SUMMARY

EDITORIAL

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EDITORIAL

The digitization of working life: Challenges and opportunities

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Digital employees and digital organizations: Challenges and opportunities

In recent years, the role of technology in working life has increased. Technology and digitalization play a crucial role in the development of the organizations and the entire societies. The ascendance of digital organizations has also become a widely researched topic, the digital workplace environment being an important organizational asset for increasing employee productivity (Köffer, 2015). Digitalization creates changes in the world of work, impacting not only business performance and worker productivity, but also job satisfaction, work/life balance, worker autonomy and monitoring across hierarchical levels. Information and Communication Technologies (ICT) in particular are essential components of working and important working tools (Korunka & Vartiainen, 2017).

According to OECD (2019) nearly 14% of the current jobs could be automated, 32% employees need to learn new skills to do their jobs, major changes are needed to succeed in the new digitally enabled work environment. Human replacement by machines and technological changes are becoming main stressors and threats to employment and job existence (Nam, 2019). Besides automation, the type of knowledge, skills, and abilities required by organisations changed, autonomy, interdependence, increased cognitive, creative, technical and social skills are also necessary (Parry & Battista, 2019). Other researchers discuss the benefits of technology at the workplace, such as the decline in workload in many work areas. Intensified autonomy demands are also increased by the expansion of ICT (Korunka & Vartiainen, 2017) and the permanent interconnection of work positions; despite increased flexibility of time and place, developments in mobile technologies accelerated the tempo of daily life, adding the necessity to constantly be on-line and connected to the workplace, reduced pauses, more multitasking and more time pressures (Cijan, Jenič, Lamovšek, & Stemberger, 2019).

The advances in information technology, the expansion of the communication apps and the availability of computer and internet access enable employees to carry out activities at remote locations, with teleworking becoming an alternative work arrangement in the developed world (Biron & van Veldhoven, 2016). Researchers were interested in analysing the impact of teleworking arrangements on employees' social relationships, work-family conflict, job satisfaction, organisational commitment or job performance (Biron & van Veldhoven, 2016; Groen, van Triest, Coers, & Wtenweerde, 2018). While teleworking has the advantages of control over work location and flexibility in the location of work and in the allocation of

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time, there are also negative consequences such as social isolation, career stagnation, work–family conflict, or reduced possibilities of monitoring employee behaviour (Biron & van Veldhoven, 2016).

Digitalization, wellbeing and occupational health

Technology and digitalization invaded nearly every aspect of our private and professional lives. Recent research discusses the associations between work-related stress, occupational safety and health and digitization. Digitalization led to greater performance demands on employees in terms of self-organization and reachability, affecting the boundaries between working time and private life. Pressures are higher than ever before because working with the Internet highlights the expectation that requests will be answered rapidly. The pressure is also augmented by the permanent necessity to keep up with the novelties which substantially increase the employees' performance pressure. These high work pressures are the causes of psychosocial health risks (Ahlers, 2016). Mobile and smart technologies brought not only flexibilization but also an increase rate of risk of accidents, injury could occur from direct contact with robots or other equipment. Increased working with technology significantly reduces the contact with human peers and social support, which could be detrimental to workers' mental health (European Agency for Safety and Health at Work, 2019).

ICT and digitalization also have positive effects, such as a more effective intra-organizational collaboration, improvement of cross-departmental communication increased productivity and satisfaction in team work related contexts; studies also showed that cultural aspects such as power distance become less dominant (Meske, Kissmer, & Stieglitz, 2020). Digitalization is also a job resource; on the one hand, it brings greater flexibility in work scheduling and location enabling employees' control over the time and place of their work; on the other hand, digitalization decreases the physical and emotional demands through automation of the repetitive, unmotivating, and physically challenging work processes (Larjovuori, Bordi, Mäkiniemi, & Heikkilä-Tammi, 2016). The cited authors also proposed a new concept of "techno-work engagement" as an indicator of subjective well-being in organizations.

Technostress – the dark side of the technology

Although technology is largely beneficial to employees and organizations, it can also have "dark" sides, such as technostress. Technostress is a psychological state of stress associated with IT use or IT use demands (Gaudioso, Turel, & Galimberti, 2017). Related to work, Salanova, Llorens, & Cifre 2013) defined the technostress experience at work as a "negative psychological state associated with the use or threat of ICT use in the future. This experience is related to feelings of anxiety, mental fatigue, scepticism and inefficacy" (p. 423). Technologies at work can be intrusive, contributing to a sense of techno-invasion and overwhelming, which lead to higher work pressures, perceptions of work overload, information fatigue, frustration, demoralization, loss of motivation, job burnout, poor job performance, intentions to quit a job and dissatisfaction at work (Tarafdar, D'Arcy, Turel, & Gupta, 2015).

The effects of technostress are anxiety, fatigue, scepticism and inefficacy related to the use of ICT, computer anxiety being one of the most widely studied technostrain experience. Research concerning the attitudes towards the computer and the internet reported that some adults exhibit high levels of computer anxiety, experience feelings of discomfort, frustration and stress, anticipate catastrophic consequences of their errors such as hitting a wrong key and losing information (Cazan, Cocorada, & Maican, 2016). Feeling inefficacious in the use of ICT is another component of technostrain and it refers to the perceived level of inefficacy when using ICT (Schaufeli &Salanova, 2007). Computer self-efficacy is associated with perceptions about computers such us usefulness and ease of use, being also related to users' attitudes,

intentions to use computers, actual computer use, computer skills and computer anxiety (Karsten, Mitra, & Schmidt, 2012).

Researchers have also frequently studied computer anxiety and computer self-efficacy in association with dimensions of the technology acceptance model (Venkatesh, 2000), such as perceived usefulness, perceived ease of use, behavioural intention, behaviour, computer skills. In organizational settings, the technology acceptance model was related to issues such as reasons for collaboration, costs and benefits of collaboration, work group characteristics and attitude toward change (Karsten et al., 2012). Previous research showed that organizations wishing to promote the use of an IT system should provide supervisory support and enhance extensive relations among colleagues to facilitate a more favourable attitude towards the IT systems (Lee, Rhee, & Dunham, 2009). The perceived usefulness and "cost" of new technologies could also influence their acceptance. In addition, personality traits and work engagement play an important role in technology acceptance (Lee et al., 2009), more specifically work engagement mediates the relationship between personality traits and the use of online communication and collaboration applications in the professional life (Maican, Cazan, Lixandroiu, & Dovleac, 2019).

Another dark side of technology could be explained by the excessive and compulsive work with ICT, namely the technoaddiction. Technoaddiction is seen as a form of workaholism (Porter & Kakabadse, 2006; Salanova et al., 2013). Thus, technoaddiction is a form of technostress experience due to an uncontrollable compulsion to use ICT for long periods of time in an excessive way (Salanova et al., 2013). As expected, higher levels of technoaddiction are associated with lower levels of wellbeing (Huang, 2010).

Conclusions

Technology and digitalisation make possible new developments in the workplace, but also brings challenges. Despite its dark sides discussed above, digitalisation can create opportunities for improving working conditions and enhancing employees' wellbeing. Technology impacts not only how our work is organized but also our work performance, nearly every aspect in the world of work being influenced by ICT (Korunka & Hoonakker, 2014). In order to enhance the positive aspects of digitalization and to reduce its disadvantages, we should aim for attaining "digital maturity". Digital maturity is "an organization's capability to recognize and utilize the opportunities provided by the development of digital technology and the ability to carry out strategies to execute the vision" (Larjovuori et al., 2016, p. 1144).

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RESEARCH ARTICLE

Psychological capital, health, and performance: the mediating role of burnout

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Abstract

Psychological capital (PsyCap) is a state-like concept with roots in positive psychology. This study investigated the potential role of PsyCap, as a personal resource, in increasing the level of employees' health (mental and physical) and performance. Based on the Job Demand-Resources theory, the mediating effect of burnout was examined using self-report data. The models were tested on 304 Romanian employees (51% women) from Information Technology & Communications (IT&C) companies, using structural equation modeling. The analysis found that burnout partially mediates the relationship between PsyCap and health (mental and physical) as well as the relationship between PsyCap and performance (task and contextual). The results highlight the role of PsyCap, as a personal resource, in health, and performance. These results are useful for implementing an evidence-based intervention to improve the level of PsyCap in IT&C employees. An improvement in PsyCap would reduce burnout and enhance well-being and performance. This study highlights the mediating role of burnout in the relationship between psychological capital and two distinct outcomes: health and performance. Thus, this research helps identify further mediators of the relation between PsyCap and health and performance.

Keywords

psychological capital, burnout, health, performance

Every organization wants to have healthy and performing employees, but this is not easy to obtain or maintain. Based on the Job Demands-Resources (JD-R) theory, personal resources are positive self-evaluations related to resilience (Hobfoll, Johnson, Ennis, & Jackson, 2003) that increase the employees' ability to cope with stress, strain, or challenges (Luthans, Avey, Avolio, Norman, & Combs, 2006). Employees with high levels of these personal resources believe they have control over their work environment and can, therefore, better handle their job demands. Psychological capital (PsyCap) is a personal resource, that can protect employees against burnout and contribute to individual and organizational success (Laschinger & Fida, 2014). PsyCap, as a second-order concept, is formed by the combination of four personal characteristics, namely self-efficacy, hope, optimism, and resilience (Luthans, 2002). PsyCap is strongly associated with performance (Avey, Reichard, Luthans, & Mhatre, 2011), and also with well-being (Avey, Luthans, Smith, & Palmer, 2010).

In the last years, research done on PsyCap has tended to focus not just on antecedents and outcomes of PsyCap, but also on the mediators

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of the relationship between PsyCap and outcomes (such as psychological empowerment; Avey, Hughes, Norman, & Luthans, 2008). One possible mediator mechanism is burnout, which is experienced by a wide range of employees, from client-based professions to employees in many autonomous jobs, like computer programmers (Maslach, Schaufeli, & Leiter, 2001). Furthermore, the effects of burnout are visible both on employee's health and performance. Employees experiencing burnout may suffer from sleep disturbances, physical illnesses, and depression (Rudman & Gustavsson, 2011). Additionally, organizations are negatively impacted if their employees develop burnout. This is because burnout syndrome reduces the employee's task performance and increases turnover intentions (Maslach et al., 2001).

The present study is based on the JD-R theory (Bakker & Demerouti, 2017), which suggests that the lack of job and personal resources will reduce the ability of the employees to cope with high job demands. This pathway most probably will lead to burnout syndrome (i.e., strain pathway; Demerouti & Bakker, 2011), burnout being the critical mechanism between personal and organizational outcomes. Moreover, this model focuses on employees' health and performance via burnout (the health impairment process) and can be applied to a broad range of professions, such as IT, teachers, nurses, or social workers (Llorens, Bakker, Schaufeli, & Salonova, 2006).

The JD-R theory (Bakker & Demerouti, 2017) highlights the role of resources on their own (e.g., personal resources), not only for fulfilling the job demands and explaining the occurrence burnout (Gorgievski, Halbesleben, & Bakker, 2011). For example, the perception of a lack of personal resources (e.g., self-efficacy and optimism) will cause manifestations characterized by burnout (Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2007). Hence, personal resources, such as PsyCap, could bring vital aid in an environment where burnout is commonly met.

This study contributes to the understanding of the relationship between PsyCap and outcomes (e.g., health and performance), from the standpoint of its mediators, mainly focusing on the IT Romanian workforce. As Newman and his colleagues (2014) advocated, more research "is needed to help us understand the underlying mechanisms through which PsyCap influences workplace outcomes" (p. 131). This is crucial for the theoretical development of the PsyCap literature and provides practical implications for organizations to train their employees in managing the organizational or individual crisis. Thus, the employee's PsyCap could be a source of sustainable competitive advantage for organizations.

Moreover, this study is based on a sample of IT&C professionals that work in Romania, a developing country with a dynamic labor market. Here, the demand for IT specialists is higher than the supply of people qualified in this field. Also, IT professionals are characterized by very high growth needs and are concerned with learning new technologies (Beecham, Baddoo, Hall, Robinson, & Sharp, 2008). IT professionals suffer from extensive projects and aggressive timelines (Messersmith, 2007), which could lead to high levels of job stress. In response to the above challenges, IT employees need to develop their personal resources (Avey, Luthans, & Youssef, 2010). Most of the previous research focused mainly on the relationship between job demands and resources that IT employees have to handle at the workplace, and job-related outcomes such as emotional exhaustion, physical health complaints, and cognitive well-being (Van de Ven, de Jonge, & Vlerick, 2014; Van de Ven & Vlerick, 2013; Van de Ven, Vlerick, & de Jonge, 2008).

Moreover, social capital as a job resource was linked to well-being, but not with emotional exhaustion, one of the dimensions of burnout (Janssens et al., 2018). These findings, in most cases, seem to converge, but there are other research questions to ask, for example, what the role of personal resources for an IT worker is. After reviewing the literature, we have not found any study investigating PsyCap and its relationship with burnout, health, and performance on IT professionals.

In the present study, we hypothesized and tested an integrative model with PsyCap as a distal predictor of both health complaints (mental and physical) and performance (task

and contextual), considering burnout as a mediator that links these pairs of variables. The sample for this study was composed of East European IT&C employees (i.e., Romanian). Therefore, our model provides researchers and practitioners a guide to creating a healthy and performance organizations in European culture.

PsyCap, health, and performance

Luthans and his colleagues (Luthans et al., 2007) proposed the concept of PsyCap, which is a second-order concept based on a combination of four personal characteristics that can be modified to enhance well-being and performance.

Self-efficacy is defined as the individual's belief of having the capacity to mobilize motivational, cognitive resources, and courses of action, to perform different activities within a specific context (Stajkovic & Luthans, 1998). For instance, employees with high self-efficacy that work in the IT&C field are more prone to be self-confident in troubleshooting specific IT situations, or merely solving easy tasks that are required to finalize a project (Lupșa & Vîrgă, 2018). *Optimism* is the general expectancy of a positive outcome (Carver & Scheier, 2002), combined with an attributional style that considers adverse events as temporary, external, and situation-specific while positive activities are considered to have lastingly, personal, and widespread causes (Seligman, 1998). In questionable circumstances at work, an optimistic IT employee will probably believe that things will get better. Thus, he or she will be motivated to pursue his or her goals and deal with difficult circumstances.

Moreover, employees with high optimism will be more likely protected from stress and will be healthier than the less positive ones (Mäkikangas, Kinnunen, & Feldt, 2004). *Hope* is defined as "a positive motivational state that is based on an interactively derived sense of successful (1) agency (goal-directed energy) and (2) pathways (planning to meet goals)" (Snyder et al., 1991, p. 287). Hope implies the will to attain one's aims and the capacity to distinguish and follow the way to success (Snyder, 2000). An IT employee with a high level of hope will consider that there are many ways to resolve a logic or a technical problem, and he or she will attempt to fulfill his or her professional goals. Finally, *resilience* is "the developable capacity to rebound or bounce back from adversity, conflict, and failure, or even positive events, progress, and increased responsibility" (Luthans, 2002, p. 702). A resilient IT employee will succeed in resolving hindrance demands (such as inadequate resources for writing code or debugging issues to code syntax, or role ambiguity in the project team) and will have the capacity to adapt in the face of changes in the external environment (Luthans, Vogelgesang, & Lester, 2006). Hindrance demands are a particular type of job demands in the JD-R model, which tend to be perceived by employees as obstacles to task accomplishment and personal growth (Podsakoff, LePine, & LePine, 2007). Using personal resources, IT professionals should be able to deal with hindrance demands, such as routine, role ambiguity, or organizational politics.

In our study, performance refers to the task and contextual performance. That is, when individuals invest energy into their work, but also in their work roles. Task performance reflects how well an individual performs the duties required by the job (Borman & Motowidlo, 1997). Furthermore, contextual performance is related to an individual's propensity to behave in ways that facilitate the psycho-social context of an organization (Borman & Motowidlo, 1993). PsyCap directly contributes to improvements in task performance (Abbas, Raja, Darr, & Bouckenooghe, 2014), as well as in contextual performance (Norman, Avey, Nimnicht, & Graber Pigeon, 2010).

A recent review (Newman et al., 2014) concluded that PsyCap is associated with desirable employee attitudes (i.e., job satisfaction, psychological well-being) and performance. Thus, previous research demonstrated a positive association between PsyCap and contextual performance, such as OCBs (Avey et al., 2008; Norman et al., 2010). Also, there is substantial evidence for the positive relationship between PsyCap and task performance, as it was indicated by

numerous studies using different measures of performance (Avey et al., 2011). Positive associations between PsyCap and self-, supervisor evaluations, and objective measures of performance were found in recent research (Avey, Nimnicht, & Graber Pigeon, 2010; Peterson, Luthans, Avolio, Walumbwa, & Zhang, 2011).

Within JD-R research, there are various approaches to integrate personal resources (Schaufeli & Taris, 2014). Personal resources are included as moderators or mediators in relation to job characteristics and outcomes in the JD-R theory (Bakker & Demerouti, 2017). Also, personal resources could be antecedents of job characteristics or act as a third variable that could explain the relationship between job characteristics and well-being. Despite this alternative, the most straightforward way of including such personal resources in the JD-R theory is to consider that personal resources have a direct impact on well-being (Grover et al., 2018; Taris et al., 2017). Thus, in our model, we chose to employ PsyCap, as an independent variable, to contribute to the explanation of different outcomes (performance and health). Based on the research of Grover and his colleagues (2018), PsyCap is associated with positive psychological well-being, which in turn exerts a direct effect on outcomes, as theorized by Schaufeli and Taris (2014). This is a step forward based on a review of Newman and his colleagues (2014) who "noticed inconsistencies with findings relating to the nature of the relationship between PsyCap and stress at work" (p. 128).

Personal resources are protective factors for mental health (Boey, 1999). Recent research assumed that PsyCap, as a personal resource, promoted well-being, and favorable health behaviors (Krasikova, Lester, & Harms, 2015; Luthans, Youssef, Sweetman, & Harms, 2013). An employee with a high level of PsyCap can explain situations in a broader positive manner (optimism). Also he will believe that he or she can productively accomplish tasks (self-efficacy), will be resilient and will manage obstacles by having energy and a goal in mind (hope). Thus, the health of the employee will be preserved during stressful events, also, which is relevant to the employee's well-being. This study will focus on both types of health complaints, mental and physical, which offers valuable information at the individual level. Consequently, we formulate:

Hypothesis 1. PsyCap is positively associated with performance (H1a) and is negatively associated with health complaints (H1b).

PsyCap and burnout

Burnout is defined as "a psychological syndrome involving chronic emotional and interpersonal stressors that individuals experience at work and their subsequent responses to their tasks, organizations, co-workers, clients, and themselves" (Swider & Zimmerman 2010, p. 487). In this study, we used core-burnout, with its two components: emotional exhaustion and cynicism (Bakker, Emmerik, & Euwema, 2006). Exhaustion refers to feelings of depletion and feeling down, resulting from overtaxing work. Cynicism or depersonalization appears when individuals mentally distance themselves from their work by generating dehumanizing perceptions of coworkers, tasks, or clients (Kahn, Schneider, Jenkins-Henkelman, & Moyl, 2006). We did not include the third dimension of burnout – personal accomplishment or inefficacy – because it implies less sense of competence at work. Thus it is a form of self-evaluation related to performance (Leiter, 1993) and has a separate role (Lee & Ashforth, 1996) from exhaustion (a type of strain) and cynicism (a form of defensive coping) in the burnout phenomenon.

