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Might insecurity and use of ICT enhance internet addiction and exhaust people? A study in two European countries during emergency remote working

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ABSTRACT

Facing the spread of the SARS-CoV-2 pandemic, we have witnessed a strong recourse to generalised lockdowns and to the deployment of remote working. These emergency measures have also thrown employers and employees into uncertainty regarding the present and future existence of their job. The present study aimed to examine the role of job insecurity and job demands in non-working hours through technologies on emotional exhaustion mediated by Internet addiction. A total of 999 remote workers, 501 of whom live in France and 498 in Italy, completed a self-report questionnaire during the first lockdown. Results suggest that both job insecurity and the requests to use technology for work purposes during non-work time exacerbate emotional exhaustion through the mediation of Internet Addiction. Limitations, future perspectives, and implications for management are discussed.

1. Introduction

In this context of health, social and economic crisis, many companies and public structures resorted to remote working in order to ensure the continuation of their activities and productivity. Thus, managers and employees have had to deploy new ways of working completely at a distance, in unusual conditions and under very tight timetables. In this context, the psychosocial challenges posed by the health crisis and the reorganisation of work deserve to be studied (Kniffin et al., 2020; Rudolph et al., 2020), paying attention to remote workers' psychological health. Before the COVID-19 sanitary emergency, both in France and in Italy the number of remote workers was limited. According to the DARES—Direction de l'Animation de la Recherche, des Études et des Statistiques (2019), in France in 2017, 1,800,000 employees were teleworking; furthermore, among them, just the 3% teleworked regularly and at least one day a week. According to the Observatory of Polytechnic of Milan (2019), in Italy, 570,000 people were remote workers in 2019.

Both in France and in Italy, with the first confinement measures adopted in March 2020 by the Italian and French governments, the rate of organisations that resorted to the remote work increased exponentially. In France, according to DARES Flash Survey data (2020), between late March and April 2020, 25% people worked remotely, while in Italy the rate was even higher. Indeed, following the first lockdown, 6,058,000 employees, circa one third of the workforce, teleworked regularly from home (Observatory of Smart Working, 2019).

Several studies have highlighted the specific labor dynamics triggered by the labor containment measures of the COVID-19 pandemic (e.g., Bartsch, Weber, Büttgen, & Huber, 2020; Carnevale & Hatak, 2020; Chong, Huang, & Chang, 2020). Following the call of numerous scholars in the field of work and organizational psychology (Kniffin et al., 2020; Rudolph et al., 2020), there are different research directions that deserve attention in relation to emergency remote work. This paper fits into this framework and analyses the role of job insecurity (De Witte, 2000) and job demands in non-work times through technologies

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(off-TAJD; Ghislieri, Emanuel, Molino, Cortese, & Colombo, 2017) on emotional exhaustion (Demerouti, Mostert, & Bakker, 2010), considering the mediation of Internet Addiction (IA; Pawlikowski, Altstötter-Gleich, & Brand, 2013; Young, 1998a).

Although some studies focused on the role of social support (supervisor support) and informal communication in reducing perceived uncertainties in the context of the COVID-19 pandemic (Charoensukmongkol & Phungsoonthorn, 2020a; 2020b) and limiting negative effects on well-being, our work aims to examine the role of:

- general job insecurity – which has been considered a very significant source of stress in recent decades in European Countries (Musumeci & Ghislieri, 2020) – in relation to which it is essential to mobilize energies, policies and tools to contrast, even more so considering the current and future consequences of the crisis in the labor market;
- the job demands in non-work times through technologies, a variable to which attention has only recently been directed but which is important in all reflections on the issue of the right to disconnect, a central theme in the discourses related to labor law, emerging regulations and human resources management policies and practices (Ghislieri, Molino, Dolce, Sanseverino, & Presutti, 2021).

2. Literature review

During the pandemic, several studies were conducted on some of the dimensions considered in this paper. Before presenting the general theoretical assumptions of our study, we place it in the panorama of the COVID-19 literature in order to grasp its continuity and originality.

The critical consequences of job insecurity exacerbated by the pandemic situation (Lin, Shao, Li, Guo, & Zhan, 2021) have been highlighted by studies that observed the impact on various outcomes, including mental health (Gasparro et al., 2020; Wilson et al., 2020). Many studies have been conducted in specific sectors, particularly in the hospitality and food service fields (Abbas, Malik, & Sarwat, 2021; Jung, Jung, & Yoon, 2021), with the aim of identifying effects on satisfaction, work engagement, and performance appraisals, but also defining interventions and policies, including the role of the union (Vo-Thanh et al., 2021). However, no study has considered the relationship between job insecurity and IA in the dynamics of dealing with emotional exhaustion across different employment settings.

Regarding the IA, most studies have looked at this variable during lockdown periods mainly from a clinical perspective, mostly focusing on populations of students (Servidio, Bartolo, Palermi, & Costabile, 2021) or, in any case, young people (Dong, Yang, Lu, & Hao, 2020). Even in research related to adult populations (Siste, Hanafi, & Sen, 2020), attention was mainly focused on the relationship with social distancing or with other types of addiction (within a framework of maladaptive coping strategies; Xu, Park, Kang, Choi, & Koo, 2021) and, more generally, within a purpose of understanding psycho-physical distress. Less attention has been paid to the relationship between some job stressors or job demands and IA: this is the space in which our studio is situated.

