework will be significantly and negatively related to (H3a) work engagement and significantly and positively related to (H3b) exhaustion at work.

3. Method

3.1. Procedure and sample

Before conducting the study, the survey was evaluated by a panel of five researchers and five individuals performing telework to assess the adequacy of the applied measures and the readability of the survey to the target population, respectively. The questionnaire was made available on the Qualtrics platform, and the data were collected online during June 2020. The research sample was defined by convenience and is therefore not probabilistic.

This finding is justified by the decision to limit the focus of the research to employees performing telework. The online questionnaire was disseminated by email lists of companies that adopt telework and social and professional networks of Portuguese teleworkers. Through each of these research dissemination mechanisms, a link to access the online survey was sent. The participants stated their agreement through an informed consent form, and the anonymity of the respondents' answers and the opportunity to receive feedback were assured. There was no incentive (cash or otherwise) for participating in this project.

A sample of 451 individuals performing telework in Portugal was collected. The sample was composed mainly of women (76.9%). The youngest participant was 21 years old, and the oldest participant was 64 years old ($M = 39.55$; $SD = 9.13$). The majority of the participants possessed a bachelor's degree (51.2%) or had completed a higher level of education (31.3%). Most of the participants were married (62.7%) and had children (61.4%). Additionally, most of the individuals had a permanent contract (75.8%) and had a job tenure between 1 year and 3 years (23.3%), between 4 years and 5 years (13.3%) and between 6 years and 10 years (12.6%). The majority of the participants (99.1%) performed home-based telework and did not exert supervision functions (72.7%). The sample characteristics of this study seem to be consistent with a recent report conducted in Portugal concerning telework (see Moço *et al.*, 2020).

3.2. Measures

The questionnaire survey method was employed to collect data to test our research model. All of the measurement items were taken from prior literature and the scales applied (i.e., composed of several items) were assessed to test their psychometric properties.

To measure the *mastering of new technologies*, the following statement was selected: “My knowledge, skills and abilities in using information and communication technologies are adequate for teleworking”. The respondents were asked to assess this sentence on a five-point scale ranging from 1 (“to a very small extent”) to 5 (“to a very large extent”). This item was based on the work of Saks and Ashforth (1997).

To measure *voluntariness and involuntariness in performing telework*, we adopted the work of Ellingson *et al.* (1998) and De Cuyper and De Witte (2008). Three statements concerning *voluntariness* were utilized as follows: (1) “Teleworking gives me more “freedom”; (2) “Teleworking is a personal choice”; and (3) “With teleworking, I have more flexibility in managing my time”. Three statements concerning *involuntariness* were employed as follows: (1) “I have no other work alternatives”; (2) “I am “forced” to opt for teleworking”; and (3) “Teleworking is the only way I can enter the labor market”. The respondents were asked to assess each item on a five-point scale ranging from 1 (“totally disagree”) to 5 (“totally agree”). The six items were subjected to principal-components analysis with a varimax rotation. Similar to the results observed by Ellingson *et al.* (1998), the findings of this study showed a two-factor solution that contributes to explaining 69.75% of the variance. The first factor included three items representing reasons to voluntarily telework (e.g., “freedom”, personal choice, and flexibility), and the factor loadings ranged between .82 and .86. The second factor included the remaining three items reflecting involuntary reasons for teleworking (e.g., feeling of being “forced”, having no

other alternative, and considering telework as the only way to enter the labor market), and the factor loadings ranged between .63 and .91. Cronbach's alpha was .75 and .80 for voluntariness and involuntariness factors, respectively.

Work engagement was measured by the Ultra-Short Measure for Work Engagement (Schaufeli *et al.*, 2019), which is composed of 3 items. An example item is "At my work, I feel a burst of energy". The participants answered the items using a seven-point Likert scale, ranging from 1 ("never") to 7 ("always, every day"). Cronbach's alpha for the scale was .81.

Exhaustion was assessed using a Portuguese translation of the Maslach Burnout Inventory (Maslach *et al.*, 1996), which was also employed in previous studies with Portuguese samples (e.g., Lopes *et al.*, 2019; Lopes and Chambel 2017). An example item is "*I feel used up at the end of a workday*". The participants answered the five items using a seven-point Likert scale, ranging from 1 ("never") to 7 ("always, every day"). Cronbach's alpha for the scale was .93.