Based on the JD-R model, personal resources such as self-efficacy and self-esteem be related to e burnout and work engagement (Xanthopoulou et al., 2007). Recent research revealed the direct influence of PsyCap on well-being (Grover et al., 2018), but did not find any support for the moderation effect of PsyCap between job demands or resources and outcomes. Thus, people with high levels of PsyCap have positive self-concepts that allow them to reframe the situation in a positive way, rather than trying to change the stressors (Rabenu, Yaniv, & Elizur, 2016). Research on PsyCap and burnout is scarce and was conducted mainly on samples of nurses and social workers. In a short series of studies,

Laschinger and his colleagues (Laschinger & Fida, 2014; Laschinger & Grau, 2012; Laschinger et al., 2012) identified that a high level PsyCap was negatively related to burnout (emotional exhaustion and cynicism). Similarly, Avey and his colleagues (Avey, Luthans, & Youssef, 2010) found that PsyCap was negatively related to cynicism. Thus, PsyCap is a crucial variable that may contribute to decreasing burnout and, consequently, increase health (physical and mental) (Estiri, Nargesian, Dastpish, & Sharifi, 2016; Laschinger & Fida, 2014; Laschinger & Grau 2012). Findings suggest that nurses with a higher level of PsyCap are less likely to experience burnout, as they have more personal resources to handle the hindrance demands and cope with workplace stress. Hence, it could be argued that employees with higher levels of PsyCap are likely to experience fewer feelings of exhaustion, tiredness, and frustration in their everyday work and interactions with clients (Herbert, 2011). Therefore, we hypothesized the following:

Hypothesis 2. PsyCap is negatively associated with burnout (H2).

Burnout as mediator

PsyCap contains a set of personal resources that could play a protective role in burnout development because it helps the employees to be better performers (Luthans & Youssef, 2004). Moreover, the JD-R theory (Bakker & Demerouti, 2017) posits burnout as a mediating mechanism of the relationship between demands and resources (e.g., personal resources) and performance. Thus, burnout could be the critical link concept that relates to PsyCap with performance and health as a component of the employee's well-being.

Based on previous research, PsyCap has a profound effect on reducing burnout (Estiri et al., 2016). Also, burnout, as a debilitating state, is associated with mental health problems (e.g., depression and anxiety) on the one hand, and physical health problems (e.g., sleep problems, impaired memory, neck, and back pain), on the other (Ahola, 2007; Rudman & Gustavsson, 2011). Moreover, exhaustion is significantly associated with reduced performance (Taris, 2006; Vîrgă, Schaufeli, Taris, van Beek, & Sulea, 2019). Therefore, according to previous research and theoretical arguments, it is more likely that an employee from the IT&C field with a high level of PsyCap will experience fewer symptoms of burnout. Consequently, they will be healthier and will perform better in the workplace. Regularly, PsyCap as a positive resource was associated with positive outcomes, in general, and with well-being, in particular. One of the mechanisms behind the link between PsyCap to well-being is referred to as the quality of PsyCap (mainly the optimism dimension) of mitigation and overcoming negativity bias (Youssef-Morgan & Luthans, 2015). Using a combination of mechanisms such as positive appraisals and regularly replenished reservoirs of psychological resources, PsyCap can diminish the damaging effects of unrealistic goals and expectations, which can lead to burnout (Bakker & Oerlemans, 2012). The hypothetical model proposes a partially mediated relationship between PsyCap and outcomes (performance and health) *via* burnout. This hypothesis is grounded in the assumption that other mechanisms that can also explain the relationship between PsyCap and the two outcomes besides burnout (which may work simultaneously or separately). Our focus is on burnout as a negative mediator mechanism between PsyCap and outcomes (performance and health). Recent research indicated that coping with change and withdrawal are partial mediators between PsyCap and employees' well-being and performance in organizations (Rabenu et al., 2017). Moreover, previous research found evidence for the direct relationship between PsyCap and performance and heath (Avey et al., 2011; Luthans et al., 2013). However, research in the area of mediators between PsyCap and outcomes is under development (Newman et al., 2014). Therefore, we formulated the following hypothesis:

Hypothesis 3. Burnout partially mediates the relation between PsyCap and performance (H3a) and partially mediates the relation between PsyCap and health complaints (H3b).

Method

Participants and procedure

We distributed 400 questionnaires to individuals from a private company in the IT&C field from Romania, in the online form. We used convenience sampling methods, and the sample was composed of programmers (42%), test engineers (36%), and web developers (22%). We previously obtained the IT company's management agreement and disseminated an online questionnaire with mandatory items via a link. All participants were informed of the general aim of the questionnaire and participated voluntarily. Only 76% of the respondents returned the entire questionnaires. Thus, 304 participants remained (51% women), aged between 19 and 60 years (M = 32.12, SD = 9.52). Their average work experience was 4.32 years (SD = 8.19), 38% of them had a Bachelor's degree, and almost 31% had a Master's degree.

Measures

Psychological capital was measured with the 24-item PsyCap Questionnaire (Luthans, Youssef, & Avolio, 2007). This questionnaire has four subscales, each with 6 items: *hope* ("At present, I am energetically pursuing my work goals"), *self-efficacy* ("I feel confident contacting people outside the company (e.g., suppliers, customers) to discuss problems"), *resilience* ("I can get through difficult times at work because I've experienced difficulty before"), and *optimism* ("When things are uncertain to me at work I usually expect the best"). All items were scored on a 5-point Likert-type scale (1 = *strongly disagree*, 6 = *strongly agree*). The PsyCap Questionnaire has previously been validated psychometrically in Romania (Lupșa & Vîrgă, 2018). Cronbach's alpha values of the PsyCap scale was adequate (α = .89). Also, the Cronbach's alpha for each subscale was acceptable: hope (α = .77), self-efficacy (α = .81), resilience (α = .71), and optimism (α = .71)

Burnout was measured as core-burnout, with two subscales from the Maslach Burnout Inventory —General Survey (MBI-GS; Schaufeli, Leiter, Maslach, & Jackson, 1996). The scales used were emotional exhaustion (5 items; "I feel emotionally drained from my work"; α = .85) and cynicism (4 items; "I have become more cynical about whether my work contributes anything"; α = .89). All items were scored on a 7-point frequency scale (0 = *never*, 6 = *always*). The MBI-GS has been successfully validated psychometrically in Romania (e.g., Sulea et al., 2012). Cronbach's alpha for the burnout scale had good reliability in this study (α = .92).

Performance was assessed with a 6-item adapted scale that comprises both task performance and contextual performance (Feuerhahn, Kühnel, & Kudielka, 2012). We have assessed performance using the rating of the employee from the perspective of the supervisors by modifying the general instructions (e.g., "Taking into consideration all aspects of your work, your direct supervisor would assess that… "). Task performance behavior was measured with the first three items. A sample of the item is ("The efficiency of your work is…"). The contextual performance, in particular organizational citizenship behavior directed at individuals, was measured with items 4 and 5 ("Your social behavior is…"). Organizational citizenship behavior directed at the organization was measured with item 6 ("Bring your ideas and improvement suggestions…"). All items were scored on 7-point Likert-type scale (1 = *below average*, 7 = *above average*). The Romanian version of this scale was evaluated using the standard back-translation technique (Brislin, 1970). Cronbach's alpha values of the performance scale were adequate (α = .89) and also for the two subdimensions, task (α = .92) and contextual performance (α = .70).

Mental health complaints were measured with an MHI-5 item screening test (Berwick et al., 1991). All items (e.g., "During the past month, how much of the time have you felt calm and peaceful?") were evaluated on a 6-point scale (1 = *never*, 6 = *always*). A high score indicated poor mental health, and items 2 and 4 are reversed score (see Vîrgă & Iliescu, 2017). Cronbach's alpha values of the mental health complaints scale were adequate (α = .85).

Physical health complaints were assessed with the 4 items proposed by Ware (1999). A sample of the item is: "I expect that my health will get worse in the near future.". All items

were scored on a 5-point scale (1 = *totally disagree*, 5 = *totally agree*). A high score signified poor physical health, and items 2 and 4 are reversed scores (see Vîrgă & Iliescu, 2017). Cronbach's alpha values of the physical health complaints scale were adequate (α = .81).

Results

Statistical analysis

Since all the variables were latent, the data were analyzed based on the SEM framework in MPlus software (Muthén & Muthén, 2012). All variables had normal distributions (Skewness and Kurtosis < 1), therefore we tested the measurement and the structural models (for the partial mediation and the complete mediation). Firstly, we tested the measurement model using confirmatory factor analysis (CFA) and compared five models: M1 – the hypothesized model with four super-ordinate factors (PsyCap, burnout, performance and health complaints); M2 – a single factor model; M3 – a three-factor model (PsyCap and performance as separate factors and burnout, mental and physical health complaints in a single factor); M4 – an additional a three-factor model (PsyCap, burnout, and task, contextual performance, mental and physical health in a single factor as a singular outcome); M5 – a common-method model which is identical with M1, but has an additional latent factor encompassing all observed variables. Subsequently, we tested two structural models with burnout as a mediator: a hypothesized model for the partial mediation (M6), an alternative model for the total mediation (M7). For the structural models, we used the latent variables approach. We employed factor scores as indicators of the latent variables. Thus, the latent factor PsyCap was compound by the four components, self-efficacy, resilience, hope, and optimism; burnout consisted of two observed dimensions, emotional exhaustion, and cynicism. Health complaints consisted of two dimensions, mental and physical health complaints, and performance was composed of two dimensions, task, and contextual performance. Model fit was assessed by using maximum-likelihood estimation. We reported three absolute fit indices (chi-square statistic; root mean square error of approximation, RMSEA; and standardized root mean square residual, SRMR) and two relative fit indices (Tucker-Lewis index, TLI and the comparative fit index, CFI). If a model had the following fit indices, it was likely to be more appropriate: RMSEA < .06; SRMR < .08; TLI and CFI > .95 (Hu & Bentler, 1999). The differences between the nested models were assessed comparing TLI, CFI, RMSEA, SRMR, and for the non-nested models, we used the Bayesian information criterion (BIC). Smaller values of BIC suggest that the model is more appropriate, and if ΔBIC is greater than 2, the data is in favor of the model with the smaller values of BIC (Fabozzi, Focardi, Rachev, & Arshanapal, 2014). Moreover, indirect effects were assessed using 5000 bootstrap samples with 95% confidence intervals.

Preliminary Analyses

Descriptive statistics, reliabilities, and the correlation matrix of study variables are presented in Table 1. The internal consistency coefficient had acceptable values. Almost all the correlations were statistically significant except the ones with the categorical variable, gender, and the continuous one, age.

Table 1. *Descriptive statistics and correlation coefficients for the observed variables*

Observed variables	*M*	*SD*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*
1. Gender	-	-	-											
2. Age	32.22	20.86	-.05	-										
3. Self-efficacy	4.92	.71	.09	.14*	(.81)									
4. Resilience	4.72	.62	-.01	.05	.56**	(.71)								
5. Optimism	4.59	.72	-.01	-.01	.47**	.46**	(.71)							
6. Hope	4.88	.63	.06	.03	.55**	.55**	.63**	(.77)						
7. Emotional exhaustion	2.23	1.65	-.01	-.05	-.19**	-.29**	-.42**	-.38**	(.85)					
8. Cynicism	2.09	1.72	-.03	.05	-.15**	-.21**	-.41**	-.35**	.80**	(.89)				
9. Task performance	5.64	1.17	.06	.01	.32**	.41**	.21**	.35**	-.33**	-.31**	(.92)			
10. Contextual performance	5.50	1.00	.16**	.04	.33**	.36**	.34**	.41**	-.40**	-.34**	.63**	(.70)		
11. Mental health complaints	2.44	.90	-.01	-.04	-.19**	-.33**	-.52**	-.40**	.55**	.51**	-.22**	-.30**	(.85)	
12. Physical health complaints	2.55	.77	.01	-.05	-.19**	-.30**	-.41**	-.36**	.44**	.34**	-.22**	-.33**	.57**	(.81)

Note. $N = 304$; Gender (male = 1, female = 2); *$p<.05$; **$p < .01$ (two-tailed); Cronbach's α coefficients are presented on the main diagonal.

Measurement Models

Before testing the hypotheses, we conducted a confirmatory factor analysis (CFA). The CFA revealed that the first four-factor model (M1) had an acceptable fit and obtained significant better fit indices than the other four models: single-factor model (M2) had poor fit indices; three-factor model (M3) with burnout and health complaints in a single factor also had poor fit indices; three-factor model (M4) with performance and health complaints in a single factor had poor fit indices; common method factor model (M5) also had poor fit indices.

Structural Models

Thus, we continued by testing the structural models (see Table 2). A confounder analysis was performed to test if gender and age could be control variables. Firstly, we tested the associations between the two control variables and outcomes. We found that only gender was significantly associated with performance, so we continued only with the gender variable. Secondly, we analyzed the hypothesized model with gender as a control variable. Gender predicted neither the mediator nor one of the outcomes (health). The fit indices for this model were poorer ($\Delta BIC = 4.31$) ($\chi^2(43) = 138.30$, $p < .001$; TLI = .89; CFI = .93; RMSEA = .09, 95% CI [.07, .10], SRMR = .05; BIC = 12048.51) than the hypothesized model (M6: BIC = 12044.20). Thus, we can conclude that the hypothetical model is superior to the model with gender as a control variable.

Comparing the two structural models that have burnout as a mediator, the hypothesized model (M6) has better fit indices than the alternative model (M7). The only acceptable model was the hypothetical one (M6).

Table 2. *Fit indices and model comparisons for measurement and structural models*

Model	*χ2*	*df*	*χ2/df*	*CFI*	*TLI*	*RMSEA [90% CI]*	*SRMR*	*Δχ2*	*Δdf*
Measurement model									
M1 - hypothesized model with four super-ordinate factors	100.11**	29	3.45	.95	.92	.09 [.07, .11]	.05		
M2 - single-factor model	382.97**	35	10.94	.56	.44	.18 [.17, .20]	.14	282.86	6
M3 - a three-factor model (burnout and health complaints as a factor)	97.46**	32	3.05	.92	.88	.08 [.06, .10]	.07	2.15	3
M4 - a three-factor model (performance and health complaints as a factor)	93.96**	32	2.93	.92	.89	.08 [.06, .10]	.07	6.15	3
M5 - common method factor model	158.14**	30	5.27	.81	.72	.12 [.10, .14]	.29	58.03	1
Structural model									
M6 – partially mediation model (hypothesized model)	100.52**	30	3.35	.95	.92	.09 [.07, .11]	.05		
M7 – total mediation model	164.73**	32	5.14	.90	.86	.12 [.10, .14]	.10	64.21	2

Note. N =304. For the M2-5 models the comparison is versus M1, while M7 is compared to M6; ***p* < .001

As can be seen from Figure 1 for the hypothesized model (M6), PsyCap was negatively related to health complaints (β = -.38, p < .001) and positively related to performance (β = .44, p < .001). Hypothesis 1a and 1b were supported by our data. In addition, PsyCap was negatively associated with burnout (β = -.47, p < .001) and Hypothesis 2 is confirmed.

Moreover, burnout was positively related to health complaints (β = .51, p < .001), and negatively to performance (β = -.27, p < .001). Additionally, burnout significantly mediated the relationship between PsyCap and both pairs of outcomes, while the direct relationship remained significant for both outcomes. Thus, consistent with Hypothesis 3a, burnout partially mediated the relationship between PsyCap and performance (indirect effect = .13, 95% CI [.07, .19]). Moreover, as stipulated by Hypothesis 3b, burnout partially mediated the relationship with health complaints (indirect effect = -.24, 95% CI [-.32, -.17]). The hypothesized model was supported by our data, and the standardized estimates for each relationship are presented in Figure 1. To sum up, the hypothesized model explained the variance of the mediator, burnout, (R^2 = .23), and the two outcomes, performance (R^2 = .39) and health (R^2 = .58) considerably.

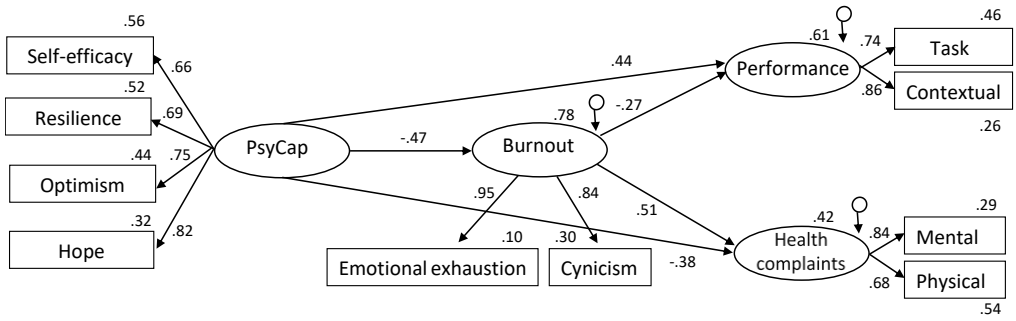

Figure 1. The results for the hypothesized model.

Table 3. *Standardized indirect effects with bootstrapped 95% confidence intervals*

Independent variable	Mediator	Dependent variable	Estimate	95% CI
PsyCap	Burnout	Health complaints	-.24**	[-.32, -.17]
		Mental health complaints	-.20**	[-.27, -.14]
		Physical health complaints	-.17**	[-.22, -.11]
		Performance	.13**	[.07, .19]
		Task performance	.10**	[.05, .14]
		Contextual performance	.11**	[.06, .17]

Note. $^{**}p < .001$

Discussion

The purpose of this research was to study PsyCap in relationship to health and performance through burnout. The results were concordant with the hypotheses. Firstly, consistent with our predictions, we found that PsyCap was related to performance and health. Romanian IT employees who are self-efficacy, resilient, and optimist are more performant and tend to have good health. Employees with a high level of PsyCap are resilient and self-efficacy, can productively accomplish tasks, and manage obstacles with a goal in mind. Those results are in line with other research, which demonstrated that these personal resources should be helpful to maintain their health and obtain performance on the job (Krasikova, et al., 2015; Grover et al., 2018).

Secondly, we observed a negative relationship between PsyCap and burnout. Thus, PsyCap, as personal resources, was negatively associated with burnout, indicating that employees who tend to be less optimistic and resilient at work are more prone to experience burnout. These individuals have a favorable view of themselves, are confident and resilient, and these help them to handle the hindrance demands and cope with workplace stress. Thus, for Romanian IT employees, it appears PsyCap has a significant effect on reducing burnout. This is in line with the JD-R model (Bakker & Demerouti, 2017), which suggests that personal resources (e.g., hope, optimism, resilience or self-efficacy) are related to burnout in the health impairment process (Mäkikangas et al., 2004; Vîrga, Baciu, Lazăr, & Lupșa, 2020).