2.1. Theoretical model

Despite the fact that some studies have emphasised some smartphone use advantages, particularly in relation to better interactions and collaboration between co-workers (Pica & Kakihara, 2003) and to some work-life balance strategies, scholars demonstrated that it can also lead to critical consequences on well-being and on overall quality of life (Davis, 2002; Ghislieri et al., 2017; Van Hooff, Geurts, Kompier, & Taris, 2006), for instance by interfering with the recovery process (Derks & Bakker, 2014; Derks, ten Brummelhuis, Zecic, & Bakker, 2014). In order to better understand the potential consequences of ICT (Information & Communication Technologies, smartphone, laptop, tablet, and so forth) use on workers' well-being, we referred to the Job Demands-Resources

Model (JD-R) (Bakker & Demerouti, 2007, 2017), which explains how specific working conditions can have an impact on burnout. According to this model, the risk of burnout (emotional exhaustion, depersonalisation and reduced professional efficiency) is greatest when work demands are high and professional resources are limited.

Job demands have been defined as “those physical, psychological, social, or organisational aspects of the job that require sustained physical and/or psychological (cognitive and emotional) effort or skill and are therefore associated with certain physiological and/or psychological costs” (Bakker & Demerouti, 2007, p. 312, p. 312). Job resources refer to “those physical, psychological, social, or organisational aspects of the job that either/or (1) reduce job demands and the associated physiological and psychological costs; (2) are functional in achieving work goals; (3) stimulate personal growth, learning and development” (Schaufeli & Bakker, 2004, p. 296). In the present study, we considered the health impairment process which has been described by the JD-R model as a process in which chronic job demands lead to the depletion of employees' energy and cause a state of emotional exhaustion and health problems (e.g., Bakker & Demerouti, 2007). Particularly, we took into consideration the role of two demands: job insecurity and the off-work hours technology assisted job demands (off-TAJD; Ghislieri et al., 2017), that is the perceived request to respond to job questions during off-work time using technological devices.

2.2. Job insecurity and use of ICT

The first relevant scientific contributions on job insecurity date back to the 1980s, with the pioneering work by Greenhalgh and Rosenblatt (1984). Job insecurity is a complex construct which boasts various definitions. Greenhalgh and Rosenblatt defined it as a “perceived powerlessness to maintain desired continuity in a threatened job situation” (1984, p. 438). Job insecurity is defined from a psychological point of view as the fear of losing one's job and becoming unemployed (De Witte, 1999, 2005); it refers to the expectations of an unwanted but potentially verifiable event (Sverke, Hellgren, & Näswall, 2002). Scholars have distinguished between qualitative and quantitative job insecurity (De Witte & Näswall, 2003): the quantitative job insecurity is related to the maintenance of the job itself and is linked to the fear of becoming unemployed; whilst the qualitative job insecurity is associated with the uncertainty related to negative changes in some aspects of the value of one's work, such as salary, working hours, work content (De Witte & Näswall, 2003).

The relevance of this topic stems from the characteristics of the current labour market, where “flexible contracts” and temporary employment with few guarantees are increasingly more common (International Labour Organization, 2016), mostly for young people (Musumeci & Ghislieri, 2020). In 2019, 11.7% of European employees (20–64 years of age) had a contract of limited duration: in particular, in Italy the rate was 13.1% and in France was 12.1%, higher than the European mean (Eurostat, 2021). A similar scenario befell the rate of unemployment of the active population, which was, in 2019, 10% for Italy and 8.5% for France, compared with a European rate of 6.7%. Furthermore, due to the COVID-19 pandemic, many working sectors and activities where remote working was not a feasible option had to shut down; others recurred to redundancy funds. In France, between late March and April, a quarter of the employees were only partially employed (DARES, 2020). Clearly, these measures have thrown many employers and employees in the uncertainty regarding the present and future existence of their job, determining, as a consequence, a likely increase in their perceptions of job insecurity which can engender negative consequences on workers well-being and organisations (Cheng & Chan, 2008; Sverke et al., 2002).

Within the framework of the JD-R model (Bakker & Demerouti, 2007; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001) job insecurity is classified as a job demand (Schaufeli, 2016) and can be conceptualised as a job stressor (Schaufeli & Taris, 2014, pp. 43–68), since it is likely to

trigger the depletion of resources resulting in job exhaustion (Bosman, Rothmann, & Buitendach, 2005; De Cuyper, De Witte, Vander Elst, & Handaja, 2010; Giunchi, Emanuel, Chambel, & Ghislieri, 2016; Kausto, Elo, Lipponen, & Elovainio, 2005; Piccoli & De Witte, 2015; Vander Elst, Van den Broeck, De Witte, & De Cuyper, 2012). According to the transactional theory of stress and coping (Lazarus & Folkman, 1984), individuals faced with a possible stressful situation undertake a primary appraisal which allows them to evaluate the stressor as a relevant threat or not, and a secondary appraisal to decide the use of coping strategies and resources. When people perceive that their job is at risk, they might consider their working situation as a threat for their personal well-being (Musumeci & Ghislieri, 2020).