Regarding the need to use *control variables*, previous research has indicated that demographic variables such as gender, age and tenure may be related to work engagement (Sonntag, 2003). Thus, we controlled for gender (0 = men; 1 = women), age (in years), and organizational tenure (from 1 = "less than 1 year" to 7 = "more than 20 years").

3.3.Data analysis

The analysis consisted of three steps. First, the descriptive statistics (mean and standard deviation) and intercorrelations among the variables in the study were calculated with the SPSS 26.0 program. Next, with the AMOS 26.0 program, a confirmatory factor

analysis (CFA) was employed to analyze the proposed measurement model and compare it with other alternative models, following the two-step approach recommended by Anderson and Gerbing (1988). By performing a CFA, we analyzed the extent to which the different variables analyzed are empirically distinguishable (Mathieu and Taylor, 2006). Therefore, control variables were not included in the CFA. The third step consisted of testing our hypotheses through structural equation models (SEMs). More precisely, two sets of SEMs were computed, i.e., a fully mediated model and a partially mediated model. We utilized a bootstrap approach (using 5,000 bootstrap samples) to calculate 95% bias-corrected bootstrap confidence intervals (CIs) of standardized indirect effects.

4. Results

4.1. Descriptive statistics and correlation matrix

Means, standard deviations, and correlations among the constructs are presented in Table 1. The participants were perceived to have a high level of mastering new technologies related to telework ($M = 4.56$; $SD = .67$; considering a 5-point Likert scale). In addition, regarding the average scores obtained for voluntariness and for involuntariness ($M = 3.57$ and $SD = 1.06$; $M = 2.12$ and $SD = 1.12$, respectively, considering a 5-point Likert scale), we observe a higher score for voluntariness than for involuntariness, suggesting that telework was perceived more as a volunteer option to individuals. The mean values obtained for work engagement ($M = 5.17$; $SD = 1.12$; considering a 7-point Likert scale) and for exhaustion ($M = 3.87$; $SD = 1.52$; considering a 7-point Likert scale) suggested that employees feel a moderate level of work engagement and report feeling some exhaustion at work.

Concerning the observed pattern of correlations (refer to Table 1), mastering new technologies correlates positively with voluntariness ($r = .25, p < .01$), negatively with involuntariness ($r = -.25, p < .01$), and with exhaustion ($r = -.10, p < .05$). Additionally, voluntariness correlates negatively with involuntariness ($r = -.34, p < .01$) and with exhaustion ($r = -.15, p < .01$). Concerning involuntariness, this variable was found to be negatively related to work engagement ($r = -.14, p < .01$) and positively related to exhaustion ($r = .29, p < .01$). The correlation between work engagement and exhaustion was shown to be negative ($r = -.43, p < .01$).

The control variables contributed significantly to explaining variance (refer to Table 1). Gender correlates positively with involuntariness ($r = .11, p < .05$) and with exhaustion ($r = .12, p < .05$) and correlates negatively with work engagement ($r = -.12, p < .01$). Age correlates negatively with mastering new technologies ($r = -.19, p < .01$) and positively with involuntariness ($r = .19, p < .01$) and with work engagement ($r = .13, p < .01$). Tenure correlates negatively with mastering new technologies ($r = -.14, p < .01$) and correlates positively with involuntariness ($r = .11, p < .05$) and with work engagement ($r = .09, p < .05$).

[Insert Table 1]

4.2. Confirmatory factor analysis

Before conducting the confirmatory factor analysis, the sampling adequacy was tested by computing the Kaiser–Meyer–Olkin (KMO) measure and Bartlett’s sphericity test. In addition, an anti-image correlation matrix was also constructed. The KMO measure (KMO = .83) and Bartlett’s test ($\chi^2(91) = 3659.25; p = 0.00$) indicated that the data were suitable for factor analysis (Hair *et al.*, 2019). Moreover, the anti-image correlation values

ranged between .63 and .93, which exceeded the threshold value of .50 (Sarstedt and Mooi, 2014).

