Training under an extreme context: the role of organizational support and adaptability on the motivation transfer and performance after training

Abstract

Purpose: The present study used the Job-Demands and Resources framework to understand how the training is transferred to an extreme working context, through the analysis of job and personal resources (social support from the leader and colleagues and adaptability). Specifically, we tested the mediating role of motivation to transfer in the relationship (1) between the perceived support from the supervisor and colleagues and performance after training, and (2) between adaptability and performance in an extreme context of the pandemic crisis – the first peak of the COVID-19 in Portugal. Further, as inspection of the factors that predicted knowledge transfer and adaptability under an extreme context was carried out.

Design/methodology/approach: To do so, a necessary training about the new safety rules regarding the pandemic crisis of COVID-19 was implemented in a healthcare institution as a strategy to help healthcare workers to deal with the increasing uncertainty and complexity that was threatening their work. It consisted of three sessions (each with one hour of training) regarding procedures, rules, and safety norms. The training occurred in May 2020. Overall, 291 healthcare workers participated in the study and answered one online questionnaire one week after the training completion.

Findings: The results showed that the motivation to transfer had a significant indirect effect on the relationship between colleagues' and supervisors' support and performance and between adaptability and performance. Additionally, complementary analyses showed that the mediations depended on the levels of self-efficacy, in such a way that the indirect relationships were stronger when self-efficacy was higher. Thus, adaptability and support, both from colleagues and the supervisor, are determining factors for knowledge

transfer and resultant performance in extreme contexts, such as the COVID-19 pandemic crisis. Lastly, the results showed that the most significant predictors of transference were self-efficacy and the motivation to transfer the learned knowledge. On the other hand, self-efficacy, peer support, and the opportunity to use the knowledge were the most significant predictors of adaptability.

Practical implications: These findings provide support for the role of employee motivation to transfer as a mechanism connecting both perceived support and adaptability to performance outcomes under extreme working contexts.

Originality/value: This study, conducted in the middle of the COVID-19 pandemic context - an extreme and uncertain working context – shows the relevance of both job and individual factors to predict employees' adaptability to such contexts.

Keywords: On-the-job training, learning transfer; adaptability; LTSI; motivation to transfer; performance; extreme contexts; COVID-19.

Introduction

Knowledge is a fundamental tool that allows employees to find solutions to work-related daily challenges and constitutes a competitiveness factor for organizations. Hence, training is a major solution to ensure the adequacy and the actualization of the knowledge for employees to perform their tasks (Garavan et al., 2020).

Thinking about training is realizing the constant world transformation (Zeng et al., 2021) and its frequently triggered extreme contexts. Extreme contexts are those associated with crises, threats, turmoil, and uncertainty (Hällgren et al., 2018), such as the COVID-19 pandemic crisis. In such contexts, training is beneficial as a strategy to learn and deal with it. For instance, when the pandemic began, healthcare employees had to learn how to deal with it, regarding medical treatments and safety procedures and

subsequent new health-related rules. All these events raise relevant questions regarding how employees and organizations may respond effectively to them. Indeed, extreme contexts provide a unique environment to understand how employees adapt to such settings (Eberly et al., 2017). For example, extreme contexts, such as the COVID-19 pandemic crisis, brought to the table the discussion about training as a way to combat it (WHO, 2020).

The interaction between an extreme context – as it was COVID-19 – and healthcare workers - can demonstrate the best and worst of human and organizational behavior (Hällgren et al., 2018), and may provide insights into organizational processes of adaptation (following an extreme event), and factors that limit such adaptation (where organizations and employees fail to respond). As such, organizations have sought to respond to this challenge, aligning their strategy with the guidelines of the General Health Direction (GHD), with the production of different documents, giving special emphasis on the COVID-19 contingency plan. However, guidelines to reduce the contamination of COVID-19 in society emerged without prior notice and their effectiveness was influenced by massive contamination. Based on this, between the urgency of action, uncertainty, fear, and the absence of knowledge, training in a real extreme work context was implemented as a reaction to the crisis in different healthcare organizations that shared the same problem and context, the first peak of the COVID-19, among healthcare employees.

Training allows the articulation of the training and the production process, resulting in a higher degree of knowledge learning and its transfer to work, which is also responsible for behavioral changes (Zeng et al., 2021). The training design, the individual characteristics, and the work environment are dimensions pointed out by Holton (1996) as determinants in the success of the training transfer. However, training

under extreme contexts, contexts in which uncertainty and complexity are part of daily work, is different and creates challenges for both trainers and trainees (Garavan et al., 2020, 2021). Despite numerous empirical demonstrations of the suitability of the Holton model (Antunes et al., 2018; Ben Zammel & Hachana, 2023; Chatterjee et al., 2018), there are scarce studies that have explored it during moments of crisis, such as COVID-19.