Thirdly, according to the JD-R theory (Bakker & Demerouti, 2017), PsyCap, as a personal resource, could be related to lower levels of burnout among Romanian IT employees. Thus, PsyCap functions as a positive psychological state that can be developed to protect individuals against challenges in their work. These results bring

more evidence that PsyCap is associated not only with low burnout but also with a lower occurrence of health problems. At the same time, PsyCap could play a decisive role in performance, in the context of a low level of burnout. Moreover, the JD-R theory (Bakker & Demerouti, 2017) suggests the mediating role of burnout in the relationship between resources and demands with job-related outcomes. In this study, we focused mainly on a personal resource, PsyCap, and two outcomes (e.g., performance and health).

Taken separately, our findings are in line with previous research (Estiri et al., 2016; Krasikova et al., 2015; Luthans et al., 2013). This study could be considered an initial attempt to integrate two types of outcomes in a model that has PsyCap as a predictor. These two types of outcomes have an impact at the individual level (health) and the organizational level (performance). Moreover, burnout partially mediated the negative relationship between PsyCap and health complaints (mental and physical), and the positive relationship between PsyCap and performance (Ahola, 2007). Employees from the IT&C field with high levels of these personal resources believe they have control over their work environment and can, therefore, better handle job demands.

Suggestions for further research

Future research could focus more on the effective mechanisms of PsyCap and provide more elaborate guidance on this new topic. Longitudinal studies could further strengthen our conclusions and would create further evidence for the nature of the relationships between PsyCap and health and performance. We encourage researchers to examine burnout as a process developing over time, using a daily longitudinal study design, and to evaluate the role of PsyCap in this process.

Also, future research should test other mediators to provide a broader image of the processes that link PsyCap to health and performance (De Waal & Pienaar, 2013). The relation between PsyCap and our outcomes was only partially explained through burnout, thus allowing for other parallel mechanisms to be tested, such as work engagement (Simons & Buitendach, 2013), or the recently introduced construct of social networks (Luthans, Norman, & Jensen, 2007). Moreover, as scholars will develop a higher number of research studies on this topic, a meta-analysis could be performed to find reliable mediators in the workplace environment that link PsyCap and organizational outcomes. Also, this kind of meta-analysis could clarify which of the personal resources have the most critical role, through which are the mediators functioning.

In future researches, other personal characteristics (personality traits, core-self evaluations, or personal demands) should be investigated in relation to burnout, performance, and health to extend the conclusions of this study and the implications related to JD-R theory.

From a cultural perspective, this study showed that PsyCap is useful in battling burnout among Romanian IT professionals. Cross-cultural studies could also be conducted to find if the hypothetical model is replicated in different countries, among employees with the same job. There is a great need for research on PsyCap in other cultures and contexts to generalize its importance in the workplace. The Romanian labor market in the IT field is willing to absorb as many professionals as possible, as there are many jobs in this field, and companies hire students to finalize projects. In this context, it would be essential to find out if the impact of the developing IT labor market dynamically and uncertainly exercises psychological repercussions. Also, it should be interesting for additional research to examine whether our findings can be generalized to employees from other backgrounds, or employees in other jobs.

Practical implications

The human resource management in Romania could benefit from our findings as PsyCap was scarcely studied on East - European populations. A recent study found that employees from Romania with a high level of PsyCap experience lower levels of cynicism when they have a high level of psychological detachment (Vîrgă & Paveloni, 2015). Our study provided evidence for the relation

between PsyCap and burnout (emotional exhaustion and cynicism), and for the relationship between PsyCap and two critical outcomes: health and performance. Moreover, the status and the role of the IT&C workers in the Romanian market are privileged, but they still have to cope with various demands. At a macro level, in Romania, there is a lack of personnel in this field, and even students or entry-level IT employees are hired on experimented positions. At a micro level, the job demands are high, as the IT employees need to fulfill complicated cognitive tasks, to keep up with final deadlines, must handle high levels of workload, or learn new technologies. Therefore, an employee in this profession is prone to develop manifestations of burnout (Maudgalya, Wallace, Daraiseh, & Salem, 2006).

The results highlight the importance of PsyCap, as a malleable resource, in achieving performance and health at the workplace, simultaneously. The practical implications of our findings could be in designing an intervention on PsyCap to reduce health complaints and to enhance performance. Human resources practitioners could invest in strengthening personal resources, such as PsyCap, through evidence-based interventions, which could protect the employees from burnout, and bring benefits both for employees and the organization (Luthans et al., 2013; Meyers & van Woerkom, 2017).

These results provide empirical evidence to develop and implement organizational strategies to enhance IT employees' well-being and performance, according to previous theory and research. In initial research, Luthans and his colleagues (Luthans, Avey, Avolio, Norman, & Combs, 2006) argued that the face-to-face PsyCap Intervention (PCI) increases employees' PsyCap, and also has a financial impact and substantial return investment. In addition to the traditional face-to-face group intervention, other settings are proposed, such as web-based individual training (Luthans, Avey, & Patera, 2008). Also, based on the JD-R model, a job crafting intervention was developed, which implies a series of proactive behaviors related to job characteristics, aimed at seeking resources, seeking challenges, and reducing demands (Oprea, Barzin, Vîrga, Iliescu, & Rusu, 2019). Thus, the combination of training programs for increasing PsyCap and job crafting, to diminish burnout, may help prevent health complaints and low performance (van Wingerden et al., 2017). The combinations of online and face-to-face interventions could be more appropriate for IT employees training related to PsyCap and job crafting. Research suggests that adding burnout-focused content related to job crafting in PsyCap workshops (Luthans, Avey, et al., 2006) could be a useful strategy to reinforce the effectiveness of this intervention. Thus, IT employees could attend small-group workshop sessions, composed of specific exercises designed to develop specific components of PsyCap (hope, optimism, self-efficacy, and resilience) (Luthans, Avey, et al., 2006). Based on a recent meta-analysis, HR practitioners could use PCI intervention to improve PsyCap as global construct. Also, could use positive psychology interventions (for self-efficacy and hope), and also stress management programs (for self-efficacy) (see Lupșa, Vîrga, Maricutoiu, & Rusu, 2019). Also, IT professionals could develop, in online sessions, a job crafting plan to redesign their job according to their capabilities. Therefore, this study encourages managers and HR practitioners to establish human resource management practices, such as training to develop employees' PsyCap as a personal resource, combined with employee programs oriented to job crafting for improving performance and health.

Limitations

The results of this study should be evaluated, considering several limitations. One of the limits is the cross-sectional design. Therefore, the relations found do not involve causal inferences. Concerning causality, we cannot be sure that PsyCap causes burnout and/or that burnout causes health complaints and decreases performance. While these linkages are consistent with the literature on burnout (Maslach et al., 2001; Schaufeli & Bakker, 2004), it is possible that employees who suffer from burnout have negative perceptions of their personal resources, or that the lack of own resources could cause burnout. Another limit could be the self-report data and the use

of subjective data due to the risk of common method bias. Although several of the variables have a individual nature (e.g., PsyCap, burnout) and self-report measures are indicated, several of the variables could have been operationalized as objective data (e.g., objective health and performance indicators) or data from other sources (e.g., supervisor, coworkers) can be included to preclude this risk. The performance was measured using a different approach: the employees offered responses from the manager's point of view about their performance. Those ratings are strongly associated with supervisors' ratings rather than to the employees' self-ratings about their performance (Schoorman & Mayer, 2008).

An additional limit could be the fact that we evaluated the global constructs (e.g., PsyCap as a composite of self-efficacy, optimism, resilience, and hope), and we cannot compile the effect for each factor on the outcomes (e.g., task and contextual performance). Therefore, we can only find general relationships between the four concepts (i.e., PsyCap, burnout, performance, and health complaints).

Conclusions

The present study has shown that PsyCap is a distal antecedent of health and performance through burnout in the practical context of Romanian IT&C employees. It appears that PsyCap plays an essential role in protecting the employee from burnout because employees with high self-efficacy, resilience, optimism, and hope are less likely to become emotionally exhausted and cynical about their work. This fact, in turn, leads the employee to perform better and to be mentally and physically healthy. These findings could be used as a starting point to create and implement different interventions to enhance employee's resources such as PsyCap, due to its contribution to achieving and maintaining well-being and performance inside organizations.

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RESEARCH ARTICLE

Ups and downs on the roller coaster of task conflict: the role of group cognitive complexity, collective emotional intelligence and team creativity

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Abstract

This study explores the association between task conflict and team creativity and the role of group cognitive complexity (GCC) as a potential explanatory mechanism in a sample of 159 students organized in 49 groups. Moreover, we analyzed the moderating effect of collective emotional intelligence (CEI) in the relationship between task conflict and GCC. As hypothesized, we found that task conflict has a nonlinear relationship with GCC, but contrary to our expectations, it follows a U-shaped association, not an inversed U-shape. In addition, the moderating role of CEI was significant only at low levels. Contrary to our expectation, the mediating role of GCC did not receive empirical support. Theoretical and practical contributions are discussed.

Keywords

task conflict, group cognitive complexity, collective emotional intelligence, team creativity

An increasing number of organizations are relying on teams in order to cope with the dynamic business environment they operate in and considerable evidence now suggests that team creativity is a key contributor to a company's competitiveness, performance and survival (Tjosvold, et al., 2004; Zhou & Shalley, 2011). Team creativity refers to the production of novel and useful ideas, products, processes and procedures by a team of people working together (Amabile, 1996; Shalley & Gilson, 2004; Shin & Zhou, 2007). While abundant research exists on the antecedents of individual creativity (Amabile & Pratt, 2016; Joo et al., 2013), the potential of team creativity to create a consistent competitive

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advantage (Anderson et al., 2004) has spurred a more recent focus on understanding what are the factors that foster its emergence (Anderson et al., 2014; Shalley, Zhou, & Oldham, 2004).

One of the most researched antecedents of team creativity is the level of within-group task conflict (also labeled as cognitive conflict). Task conflict refers to disagreements among team members about the task being performed, based on differences in viewpoints, ideas and opinions (Jehn & Bendersky, 2003). The popularity of this construct in relation with creativity stems from the idea that such disagreements among team members are a trigger for information exchange, thorough exploration of opposing opinions, reevaluation of the status quo, and scrutiny of the task at hand. As such, task conflict is argued to be beneficial for the emergence of complex knowledge structures and the generation of novel ideas and solutions (De Dreu & West, 2001; Hulsheger et al., 2009). These arguments are in line with the minority dissent theory, which claims that the presence of different views within the group stimulates team members to take into consideration multiple perspectives by means of tension and surprise (Nemeth & Staw, 1989).

However, despite the logic that suggests that task conflict promotes creativity through processes of divergent thinking and information search, there are also authors (De Dreu & Weingart, 2003) who argue that increased levels of conflict might decrease the team members' ability to process and evaluate information due to cognitive overload. In line with the cognitive load hypothesis (Kirschner et al, 2009) and too much of a good thing effect (Grant & Schwartz, 2011), when the number of task related disagreements is too high, the group might be unable to integrate the large pool of perspectives into a rich cognitive structure (the team might have produced differentiation, but this impedes integration). In turn, this could be detrimental for a team's creative output (De Dreu, 2006; Farh et al., 2010).

At the same time, intensely debating on the diverse perspectives (i.e., experiencing high levels of task conflict) might result in tension and frustration stemmed from the lack of progress, and even transform into relational conflicts (Simons & Peterson, 2000). Handling such a rich underlying affective dynamics could make it difficult for a team to allocate enough resources in order to integrate conflicting opinions in a rich knowledge structure (i.e. indicative of a cognitively complex team). As such, exploring the way the group manages its emotions gains significant importance for understanding the task conflict – creativity link.

Imagine for example a team of scientists from an R&D department who are trying to develop a vaccine for the coronavirus. Some might bring up ideas based on previous research; some might express entirely new opinions, or will not have anything to say for the moment. If the flow of ideas is rather slow and not exactly diverse, the progress for creating the vaccine might stop right there. Conversely, if they express many different perspectives, the total pool of ideas will grow larger and they might feel some progress towards the objective. However, producing many different ideas does not mean they found the solution. A high level of differentiation might render it difficult to achieve integration because they are not able to process all of the opinions, or team members get defensive and start criticizing each other, which might escalate into intense arguments. Without the emergence of a complex knowledge structure related to the task, the combination of perspectives into new ideas and thorough elaboration might become just a pipe dream, with no breakthrough in the end.

To sum up, the available empirical data on the effects of task conflict on creativity are inconsistent (Hulsheger et al., 2009), thus pointing out to the potential existence of multiple mechanisms and contingencies that might operate in this relationship.

The contribution of our paper is threefold. First, in this paper, we build on group cognition as emergence (Curşeu, 2006; Curşeu et al., 2007, 2013) and explore the mediating role of group cognitive complexity (i.e. the richness of collective knowledge structures/ GCC) in the relation between task conflict and team creativity. Second, in line with the too-much-of-a-good thing (TMGT) meta-theoretical framework (Busse et al., 2016; Grant & Schwartz, 2011; Pierce & Aguinis, 2013), we posit a non-linear relation (reversed

U-shape) between task conflict and GCC. We argue that an average level (compared to low levels) of task conflict is beneficial to GCC due to cognitive differentiation, whereas increased levels of task conflict might be detrimental to the richness of knowledge structures due to idea integration costs and finally impeding team creativity. We thus aim to add to the team creativity literature by trying to shed light on the inconsistent findings concerning the role of task conflict for team creativity. Finally, we explore the contingent role of collective emotional intelligence (i.e. the group's capacity to recognize and handle its emotional dynamics) in the relation between task conflict and GCC.

Theory and Hypotheses

In our attempt to answer the call regarding what are the factors that have an impact on creativity at the team level, we adopted the input-mediator-output-input (IMOI) model (Ilgen et al., 2005) as an overarching theoretical background framework. Briefly put, the model depicts teams as complex, adaptive and dynamic systems, whereby team inputs (i.e., team composition, resources etc.) influence the type and quality of team processes (i.e., team members' interactions) and emergent states (i.e., cognitive, affective and motivational states or/and structures that describe the group in itself). In turn, the interplay of processes and emergent states influences the quality of outputs such as team performance and creativity.

Simultaneously, we adopted the perspective of groups as sociocognitive systems (Curșeu, 2003; Hinsz et al., 1997; Hollan et al., 2000) and argue that the ability of such social systems to process information rests both on the cognitive processes and individual representations, as well as on the quality of interactions that take place among group members. Group cognitive complexity (GCC) refers to the richness of collective knowledge structures emerging from knowledge exchange through team members' interactions. A complex knowledge structure is characterized by differentiation (includes many semantic nodes, concepts or themes) and integration (the nodes are interconnected) (Curșeu et al., 2007; Curșeu et al., 2010). Therefore, in order to produce these differentiated knowledge structures, the group members have to engage in debates regarding the task at hand, also labeled task conflict, and make use of their diverse expertise and opinions.

In a study conducted by Curșeu et al. (2012), they argued that task conflict has a positive effect on GCC in a way that fosters the cognitive activity of the group in terms of information search and evaluation because it is associated with diverse opinions expressed during group discussions. The expression of various viewpoints and the information exchanges associated with task conflict might increase the levels of elaboration and careful analysis of the task's content, as well as exploration behaviors directed at problem solving.

On the other hand, the information processing perspective (Carnevale & Probst, 1998), suggests that the emergence of within group task conflict might in fact represent a distraction from the task itself as handling the conflict uses up cognitive resources that cannot be directly invested to solve the task. This increases cognitive load, interferes with other cognitive processes and might actually lead to a narrowed view of the problem (De Dreu, 2008). Moreover, high levels of task conflict might result in tension, dissatisfaction and escalate into relationship conflict (i.e., disagreements concerning values, personality) (Pluut & Curșeu, 2013). Moreover, the negative emotionality associated with relationship conflict might actually decrease the cognitive flexibility of the members and their motivation to explore different views, which in turn might lead to rigid and less complex cognitive structures, both at the individual and group level (Carnevale & Probst, 1998). Therefore, a moderate level of task conflict ensures just enough debate and processing of group members' ideas and expertise in order to create a differentiated (i.e., including many concepts and ideas) yet integrated (i.e., ideas are related to one another) cognitive structure., On the other hand, higher levels of task conflict might negatively interfere with the integration process such that arguing intensely on the

diverse pool of ideas might hinder establishing connections between different pieces of information.

Hypothesis 1. Task conflict has a nonlinear association (inverted U shape) with GCC in such a way that at lower to moderate levels of conflict this relationship is positive, whereas at moderate to higher levels of conflict it becomes negative.

As previously argued, team creativity refers to the production of novel and useful ideas, products, processes and procedures by a team of people working together (Amabile, 1996; Shalley & Gilson, 2004; Shin & Zhou, 2007). Two different theoretical frameworks explain the emergence of team creativity. One theoretical approach suggests that it is actually a function of individual creativity and that it could be explained as either the average or a weighted average of team members' creativity (Pirola-Merlo & Mann, 2004). A different theoretical perspective revolves around the idea of creative synergy assuming that the group is able to produce a novel, creative output due to diverse cognitive inputs provided by team members and the quality of interpersonal interactions (Kurtzberg & Amabile, 2001). As such, ideas are formed, shared and shaped via interpersonal interaction.

Research regarding the relationship between cognitive complexity and creativity are scarce and have focused solely on the individual level where a positive association has been reported (Charlton & Bakan, 1989; Quinn, 1981). Switching to the team level, we argue that group cognitive complexity might also be beneficial for team creativity. Producing a creative output involves finding connections among seemingly unrelated concepts, requiring a rich store of knowledge (Boden, 2003), or acting upon an idea and transforming it into something new by introducing modifications. As such, having achieved a complex knowledge structure (i.e., indicative of a high level of cognitive complexity) makes it easier for the group to shift between perspectives (due to differentiation) and have a larger pool of ideas on which they can further elaborate. In addition, team members' efforts of drawing connections among concepts act as a catalyst for coming up with unique perspectives (due to integration). Therefore, balancing the differentiation and integration mechanisms associated with group cognitive complexity has a positive influence on the fluency, flexibility and originality of the group's ideas.

As such, we depart from the idea that individual creativity is a necessary and sufficient condition for team creativity. Instead, we take into consideration the systemic approach arguing that group processes and emergent states are equally important determinants of team creativity and performance (Ilgen et al., 2005; Mathieu et al., 2008). For example, Taggar (2002) found that team processes (e.g. effective communication, involving others, team citizenship, providing feedback, reacting to conflict, etc.) accounted for additional variance in team creativity beyond the one already accounted for by individual creativity. This is aligned with the IMOI framework arguing that team outputs, such as team creativity, are the result of input factors (such as team composition and resources) and the information processing and quality of interactions that take place among its members.

As such, we argue that:

Hypothesis 2. There is a positive association between GCC and group creativity.

Hypothesis 3. GCC mediates the relationship between task conflict and creativity.

As previously argued, task related disagreements among team members are a key driver for group cognitive complexity, which in turn has a positive influence on team creativity. These viewpoint differences (i.e., task conflict) might carry an attached emotion, which influences the way that events are perceived (Yang & Mossholder, 2004), and fMRI research has suggested that perceived conflict can stimulate the activity of the amygdala, which generates emotions such as anxiety and stress (Etkin et al., 2006). For example, disagreements pertaining to the task might be interpreted as personal attacks by team members (Simons & Peterson, 2000) and the expression of the associated negative emotions might escalate during conflict through emotional contagion (Hatfield et al., 1994). Therefore, the group's emotional

climate as well as the quality of interpersonal interactions themselves could be improved when groups are emotionally intelligent (Druskat & Wolff, 2001).