The theoretical model, with five factors, obtained an acceptable fit to the data [$\chi^2(80) = 226.82, p < .01, SRMR = .06; CFI = .96; IFI = .96; RMSEA = .06$]. We compared this model with the single factor model, in which all items were loaded on a single latent variable, which obtained a poor fit [$\chi^2(89) = 1524.65, p < .01, SRMR = .15; CFI = .61; IFI = .61; RMSEA = .19$] that was significantly lower than the theoretical model [$\Delta\chi^2(9) = 1297.83, p < .01$]. We further tested a four-factor model with voluntariness and involuntariness grouped as only one latent factor and each of the other analyzed variables considered a latent factor [$\chi^2(84) = 542.13, p < .01, SRMR = .08; CFI = .88; IFI = .88; RMSEA = .11$]. This model also showed a poor fit to the data and was significantly lower than the theoretical model [$\Delta\chi^2(4) = 315.31, p < .01$]. These analyses revealed that the factor structures of the research variables were consistent with the conceptual model and that the manifest variables loaded, as intended, on the latent variables. Furthermore, the convergent and discriminant validity of multiple-item measures (i.e., voluntariness telework, involuntariness telework, work engagement and exhaustion) was estimated by following Fornell and Larcker's (1981) recommendations (refer to Table 2). Composite reliability (CR) was greater than .70, and the average variance extracted (AVE) was greater than .50 and lower than CR. Furthermore, AVE was greater than the maximum shared squared variance (MSV). Thus, the convergent and discriminant validity of measures seems to be reached in this study.

[Insert Table 2]

4.3. Structural models

The fully mediated model [$\chi^2(82) = 227.18, p < .01, SRMR = .06; CFI = .96; IFI = .96; RMSEA = .06$] with indirect effects through voluntariness and involuntariness and no direct paths between mastering new technologies and work well-being (i.e., work engagement and exhaustion) showed an acceptable fit. The partially mediated model also provided an acceptable fit [$\chi^2(80) = 226.82, p < .01, SRMR = .06; CFI = .96; IFI = .96; RMSEA = .06$] and did not significantly differ from the fully mediated model [$\Delta\chi^2(2) = 0.36, n.s.$]. Since the direct paths – i.e., from mastering new technologies to work engagement and exhaustion – were found to not be significant in the partially mediated model that was tested ($\beta = .03$ and *n.s.*; $\beta = -.01$ and *n.s.*, respectively), we considered the fully mediated model as the final model (Figure 1).

[Insert Figure 1]

As expected, mastering new technologies was positively related to voluntariness performing telework ($\beta = .25, p < .01$) and negatively related to involuntariness performing telework ($\beta = -.28, p < .01$). Thus, H1a and H1b were supported. However, contrary to our expectations, voluntariness performing telework was not significantly related either to work engagement or to exhaustion at work ($\beta = .00, n.s.$; $\beta = -.01, n.s.$, respectively), thereby refuting H2a and H2b. Regarding the relationship between involuntariness performing telework and work engagement, as well as the relationship between involuntariness performing telework and exhaustion at work, as expected, involuntariness performing telework showed a negative relationship with work engagement ($\beta = -.18, p < .01$) and a positive relationship with exhaustion at work ($\beta = .32, p < .01$), thereby supporting H3a and H3b, respectively.

Since the relationship between mastering new technologies and involuntariness, as well as the relationship between involuntariness and work engagement and exhaustion, was found to be significant, we further inspect the mediating role of involuntariness in explaining the relationship among these variables. We found significant indirect effects (indirect effect = 0.03; 95 percent CI from 0.01 to 0.06; indirect effect = -0.06; 95 percent CI from -0.09 to -0.03, respectively), which suggest that involuntariness is a mediator that contributes to explaining the relationship between mastering new technologies and work well-being (i.e., work engagement and burnout).

5. Discussion

The main purpose of this research was to explore the relationship between mastering new technologies and teleworkers' voluntariness and involuntariness. Additionally, this study aimed to test the relationship between voluntariness and involuntariness and work wellbeing (i.e., work engagement and exhaustion) with a sample of teleworkers. By empirically testing these relationships, this study contributed to the literature by giving new insights regarding the work experience of teleworkers.