Consistent with the Lazarus and Folkman's framework (1984), coping strategies are cognitive and behavioural efforts to respond to the demands created by the stressor; they can be distinguished in problem-focused strategies and emotion-focused strategies. The problem-focused strategies are aimed at changing the stressful situations, whilst the emotion-focused strategies are directed at modifying, monitoring and regulating emotions associated with the stressor (Lazarus & Folkman, 1984). A third type of strategy, particularly used when the source of strain is considered uncontrollable, is the avoidance strategy. Among the various coping strategies, in line with Shoss' conceptual model (2017), job insecurity might motivate individuals to engage in acts that they perceive as able to decrease the probability of job loss, adopting the so-called job preservation strategies. However, these strategies might result in a work intensification (Ghislieri et al., 2017; Piccoli, Reisel, & De Witte, 2021; Shoss, 2017). If, on the one side, work intensification may be the direct consequence of the workforce reduction, on the other side it can be a strategy aimed at securing work continuity (work harder to keep the job), despite there being no guarantees regarding its effectiveness. For instance, in organisational contexts where sacrifice is highly valued, these strategies might lead to various phenomena such as presenteeism (Ishimaru, 2020).

Via an intensification of their efforts, it is likely that employees attempt to manage their concerns associated with the future existence of their job by attaining a sense of control (Piccoli et al., 2021). However, this could result in a double-edged sword that may intensify job exhaustion (Giunchi et al., 2016) by depleting employees' energy (Bakker & Demerouti, 2007). In this regard, Giunchi and colleagues' study (2016), carried out on a sample of temporary agency workers in Portugal, found a positive relationship between perceived job insecurity and emotional exhaustion, partially mediated by workload. The work intensification associated with job insecurity (Richter, 2011), driven by the job preservation motivation (Shoss, 2017), today is also supported by a more pervasive use of ICT, which allows people to work everywhere and at any time. Therefore, we assumed that:

H1: Job insecurity is positively related to emotional exhaustion.

Furthermore, along with the pervasiveness of job insecurity, as previously mentioned, we are currently witnessing the spread of an always-on approach, which explicitly presses employees to be always online and available (Derks, Van Duin, Tims, & Bakker, 2015; McDowall & Kinman, 2017; Ghislieri, Molino, & Cortese, 2018). The prevalence of the always-on culture and the loss of boundaries between work and home, in a "global remote working situation", raised the already high expectations of employees' total availability through ICT (Dolce, Vayre, Molino, & Ghislieri, 2020), especially through pervasive requests to respond to work messages and emails, also during off-work time (Davis, 2002; Derks & Bakker, 2014). Consistent with the JD-R model (Bakker & Demerouti, 2007), high demands are related to emotional exhaustion, thus we assumed that:

H2: off-TAJD is positively associated with emotional exhaustion.

2.3. Internet Addiction as mediator

In addition to the traditional job demands, thoroughly studied in the literature (Lesener, Gusy, & Wolter, 2019), the present study extends the

hypotheses of the JD-R model considering the role of IA as a mediator between job demands and emotional exhaustion, in line with other forms of addiction related to work, such as workaholism (Guglielmi, Simbula, Schaufeli, & Depolo, 2012; Molino, Bakker, & Ghislieri, 2016). In particular, according to previous considerations and within Lazarus and Folkman's framework (1984), individuals who face a job stressor attempt to implement coping strategies to respond to the demands, some of which result in positive outcomes for the individual well-being, while some others do not, and can worsen the situation. Thus, we assumed that some coping strategies stemming from job insecurity conditions or always-on organisational culture may lead, sometimes, to dysfunctional results, such as exacerbating IA, which have consequences on emotional exhaustion.

Since the end of the 1990s, with the increasing use of technologies such as smartphones, personal computers and tablets that, via an Internet connection, allow us to be always-on (Ghislieri, Molino, & Cortese, 2018), scholars began to be interested in this new form of behavioural addiction (e.g., Griffiths, 2005; Tao et al., 2010; Young, 1998a, 1998b). The complexity of the definition of IA lies partially in the coexistence of other terms used to describe an excessive Internet use (Pawlikowski et al., 2013; Vayre & Vonthron, 2019) such as problematic, excessive or pathological Internet use or Internet dependency (Caplan, 2002; Hansen, 2002; Meerkerk, van den Eijnden, & Garretson, 2006). Despite some differences, all terms share a common core characteristic: the loss of behavioural control in the context of Internet usage, which results in substantial repercussions on daily life (Pawlikowski et al., 2013; Vayre & Vonthron, 2019). IA is considered a behavioural addiction, like gambling addiction (Young, 1998a, 1998b), but unlike the latter IA is still not included under the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-V; American Psychiatric Association, 2013). However, as all other forms of addiction, a series of symptoms defines it.

Among the diverse models of IA (Van Rooij & Prause, 2014) the present study adopted the Young' conceptualisation (1998a, 1998b) from which the largely used IA scale stemmed (Widyanto & McMurrin, 2004). According to Young' conceptualisation (1998a, 1998b), IA is characterised by: behaviours of loss of control over the time spent on Internet with interferences with daily duties and social relationships; preoccupation with the Internet; inability to moderate or suspend the Internet usage despite the intentions with repercussions on mood; craving for Internet instead of other social activities; lying about Internet usage; use of Internet to cope with problems and bad moods or to escape from them (Van Rooij & Prause, 2014; Widyanto & McMurrin, 2004; Young, 1998a, 1998b). Obviously, time spent online per day or per week is also associated with IA, as shown by various studies (e.g., Barke, Nyenhuis, & Kröner-Herwig, 2012; Widyanto, Griffiths, & Brunson, 2011).