Collective emotional intelligence (CEI) represents an emergent group level competence (Curşeu et al., 2015) which is defined as the ability of a group to develop a set of norms that promotes the expression, awareness and regulation of member and group emotions (Druskat & Wolff, 2001). Emotionally intelligent groups are able to develop norms that allow them to experience moderate levels of task conflict without an escalation into relationship conflict (Yang & Mossholder, 2004). High levels of CEI are also associated with an increased chance of stimulating positive emotions among the members, cooperation and the efficient management of dysfunctional reactions (Ayoko et al., 2008).

Jiang et al. (2012) have shown that individuals and groups skilled at emotion regulation were able to capitalize on the advantages of task conflict for effective performance and limit the negative impact of relationship conflict. They argued that efficient emotion regulation decreases the chance of being distracted by negative emotions and cognitive loads, which increases the probability to make use of the information resulted from task conflict and ultimately to improve performance. Moreover, empirical evidence has shown that team emotional intelligence promotes both cognitive and affective team trust, which in turn fosters a collaborative culture that promotes team creativity (Barczak et al., 2010). Emotionally intelligent groups are able to deal with emotions and maintain positive interpersonal relationships, which might facilitate cohesion and an atmosphere of open discussion and exchange of diverse ideas. Troth et al. (2011) have shown that team level emotional skills (e.g. own and others' emotional awareness and emotional management) are predictive for individual level communication performance. They suggested that teams with greater collective emotional skills during interactions would promote an environment where the members are more prone to listen to alternative viewpoints and follow the appropriate rules of communication exchange. Also, the results of a more recent study (Lee & Wong, 2017) show that team emotional intelligence decreases the negative effect of task conflict on team effectiveness. Moreover, their findings indicate that team emotional intelligence plays a moderating role on decoupling task conflict and relationship conflict, which might harm the team's interaction processes. Furthermore, team emotional intelligence can mitigate the negative emotions resulted from a task conflict by managing them in a collaborative manner (Jordan & Troth, 2004).

Therefore, when dealing with creative tasks, it is likely that groups with high levels of collective emotional intelligence will be able to tolerate more task conflict before the slope between conflict and GCC becomes negative. This will allow them to take advantage of a larger pool of information because idea generation is paralleled by the maintenance of the quality of interpersonal interactions, which will promote the integration of knowledge structures into complex networks and increase the odds of obtaining a creative output. As such, we argue that:

Hypothesis 4. Collective emotional intelligence moderates the nonlinear association between task conflict and GCC in such a way that for groups with high levels of CEI, the inflection point of the curve is higher compared to groups with low levels of CEI.

Figure 1 presents the overall model with the four hypothesized relations.

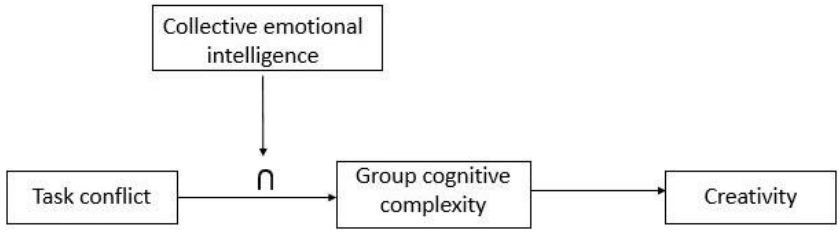

Figure 1. *Summary of the research hypotheses*

Method

Participants

We used a convenience sample consisting of first year students enrolled in a Romanian university at two different courses. Participation was voluntary, and from the 230 students enrolled, 159 students (124 women) took part in our study. They were informed one week prior to the study that their next class will be conducted by the first author and that they will be involved in activities pertaining to data collection related to a previously studied theme (attitudinal change). The participants were distributed in 49 groups having 3 to 5 members (*M*group size = 3.2 members, *SD* = .*52*, *M*age = 19.5 years, *SD* = .98).

Measures and procedure

Prior to data collection, we introduced the participants to the method of constructing a mind map and worked out an example together. Afterwards, we formed ad-hoc groups, which were required to complete two different tasks (they had 20 minutes for each). The first task was used to derive the GCC score, whereas the second task was used in order to compute the level of creativity. At the end of each task, team members filled out the questionnaires related to demographic variables (gender, age), task conflict and emotional intelligence.

Task conflict was assessed using the four-item scale developed by Jehn (1995). Sample items for task conflict are the following: "How frequently are there conflicts about ideas in your team?" and "How often do people in your team disagree about opinions regarding the task being done?". Answers could be given on a 7-point scale (1= *not at all*, to 7= *totally agree*). Alpha Cronbach is .79, 95% CI [.74, .84].

Collective emotional intelligence (CEI) was measured using an eight-item scale developed by Curșeu et al. (2015). Sample items are: "We usually had a good sense of how each team member felt, even if they did not express it in words" and "We made each other feel better when we were down". Answers could be given on a 7-point scale (1= *not at all*, to 7= *totally agree*) and Cronbach's α is .73, 95% CI [.65, .78].

We used a cognitive mapping technique (Curșeu et al., 2010; Davies, 2011) to measure group cognitive complexity (GCC). Each group was asked to generate by group discussions as many concepts regarding a topic they have studied throughout the semester (persuasion) and organize them in a map reflecting the perspective of the entire group on that subject by drawing connections among the concepts and specifying the nature of their relationship. The cognitive map that resulted during group interactions reflects the knowledge structures that the groups developed in relation with a specific domain.

The GCC of each map was computed using the following formula (Curșeu, 2008): GCC = NoC × CMC × CMD, where NoC refers to the total number of concepts used in the map, CMC represents the total number of connections established between the concepts, and CMD stands for the number of distinct type of relations established between the concepts. Based on the typology defined by Gómez et al. (2000) there are seven types of distinct relations: causal, association, equivalence, topological, structural, chronological, and hierarchical. The maps were evaluated on those three indicators (NoC, CMC, CMD) by two external raters who coded them afterwards. At first, each evaluator coded the maps individually, and afterwards they met in order to discuss any differences in

their coding and solve them in a consensus fashion.

We evaluated team creativity through a task where each group had to create a poster in order to change the attitude of a target audience on a specific topic by implementing the concepts used in the previous mind mapping technique. The final product was coded by external raters on five dimensions: fluency (generating as many ideas, options or solutions as possible- the total number of non-redundant elements), flexibility (approaching the problem from a new perspective, or the variety of the elements used, both inter- and intra- category: e.g. text messages, illustrations, graphics) , originality (the distinctiveness of the elements used when compared with other posters, memorable elements, distinctive identity), utility (there is a match between the poster's content and the target audience; the elements included are compelling enough for an attitudinal change) and coherence (the messages are clearly formulated and there is a logical connection between the elements included, the content makes sense). These categories were inspired by Rietzschel et al. (2007) and Curșeu (2010). The final creativity coefficient for each group was obtained by computing the Bartlett factor score (Bartlett, 1937; DiStefano et al., 2009) on those five dimensions.

Results

The descriptive statistics and bivariate correlations are presented in Table 1.

Table 1. *Means, Standard Deviations, and Correlations*

	Variable	*M*	*SD*	1	2	3	4
1.	Gender	-	-				
2.	Task Conflict	2.084	.698	.044			
3.	Group cognitive complexity	423.367	354.614	.082	.306*		
4.	Creativity	3.796	1.546	.088	.125	.162	
5.	Collective emotional intelligence	5.338	0.630	-.171	-.211	-.174	.032

Note: $*p < .05$, $N = 49$

Data was analyzed using the SPSS v23 software. In order to check interrater agreement among team members, we calculated within-group agreement (*Rwg*) values using uniform null distribution and obtained mean values of .80 for CEI with a range between .52 and .95, and .87 for task conflict with a range between .55 and 1. These values are above the conventionally accepted value of .70 (LeBreton & Senter, 2008). Additionally, we calculated the intra class correlation coefficients *ICC (1)* and *ICC (2)* and found .39 and .67 for CEI, and .27 and .55 for task conflict. These statistics justify the aggregation of the data to the group level (Bliese, 2000).

To test H1 and H4, we conducted an OLS regression analysis (Table 2). In the first step we entered gender (the percentage of women in each group), task conflict and CEI; in the second step we entered the squared task conflict; in the third step, we entered the cross product between task conflict and CEI and the cross product between squared task conflict and CEI. Before entering the variables in the regression models, they were grand mean centered so as to reduce possible multicollinearity.

Table 2. *Results of the OLS Regression Analysis*

	Model 1	**Model 2**	**Model 3**
Main effects			
Gender	.05	-.04	.032
TC	.28	-.006	-.16
CEI	-.11	-.09	.09
Quadratic effect			
TC squared		.46*	.20
Linear interaction			
TC x CEI			.35
Quadratic interaction			
TC squared x CEI			-.76*
R	.333	.477	.553
R^2	.111	.228	.305
F	1.824	3.167*	3.004*

Note. Standardized regression coefficients are presented in the table. TC= task conflict; CEI= collective emotional intelligence
*$p < .05$

The first hypothesis (H1) stated that task conflict has a nonlinear (inverted U shape) association with GCC. This hypothesis was partially supported by data, as the beta coefficient for the quadratic term is significant (β = .462, p = .014) but positive (which describes a U shape association), whereas the beta coefficient for the linear effect of task conflict is positive and not significant (β = .281, p = .060). That is, the relationship between task conflict and GCC shows a downward trend at low to average levels of task conflict and an upward trend at average to high levels of task conflict. Figure 2 shows the U-shaped association between task conflict and GCC and depicts the inflection point at around the sample mean (the computed inflection point for the centered variable is .010004).

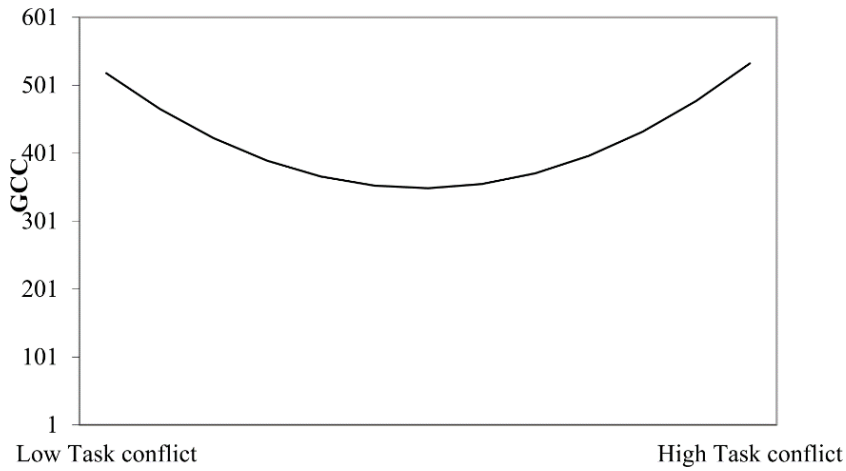

Figure 2. *The U-shaped association between task conflict and group cognitive complexity (GCC)*

The fourth hypothesis (H4) stated that CEI moderates the nonlinear association between task conflict and GCC. This hypothesis received empirical support as the beta coefficient for the quadratic interaction is significant (β = -.763, p = .040), whereas the beta coefficient for the linear interaction is not significant (β = .36, p = .218). The moderation effect of the quadratic relationship between task conflict and GCC at low versus high levels of CEI is plotted in Figure 3 and it seems that at low levels of CEI the task conflict – GCC relationship follows a U-shaped curve, whereas at high levels of CEI, the relationship becomes an inverted U shaped curve. To affirm whether our visual observation was valid, we continued to probe this interaction effect using the "pick a point" procedure which tests the conditional effect of task conflict on GCC at three levels of CEI: the mean and plus/minus one *SD* from the mean (Hayes, 2015). The results showed that when CEI was low (1 *SD* below the mean), the curvilinearity in the association between task conflict and GCC is positive and significant (θ X2→Y |M= -0.63 =225.25, p = .037), but at moderate and high levels of CEI, there is no statistically significant evidence of curvilinearity in the association between task conflict and GCC (θ X2→Y |M= 0 = 79.36, p = .498; θ X2→Y |M= 0.63 = -66.52, p =.677).

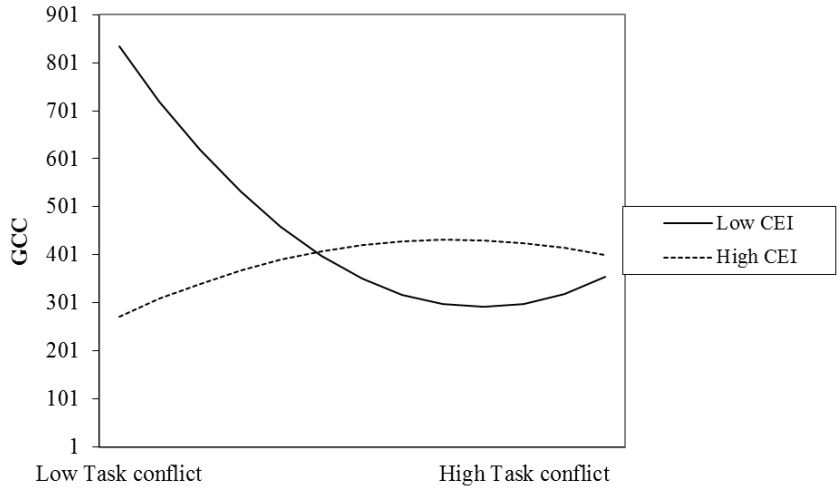

Figure 3. *Curvilinear interaction of task conflict and group cognitive complexity (GCC) at low and high levels of collective emotional intelligence (CEI)*

Furthermore, in order to test H2 and H3 we conducted a mediation analysis using MEDCURVE in SPSS (Hayes & Preacher, 2010). This method allows the estimation of the instantaneous indirect effect (θ) of X (task conflict) on Y (team creativity) through M (GCC) at low (one standard deviation below the mean), moderate (sample mean), and high (one standard deviation above the mean) values of X. One of the advantages of using this technique, which is based on bootstrapping, is that it does not require distribution assumptions to be met and is suited for mediation with rather small sample sizes (Hayes & Preacher, 2010).

The second hypothesis (H2) which stated that there is a positive relationship between GCC and creativity did not receive empirical support, as the regression coefficient was positive but not significant (β=.0004, p=.37).

The third hypothesis (H3) stated that GCC mediates the relationship between task conflict and team creativity. This hypothesis did not receive empirical support, as the instantaneous indirect effect was not significant at either low (θ low = -.0843, 95%

confidence interval [CI] = [-1.0652, .0672]), moderate (θ average = .0027, 95% confidence interval [CI] = [-.1014, .1385]) or high levels of task conflict (θ high = .0896, 95% confidence interval [CI] = [-.0735, .7122]).

Discussion

The purpose of this study was to examine the relationship between task conflict and team creativity. Specifically, we examined whether this relationship is mediated by the cognitive complexity of the group (H3), where the association between task conflict and GCC is nonlinear (H1) and the association between GCC and creativity is positive (H2). Moreover, we argued that the hypothesized curvilinear relationship between task conflict and GCC is moderated by the level of collective emotional intelligence (H4).

We found partial support for our first hypothesis specifying a nonlinear relationship between task conflict and GCC. Contrary to what we expected however, the relationship between task conflict and GCC follows a U shaped pattern and not a reversed U-shape as predicted. More specifically, we found that up to the inflection point, as task conflict increases, GCC is decreasing, whereas after the inflection point, as task conflict continues to increase, GCC is also increasing.

This suggests that the emergence of higher levels of group cognitive complexity is associated with either low or increased levels of task conflict. To be able to construct this rich cognitive structure, groups have to engage in task conflict in order to produce the differentiation component, and in the same time, to be able to integrate the generated concepts. Our results suggest that increased levels of task conflict are necessary for the emergence of cognitive complexity, which seem to contradict some arguments presented in the literature, where it is believed that too much task conflict may result in cognitive overload and render it difficult for the members of the group to arrive at a coherent solution (De Dreu, 2006; Farh et al., 2010). One possible explanation for this effect might be the case that high levels of task conflict have produced the necessary level of differentiation, whereas the simple fact that the task we used to measure the group's cognitive complexity required them to organize the concepts and draw associations between them on a paper based support, has allowed them to better visualize this rich differentiation and achieve integration. This is in line with the arguments presented by Nusbaum and Schraw (2007) who suggest that a graphic organizer could help to scaffold the students' ability to integrate arguments and counterarguments because it might lower the load on the working memory.

Future research might investigate different types of graphic organizers that allow teams to achieve integration even in high differentiation contexts. One of the simplest method might be the use of post-it notes, which are considered capable of flexibly carrying symbolic representations of ideas and can be grouped and sorted accordingly to their physical characteristics (color, size) to represent larger, emergent concepts and support categorization qualities associated with semantic long-term memory (Dove et al., 2018) which might facilitate the integration of different semantic nodes.

When it comes to explaining the relationship between low levels of task conflict and high GCC, we could think that in low conflict situations, the group does not suffer from increased negative emotionality, since human conflict does not exist in the absence of emotions (Bodtker & Jameson, 2001), and can direct its attention towards solving the task by maximizing the positive effects of those small differences in opinions. It might be the case that in the context of reduced task conflict, the group achieves high differentiation through additional mechanisms (for example, small disagreements inside the group trigger idea generation in one or some of the group's members) and can also achieve high levels of integration because the cognitive load associated with processing multiple perspectives is reduced, as well as the negative emotional costs.

For the average conflict-low GCC relationship, a possible explanation might be the fact that integration is impeded due to the negative affect associated with increasing levels of conflict and possibly diminished motivation to process all those differences in opinion. Whereas after a certain threshold (the inflection point), they might be able to attain

integration even though conflict is increasing because they interpret those different perspectives as a sign of personal involvement in solving the task and good intentions (so the negative affect is reduced).

We only found partial support for our fourth hypothesis, which states that CEI moderates the nonlinear association between task conflict and GCC since this conditional effect was statistically significant only at low levels of CEI. Our results show that for groups with low CEI, less conflict is beneficial to GCC, and while task conflict increases, GCC decreases up to the inflection point where it starts to increase again, but not too much. A possible explanation is that since conflict is an affective event, without the proper norms and mechanisms that emotionally intelligent groups are developing, only a small amount of conflict is necessary for a positive impact on the team's task. This is in line with the findings of Ayoko et al. (2008) who reported that lower levels of task conflict were associated with productive reactions such as learning from conflict and settling disagreements. Increasing conflict also increases emotionality, which might impair the differentiation and integration mechanisms. However, the slight increase in GCC after the inflection point might be attributed to the fact that high levels of conflict are associated with a longer duration of arguments, which Ayoko et al. (2008) argue that it gives an opportunity to the team members for conflict reappraisal. This might offer them the chance to change focus from the emotional aspects (which they don't know how to manage) to cognitive aspects, which in turn will positively influence their GCC

For high levels of CEI, the visual inspection shows a slight shape flip tendency for an inversed U-shape, even though it was not statistically significant. It might be the case that including only ad-hoc groups in the research sample has allowed us to observe only the effects of low levels of CEI, whereas high CEI was less likely to emerge, which impacted our moderation analysis. Future research could try to disentangle these results by manipulating the level of CEI in each group and observe the impact it has on team processes and outcomes. This could be achieved by designing an intervention in the form of a gaming simulation which aims at teaching group members specific behaviors and norms related to the awareness and management of affective states, and follow up the impact of transferring those behaviors in team work contexts.