Consistent with the person-job fit literature (Saks and Ashforth, 1997), we observed a positive relationship between mastering new technologies and voluntariness in opting for telework. Additionally, a negative relationship between mastering new technologies and involuntarily choosing to telework was also observed. These findings seem to indicate individuals' subjective evaluation of mastering new technologies as having a crucial role in explaining employees' volition in opting for teleworking. The higher the individual perception of mastering new technologies, the lower his or her level of involuntariness in opting for telework. In contrast, the higher the individual perception of mastering new

technologies, the higher his or her voluntariness in opting for telework. These findings seem to align with Wilson and Greenhill's (2004) perspective. More precisely, when individuals perceive their mastering of new technologies as being low, they are likely to perceive the use of new technologies as a stressor, increasing their anxiety and contributing to a lower preference (i.e., voluntariness) in opting for telework where the use of new technologies is crucial. However, despite the findings of this study, we must consider the impact of the pandemic on this result. In the context of social emergence and the need to continue social and economic activity, possible internalization of motives might have occurred. This issue should eventually be explored in other projects with qualitative data. Despite the voluntariness and/or involuntariness in opting for telework, this pandemic period catalyzed, and with the use of open access or free-of-charge tools, the availability of resources for telework will be a research and policy issue in the future.

Concerning the relationship between voluntariness performing telework and work engagement and exhaustion at work, contrary to what was expected, no significant relationships among these variables were observed. As Gallagher and Connelly (2008) noted, "researchers should not simply assume that all behavioral theories will apply equally well to nonstandard workers..." (p. 631). Additionally, an alternative explanation for this finding can be advanced. Previous studies have demonstrated that when teleworkers have a higher voluntariness, they can be more likely to invest minimal emotional attachment or commitment to their work and attribute a higher relevance to other life domains (Chambel and Castanheira, 2007). Voluntariness can be less relevant for explaining the work-related wellbeing of these individuals, at least in the present situation where much effort and involvement were requested for all employees. Future studies should examine the extent to

which this alternative explanation is valid to justify the results obtained. Additionally, it is important to replicate this study to determine if this pattern of results is maintained.

Regarding the relationship between involuntariness performing telework and work engagement and exhaustion at work, the pattern of the relationships observed was congruent with that predicted by self-determination theory (Deci and Ryan, 2000). For example, a worker who acts with an experience of pressure and control that is derived from forces perceived to be external to the self (i.e., higher involuntariness) presents less optimal outcomes, such as lower work engagement and higher exhaustion at work (Deci and Ryan, 2008). The empirical studies of Chambel *et al.* (2015), Fernet *et al.* (2015) and Lopes *et al.* (2019), with samples of permanent and contingent workers, also evidenced the same pattern of results. However, considering the specificities of teleworking, future studies should continue analyzing these relationships to observe if this pattern of relationships is maintained.

6. Conclusion

This study allows us to obtain interesting results. Through the collected sample, we had the chance to verify high voluntarism to telework and a positive relationship between mastering new technologies and teleworkers' voluntariness. Additionally, there is a negative relationship between mastering new technologies and teleworkers' involuntariness. These results highlight the role of voluntariness vs. involuntariness as a distinctive factor of telework involvement and fill a gap in the literature that should be deepened in the future. We also understood that voluntariness in teleworking, contrary to involuntariness in teleworking, was not related to either work engagement or exhaustion. Eventually, the effect of COVID-19, with a social norm favorable to telework, can have a role in these

results, as well as the characteristics of the sample. However, they might also be a signal of the knowledge and mastery of new technologies and a positive perspective about their impact from a more balanced, work–life perspective. Further investigation, with qualitative information, can give us more data for discussion.

These results contribute to the debate about the impact of digital technologies on the nature and quality of work (e.g., Thompson and Briken, 2017), particularly highlighting their role in involuntariness in telework, which impacts individuals' work engagement and exhaustion. The results might highlight the need to promote adequate training to employees and adjustment of their tasks to the necessary tools. Moreover, taking advantage of social relations at work, these findings might also highlight the vital role of knowledge sharing in the use of ICTs (Lee *et al.*, 2020). As recently presented by the OECD (2020), the widespread use of telework might remain a more permanent feature in the future of work, and further policies and practices are necessary. Additionally, the research lines about the effective impact of these technologies in family life, as well as the role of organizations, will be necessary to gain a broader perspective of the benefits and risks of the dissemination of these technologies in different sectors in the future.