Despite being a relatively new topic, there is little research which specifically targets IA at work, while also focusing on its work-related antecedents (Durand, Gayet, Laborde, van de Weerd, & Farges, 2008; Beard, 2005; Vayre & Vonthron, 2019). A recent contribution by Vayre and Vonthron (2019) shed light that working via technologies, in and outside of the normal work places and hours, fosters the permeability between work life and personal life, diminishes managers' dedication and vigour at work, and favours IA. Indeed, as with all other forms of addiction, the repeated exposure to the source of addiction enhances the dependency.

Job insecurity conditions are potentially able to enhance IA in different ways. Firstly, as previously mentioned, they promote the adoption of job prevention strategies, which can lead to work intensification, e.g. constantly checking emails or instant messaging, in order to rapidly respond to job requests and enhance control on the situation. At the same time avoidance strategies, which occur especially when job insecurity conditions are perceived as uncontrollable (Musumeci & Ghislieri, 2020), or emotion-focused strategies may also lead to an increase of IA (McNicol & Thorsteinsson, 2017). Indeed, people who resort

to avoidance strategies to face the threat of job insecurity may intensify the use of IA to escape from the situation; similarly, emotion-focused strategies may push individuals to connect to the Internet in order to modify the negative mood associated with the stressful situation (McNicol & Thorsteinsson, 2017; Widianto & McMurran, 2004).

The work-related hyper solicitations to be connected even during non-working hours, valued by organisations with an always-on culture that can demand workers the availability to answer emails or calls almost everywhere and at any time, can also be conceptualised as situational antecedents of IA. This behavioural addiction, which as stated before rises along the frequency of exposure to its source, can have significant repercussions on social relationships and daily duties, influence mood states, and have consequences on various social activities (Young, 1998a, 1998b). Recent studies conducted on a sample of college students showed that IA could be associated with insomnia symptoms, anxiety and stress (e.g., Jain et al., 2020; Shen et al., 2020; Younes et al., 2016). Within the JD-R model (Bakker & Demerouti, 2007, 2017), thus we assumed that:

H3a: IA mediates the relationship between job insecurity and emotional exhaustion.

H3b: IA mediates the relationship between off-TAJD and emotional exhaustion.

The overall theoretical model is depicted in Fig. 1.

3. Method

3.1. Participants and procedure

This work draws upon a convenience sample of 999 remote workers, of which 501 live in France and 498 in Italy; they were recruited by members of the research team using social networks. The participants filled in a self-report online questionnaire on the platform Google Forms; data collection started on April 4th and concluded on May 3rd, during the first French and Italian lockdowns. LinkedIn was used to contact former students and/or colleagues working in human resources to quickly disseminate the questionnaire among workers from different sectors. The link to the platform Google Forms was sent mainly through the social media messaging with a detailed accompanying text and wide availability for further information.

The research did not include procedures which could harm participants' psychological or social well-being, in compliance with the Declaration of Helsinki (World Medical Association, 2013); furthermore, the research was approved by the Bioethical Committee of the University of Turin (document n.150,561, April 3rd 2020). All participants gave informed consent and were assured of the anonymity of data,

which was analysed in an aggregated fashion. The objective of the research, the instruction to complete the questionnaire, the voluntary and unpaid participation, and thus the right to opt out of the study and finally the data treatment information were all emphasised in the cover letter. The participants were all remote workers from different sectors and role positions.

In the French subsample, females were the majority (67.5%). The average age was 40.75 years ($SD = 11.59$), ranging from 20 to 66 years. 58.9% of the subsample reported having children, while only 44.9% declared that they were primarily responsible for the care of a family member. Less than half of the subsample (35.9%) had prior experience with remote working, for a total of 18.56 months ($SD = 28.41$, $min = 1$, $max = 240$) on average. Most of the subsample has a full-time job (88.4%) and a permanent contract (77.8%), with office worker as the most common position (54.3%), followed by middle management (37.7%), with a mean professional seniority of 10 years ($SD = 10.16$, $min = 1$, $max = 42$). The majority works in large (50.1%) or medium (23.5%) organisations, mainly in the private (64.2%) sector, specifically in services (60.4%). The weekly remote working days were, on average, 4.51 ($SD = 1.12$), with 29.41 weekly working hours on average ($SD = 13.07$).

In the Italian subsample, the participants were also mainly females (63.5%) while the average age was 43.30 years ($SD = 10.61$), ranging from 19 to 64 years. More than half of the subsample (58.4%) reported having children, compared to the 63.5% that declared that they were primarily responsible for the care of a family member. Less than a quarter of the subsample (22.2%) had prior experience with remote working; those who had, worked for a total of 12.84 months ($SD = 18.13$, $min = 1$, $max = 120$) on average. The majority was employed full time (87.7%) and had a permanent contract (79.1%); as for the job profile, most were office workers (63.4%), followed by middle managers (15.1%), with a mean professional seniority of 15.59 years ($SD = 10.93$, $min = 1$, $max = 44$). Most of the subsample worked in large (64%) or medium organisations (19.9%) and were almost equally distributed between private (51.8%) and public (48.2%) sectors, while the most common occupational sector was services (42.4%). On average, the weekly remote working days were 4.50 ($SD = 1.23$), while the average weekly hours were 31.65 ($SD = 13.33$).

3.2. Measures

For all measures, where present, we adopted the French and Italian validated scale (e.g., Fioravanti & Casale, 2015; Khazaal et al., 2008); otherwise a back-translation was performed.