The third hypothesis stating that GCC mediates the relationship between task conflict and team creativity was not supported by the data. One possible explanation for these results might be indeed that other mechanisms carry on the effect of task conflict on team creativity and not GCC. For example, even though experiencing task conflict is associated with the group using many richly and differently interconnected concepts in order to represent a specific domain, this complex cognitive representation might not be further translated into a creative output unless the group perceives the requirement of creativity. A study conducted by Gilson and Shalley (2004) has argued that the perceived expectation for creativity seems to translate into more active engagement in the creative processes. An alternative explanation for the lack of empirical support for the mediation hypothesis is the reduced power of the study due to the small sample size, which is also a limitation of this study.

Limitations and future research

Aside from potential contributions, a limitation of this study is the student sample used. Hence, caution is recommended in generalizing the results to established teams working in organizations. Furthermore, we used a cross-sectional design and thus we cannot draw causal inferences for the relationships found, even though the tasks used for measuring our variables were separated in time, which could help determine the direction of their association. Future studies could attempt to use longitudinal designs and experience sampling methods (Bloger & Laurenceau, 2013) in order to examine the relationship between conflict and creativity. It might be interesting to see what happens with long established teams who work in creativity-required contexts in terms of daily interactions and norms for managing

their affective dynamics, as well as if there are any patterns emerging depending on the stage of the project they are working on.

Another possible limitation might be the way we measured the level of task conflict by aggregating the individual responses. It might be the case that when team members were asked to evaluate the level of task conflict at the group level, they thought about the disagreements they had with each member and computed an average score or maybe thought that only two members of the group shared different opinions and evaluated that with a low score, so that their perceptions might influence the accuracy of the measurements. Future research might investigate other methods for evaluating these team level variables like the use of external coders who could count each of the disagreements expressed, as well as the number of members involved in order to better illustrate the level of conflict.

Contributions and practical implications

Our study answers the call for more research in the field of team creativity and innovation that focuses on contingency models and potential curvilinear effects within processes and outcomes (Hulsheger et al., 2009). The results of one study (Curșeu et al., 2012) in the literature that examined the linear positive relationship between task conflict and GCC have only reached marginal statistical significance. We contribute to the literature by specifying a nonlinear association between task conflict and GCC and obtaining support for a U shaped curve that illustrates it.

One of the methodological contributions of our study is the use of a method to code the creative output of the groups that uses independent raters, instead of relying on self-ratings of the dependent variable. The latter approach is still heavily used in many published studies in the field of creativity and innovation research, despite the evidence that it has inherent shortcomings such as common method bias, percept-percept inflation, and construct validity concerns (Anderson et al., 2014; Potočnik & Anderson, 2012). Moreover, since our study is a team level study, we analyzed creativity through a team level measure (Costa et al., 2013).

Our study might have as well important practical contributions for teams that are working in environments where the handling of complex knowledge and information is a requirement for effectiveness. Team leaders and managers could try to stimulate increased levels of task conflict in order to help the team construct a complex cognitive representation, which can be especially useful at early stages, prior to task performance (Farh et al., 2010). This could be done by normative interventions at the team level or delegation of specific roles, which different team members could assume by rotation in order to stimulate the sharing of different viewpoints. However, if the team is newly formed and their level of CEI is reduced, keeping task conflict at low levels might be more beneficial to their cognitive outputs.

Moreover, the use of a mind mapping technique might help them achieve better integration, facilitate the understanding of ideas, and align their strategy by combining this visual organizer with schema-enriched communication (Rentsch et al., 2010). Mind mapping might come in handy as a way of diminishing the cognitive load associated with high levels of conflict. This particular strategy might also be useful for international or virtual teams in order to paint a complex image of the situation before engaging in decision processes or lead to a shared knowledge common ground. Even though the results of our mediation analysis did not reach statistical significance, stimulating task conflict in order to generate a large pool of ideas and using a graphic organizer to integrate them into a complex representation, might help a team come up with a creative output in a climate supportive for creativity with valued participative problem solving and shared goals (Gilson & Shalley, 2004).

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RESEARCH ARTICLE

Job demands when exhausted: the relationship between exhaustion and the perception of job demands mediated by self-undermining

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Abstract

There is a large body of literature devoted to factors that shape performance in organizations. Although much of this literature focuses on the relationships between job demands, job resources and performance, Bakker and his colleagues (2014; 2018) have recently drawn attention to self-undermining effects that can add support for a deeper understanding of such a relationship. The following contribution explores self-undermining related to exhaustion at work and its mediating role in the perception of three types of job demands in a sample of employees working in IT companies. More specifically, the paper draws on the concept of self-undermining to reflect on how it activates a loss cycle of job demands and potential negative reactions at work. We argue that (i) exhaustion has an indirect effect on the perception of job demands through self-undermining; and so on referring to each dimension of job demands: (ii) exhaustion has an indirect effect on the perception of workload through self-undermining; (iii) exhaustion has an indirect effect on the emotional load through self-undermining; (iv) exhaustion has an indirect effect on the cognitive load through self-undermining. In order to test the hypotheses, a cross-sectional design was employed. The regression analyses revealed that self-undermining mediated the relationship between exhaustion and the perception of workload meeting our expectations, and a significant indirect effect of exhaustion on the perception of job demands and emotional load. However, there is a need for future studies to generalize the results. Finally, theoretical and practical implications are discussed.

Keywords

self-undermining; perception of job demands; exhaustion; perceived workload; IT employees

Over the previous decades, researchers and practitioners have committed vast amounts of time and resources into addressing the factors and challenges associated with the job performance and the quality of working life in a dynamic, complex, and competitive environment. The software industry constitutes a significant component of the global economy that has become increasingly fast-paced in recent years (Fitzgerald & Stol, 2017). Changes like rapid technological developments, fast market dynamics, a growing variety of data sources, and increasing needs for enterprise software to span multiple domains of business oblige software companies to thoroughly evaluate the working conditions, continuously support their workforce, redefine development processes and roles to face the altering conditions, and to facilitate the ongoing acquisition of new skills (Fosso Wamba et al., 2017). Such complex and fast changes add more job demands for the employees in software companies who might suffer from

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increased stress and work exhaustion (Venkatesh et al., 2018). While work exhaustion in software developers accounts for more than 30% of all technical development errors besides other negative results (Furuyama et al., 1997), the importance of exploring its correlates becomes imperative. Considering that employees in the software industry have specific job demands dealing with high responsibility and new knowledge in their daily professional duties, we aim to further explore the relationship between exhaustion and the perception of job demands by including self-undermining.

The concept of self-undermining emerged in professional and occupational contexts as a "behavior that creates obstacles that may weaken performance" (p. 115, Bakker & Costa, 2014). Self-undermining is caused by job stress and consists of behaviors such as poor communication, mistakes, and conflicts at the workplace. The concept was included into the Job Demands–Resources (JD-R) model (Bakker & Demerouti, 2007) by Bakker and Costa (2014), who suggested that self-undermining mediates the relationship between exhaustion and job demands. Besides these, it is widely acknowledged that job strain is caused by job demands and the lack of job resources and employees who experience job strain perceive and create more job demands over time (Demerouti et al., 2014; Vohs & Faber, 2007). In the same manner, the researchers suggested that employees who engage in self-undermining most likely experience high levels of job strain, because they communicate poorly, make more mistakes and create more conflicts and thus increase their job demands unwillingly (Bakker & Yang, 2019).

While past research draws attention to self-undermining by clarifying the concept, the potential connections between self-undermining and other factors have not yet been fully studied, especially the mediating role of self-undermining in the relationship between exhaustion and job demands, as they are presented in the Job Demands-Resources Model (Bakker & Demerouti, 2018). The main aim of this paper is to broaden our understanding of the relationship between self-undermining and the already established one between job demands and exhaustion.

More specifically, the objective of this paper is to tackle the mediation role of self-undermining in the relationship between exhaustion and the perception of job demands in a sample of employees working in software industry. To address the objective, we rely on the Job Demands-Resources Model as proposed by Bakker and Demerouti (2018). We follow Bakker and Demerouti's prediction that there are two independent processes in this model: a process of health impairment and a motivational one. Therefore, although workplace resources are the most important predictors of engagement, motivation, and well-being (Bakker, et al., 2007) through mediators such as job crafting, workplace demands are generally the best predictors of exhaustion, health problems, burnout (Bakker et al., 2003; Hakanen, et al., 2005) and the relationship could be mediated by self-undermining. Moreover, the literature (Bakker et al., 2014) suggests that the behavior of self-undermining could act as a catalyst for a spiral of losses by facilitating demands and efforts and could be considered the link between demands and exhaustion in the process of health impairment.

Thus, understanding the vicious cycle between exhaustion and job demands might mitigate well-known individual and organizational outcomes (e.g., work performance, turnover intentions or sick leave) and might offer a means to positively influence exhausted employees. A scientific understanding of the role of self-undermining in connection with exhaustion and job demands perceived by the employees could, in the future, help researchers find better ways of counteracting their negative effects on employee well-being and performance.

A further aim of this study is to explore the relationship between self-undermining and different types of job demands. By identifying differences in such relationships, this paper addresses a current gap in job demands research which suggests considering a more analytical approach. To address this gap, our goal aims at exploring the way self-undermining relates to different types of perceived job demands in exhausted

employees. Besides, we will explore how different types of job demands are indirectly predicted by exhaustion through self-undermining. We will first provide the relevant theoretical background and describe the current state of research on job demands, exhaustion, and self-undermining. Second, based on these foundations, we develop the hypotheses concerning the relationships between exhaustion, perception of job demands, and self-undermining.

Job Demands

Job demands are defined as "those physical, social, or organizational aspects of the job that require sustained physical and/or psychological effort on the part of the employee, and are therefore associated with certain physiological and/or psychological costs" (Demerouti et al., 2001, p. 501). A specific interest in job demands has been shown by the scholars in the field of job stress who also started incorporating job resources into their models, in order to examine the impact of the job demands in relationship with job resources on organizational outcomes. To better framing the concept of job demands, we have documented the most impactful theories or models on job demands – job resources in organizational psychology, namely Michigan Model (Caplan et al.,1980), the demand-control model (Karasek, 1979: Karasek & Theorell, 1999), and Job Demands–Resources (JD-R) theory (Demerouti et al., 2001).

First, the Michigan Model (Caplan et al., 1980), for example, has suggested that objective job demands (e.g., role ambiguity, role conflict, job insecurity, workload) are subjectively perceived by employees and indirectly lead to mental and physical health complaints. The mentioned relationship was expected to be moderated by neuroticism and social support such that individuals more emotionally stable and with a stronger social network experience fewer health complaint in response to high job demands.

Second, the demand-control model (Karasek, 1979) has posited that job demands particularly lead to job strain and health complaints when job control (or decision latitude; i.e. a combination of autonomy, variety, and skill use) is low. Thus, job control becomes the most important job resource and is expected to buffer the impact of job demands. Karasek and Theorell (1990) expanded the demand-control model by including a second job resource—social support—that can also help in dealing with high job demands. Evidence for those models are rather mixed (De Lange et al., 2003).

Third, Job Demands–Resources (JD-R) theory (Demerouti et al., 2001) builds on and expands these earlier models in suggesting that many different job resources and job demands could and should be considered, as all organizations and jobs may have unique, distinctive job characteristics. While previous models propose a predefined set of job characteristics to predict job stress and motivation, JD-R theory is more flexible and can accommodate various specific job demands and job resources.

The well-known Job Demands-Resources Model (Bakker et al., 2011) argues that, regardless of the type of organization, work can be divided into two broad categories - demands and resources - thus offering a theoretical framework in which the two, together with various psychological states and effects can be associated (Bakker & Demerouti, 2017). Job demands consists of characteristics of the working environment that require physical, cognitive, and emotional energy and that incur costs to the individual. Job resources are the physical, psychological, social, or organizational aspects of the job that are functional in achieving work goals and stimulate personal growth, learning, and development (Demerouti et al., 2001; Bakker & Demerouti, 2017). While job demands are the most important causes of a health-impairment process leading to job strain, job resources are seen as the most important causes of a motivational process leading to work engagement (Bakker & Demerouti, 2017).

Another aspect the JD-R model brings is the multidimensional nature of job resources and job demands. These resources and demands include emotional, cognitive, and physical components. Consequently, job demands can be divided into three dimensions: workload, cognitive load and emotional load. Examples of job demands may be work pressure, unfavorable work environment, extended work hours, etc. However, all these

do not necessarily have negative effects, but can turn into stressors when the employees fail to employ work recovery activities suitable for the effort made (Demerouti & Bakker, 2011). Scholars have pointed out that the emotional demands have not traditionally valued as high as cognitive and/or technical demands. For instance, wages and cognitive demands are linearly related, whereas wages and physical demands are curvilinearly related (with compensation rates higher at more extreme levels of physical demands). Wages and emotional demands have been shown to be unrelated (Glomb et al., 2004).

In order to clarify the role of these demands, LePine et al. (2005) have mentioned other two categories: challenging demands and hindrance demands. Challenging stressors (eg. high workload, pressure, increased responsibility) promote personal development and employee achievement (Podsakoff et al., 2007). Moreover, despite the discomfort involved, they are seen as "beneficial stressors" that bring positive work experiences. On the other hand, hindrance stressors (e.g. role conflict, role overload or role ambiguity) inhibit individuals in achieving their goals and are thus characterized as "unfavorable stressors" (Cavanough et. al, 2000).

In addition to the analytical approach of the job demands, the nature of job demands is thought to depend on varying individual evaluations, which can be modified by work-related boundary conditions such as the amount of social support and job control (Gerich & Weber, 2020). As we have already specified, Bakker and Demerouti (2018) included exhaustion and self-undermining as predictors of perception of various job demands.

Exhaustion at work

Exhaustion is mostly studied as a dimension of the burnout syndrome, which, in turn, has been recently accepted as a legitimate medical diagnosis, according to the International Classification of Diseases, or the ICD-11, the World Health Organization's handbook that guides medical providers in diagnosing diseases.

The Job Demands-Resources Model specifies that the level of exhaustion / burnout can affect the demands of employees at the workplace, through the context of reversed causal relationships. For example, some studies have argued the predictive effect of employee exhaustion or burnout on demands (Bakker et al., 2000; Demerouti et al., 2004; Zapf et al., 1996). This effect can be explained by the fact that employees who experience a low level of engagement behave in ways that generates even more demands, thus increasing the level of stress and problematic interactions (Demerouti et al., 2009). We argue that this causal effect is mediated by the newly integrated concept in the Job Demands-Resources Model: self-undermining (Bakker & Costa, 2014; Bakker & Demerouti, 2018).

The second assumption of the model is that work environments can cause two types of psychological processes: motivational and of health impairment. The first process starts from a high level of resources and stimulates the increase of the commitment to work, as well as the decrease of the level of cynicism towards the work (Demerouti & Bakker, 2011). In contrast, the process of health impairment starts from a high level of demands and depletes the energy resources of the employees, thus stimulating fatigue, exhaustion, and health problems (Hakanen et al., 2006). According to the first two assumptions, the optimization of the levels of resources and demands in the workplace for employees could stimulate the development of the organizational commitment, and later, increase the performance.

It is also important to note that, although the predictive relationship between job demands and exhaustion is already known (Bakker & Demerouti, 2007; Demerouti et al., 2001; Lee & Ashforth, 1996), exhaustion or burnout can also have a negative effect on demands over time (Bakker et al., 2000; Demerouti et al., 2004; Zapf et al.1996). A possible explanation for such an inverse effect is that the already exhausted employees begin to engage in behaviors that increase their demands, staying behind with work or often making mistakes (Demerouti et al., 2004). Hereinafter, the role of self-undermining behaviors in exhausted employee could be as

a facilitator of demands this inversed causal effect.

Self-Undermining

According to previous research (Demerouti et al., 2004; Schaufeli et al., 2009; Ten Brummelhuis et al., 2011), employees that show low engagement, therefore an increased risk of burnout, get to create more demands in their role. When they become exhausted and develop an aversion or cynicism towards their work, individuals put less effort and attention into their tasks and become prone to mistakes, which ultimately predicts poor performance and accumulation of demands in the workplace.

This dysfunctional behavior of the employees was captured in the form of the concept of self-undermining. The concept, though similar, is different from "self-handicapping" because the latter is characterized by a defensive behavior against obstacles or a strategy used by individuals to protect their self-esteem in the face of failure (Jones & Berglas, 1978). Therefore, a person shows the behavior of "self-handicapping" by creating obstacles in the face of achievement (ex: procrastination) and when failure occurs he attributes it to the obstacles and not to personal characteristics or efforts (ex: intelligence, perseverance, abilities, etc.).

It is also important to note that self-undermining is not a personality trait and cannot be included in personality models because the concept may change depending on the situation and consequences (e.g. fatigue level). Personality models such as Big Five (Digman, 1990) proposes certain characteristics that remain similar in a wide variety of situations (for example, individuals with a high level of Neuroticism will tend to perceive negative experiences and be irritable both in work-related situations, as well as in other areas of life). Bakker and Costa (2014) argued that the term self-undermining should be reserved for those behaviors that "create obstacles which could weaken performance" (p. 115) such as lack of effective communication, the creation of frequent mistakes, conflict creation and failure to perform tasks.

According to the Job Demands-Resources Model, engaged employees exhibit proactive behavior in creating challenging resources and demands, behavior that has been conceptualized as job crafting. In contrast, employees who are exposed to a high level of job demands become exhausted and end up creating hindrance demands through self-undermining (Bakker et al., 2014). This behavior thus becomes the catalyst for a dysfunctional cycle of losses for the employee, both by facilitating new hindrance demands and by increasing the efforts made that ultimately predispose the individual to exhaustion or burnout (Bakker et. al, 2014).

Another mention concerns the correlation between self-undermining and the concepts of interest in this study. According to the proposed model in the previous research, self-undermining is positively correlated with and even predicts job demands and also positively correlated with exhaustion and burnout (Bakker et al., 2014).

Thus, we can conclude that self-undermining is not a belief, but behaviors manifested at work that could be targeted through organizational interventions. The literature (Bakker & Costa, 2014; Bakker & Demerouti, 2018) suggests that while job crafting is the link between resources and engagement in the motivational process of the Job Demands-Resources Model, self-undermining might be the link between the perception of demands and exhaustion in the process of health impairment, leading to higher job demands in a loss cycle.

In sum, based on the theoretical and previous empirical research, we expect that:

Hypothesis 1. Exhaustion positively relates to the perception of job demands.

Hypothesis 2. Exhaustion positively predicts self-undermining.

Hypothesis 3a. Self-undermining is a positive mediator between exhaustion and the perception of job demands.