6.1. Theoretical and practical implications

This study presents a set of theoretical and practical implications. Regarding the theoretical implications, we contribute to the HRM, OB and telework literature on a predictor of individuals' voluntariness and involuntariness in opting for telework. More specifically, this study showed that individuals' subjective perception of mastering new technologies contributes significantly to their reasons to opt for telework. This study stresses the

importance of researching the subjective perceptions of teleworkers, such as the subjective perception regarding mastering new technologies. Particularly, the findings indicate that these subjective perceptions seem to contribute to decreasing or increasing workers' voluntariness or involuntariness in opting for telework, which would be translated into individuals' well-being. As previously noted, to the best of our knowledge, no studies have analyzed the relationships among these constructs in the same conceptual model. This research contributed by filling the gap in the literature. However, this study also offers future research avenues. For instance, since an organization can be conceptualized as a knowledge network in which individuals send and receive knowledge (Lee *et al.*, 2019), future studies could test the extent to which the knowledge-sharing behaviors of supervisors and coworkers contributes to increasing individuals' perception of mastering new technologies.

Consistent with previous studies (e.g., Chambel *et al.*, 2015; Fernet *et al.*, 2015; Lopes *et al.*, 2019), this study adds to the body of literature showing that the reasons individuals have to engage in a particular course of action are important to explaining their outcomes, such as work well-being. However, the current research innovates by analyzing these relationships with a sample of teleworkers. Thus, we contribute to the literature on human motivation, particularly by using the theoretical background of self-determination theory (Ryan and Deci, 2019).

Regarding the practical and managerial implications, this study's findings allow us to confirm, from a practical point of view, that organizations need to provide teleworkers with technical training on ICTs (Nunes, 2005). By offering this training, organizations may contribute to increasing workers' perceptions concerning their mastering of new

technologies, which may lead to a higher volition for telework (Wilson and Greenhill, 2004). Additionally, the employer must assume the responsibility of installing the technical equipment and bear the telecommunication costs to demonstrate to teleworkers that the organization invests and cares about their employees, regardless of the employment arrangement the employees have with the organization (Nunes, 2005). Moreover, organizations must contribute to a climate of ICT knowledge sharing among coworkers (Wang *et al.*, 2015). For instance, organizations should develop networking platforms, where it is possible for coworkers to share and communicate tips and technical information regarding the use of ICTs (Korzynski, 2015).

Additionally, the findings of this study suggested that a worker who acts with an experience of pressure and control that is derived from forces perceived to be external to the self (i.e., higher involuntariness) presents less optimal outcomes –, i.e., lower work engagement and higher exhaustion at work (Deci and Ryan, 2008). These findings have practical implications. Since involuntariness performing telework seems to contribute to decreasing workers' engagement and increasing workers' exhaustion, organizations need to develop policies and practices to contribute to decreasing teleworkers' involuntariness. Among these policies and practices from organizations, we must note the negative link regarding mastering new technologies and involuntariness that was obtained in this study. From a practical point of view, the need for organizations to provide teleworkers with technical training on ICTs and to promote ICT knowledge sharing within organizations seems to be once again highlighted (Nunes, 2005; Wang *et al.*, 2015). Since the sense of agency of actors seems to have a crucial role in the use and clear dissemination of telework, future works and policy measures should ensure that the adoption of these tools is more than an

informal working arrangement (Aguilera *et al.*, 2016), contributing to a fair, productive and balanced relationship between work and life. If COVID-19 provides the context for significant changes in the field of work and digitalization, it also suggests the need to promote and communicate common values to ensure positive behaviors (Wolf *et al.*, 2020), on both an individual level and an organizational level.