Job Insecurity was assessed using four items of the Job Insecurity

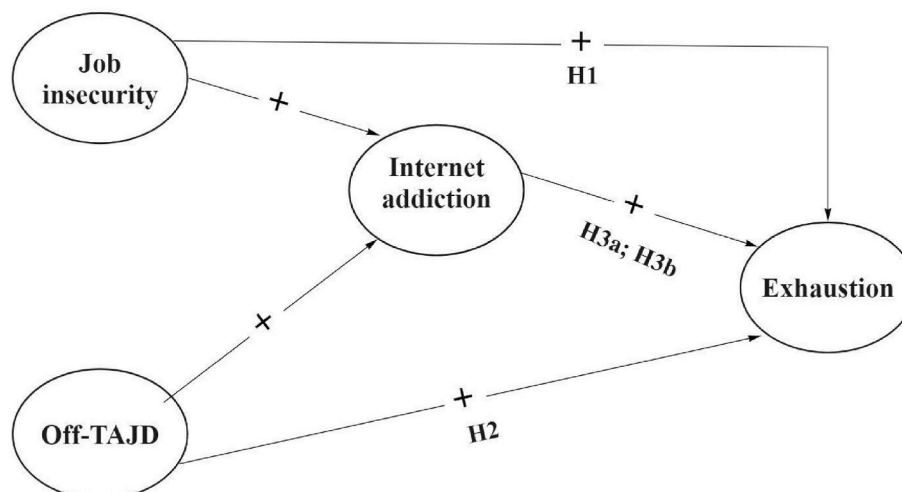


Fig. 1. The theoretical model.

Scale (JIS) (De Witte, 2000). Participants were asked to think about the last ten days, assessing statements such as “Chances are, I will soon lose my job” or “I am sure I can keep my job” (reverse coded) on a five-point Likert scale, ranging from 1 (“strongly disagree”) to 5 (“strongly agree”). Cronbach’s Alpha was 0.84 for the whole sample, 0.85 for the French subsample, and 0.83 for the Italian subsample. *Off-TAJD* was measured using four items adapted from the scale of Ghislieri et al. (2017). Participants were asked to think, during the last ten days, how often they perceived that their organisation required them to work beyond the agreed-upon work hours, with the aid of technology. Participants were asked to assess the statements on a five-point Likert scale, ranging from 1 (“never”) to 5 (“always”). An example item is “How often does your organisation require you to answer phone calls and e-mails during weekends and/or off days?”. Cronbach’s Alpha was 0.91 for the whole sample, 0.91 for the French subsample, and 0.92 for the Italian subsample. *Internet Addiction* was assessed using thirteen items adapted from the Italian and French validation (Fioravanti & Casale, 2015; Khazaal et al., 2008) of the original *Young’s Internet Addiction Test (IAT; 1998a)*, a twenty-item scale. The scale has a two-factor structure: eight of the chosen items pertain to factor 1, Emotional and cognitive preoccupations with the Internet and social consequences (e.g. “How often do you feel depressed, moody, or nervous, when you are offline, which goes away once you are back online?”), while the remaining five pertain to factor 2, Loss of control and interference with daily duties (e.g. “How often does your job performance or productivity suffer because of the Internet?”). Participants were asked, in relation to the last ten days, to assess the items on a five-point Likert scale, ranging from 1 (“never”) to 5 (“always”). Cronbach’s Alpha was 0.87 for the whole sample, 0.87 for the French subsample, and 0.87 for the Italian subsample. A recent research (Panova, Carbonell, Chamarro, & Puerta-Cortés, 2020) through a cross-cultural perspective, including Spain, The United States and Colombia, confirmed the two-factor structure of the IAT in line with other validations (e.g., Faraci, Craparo, Messina, & Severino, 2013). *Emotional exhaustion* was measured using eight items of the Oldenburg Burnout Inventory (OLBI) (Demerouti et al., 2010), applying a five-point Likert scale, from 1 (“strongly disagree”) to 5 (“Strongly agree”). Participants were asked to think about the last ten days and assess statements such as “during my work, I often feel emotionally drained.” Cronbach’s alpha was 0.77 for the whole sample, 0.76 for the French subsample, and 0.78 for the Italian subsample.

3.3. Data analysis

The IBM SPSS 26 statistical software was applied to test descriptive data analysis, Pearson correlations and the Cronbach’s alpha coefficient in order to verify scales’ reliability and analysis of variance (*t*-test for independent samples) to compare the means of the variables between the Italian and French samples. The Mplus 7 software (Muthén & Muthén, 1998 – 2012) was used for all the other analyses.

Since the study compared data collected in two different languages, we tested for measurement invariance (Meredith, 1993) and confirmed the scalar level of comparability, as suggested for cross-cultural research (Steenkamp & Baumgartner, 1998). Results of measurement invariance analysis are available under the request to the authors.

Successively, we tested the hypothesised model across the two samples by performing a multigroup full structural equation model (MG-SEM). The method of estimation was maximum likelihood (ML). For reasons of parsimony, the item parcelling technique (Little, Cunningham, Shahar, & Widaman, 2002) has been applied to all dimensions. Gender and concern about COVID-19 were used as control variables in the model. According to the literature (Bollen & Long, 1993), the model was assessed by the following goodness-of-fit criteria: the χ^2 goodness-of-fit statistic; the comparative fit index (CFI); the Tucker Lewis index (TLI); the standardised root mean square residual (SRMR); and the root mean square error of approximation (RMSEA). Finally, the bootstrapping procedure was used to verify the mediation effects

(Shrout & Bolger, 2002).