Hypothesis 3b. Self-undermining is a positive mediator between exhaustion and different types of the job demands: (H3b1) the perception of workload, (H3b2) emotional load and (H3b3) cognitive load.

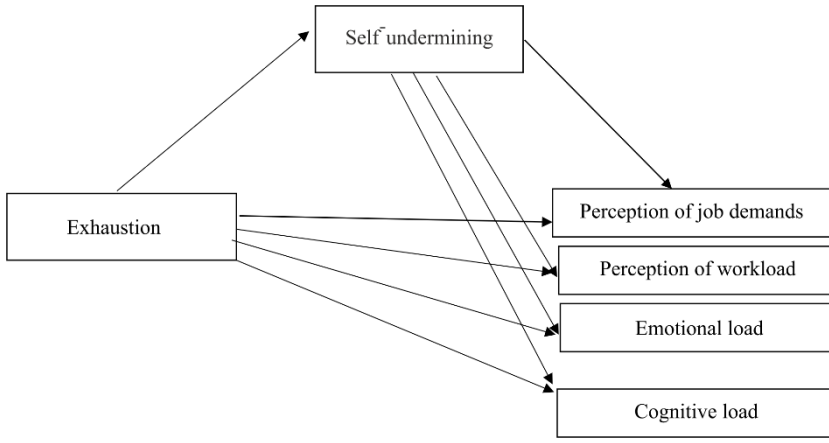

Figure 1. *The overall model*

Method

Sample

We invited two large IT companies to participate in our research project. We offered the opportunity to receive feedback to encourage participation. The study was conducted in a single stage. The authors contacted the management teams of the companies to present the potential benefits of participation and to get the official approval. Once the approval was received, the questionnaire was set up on an online survey platform. The link was sent to 210 individuals working in different departments (Human Resources, Facility Department, IT Support, Financial, etc.). Participants were informed through a letter that accompanied the questionnaire, that the information provided would be treated confidentially, trying to reduce the response distortion. Data collection was run according to the instructions provided by the APA (American Psychological Association), so the participation in the study was voluntary and the respondents did not receive any monetary compensation for their participation.

The final sample for this study consisted of 96 participants (N = 96) with a response rate of 46%. The respondents were 59% female and 41% male. The age distribution was as follows: 20-24 years (28%), 25-29 years (44%), 30-34 years (19%), 35-39 years (3%), 40-44 years (5%), 45-49 years (0%), 50-54 years (1%). 18 % out of the full sample hold leadership position. A percentage of 74% have between 0-3 years of seniority in the organization, 15% have between 3-5 years of seniority in the organization, and 12% have been working in the company for over 5 years. The average seniority in the organization was around 3 years. Most employees worked on a full-time contract. Those working on a part-time contract (6 hours/day) were either students or parents.

The participants reported their multiple membership, as well. The organizations involved in the study offer project-based work. The duration of the projects varies on the type of the relationship with the customers, starting from 3-6 months up to 10-20 years. The projects are often organized based on the SCRUM methodology so that the employees can be part of one or more teams for a specific time. According to the respondents, 71% were members of a single team in the organization and 29% were part of 2 or more teams. 28% of the participants have worked in the same team for 0-9 months, 49% for 1-3 years and 19% have worked in the same team for over 3 years. The changes from one team to another are part of the dynamism of the organizations and most of the time they are even preferred by the employees in order to develop the programming or testing skills.

Instruments

Self-undermining was measured using the scale developed by Bakker & Wang (2019). The scale measures the frequency of dysfunctional behaviors that employees exert at work and impede their development. Examples of items used are: "I make mistakes at work", "I admit that I trigger stress at work" and "At work, I put others in trouble when I communicate with them". Each item required a response on a 5-point Likert-type scale ranging from 1 (never) to 5 (very often). According to Bakker & Wang (2019), this scale demonstrated a high convergent, divergent and predictive validity. The scale comprised six items that had high inter-item reliability ($\alpha = .73$) in the present study.

Exhaustion was evaluated as energy depletion and was assessed using 3 items of the Utrecht Work Engagement Scale (Schaufeli et al., 2006) referring to vigour which, actually is considered the direct opposite of exhaustion (Maslach et al., 2001; Schaufeli & Bakker, 2004). Vigour is characterized by a high level of energy and resilience, a willingness to invest effort in work and persistence in the face of obstacles (Schaufeli et al., 2002), whereas exhaustion seen as energy depletions is represented by the opposite of those characteristics, such as very low levels of energy, lack of willingness to invest in work and giving up in the face of obstacles. Examples of items used are: "At work, I feel like I am bursting with energy", "At work, I feel strong and full of energy". Participants were kindly requested to respond to each statement using a 7-point answer format where 1 = never and 7 = always. Value of Cronbach's alpha for this scale exceed the value of .70 ($\alpha = .91$).

Perception of job demands were assessed using the Questionnaire on the Experience and Assessment of Work scale (van Veldhoven et al., 2005) and included the three dimensions of the concept: the perception of workload, emotional load and cognitive load. The first dimension – *perception of workload* – was measured by 11 items (ex: "I have to work at a very alert pace"), the second one – *emotional load* – using 6 items (ex: "My activity is emotionally difficult") and *the cognitive load* was assessed by 8 items (ex: "My professional activity requires a lot of concentration"). All items are scored on a 4-point frequency rating scale ranging from 1(never) to 4 (every day). The Cronbach alpha coefficients for the perception of workload subscale was .69, for emotional load subscale was .82, and for cognitive load subscale was .84.

Results

In line with our interests, all variables were assessed at the individual level. Because the data for all variables were collected from the same source, we performed a common method bias test by using Harman's single-factor test. Analyses revealed that only one factor emerged and that it explained only 24.22% of the variance, which is less than 50%, indicating that common method bias was not a problem in the current study.

Data analysis was performed primarily in SPSS 23 for data screening, means, standard deviations, Cronbach alpha coefficient, and bivariate correlations (Table 1). In order to test the mediations hypotheses, we have employed ordinary least squares regression method using PROCESS (Model 4) (Hayes, 2012) with the perception of job demands and each of type of job demands as the criterion, and exhaustion and self-undermining as predictors.

For the analysis of indirect effects, more and more research in this direction proposes the use of bootstrapping (Bollen & Stine, 1990; MacKinnon et al., 2000). The technique represents a resampling strategy for estimating and testing hypotheses. Within it, the sample is conceptualized as a pseudo-population, which represents a larger population from which the sample was extracted. Thus, it is allowed to assign the accurate measurements in terms of bias, variance, confidence intervals, error predictions, etc., to the sample estimates.

Table 1. *Means, standards deviations and bivariate correlations*

	M	SD	1	2	3	4	5	6	7
1. Age	27.88	5.66	1						
2. Gender	1.58	0.49	-.220*	1					
3. Exhaustion	3.41	1.13	.147	-.012	1				
4. Self-undermining	1.93	.48	.218*	-.134	.222*	1			
5. Perception of job demands	2.51	.36	.056	.040	.155	.454**	1		
6. Perception of workload	2.32	.39	.034	-.027	.268**	.540**	.854**	1	
7. Cognitive Load	3.24	.50	.120	-.030	-.038	.108	.722**	.442**	1
8. Emotional load	1.87	.59	-.036	.171	.110	.372**	.680**	.448**	.162

$N = 96$

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

The first hypothesis posits that exhaustion positively relates to the perception of job demands. According to the bivariate correlation analysis, the proximal association between exhaustion and the perception of the job demands is not statistically significant (r = .155, p = .13). Thus, the first hypothesis has not been supported by the data. Instead, the second hypothesis regarding the predictive relation between exhaustion and self-undermining was tested and the results showed that it was significant at a threshold of $p < 0.5$ (β = .10, t = 2.21, 95% CI [.01, .18], p < .05).

The third (a) hypothesis stated that self-undermining was a positive mediator in the relationship between exhaustion and the perception of job demands. According to JD-R theory, employees are active actors of their work by modeling the loss and gain cycles so that employees who are too strained by their job demands will become exhausted and will initiate a loss cycle (Bakker & Demerouti, 2018). Given that we have not found a statistically significant association between the exhaustion and the perception of job demands, we assumed that there was a distal effect and proceeded further to test the indirect effect. In this additional analysis, we have drawn on the theoretical logic rather than on the bivariate test of association between the predictor and the criterion (Shrout & Bolger, 2002). First, we tested the relationship between self-undermining and the perception of job demands and we did find that it was significant (β = .43, t = 5.87, 95% CI [.28, .57], p < .00). Second, the indirect effect of exhaustion on the perception of job demands through self-undermining was tested using bootstrap analysis. The results showed that the indirect effect was .03 with a 95% CI of [.01, .07], which partially supported hypothesis 3(a).

Hypothesis 3(b) regarding the different types of demands predicted by exhaustion through self-undermining was partially supported. The results of the first mediation analysis in which the variables perceived workload (hypothesis 3(b1)), exhaustion and self-undermining were included indicated that exhaustion is a significant predictor for the perceived workload (β = .09, t = 2.66, 95% CI [.02, .17], p <.05). Also, exhaustion predicted self-undermining (β = .10, t = 2.21, 95% CI [.01, .18], p <.05)), and self-undermining predicted the perception of workload (β = .43, t = 5.87, 95% CI [.28, .57], p <.001. Finally, the mediation analysis showed that self-undermining totally mediated the relationship between exhaustion and perception of workload, age being included as a control variable (R^2 = .33, F(3,92) = 14.17, p < .001). The bootstrapping analysis revealed an indirect effect of .04 with a 95% CI of [.01, .09].

In what concerns the perception of emotional load (hypothesis 3(b2)), we found significant only the indirect effect. Self-undermining predicted emotional load (β = .45, t = 3.71, 95% CI [.21, .69], p <.001) and exhaustion had the indirect effect on emotional load with value of .04 with a 95% CI of [.01, .09]. The last mediation analysis in which the variables cognitive load (hypothesis 3(b3)), exhaustion and self-undermining were included indicated that exhaustion is not a significant predictor for the cognitive load (β = -.02, t = -.36, 95% CI [-.11, .08], p > .05). Moreover, the relationship is negative. The analysis showed that neither the relationship between the mediator and the outcome is significant, so in this relationship self-undermining does not predict cognitive load alone (β =.13, t=1.16, 95% CI [-.09, .35], p = ns). Therefore, no effect of exhaustion on the outcome cognitive load seems to be direct or mediated, so that we consider that hypothesis 3(b) is not statistically supported by data.

Discussion

The aim of this study was to investigate the role of self-undermining in the relationship between exhaustion and the perception of job demands in a sample of employees in software industry. Our study brings empirical support for and extends the research on the reverse relationship between exhaustion and job demands, a relationship advanced by Bakker & Demerouti (2018).

We chose to collect the data from a specific group of participants working in two software companies assuming that the level of exhaustion in IT employees was high. Actually, it is widely accepted that working in technology industry exhausts the engineers and other employees in the field who need to achieve goals, to solve issues, to catch deadlines, to learn new technologies really fast (Kim & Wright, 2007).

The results of the study showed that self-undermining did not mediate the relationship between exhaustion and the perception of job demands as a global concept. So that, based on the theoretical model we have documented before, we further explored the potential distal relationship between exhaustion and the perception of job demands and we did find a significant indirect effect. The nonsignificant relationship might be attributed to the characteristics of the sample or suppression process (Shrout & Bolger, 2002). Such suppression factors can be task-related and organizational characteristics as boundary conditions that affect how employees appraise specific job demands (Gerich & Weber, 2020).

Most studies based on the JD-R model have reported on job demands as a global concept. Therefore, we built on a multidimensional approach of job demands beyond the other indicators like time pressure, and role ambiguity that have been studied before. The data provided different patterns in relationship with exhaustion and self-undermining.

Considering the self-undermining characteristic, the results revealed that it was significantly predicted by exhaustion, and furthermore it predicted the perception of job demands. This, therefore, supports the suggestion that there is a reverse relationship in understanding the perception of job demands (Bakker & Costa, 2014; Bakker & Demerouti, 2018). However, previous studies have not explicitly tested such a relationship. More specifically, the higher exhausted employees were, the more undermining behaviors they scored. In other words, while individuals are more likely to feel lack of energy and vigor, they may make more mistakes, worse communicate, initiate conflicts.

Based on the data, we also found support for the undermining effect concerning perception of workload and emotional load, as well. Both perception of workload and emotional load were positively and statistically significant predicted by self-undermining. But self-undermining did not predict cognitive load. Besides, the negative correlation, even nonsignificant with exhaustion suggested that at some level, exhausted employees did not pay too much attention to the cognitive dimension of the work. Of course, this is only a possible explanation that needs to be addressed in future research. However, a recent study (Moeller et al., 2018) has identified different profiles of highly engaged-exhausted and moderately engaged-exhausted employees.

This research adds to a growing body of research that has examined the JD-R model

but rather focuses on the new pattern of the model including self-undermining. The first theoretical contribution of the study consists in deepening the knowledge on the concept of self-undermining and its relationship with exhaustion and the perception of job demands in the workplace that has not been investigated so far. To date, the studies have addressed the issue of self-undermining and its relation to other concepts such as the prediction of the demands at the workplace (Bakker et al., 2014), the negative correlation with initiative and job crafting (Bakker et al., 2014; Hakanen et al., 2008), the negative correlation with commitment and high levels of performance (Crawford et al., 2010; Bakker et al., 2014).

Secondly, the present study furthers our knowledge of the relationship between exhaustion and the perception of job demands focusing on the reversed relationship Thus, these results partially support the theory of Bakker and Costa (2014), who argued that employees who have self-undermining behaviors such as lack of effective communication, frequent mistakes, conflict creation, and task failure create even more demands at the work-place, which in turn increase their level of exhaustion in the future. This behavior, however, remains of particular importance in the study of the loss spiral in which employees may fall when they become exhausted.

Thirdly, this research empirically addressed different types of job demands as they are perceived by the employees (Gerich & Weber, 2020). This could be extended in future research to examine other dimensions of job demands.

Finally, this research adds to the knowledge on perception of work characteristics by employees in software industry. Research into employees working in software industry has previously explored, for instance, the organizational context variables and job-related stressors as antecedents of work exhaustion and turnover intentions as consequences highlighting the importance of better understanding the working context, personal and organizational factors in IT professionals (Kim & Wright, 2007).

By pointing out the role of self-undermining, this paper offers opportunities for further expansion of JD-R theory, which have previously been inferred but not fully tested. For example, it would be interesting to longitudinally examine antecedents to perceived job demands by combining the self-report measurements with multisource data to detect more precisely causal relationships.

The results of this study offer organizations practical implications for designing interventions that consider individual differences in job demands, and exhaustion and self-undermining as well. As it has been shown that exhaustion and self-undermining can have negative effects on employee health, initiative, and performance (Bakker et al., 2014; Hakanen et al., 2008; Crawford et al., 2010). Therefore, increased attention paid to these aspects in organizations could prevent the loss of resources and could positively influence market sustainability and retention and prevent absenteeism. Drawn on JD-R theory, Bakker and Demerouti (2014) proposed an intervention model based on the target and level of intervention required. According to the model, at the individual level, job crafting interventions are needed to reduce job demands and improve job resources, and strength-based interventions are needed to improve personal resources. According to Bakker and Demerouti (2014), employees can proactively craft the job demands and job resources in the workplace. However, other personal characteristics, like exhaustion and self-undermining cannot be ignored. As the results of this study suggest, exhausted employees are likely to perceive more workload or emotional load. That why to spot those fatigued workers and to address the issue before it gets out of hand would prevent negative consequences. Also, at the organizational level, a variety of customized interventions for the employees should be provided, considering the differences in the profiles of the employees. More precise, tailored interventions could be designed for employees with high scores on exhaustion, perception of job demands, and self-undermining. Such an intervention could decrease the level of exhaustion the employee is experiencing, and in time, mitigate self-undermining behaviors. Moreover, organizations could provide counseling

services for employees who scored high on self-undermining behaviors. Developing an organizational culture that promotes open discussion of problems and solving them, together with the appropriate counseling services, could be the secret ingredient to getting out of the negative spiral between exhaustion, self-undermining, and high job demands. Also, a structured recognition program for employees who invest in their development and well-being could encourage such actions.

Limitations and future directions

The present study showed some promising results regarding concepts such as exhaustion, self-undermining and the perception of job demands. However, these results must be interpreted given certain limitations. The first limitation concerns the cross-sectional design to estimate and predict certain outcomes which does not allow us to draw conclusions about causal relationships. In order to check the spiral of losses between exhaustion, self-undermining, and demands, at least 3 measurements should be performed at different times (Salanova, et al., 2010), preferably within a longitudinal design.

Furthermore, the data were collected based on self-report, so they were not completely objective, which may have influenced the magnitude of relationships between the study variables. Although most studies focus on self-reports, certain variables can be evaluated by other measures, using, for example interview, feedback from the team, the manager to report on self-undermining behaviors.

Also, the study was based on a fairly homogeneous sample because all the respondents were undergraduates, the average seniority in organizations was 3 years, and the proportion of the ages was mainly between 20-29 years (72%). All these characteristics could affect how they perceived job demands or how much they experienced self-undermining behaviors. The fact that most of them are still undergraduate or master's degree students might have influenced the reported level of exhaustion and the perception of the workload.

The sample size can be considered an additional limit because the response rate was 46%, and the final sample was rather small. Using a larger sample, future studies could focus on testing the integrated Job Demands-Resources Model (Demerouti et al., 2001), which incorporates both the direct predictive relationships between resources and commitment, demands and exhaustion, the moderating effects of resources and demands but also the mediating effects of the concepts of job crafting and self-undermining.

Despite the limitations, the main contributions of the study consist in deepening the knowledge on the concept of self-undermining and its relationships with exhaustion and the perception of job demands. Although the results partially support the hypotheses formulated, we can consider that self-undermining remains of great importance in the study of the loss spiral that employees fall into and the study can be seen as a first step in researching these relationships.

The added value and the empirical data could inspire the people in the organizations as a point to invest in the well-being of the employees and to promote breaks or trainings of work recovery, optimization of the resources and demands of the employees or implementation of job crafting/elimination of self -undermining. However, to be able to generalize these results, it would be advisable for future endeavors to incorporate these studies into longitudinal designs, based on larger samples.

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RESEARCH ARTICLE

The role of Dark Triad on the link between Emotional Labor and Core Burnout

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Abstract

This study investigates whether the Dark Triad personality traits could be potential moderators of the relationship between the emotional labor and core burnout. The nonexperimental, cross-sectional study was based on a sample of 158 participants from different fields of activity. The results show that only narcissism (at medium and high scores) acts weakly as a moderator for the positive relation between emotional labor and burnout and, contrary to our hypothesis, it buffers the negative effects of emotional labor. These results can be explained in terms of Narcissism' conceptualization and are consistent with the newest proposed distinction form the literature between adaptive and maladaptive nature of this trait. Meanwhile the effects of the other moderators are insignificant. The results highlight both the importance of the emotional factor at work and the role of Dark Triad personality factors for core burnout.