6.2. Limitations and future research directions

Although this research has important strengths, certain limitations should be considered when interpreting these findings. First, the cross-sectional design should be regarded as a limitation since causality cannot be established among the explored variables. Moreover, each variable was only assessed with self-reported measures, raising common method bias concerns. However, since all the variables concern individuals' perceptions and were focused on individuals' personal experiences, the self-reported measures seemed to better fit the main research goals. Moreover, we followed the methodological recommendations of Podsakoff *et al.* (2003), namely, by conducting a confirmatory factor analysis, by guaranteeing the anonymity and confidentiality of the answers, and by indicating that there were no right or wrong answers. Although we believe that this design did not overly threaten our findings, as concerns associated with self-reported data may be inflated (Spector, 2006), it would have been preferable to further reduce the common method variance by introducing a time lag among the measurement of the examined variables. Additionally, the measure of the subjective perception of mastering new technologies included only a single item, which may offer a disadvantage, such as a lack of measurable internal consistency. However, previous studies have found single-item measures to show high correlations with multiple-item measures (e.g., Wanous and Hudy, 2001) and have

concluded that single-item measures can be an acceptable and reasonable alternative to multiple-item scales. However, in future studies, it would be important to develop and validate a multiple-item measure for the subjective perception of mastering new technologies. Furthermore, the sample comprised employees from only one country (Portugal), which may constrain the generalization of these results. Moreover, most of the participants had a university degree. Thus, future studies could replicate this study with teleworkers who possess a lower educational level and with teleworkers from other countries to broaden the findings of this study.

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Table 1. Means, standard deviations, and correlation matrix.

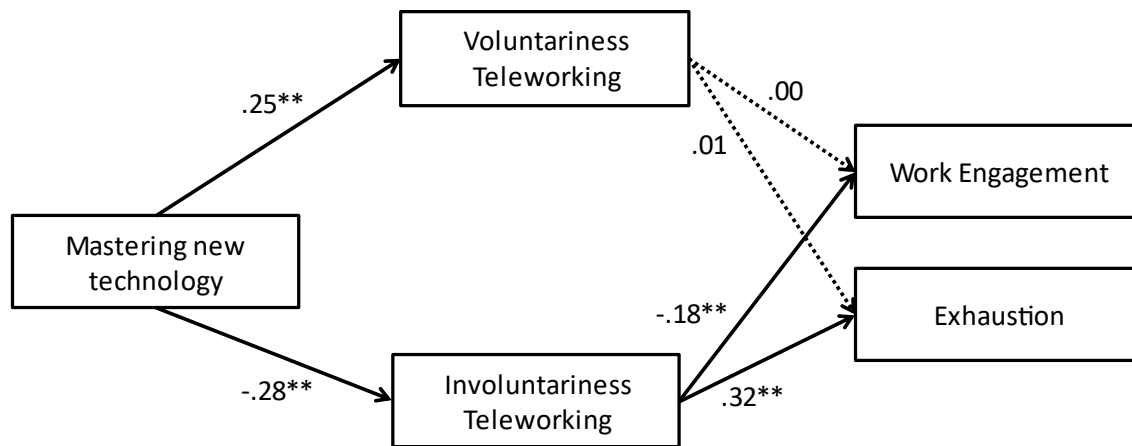
	Mean	SD	1.	2.	3.	4.	5.	6.	7.
1. Gender	.77	.42							
2. Age	39.55	9.13	.01						
3. Tenure	3.69	1.99	-.02	.57**					
4. Mastering new technologies	4.56	.67	-.02	-.19**	-.14**				
5. Voluntariness	3.57	1.06	.07	-.05	-.06	.25**			
6. Involuntariness	2.12	1.12	.11*	.19**	.11*	-.25**	-.34**		
7. Work Engagement	5.17	1.12	.12**	.13**	.09*	.07	.07	-.14**	
8. Exhaustion	3.87	1.52	.12*	-.00	.08	-.10*	-.15**	.29**	-.43**

Notes. Gender (0 = Men ; 1 = Women); *SD* = Standard deviation; ** $p < .01$; * $p < .05$

Table 2. Convergent and discriminant validity of multiple-item measures.

Constructs	CR	AVE	MSV
1. Voluntariness	0.777	0.551	0.135
2. Involuntariness	0.801	0.576	0.135
3. Work Engagement	0.829	0.631	0.336
4. Exhaustion	0.923	0.707	0.336

Note: CR = Composite reliability; AVE = Average variance extracted; MSV = Maximum shared variance.



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

Figure 1. Standardized estimates for the fully mediated model.