4. Results

4.1. Descriptive analysis, analysis of variance and correlations

Table 1 shows descriptive analysis, reliability and correlations among the study variables separately for the French and Italian samples. Significant correlations were consistent with expected directions in both groups. Analysis of variance between the two samples showed a significant difference only in the case of concern about COVID-19, which was higher in the Italian sample [$M_{\text{French}} = 3.46$; $SD = 1.06$; $M_{\text{Italian}} = 3.86$; $SD = 0.84$; $t(949) = -6.64$, $p < .001$].

4.2. Multi-group structural equation model

The hypothesised model, with all parameters constrained to be equal across samples, fitted to the data well: $\chi^2(70) = 173.40$; $p < .001$; CFI = 0.97; TLI = 0.97; RMSEA = 0.05 (0.04, 0.07); SRMR = 0.05. As shown in Fig. 2, both off-TAJD and job insecurity were positively related to IA in both samples; in turn, IA was positively related to exhaustion for both French and Italian workers. Female gender showed a negative relationship with IA and a positive relationship with exhaustion in both samples. The model explained about 15% and 14% of the variation in IA, and 14% and 15% of the variation in exhaustion, respectively for French and Italian samples.

Finally, bootstrapping method was used to evaluate indirect effects. The procedure extracted 2000 new samples from the original one and calculated all direct and indirect parameters (Preacher & Hayes, 2008). Statistically significant indirect effects are reported in Table 2 and showed similar results in the two samples. IA fully mediated the relationship between off-TAJD and exhaustion and partially mediated the relationship between job insecurity and exhaustion. Moreover, a weak indirect effect between gender and exhaustion has been found.

5. Discussion

Within the JD-R model (Bakker & Demerouti, 2007, 2017), the current study aimed to test the role of both job insecurity and job demands during non-working hours through the use of technologies (Ghislieri et al., 2017) as predictors of IA and emotional exhaustion in a convenience sample of remote workers, during the first lockdown at the beginning of the COVID-19 sanitary emergency in France and Italy. The results partially supported our hypotheses and confirmed the key role of

Table 1 Descriptive statistics, Cronbach’s Alphas and Correlations among the study variables in the French and Italian samples.

	1	2	3	4	5	6
1. Exhaustion	.77/ .78	.27**	.13**	.16**	.14**	.11*
2. Internet addiction	.29**	.87/ .87	.30**	.14**	-.09	.02
3. Off-TAJD	.14**	.22**	.91/ .92	.06	-.05	.03
4. Job insecurity	.27**	.24**	.10*	.85/ .83	-.05	.11*
5. Gender (1 = F)	.15**	-.11*	-.02	-.02	-	.15**
6. Concern about COVID-19	.16**	.14**	.14**	.18**	.10*	-
Italian – M	2.73	2.05	2.17	1.99	-	3.46
SD	.73	.68	1.09	.96	-	1.06
French – M	2.67	1.99	2.26	2.03	-	3.86
SD	.67	.66	1.10	.92	-	.84

Notes. Correlations for the French sample below the diagonal; correlations for the Italian sample above the diagonal. * $p < .05$; ** $p < .01$. Cronbach’s Alpha for French/Italian samples on the diagonal.

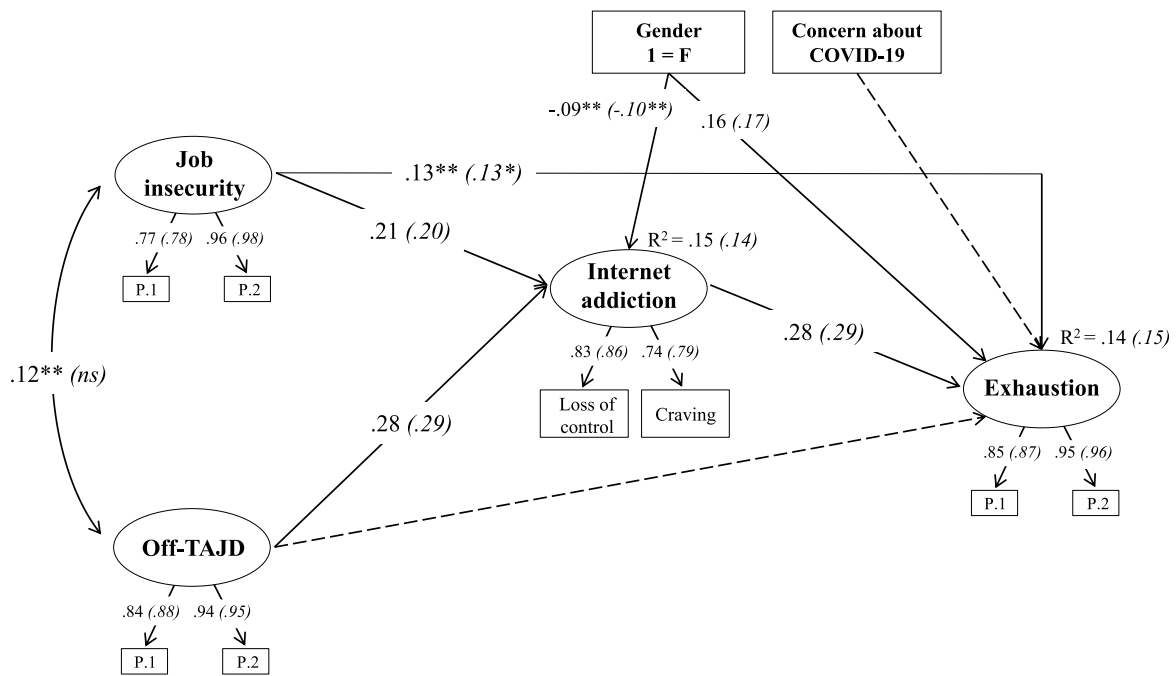


Fig. 2. The model results (all path coefficients are standardized; $p < .001$; $*p < .01$; $**p < .05$). French group data out of parentheses, Italian group data in parentheses. Discontinuous lines indicate non-significant relationships.