Keywords

emotional labor, Dark Triad, narcissism, Machiavellianism, psychopathy, core burnout

Numerous theoretical frameworks such as Multidimensional Burnout Theory (Maslach & Jackson, 1981) or Holchschild's perspective (Hochschild, 1983) have outlined the relationship between emotional labor and the level of burnout. Although emotional exhaustion underlies the concept of burnout, the literature has rarely considered that the demands associated with emotional labor can be predictors of burnout (Brotheridge & Grandey, 2002). Also, Grandey (2000) found that specific explanatory mechanisms have not been defined in terms of understanding the relationship between emotional labor and chronic stress outcomes, such as burnout. The author claims that previous studies did not describe briefly and concretely the concept of emotional labor, in this way there is an ambiguity about the nature of the concept's definition.

Based on this observation, this paper draws on the Job Demands-Resources (JD-R) Model (Bakker & Demerouti, 2007; Bakker & Demerouti, 2017) and analyzes the relationship between emotional labor and the burnout of employees in the workplace. Furthermore, although various factors have been proposed as moderators of the relationship between emotional labor and burnout, most of them were organizational,

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ignoring the role of individual differences. As such, our second objective is to investigate the moderating effect of the narrow personality traits, namely the Dark Triad, in the relationship between emotional labor and burnout.

Burnout as a criterion – conceptualization

In the past, the workplace was considered to be a rational environment, while the emotional dimension was not taken into account (Grandey, 2000). Currently, the researchers in this field highlight the importance of the emotional factor in the workplace, and especially the effects that emotions and feelings have on the organizational outcomes, including the level of employees' burnout (Hülsheger & Schewe, 2011).

Burnout manifests itself as depression, feeling of failure, fatigue or lack of motivation, and is linked to negative consequences in both the organizational and personal life (Bakker, Van Der Zee, Lewig, & Dollard, 2006). Burnout is systematically related to physiological and affective manifestations. For example, exhausted employees may have difficulty in concentrating and making decisions and may report having memory and attention problems. Physically, they experience mostly sleep disorders and constant fatigue (McCormack & Cotter, 2013). Moreover, it seems that burnout is correlated with distress, physical exhaustion, insomnia, increased alcohol and/or drug consumption and marital or family problems (Maslach & Jackson, 1981; Salvagioni et al., 2017). Burnout is also associated with changes in behavior, thinking, sentimental and health status. In connection with the social and professional activity, employees with a high level of burnout can distance themselves from the people they work with, reduce their involvement in social activities, spend less time on and invest less energy in their work. They may experience frustration, anger, guilt, disappointment and a lack of interest in the work they initially enjoyed.

As organizational consequences, other researchers have associated burnout with important outcomes such as poor performance, turnover (Wright & Cropanzano, 1998), absenteeism (Salvagioni et al., 2017) and effects on the organizational climate through contagion (Verbeke, 1997).

Considering the multiple and diverse effects of burnout, distinct antecedents were examined. The Job Demands-Resources (JD-R) model is the most widely used theoretical framework for integrating variables related to burnout such as its antecedents and consequences (Bakker & Demerouti, 2007). The antecedents of burnout are grouped into two categories, namely job demands (such as role conflict, workload, etc.) (Khedhaouria & Cucchi, 2019) and job resources (such as role clarity, social support, rewards, etc.) (Sabagh, Hall, & Saroyan, 2018; Bakker, Demerouti, & Verbeke, 2004). According to the JD-R model, job demands and job resources are defined as physical, psychological, social or organizational aspects in work context. Job demands require physical and psychological effort and may be a health impairment process that can lead to negative outcomes. Job resources stimulate personal development, reduce job demands and are helpful to achieve work goals (Bakker & Demerouti, 2017). The presence of job demands and the absence of job resources are associated with a high level of burnout (Rattrie, Kittler, & Paul, 2019), while the presence of job resources is associated with work involvement and motivation (Bakker & Demerouti, 2007; Chen & Chen, 2012).

According to Maslach and Jackson's (1981) burnout is conceptualized as a tripartite stress syndrome, the three dimensions being represented by emotional exhaustion, depersonalization, which appears in response to chronic stressors in the work context and leads to a lack of personal, and reduced professional achievement, the third dimension of burnout. The first dimension is emotional exhaustion, the most common symptom among employees. Prolonged stress and excessive demands on the workplace can result in developing emotional exhaustion (Leiter, Maslach, & Frame, 2015). Depersonalization is the second dimension, labeled by other authors as cynicism or a feeling of inefficiency. This refers to careless attitudes towards others (Fernet, Guay, & Senécal, 2004). Personal achievement is the

last dimension of burnout. This implies a negative self-evaluation and a negative, reduced perception of competence and performance (Maslach & Jackson, 1981).

The researchers' approaches were different in terms of burnout's conceptualization. Some authors used all three modified or extended components of burnout, while other researchers used only emotional exhaustion and depersonalization in their investigations. Also, many authors have resorted to a one-dimensional approach of burnout conceptualization, preserving only the emotional exhaustion, the basic component of burnout (Kristensen et al., 2005). The one-dimensional approach is extensively used in others researches (Bekker et al., 2005). The main arguments of using only the emotional exhaustion in this research are related to the inherent criticisms associated with the two other components. Depersonalization and lack of personal achievement were rather considered coping strategies than components of burnout.

Starting from these observations and taking into consideration previous investigations, the present study focuses on the core component, namely emotional exhaustion. Another reason why we chose this conceptualization is because previous studies show that emotional demands (the antecedent investigated) are more often related to emotional exhaustion than to depersonalization and personal achievement.

The relationship between emotional labor and core burnout-emotional exhaustion

The emotional effort invested by the employee in the work context is described in the scientific literature in terms of emotional labor, usually referring to physiological arousal (including heart rate, blood pressure, skin electrodermal reaction, respiration and the role of hormones), and in terms of the cognitive assessment of the situation that accompanies the experience of emotions and stress, in general (Grandey, 2000). Employees' effort to display certain emotions that may be at odds with their own emotional state describes the concept of emotional labor and is discussed and analyzed in several theoretical frameworks (Hochschild, 1983; Ashforth & Humphrey, 1996; Morris & Feldman, 1996).

In a professional context, emotional labor represents an effort to adapt the emotional manifestations to the professional framework according to the expectations of the role that the employee has in the workplace. Whether experienced authentically or not, employees involved in emotional labor are required to express a set of expected emotions in the workplace and to suppress those that might be an obstacle to achieving work performance (Hochschild, 1983). As such, emotions are a part of the employee's role in the workplace.

Studies claim that the occupational categories that frequently engage in emotional labor are more exposed to burnout. Doctors, social workers, teachers, police officers and firefighters, for instance, are more likely to develop high levels of stress, given that the nature of their work is highly emotional and the fact that they are constrained by the related surroundings to hide the reality of their emotions when interacting with other people (Dudau & Brunetto, 2020). Kinman, Wray and Strange (2011) show that the emotional labor expressed by teachers during the educational activities was associated with a low level of students' sympathy for teachers and also with a high level of teachers' cynicism towards students. Significant positive correlations were observed between emotional labor and both emotional exhaustion (p = .44) and depersonalization (p = .44), and a negative association with job satisfaction (p = -.37).

The constant display of positive emotionality that is not felt by the employee, leads to a depletion of personal resources due to strain in the workplace. It also compromises and impedes the establishment of social relationships with clients and other co-workers and leads to an extended experience of negative emotions (Totterdell & Holman, 2003). Given these inconveniences associated with the required effort to maintain a positive attitude at the workplace, emotional labor could be considered a possible job demand (Grandey, 2000) and a predictor of burnout (Bakker & Heuven, 2006; Bhowmick & Mulla, 2016; Yun, Lee, & Mastracci, 2019; Näring, Briët, & Brouwers, 2006). Thus, the

current study integrates emotional labor as a job demand, which could be associated with a high level of burnout. According to studies, burnout which compromise employees' well-being and performance, is a consequence of emotional labor (Yun, Lee, & Mastracci, 2019; Yin, Huang, & Chen, 2019).

Therefore, in addition to the mentioned observations, emotional labor, as a job demand, can contribute to the health impairment process that leads to negative outcomes, such as burnout, according to the JD-R model.

Considering emotional labor, a job demand, more specifically a hindrance job demand, because the literature claims that this category of demands affects health and hinders the optimal functioning, we can assume that it is related to burnout. Accordingly, based on these arguments from recent literature, the current study launches the following hypothesis:

Hypothesis 1. Emotional labor is positively related to employees' burnout.

The moderating effect of Dark Triad

Various contingencies have been explored in order to gain a better understanding of how the relationship between emotional labor and its outcomes, such as burnout or job satisfaction, is influenced (Cheung, Tang, & Tang, 2011; Kinman, Wray, & Strange, 2011). The literature on burnout has focused more on organizational factors which may influence emotional exhaustion feelings in a certain direction (Kinman, Wray, & Strange, 2011).

As these contingent factors can diminish or intensify the negative outcomes of emotional labor, identifying them is important for both theoretical and practical reasons. Next to the other organizational level factors proposed as moderators in the literature, the individual differences such as personality traits may also act as a contingency in this relationship. The current study contributes to the literature, by exploring the moderating role of Dark Triad personality factors that can buffer or exacerbate the effects of emotional labor on burnout.

Bono and Vey (2007) described how personality would affect individual differences that play a role in choosing the emotion self-regulation strategy. The latter can lead to a possible negative outcome such as stress. The authors proposed the Theory of Trait-Behavior Congruence, which foresees that people who engage in activities that are congruent with their personality, may experience less stress. According to the theory, personality traits can an important role in buffering or intensifying stress in the workplace. So far, the Big Five personality factors (emotional instability, extraversion, openness to experience, agreeableness and conscientiousness) (Costa & McCrae, 2008) were investigated as potential moderators. Correlations were made between each dimension of the Big Five model and each component of burnout. Of the five factors, emotional instability is the strongest predictor of burnout, as it positively correlates with all three dimensions of the burnout syndrome. The other correlations between personality traits and burnout were moderate or weak and did not make a significant contribution to burnout (Swider & Zimmerman, 2010; Bakker, Van Der Zee, Lewig, & Dollard, 2006; Khedhaouria & Cucchi, 2019; Ebstrup, Eplov, Pisinger, & Jørgensen, 2011).

In contrast to the Big Five Model, the Dark Triad framework presents the negative aspects of human personality (Jonason & Middleton, 2015). While the literature examining the Dark Triad traits is abundant, few studies focus on the relationship between these traits and occupational health (Prusik & Szulawski, 2019). Current research provides compelling evidence for the association among the three components of the Dark Triad and burnout. High levels of narcissistic traits were positively associated with high levels of all dimensions of burnout (Schwarzkopf et al., 2016), and Machiavellianism and psychopathy were positively associated with emotional exhaustion and depersonalization (Johnson, Beehr, & O'Brien, 2015; Prusik & Szulawski, 2019). So far, Dark Triad facets have been analyzed only as antecedents of burnout, not as moderators (Paulhus & Williams, 2002). However, some arguments presented below can position Dark Triad factors as moderators.

Narcissism is associated with the feeling of grandiosity and superiority. People with a high level of narcissism have an egocentric lifestyle, a need for being admired and for strengthening

the ego from others, while overestimating their own abilities (Volmer, Koch, & Göritz, 2016; Jonason & Middleton, 2015). Narcissistic people can express feelings of anxiety and manifest divergences that arise from the lack of visibility in the social context. For this reason, narcissists make considerable efforts to make a good impression, which strengthens their self-esteem. From the desire to protect their self-esteem, they can display more socially acceptable emotions so as to obtain positive reactions or appreciations from those around them. Thus, they consume more resources by displaying strong emotional responses that are inconsistent with their mood, which can lead to exhaustion faster.

Hypothesis 2. Narcissism will moderate the relationship between emotional labor and burnout, in the sense that it will act as an exacerbator.

Defined as the manipulation and exploitation of others, Machiavellianism denotes pragmatic, misanthropic or even immoral beliefs (Jonason & Middleton, 2015). People with high levels of Machiavellianism pursue their goals such as power, status or competition (Rauthmann & Will, 2011), by using specific tactics such as deception, building alliances, adapting the situation on their behalf, lying, revenge or building reputation. . However, these tactics are not manifest. On the contrary, the employees with high levels of Machiavellianism display a lack of honesty or inconsistency between what they really feel and what they post. The lack of congruence between the felt emotions and those that are displayed can lead to burnout, consuming more resources.

Hypothesis 3. Machiavellianism will moderate the relationship between emotional labor and burnout, in the sense that it will act as an exacerbator.

Psychopathy includes characteristic elements such as high impulsivity, low empathy and fear, presenting a possible antisocial behavior. The lack of concern, guilt or regret for harming people around make up the profile of a person with high scores on psychopathy (Paulhus & Williams, 2002; Hare & Neumann, 2009). Every employee has the duty and responsibility to adapt to the norms and rules of the organization they are a part of, but people with a high level of psychopathy make a greater effort than the others, as they are more impulsive and have increased difficulty to adapt. Hence, the resources invested in impulse self-control can lead to burnout and a lower commitment at work (Prusik & Szulawski, 2019), psychopathy being in particular associated with a low level of awareness (Jonason & Middleton, 2015). Studies claim that neuroticism traits are reflected in psychopathy (Benning, Patrick, Hicks, Blonigen, & Krueger, 2003; Hicks, Markon, Patrick, Krueger, & Newman, 2004). Impulsivity, anxiety or anger, specific to neuroticism, were positively correlated with psychopathy (Ross, Lutz, & Bailley, 2004), being closely related to greater reactivity to stress and negative reactions to stressors in general too (Hicks et al., 2004). As well, the behavioral tendencies manifested by persons with high levels of psychopathy may contribute to increasing burnout (Johnson, Beehr, & O'Brien, 2015).

Hypothesis 4. Psychopathy will moderate the relationship between emotional labor and burnout, in the sense that it will act as an exacerbator.

Method

Research Design

This study is based on a non-experimental research model. The analyzed variables were emotional labor as an independent variable, burnout as a dependent variable and Dark Triad traits, considered moderating variables. This type of design follows the associations between variables and the way they influence each other in terms of intensity or buffer level, thus being suitable for studying the current research objectives. The research design was a cross-sectional one, where variables are investigated at a single moment, without controlling or manipulating the independent variable.

Procedure and participants

All the personal data of the participants were collected between November and December 2019, through a Google form addressed via an

on-line link only to people that had a job at the time of completing the questionnaire and who agreed with the processing of collected data for academic purpose. The participants were informed that they could withdraw from the research at any time and they were guaranteed the anonymity and confidentiality of the data they provided. The participants were given explicit instructions at the beginning of the questionnaire on how to go through each set of questions in the tool guide, as well as a brief description of the research carried out for academic purposes. In the first part of the form, the participants provided the requested demographic data, such as age, gender, last graduated studies, seniority at work and field of activity. The second part of the form requested the provision of information according to the research questions, with a total of 47 items and a completion time of approximately 7 minutes. In case there were any doubts or they wanted to withdraw from the study without any risk, an e-mail address was provided. No participant expressed a desire to withdraw from the research. All respondents were volunteers and did not receive incentives. The data provided by the participants were subsequently inserted into a database and statistically processed.

The target population of this study included the 158 (full-time or part-time) employees from private (36%) and public (64%) institutions from various sectors of activity (education, medicine, engineering, marketing, etc.) who work in Bucharest. Current research is based on a convenience sample. Of the 180 employees who were selected, 166 completed the on-line questionnaires sent through the access link. There is an overall response rate of 92%. Of the 166 questionnaires received, 8 were considered invalid (6 were incomplete and 2 were of low quality). After eliminating incomplete and low-quality questionnaires (for example, Z-form responses), a total of 158 questionnaires were considered usable. Of these 158 questionnaires, 52 were completed by men (32.5%) and 108 by women (67.5%), aged between 18 and 45 (M = 25.2; SD = 7.54). Of these, 9 people have post-university degree (5.6%), 66 have Bachelor's degree (41.3%) and 85 high school (53.1%). In terms of experience in the field of activity, 132 of the respondents have the experience of 1-5 years or less (82.5%), 11 of 5-10 years (6.9%) and 17 of 5-10 years or more (10.6%). A post hoc power analysis revealed that for the subsequent statistical analyses, the statistical power of the present study is .91.

Instruments

Burnout. Employees' burnout was assessed using the 9-item "The Maslach Burnout Inventory – Core Burnout", developed by Schaufeli, Leiter, Maslach and Jackson (1996). Examples of items include: "I feel emotionally drained from my work.", "Working all day is really a strain for me.". Participants were asked to rate their level of agreement on a 7-point Likert scale ranging from "Never" (1) to "Daily" (7). The Cronbach's Alpha for the scale was .91.

Emotional labor. Employees' emotional labor was measured using "Emotional Labor Scale (ELS)" (Brotheridge & Grandey, 2002) which consists of 11 items. Examples of items include: "Express intense emotions.", "Display many different kinds of emotions.". Participants were asked to rate their level of agreement on a 5-point Likert scale ranging from "„strong disagreement" (1) to "„strong agreement" (5). The Cronbach's Alpha for the scale was .83.

Dark Triad. Employee's personality traits were measured using "The Short Dark Triad (SD3)", developed by Jones and Paulhus (2014). The scale comprises three subscales, each containing 9 items. Examples of items include: Machiavellianism ("It's not wise to tell your secrets."; "I like to use clever manipulation to get my way."), narcissism ("People see me as a natural leader."; "I hate being the center of attention) and psychopathy ("I like to get revenge on authorities.", "Payback needs to be quick and nasty."). The Cronbach's Alpha for Machiavellianism scale was .84, for psychopathy was .75 and for narcissism was .64. In order to improve internal consistency (.78) for narcissism, 3 out of 9 items were deleted, as suggested by *If deleted items option* form SPSS. However, the deleted item decision was also based on the rationale of improving the theoretical structure of the scale. The current literature dedicated to narcissism's concept distinguishes between

adaptive and maladaptive narcissism. Maladaptive narcissism refers to a person's inflated self-view and a sense of exploitative entitlement, which is associated with high levels of manipulativeness, callousness and irresponsibility. At the same time, adaptive narcissism refers to a non-exploitative entitlement, described by, authority, positive work orientation and may reflect a stable sense of self-worth (Lessard, Greenberger, Chen, & Farruggia, 2011). According to a content analysis, 3 out of 9 items evaluate maladaptive narcissism and 5 items evaluate adaptive narcissism. Because 3 items were not enough to constitute a scale to represents maladaptive narcissism per se, we gave up on them. The 5-items solution, that evaluates adaptive narcissism, has been shown by factor analysis to be the most appropriate.

Results

Analytic Approach

We have followed the two-step model approach proposed by Kline (2010). First, we have tested the factorial validity of the instruments with confirmatory factor analyses (CFA) using the Jamovi Software (The Jamovi project, 2020). Then, we proceeded with testing the hypotheses, by doing a regression analyses in order to test moderation, by using the PROCESS macro in SPSS (Hayes, 2012) with 5000 bootstrapped samples. We tested the moderation hypotheses based on the significance of the interaction term and we used the Johnson-Neyman technique (Hayes, 2012) to identify the values of the moderating variable for which the relationship between independent and dependent variables showed a significant association. Predictors were mean centered before being. To rule out alternative explanations (Carlson & Wu, 2012), gender (0 = male, 1 = female) and age (in years) and job tenure (in months) were included as control variables.