Table 2
Indirect effects calculated using bootstrapping procedure (2000 replications).

Indirect effects - French sample	Bootstrap			
	Est.	S.E.	p	CI 95%
Off-TAJD → IA → Exhaustion	.08	.02	<.001	(.05, .11)
Job insecurity → IA → Exhaustion	.06	.02	<.001	(.03, .09)
Gender (1 = F) → IA → Exhaustion	-.03	.01	.028	(-.05, -.01)
Indirect effects - Italian sample				
Indirect effects - Italian sample	Bootstrap			
	Est.	S.E.	p	CI 95%
Off-TAJD → IA → Exhaustion	.08	.02	<.001	(.05, .12)
Job insecurity → IA → Exhaustion	.06	.02	<.001	(.03, .09)
Gender (1 = F) → IA → Exhaustion	-.03	.01	.024	(-.05, -.01)

Note. All parameter estimates are presented as standardized coefficients. CI = confidence interval. IA = Internet addiction.

IA in mediating the relationship between job demands and outcome. Moreover, the results showed that the relationships between the variables considered did not vary between the two countries, suggesting that the mechanisms found are common to both France and Italy and could be relevant to other European countries. Overall, these results are significant as they draw attention to the potential negative consequences of two phenomena that are particularly prevalent nowadays, also because of the COVID-19 emergency: job insecurity and the tendency to work beyond traditional working hours. Previous studies have already shown their negative effects on well-being; however, this is the first study to examine their impact on IA, one of the most common contemporary addictions related to technology, considering a sample of adult workers. These original findings offer important insights into the prevention of IA among workers by reporting on the issue and suggesting workplace intervention through the implementation of specific human resource management policies and practices.

Regarding the relationship between the two job demands and emotional exhaustion, we found confirmation of the JD-R model's health impairment process only in the case of job insecurity (Bakker & Demerouti, 2007). Indeed, job insecurity was positively and directly related to emotional exhaustion (H1), in line with previous

contributions (Bosman et al., 2005; De Cuyper et al., 2010; Giunchi et al., 2016; Kausto et al., 2005; Piccoli & De Witte, 2015; Vander Elst et al., 2012).

In an original way, the results have also confirmed the hypothesis that job insecurity is a predictor of IA, which in turn partially mediates the association with emotional exhaustion (H3a). In addition to the findings of previous meta-analytic reviews (Cheng & Chan, 2008; Sverke et al., 2002) indicating a negative and significant relationship between job insecurity with psychological health, this study also sheds light on the work-related consequences and antecedents of IA, thus enriching the literature on this construct, which is usually studied in samples of adolescents (e.g., Lam, Peng, Mai, & Jing, 2009) and remains understudied in relation to the worker population. In particular, the results seem to suggest that job insecurity is a predictor of IA. This finding can be explained by the transactional theory of stress and coping (Lazarus & Folkman, 1984); indeed, people may adopt some coping strategies in the face of job stressors, such as job insecurity. Consistent with the work of Piccoli et al. (2021) and Shoss' (2017), individuals who perceive job insecurity may employ a number of strategies aimed at retaining one's job, including intensifying of work activities (Richter, 2011). Thanks to technology and Internet connectivity, this intensification can lead to continued use of technology and online activities, even beyond traditional hours of work. In this regard, findings seem to suggest that IA increases in the presence of job insecurity, likely due to behaviours rooted in the belief that being connected all time can elicit a positive consideration in the eyes of management, which is ultimately an attempt to alleviate the perceived threat associated with job loss (Bergman & Wigblad, 1999). Avoidance- and emotion-based strategies can also be seen as a response to job insecurity leading to an increase in IA (McNicol & Thorsteinsson, 2017): compulsory use of the Internet, for example, constant activity on social networks or online games, may stem from escapism or mood regulation needs (Widyanto & McMurrin, 2004) fostered by the stressful conditions of job insecurity. As demonstrated by the model tested and consistent with the JD-R model, this process leads to emotional exhaustion (Bakker & Demerouti, 2017). These findings appear particularly interesting in light of the recent implementation of a "global remote work situation", that is creating new demands about the merge of boundaries between work and life (Kniffin et al., 2020).

The ubiquitous use of technology during non-standard working hours could also be related to the organisational requirement to stay always connected to work through ICT. Indeed, our results confirmed a full mediation by IA in the relationship between off-TAJD and emotional exhaustion (H3b). The request to work even during non-working hours does not have negative effects on well-being per se, but only through the mediation of other variables. These findings are consistent with previous research that has highlighted the positive association between this job demand and exhaustion through the total mediation of recovery (Dolce et al., 2020) and workaholism (Molino, Cortese, & Ghislieri, 2019). In line with the latter paper (Molino et al., 2019), it is confirmed that off-TAJD is a relevant risk factor for the development of behavioural addiction with important consequences for individual well-being. Organisations, especially those characterised by an “always-on” culture where employees are required to answer emails or calls almost anywhere and at any time (McDowall & Kinman, 2017), may also explicitly demand additional work tasks during non-standard working hours through technologies (Ghislieri et al., 2017), which affects the recovery process and thus employee well-being (Dolce et al., 2020). As the proliferation of remote working began during the pandemic and is likely to continue in the coming years, organisations should seriously consider the potentially harmful effects of the always-on approach and implement policies and tools to ensure the right to switch off.

5.1. Limitations and future research implications

Despite the contribution that the study has made to the literature, some limitations can also be mentioned. A first limitation related to the cross-sectional nature of the study, which did not allow us from drawing conclusions about causal relationships between variables nor exclude a cyclical and recursive process involving the constructs considered in our model. Future studies should examine these dynamics using longitudinal studies, in order to verify associations over time and their relationships also outside the COVID-19 pandemic. A second limitation is the use of self-report measures and the resulting risk of common-method bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). This limitation could be addressed by future studies that also consider objective (e.g., factual measures of time spent using the Internet or actual numbers of emails and phone calls received and sent during time off) and others-reported data (e.g., supervisor or partner ratings of behaviour during time off). Another limitation relates to the heterogeneous samples of the study, which preclude generalisation of the results. The recruitment of a heterogeneous convenience sample offers a series of advantages: it is cheap and quick compared to other sampling procedures and is not related to any organisations, diminishing the risk of the desirability bias in the participants' answers. Nevertheless, as previously mentioned, this sampling procedure also has some disadvantages, indeed, in addition to the lack of generalizability of the results, it is not possible to suggest intervention targeting on a specific sector or organisational culture. Future research may extend the comparison to other countries that differ more in terms of cultural dimensions (Hofstede, 2011) and work policies.

Other limitations of the study concern the variables that could have been included in the analysis. First, our model only considered the health impairment process described by the JD-R model and did not examine the role of job or personal resources in reducing the effects of the two job demands, job insecurity and off-TAJD, on both IA and exhaustion. Future studies should include the investigation of resources' role, such as social support and informal communication (Charoensukmongkol & Phungsoonthorn, 2020a; 2020b), in these dynamics. In addition, we can offer some thoughts on how to incorporate further outcomes in future studies. The recent meta-analysis by Sverke, Låstad, and Hellgren (2019) confirmed the negative relationship between job insecurity and performance, although in contrast, some other studies (e.g., Piccoli et al., 2021), confirmed a positive relationship between job insecurity and employee work intensification. The present work suggests

that job insecurity can indeed increase work intensification, but this does not exclusively lead to positive results. As several studies have shown (e.g., Halbesleben & Bowler, 2007; Leiter, Harvey, & Frizzell, 1998; Wright & Bonett, 1997; Wright & Cropanzano, 1998), emotional exhaustion actually decreases performance. Nonetheless, one of the limitations of our study is the lack of measurement of performance, which should be included as a final outcome in future studies. Our findings also offered interesting insights (or a starting point) for further research on the effects of different coping strategies in the JD-R model, especially regarding their role in reframing contextual demands. Finally, in terms of measurement, the short version of the IAT should merit further cross-cultural validation on larger and more diverse populations, as few papers to date have considered worker samples (Panova et al., 2020).

6. Conclusion

6.1. Managerial implications

The findings offer some organisational suggestions. First and foremost, organisations should implement a series of measures to maintain psychological balance, which must provide for balanced work rhythms as required by the Labour Code. The European Directive 2003/88/CE establishes minimum daily and weekly rest to ensure the well-being of employees; in France, according to the Labour Code Article R. 3121-1, the effective daily working time per employee may not exceed 10 h, including recovery and break periods. Companies could develop internal policies to regulate the use of smart technologies outside the working hours, also considering that this is already a legal obligation in France (“Loi Travail” n°. 2016-1088 of 8 August 2016) for companies with more than fifty employees. Measures should be formative rather than coercive. For example, companies could train employees and employers to jointly build skills for responsible use of smart technologies (Harwood, Dooley, Scott, & Joiner, 2014); this would raise awareness of the benefits and dangers of excessive use of smart technologies (Harwood et al., 2014) for professional purposes and lead to spontaneous adaptation of subordinates' and managers' behaviours. To this end, organisations might implement organisational tools to support informal and networked interactions with their peer and manager relationships (Eisenberger & Stinglhamber, 2011), such as smart chat tools and organisational e-forums. This measure would make communication more fluid and could help employees perceive more control over their work situation, thus reducing their sense of job insecurity (Piccoli et al., 2021) and helping employees feel more supported by their organisational environment (Bakker, ten Brummelhuis, Prins, & van der Heijden, 2011) despite the distance.

Credit author statement

Chiara Ghislieri: Conceptualisation, Investigation, Project administration, Resources, Supervision, Roles/Writing - original draft; Writing – review & editing. **Valentina Dolce:** Conceptualisation, Investigation, Data curation, Methodology, Resources, Roles/Writing - original draft; Writing – review & editing. **Domenico Sanseverino:** Investigation, Roles/Writing - original draft; Writing – review & editing. **Sophie Wodociag:** Investigation, Resources, **Anne-Marie Vonthron:** Investigation, Resources, **Émilie Vayre:** Investigation, Resources, **Marianna Giunchi:** Investigation, Resources, **Monica Molino:** Conceptualisation, Investigation, Data curation, Formal analysis, Methodology, Resources, Roles/Writing - original draft; Writing – review & editing.

Declaration of competing interest

None

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