Table 1 presents the descriptive statistics and the correlations between the study's variables.

To test the first hypothesis, emotional labor predicts core burnout (H1), we use a hierarchical linear regression. Multicollinearity between variables was low (Tolerance= 1.00; VIF = 1.00). Durbin-Watson tests for autocorrelation in residuals was also used. The obtained value was 2, indicates that there is no autocorrelation. It also met the assumption of non-zero variance. Results indicated that emotional labor predicts core burnout (ΔR^2 =.10, $F(1,158)$ = 19.12, p <.05).

Table 1. *Descriptive statistics and correlations for the variables in study*

Variables	*M*	*SD*	1	2	3	4	5	6	7	8
Gender	_	_	_							
Age	25.2	7.55	-.05							
Job Tenure (in months)	38.7	60.9	-0.8	.79***						
Core Burnout	26.7	13.01	.01	.08	-.03					
Emotional Labor	30.09	8.77	.04	.15	.18*	.32**				
Narcissism	14.49	5.56	.01	-23**	-.09	-02	.14			
Machiavellianism	27.1	8.21	-.12	.06	.08	.06	.37***	.29***		
Psychopathy	18.08	7.07	-.29***	-.00	.02	.08	.22**	.21**	.45***	_

Note. * p < .05, ** p < .01, *** p < .001.

As controlled variables, based on previous literature we inserted gender, age and job tenure. In this case, gender is negatively associated with psychopathy (r =. -.29, p<.01; females have a lower tendency), age relates negatively with narcissism (r =. -23, p<.01; older people tend to have lower scores on narcissism), with negative emotionality (r = -.10, p<.01; younger people have a higher tendency experiencing negative emotionality) and job tenure has a positive relationship with emotional labor (r = .18, p<.05).

As can be seen in Table 2, we found a significant effect of emotional labor and narcissism in predicting burnout (β =.06, ΔR^2 = .02, p < .001). The predictive value for the whole model regarding the explained variance of burnout is 16%. The Johnson-Neyman technique allowed us to identify the values of narcissism specifying the regions of significance for the core burnout; these values range between 0.31 and 1.12 and corresponded to the centered value of neuroticism between −3.57 and 10.88. Accordingly, 78% of the moderating effect of narcissism on the relationship between emotional labor and core burnout is above p<.05 (see Table 4). Only higher level (b= 0.75, t[158] = 4.81, p < .001) and average (b = 0.51, t[158] = 4.38, p < .001) levels of narcissism exert an influence over the relation between emotional labor and core burnout (see Table 3). However, the negative correlation between narcissism and burnout indicate that high level of core burnout act as a buffer, not as an amplifier as we would expect (see Figure 1).

Table 2. *Summary of the regression results for the moderating effect of emotional labor and Dark Triad on Core Burnout*

	Narcissism	Machiavellianism	Psychopathy
Gender	.27	.24	.24
Age	.12	.14	.19
Job Tenure	-.03	-.03	-0.4
IV	.51***	.54***	.48***
M	-.37	-.07	.04
IV x M	.06**	-.01	.01
R^2	.16***	.13***	.14***
ΔR^2	.02*	.00	.01

Note. IV = Emotional Labor, M = Narcissism, Machiavellianism, Psychopathy. N=. 95CI = 95% Confidence Interval at Step 3, * p < .05, ** p < .01, *** p < .001.
Gender was coded: 0 = male; 1 = female.

Table 3. *Conditional effect of bullying on core burnout at values of the significative moderators (Narcissism)*

Moderator	N			
	Values	Effect	*SE*	*t*
Low	-4.29	0.27	.17	1.58
Average	0	0.51***	.12	4.38
High	4.29	0.75***	.16	4.81

Note. Values for moderators are the mean and plus/minus one SD from mean, * p < .05, ** p < .01, *** p < .001.

Table 4. *Moderator value(s) defining Johnson-Neyman significance regions*

Narcissism	Effect	SE	t	p	LLCI	ULCI
-9.12	.00	.28	.00	1.00	-.55	.55
-8.12	.05	.25	.22	.83	-.45	.56
-7.12	.11	.23	.48	.63	-.35	.57
-6.12	.17	.21	.80	.42	-.25	.58
-5.12	.22	.19	1.19	.24	-.15	.59
-4.12	.28	.17	1.67	.10	-.05	.61
-3.57	.31	.16	1.98	.05	.00	.62
-3.12	.33	.15	2.25	.03	.04	.63
-2.12	.39	.13	2.92	.00	.13	.65
-1.12	.45	.12	3.65	.00	.20	.69
-.12	.50	.12	4.31	.00	.27	.73
.88	.56	.12	4.79	.00	.33	.79
1.88	.61	.12	5.02	.00	.37	.86
2.88	.67	.13	5.02	.00	.41	.93
3.88	.73	.15	4.88	.00	.43	1.02
4.88	.78	.17	4.69	.00	.45	1.11
5.88	.84	.19	4.48	.00	.47	1.21
6.88	.89	.21	4.29	.00	.48	1.30
7.88	.95	.23	4.11	.00	.49	1.41
8.88	1.01	.25	3.95	.00	.50	1.51
9.88	1.06	.28	3.81	.00	.51	1.61
10.88	1.12	.30	3.69	.00	.52	1.72

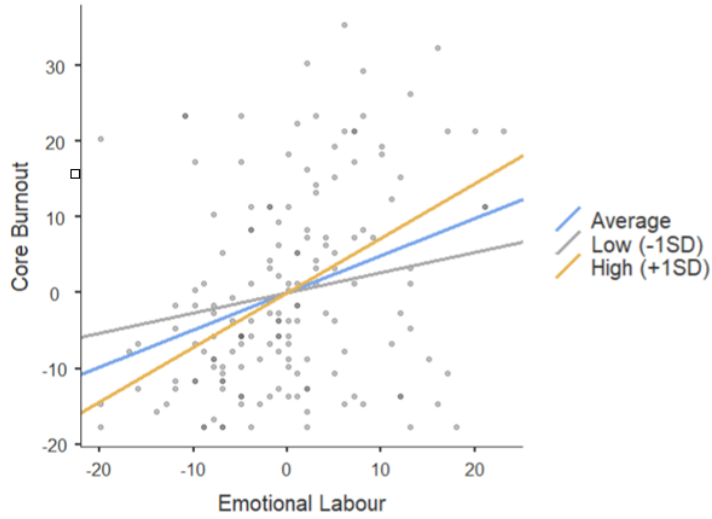

Figure 1. *Simple Slope Plot*

Results revealed that the interaction among emotional labor and Machiavellianism did not account for a significant proportion of the variance in core burnout (β = -0.1, ΔR^2 = .00, p >.05). In the case of psychopathy, the interaction term with emotional labor also did not account for a significant portion of the variance for core burnout (β = .01, ΔR^2 = .00, p >.05).

Discussions

The current study aimed to investigate whether and to what extend the emotional labor is associated with the employees' core burnout and to test whether Dark Triad (narcissism, Machiavellianism and psychopathy) moderates this relationship. The results showed that emotional labor is a significant predictor of burnout. Similar findings have been reported by other authors (Yun, Lee, & Mastracci, 2019; Zhang & Zhu, 2008).

These results could be explained based on the health impairment process proposed by the Job Demands-Resources model (Bakker & Demerouti, 2007). Prior studies allocate employee' job demands to the category of elements strictly associated with the work tasks. However, job demands' classification includes various aspects associated with psychological (cognitive and emotional) effort (Bakker & Demerouti, 2007). In this regard, our first contribution to the literature was to treat emotional labor as a demand, more specifically a hindrance job demand, because the literature claims that this category of demands hinders the optimal functioning of health (Bakker & Demerouti, 2017).

In essence, the emotional labor, as a (hindrance) job demand, hinders the optimal functioning of employee' health, as they become more likely to invest a higher level of energy at work. Therefore, they will experience much easier the inherent obstacles and will make a bigger effort to overcome them, and, as such, they will have a higher level of burnout. The findings provide empirical support for previous observations that emotional labor is an important aspect of stress that has potentially negative consequences for well-being (Hülsheger & Schewe, 2011).

By discovering a weak moderation relationship between emotional labor, core burnout and narcissism, the second hypothesis was supported. However, contrary to our expectations, narcissism acted as a buffer rather than as an exacerbator, and only at high and average scores. Low scores of narcissism do not bring any increment in the relationship between emotional labor and core burnout. Thus, higher level of narcissism leads to lower level of burnout under the condition of emotional labor. This result is only partially surprising and strictly based on the conceptualization of narcissism involving maladaptive and adaptive traits. This distinction is recently presented in the literature (Kanel, van Vianen, Her & Schmidt, 2017). Even if we did not adhere to this theoretical framework from the beginning, the fact that we had to revise the narcissism scale, leads to adaptive narcissism as assessments. Adaptative narcissism refers to stable sense of self-worth and authority. In support to the buffering hypothesis, narcissism might diminish the effect of emotional labor on burnout, leading to lower levels of employee' burnout. Narcissistic people have a positive image about themselves which is an important resource that may decrease the level of burnout (Kanel, van Vianen, Her & Schmidt, 2017). Hobfoll (1989) suggests that stress is defined as a reaction to environmental factors depicted by a risk of loss of resources, the actual loss of resources and the absence of resource gain following the investment of resources. Being associated with higher narcissism, high non-exploitive entitlement is related to a positive work orientation, authority and self-perceived initiative to motivate the employee. It suggests that people with high levels of non-exploitive entitlement, experience a robust feeling of self-worth, rather than a low self-esteem, feelings of self-doubt or anxiety. This would lead to less vulnerability to threatening events (Lessard et al.2011). Machiavellianism and psychopathy did not have a significant effect on the link between emotional labor and core burnout.

Theoretical and Practical implication

A series of theoretical and practical implications belong to the current study. Regarding the theoretical perspective, firstly, emotional labor and burnout have been examined, in accordance with the Job Demands-Resources (JD-R) Model. Thus, emotional labor was established as a job demand, even if this concept is not directly based on the theoretical framework of the JD-R. On the other hand, examining the moderating role of personality traits can assist in exploring whether burnout is a social phenomenon or is more related to individual variability. Also, such studies help practitioners to identify which individuals are more exposed to the risk of burnout.

In terms of practical implications, this study reinforces the importance of the employee's emotional labor and the need for organizations to reconsider the job descriptions and employee 'performance appraisals and to include the emotional labor into. This aspect is required in order to present what kind of emotional tasks the job involves, and to assess how and whether employees manage their emotions in a healthy way. Another aspect that should be taken into consideration is training related. Although emotions are considered crucial in the workplace, most of the training programs are designed in order to consolidate hard skills, and less on the ensuring an adequate emotional regulation (Hülsheger & Schewe, 2011). For example, training programs could prevent employees from engaging in surface acting and promoting deep acting. One of the strategies is training employees in strategies to regulate healthier emotions and to create more opportunities to experience genuine positive emotions during work. Consequently, the employee' burnout may decrease. But, the first step is to identify the employee' pattern of personality who tend to engage in surface acting that may lead to burnout. The personality may have an impact on the individual differences that play a role in choosing the emotion self-regulation strategy that may lead to a possible negative outcome such as stress. People who engage in activities that are coincidental to their personality may experience less stress, according to Theory of Trait-Behavior Congruence (Bono & Vey, 2007).

Limitations and future research

The current research has a number of limitations that will be set forth below. A first limitation of the study is the cross-sectional design. A longitudinal design might be helpful also in order to track accurately the evolution of these variables which may lead to a specific disorder, as well as the comparison of contrasting groups in the analyzed characteristics.

The research was compiled on the basis of a convenience sampling. Thus, the results can be generalized to the reference population only with certain precautions. The sample consists mainly of students, with a medium educational level, who belong to a restricted geographical area which makes the general population' representativeness limited.

More than that, the questionnaires were applied in on-line form, which leads to a lack of control over some confounded variables referring to respondent's state at the time of completion the questionnaire (lack of attention, fatigue, noise etc.).

Considering the displayed limits, numerous future directions can be taken into consideration. All the analyzed variables can be deeply explored, at the level of subscales of the instruments, in order to produce a more thorough and complete interpretation of the phenomena, which can have numerous theoretical and practical implications. For example, the distinction between surface acting and deep acting should be analyzed for providing a clearer perspective of the concept (Brotheridge & Grandey, 2002). Or, burnout should be measured at the level of all three components and make a difference on how different personality traits moderate the relationship between emotional labor and all burnout's components.

Conclusions

Consequently, the current research started from the two proposed objectives, under which emotional labor is a predictor for burnout and the Dark Triad personality traits

moderate the mentioned relationship. Based on the obvious results, the first objective is confirmed. This finding is consistent with previous studies and provides additional insights about employees' emotional labor and its potential long-term consequences. About Dark Triad, in the scientific literature, such an association has not been studied as a priority and the current study claims that only narcissism had a (weak) moderating effect on the relationship between emotional labor and burnout. The Job Demands-Resources model was used as a theoretical framework that analyzes the antecedents and consequences in occupational health's field, focusing on the relationships between the employee' well-being and the workplace's specificity.

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PUBLISHING STANDARDS

Psychology of Human Resources – guide for authors

THE EDITORS

This document represents the "Guide for Authors". It covers the format and language to be used for manuscripts submitted to Human Resources Psychology. Also, this document can be found on the webpage of the Romanian Association of Industrial and Organizational Psychology (www.apio.ro).

This "Guide for Authors" follows the 6th APA Publication Manual.

Manuscript Submission and Format

All manuscripts for the journal Human Resources Psychology should be submitted to the following e-mail address: revista@apio.ro.

To edit the manuscript please use Times New Roman 12-point type, 1.5 line spacing and the A4 page setting. Each page will be numbered in the upper right corner. The top and side margins should be left of at least one inch or 2.54 cm. A full example of a manuscript can be found in the 6th APA Publication Manual.

Publications

Accepted papers are copy-edited and retyped. Authors have to review edits and proofread their work. The editor of Human Resources Psychology will contact the corresponding author after the editor assigns your work to an issue.

If your work is accepted, please keep the editor informed of changes in your contact information and of long absences.

Front Page

The first page of the manuscript should include the following information:

1. Title

The title should be a concise statement of the main topic and should identify the variables or theoretical issues under investigation and the relationship between them. It should be typed in sentence case, centered between left and right margins, and positioned in the upper half of the page.

2. Author name(s) and institutional affiliation(s)

Author name(s) will be presented in the following form: first name, middle initial(s), and last name.

Institutional affiliation should reflect the institution/location where the author(s) were when the research was conducted. When an author has no institutional affiliation, the city and state of residence below the author´s name should be specified. The institutional affiliation should be centered under the author's name, on the next line.

3. Author´s note

This section should include the following:

- First paragraph should include the departmental affiliations at the time of the study for all authors as follows: name of the author as it appears in the byline, comma, department name, comma, university name, semicolon, next

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- Second paragraph should include any changes in author affiliation subsequent to the time of the study as follows: [author´s name] is now at [affiliation].
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Place the author note on the title page, below the title, byline, and affiliation. Center the label *Author Note.* Start each paragraph of the note with an indent, and type separate paragraphs for the authors' names and current affiliations, changes in affiliations, acknowledgments, and special circumstances, if any, along with the person to contact. The author note is not numbered or cited in the text.

Abstract Page

The abstract as well as the title of the work go on page 2. The abstract should be no longer than 150 words. The label *Abstract* should appear in sentence case, centered, at the top of the page. Type the abstract itself as a single paragraph without paragraph indentation. Place a running head (short title).

The abstract will be written in English. It is necessary to include 3-5 key words after each abstract, in all these three languages.

Main body text pages

In preparing your manuscript, begin the introduction on page 3. Type the title of the manuscript in sentence case centered at the top of the page, and then type the text. The remaining sections of the article follow each other without a break; do not start a new page when a new heading occurs.

This section should include the following:

- Introduction of the problem. This section will present the specific problem under the study and describe the research strategy. There is no need to label this section as Introduction.
- Explore importance of the problem. This section states why the problem deserves new research. State explicitly this problem according to the type of the study (empirical study, literature review and meta-analysis, methodological paper and case study).
- Describe relevant scholarship by discussing the relevant related literature and demonstrating the logical continuity between previous and present work.
- State each tested hypothesis clearly and provide a theoretical argument for how it was derived from theory or is logically connected to previous data and argumentation.

Method

This section describes in detail how the study was conducted, including conceptual and operational definitions of the variables used in the study. Authors should include the following:

- Sample description, by describing the main characteristics with particular emphasis on characteristics that may have bearing on the interpretation of results.
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- Measures and covariates by describing the methods used to collect data and to enhance the quality of the measurements.
- Research design.
- Experimental manipulations or procedures.
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Results

This section summarizes the collected data and the analysis performed on the data to test the proposed hypotheses. Report the data analysis in sufficient detail to justify your conclusions. For more information please consult the 6th APA Publication Manual.

Discussion

This section evaluates and interprets the implications of the results, especially with respect to original hypotheses. Examine, interpret, and qualify the results and draw inferences and conclusions from them. Emphasize any theoretical or practical consequences of the results.

Also, the limits of the study and possible future studies can be considered in this section.

References

References are your entries in the *alphabetical list at the end* of your article or research note. This list should include all the works you have cited throughout the manuscript. The references should be formatted as follows:

1. Periodicals (selective examples)

Author, A.A, Author, B. B., & Author, C. C. (year). Title of article. *Title* of *Periodical, xx,* pp-pp. doi: xx.xxxxxxxxxx

Author, A. A., Author, B. B., Author, C. C., Author, D. D., Author, E. E., Author, F.F., … Author, Y.Y. (year). Title of article. *Title* of *Periodical, xx,* pp-pp. doi: xx.xxxxxxxxxx

Author, A.A, Author, B. B., & Author, C. C. (year). Title of article. *Title* of *Periodical, xx,* pp-pp.

Author, A.A., & Author, B.B. (in press). Title of article. *Title of Periodical.* Retrieved from http://cogprints.org/5780/1/ECSRAP.F07.pdf

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3. For chapters in a book or entry in a reference book (selective example)

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4. Meeting and symposia (selective examples)

Contributor, A.A., Contributor, B.B., Contributor, C.C., & Contributor, D.D. (Year, Month). Title of contribution. In E.E. Chairperson (Chair), *Title of symposium.* Symposium conducted at the meeting of Organization Name, Location.

Presenter, A.A. (Year, Month). *Title of paper or poster.* Paper or poster session presented at the meeting of Organization Name, Location.

5. Unpublished works (selective examples)

Author, A.A. (Year). Title of manuscript. Unpublished manuscript [or "Manuscript submitted for publication," or "Manuscript in preparation"].

For a detailed description of the procedure related to the citation of other types of work than those listed above, consult the 6th APA Publication Manual.

Footnotes

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Appendices

The appendices of the manuscript (labeled APPENDIX A, APPENDIX B etc.) contain materials that supplements article content such as lengthy methodological procedures, calculations of measures, scales etc.

Tables and Figures

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Insert Table 1 about here

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Citation

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Thank you for paying attention to the conventions outlined in this guide – it will help the work of everyone involved in the publication of this journal.