The present study aimed to develop knowledge about training transfer in an extreme context characterized by high levels of uncertainty and complexity, such as the COVID-19 crisis (Junça-Silva & Silva, 2022). Specifically, we intended to (1) identify the factors that could promote the knowledge transfer to work, (2) and those that stimulate the adaptability of employees to the extreme context. We also aimed to analyze the mediating role of motivation to transfer knowledge in the relationship between (1) the supervisor's and colleagues' support, and performance (2) and adaptability and performance under this context. This study focused on healthcare organizations that are, by nature, promoters of training employees in their mission of caring for the more vulnerable, mostly with cognitive and functional dependencies.

Our study enhances the understanding of training in healthcare settings under an extreme working context in three ways. First, we draw on the Job-Demands and Resources Model (JD-R; Demerouti et al., 2001) to understand the role of job (perceived support) and personal resources (adaptability) in employees' motivation to transfer what they learned in training and, as a result, its effect on performance. The JD-R proposes that both job and personal resources are crucial for effectiveness and efficiency (Bakker & Demerouti, 2007). Complementarily, perceived support theories highlighted the importance of perceived support as a crucial job resource even in periods of crisis (Kurtessis et al., 2017; Rhoades & Eisenberger, 2002). Moreover, more

recently some studies called the need to better explain the role of employees' adaptability in shaping their responses to crises, uncertain situations, or extreme working settings (Bartone et al., 2018). Most of these resources have not been systematically investigated in the context of extreme situations, as was the peak crisis of COVID-19 in healthcare working settings.

Second, we address a significant gap in the literature concerning the roles that job and personal resources have in training that occurs in an extreme working setting. We draw on the conservation of resource theory (COR; Hobfoll, 1989, 2001; Hobfoll et al., 2018) to better clarify the roles that resources play in stimulating effectiveness after training (that is, performance). The COR argues that resources stimulate not only resource development but also prevent employees from losing resources under crisis or uncertain situations (Somaraju et al., 2022).

Last, but not least important, is the overemphasis on the investigation of the role of certain training characteristics (the learning contents or methods) for motivation to transfer and the underemphasis on the importance of job and personal resources during the training under extreme contexts. Hence, this study not only covers existing gaps in the literature but also creates value as it was focused on training that occurred in the peak of the first COVID-19 phase which can give a better picture of its role in employees' effectiveness in this extreme working setting.

Further, a review of the literature showed that research has been carried out in diverse sectors, namely, the education sector (Junça-Silva & Almeida, 2023) or finance (Tabvuma et al., 2015). There is a lack of research in the healthcare sector (Weaver et al., 2014); thus, this study collected data in a real healthcare working sector that was living the first peak of the covid-19 pandemic crisis - a phase described by a high number of deaths per day, mandatory social isolation in which doctors and nurses

mostly could not go home to see their family as a strategy to avoid increasing contagion, significantly increased workload (both in the number of hours, and the number of shifts per week), and high loss of beloved ones. A working setting filled with job demands, and low resources was impairing the health and motivational process (as argued by the JD-R), thereby leading to poorer mental health outcomes among these professionals (Junça-Silva & Silva, 2022).

The COVID-19 context: an extreme working context for healthcare workers

The COVID-19 pandemic crisis was an extreme context, especially for healthcare workers because even though they are often faced with challenges and uncertainties in their working lives, they were facing a completely different setting with specific and extreme characteristics and job demands. These characteristics and demands are not inherent to their routines, thus they were living and working in an extreme context. For instance, even when the national governments demanded mandatory confinement, healthcare institutions (i.e., hospitals) had to maintain their services and routines even though the number of contagions was marking and shaping the work shifts, increasing the number of working hours and demanding workers' changing shifts regularly and uncertainly. At this time, both doctors and nurses were required to adapt in response to these changing working conditions, to the complex demands that were arising, the changing needs of their patients, shifts in timetables, changing policies, and new rules and safety procedures. Furthermore, they were called upon to deal with diverse emotional demands, including for instance, social distance, the loss of loved ones, together with heavy workloads, competing demands, and the high death rates that hospitals were experiencing. Likewise, healthcare workers were

involved in many instances of challenges and setbacks that made this context an extreme one.

COVID-19 marked and (re)defined several occupational areas due to diverse factors that between 2020 and 2022 affected individuals, employees, and society in general (Sinclair et al., 2020). For instance, the extreme variability in COVID-29 symptoms, the existing gaps in testing, the lack of a vaccine and the unreliable vaccines that were developed after that, the differences across countries in reporting practices, and high variability in governmental policy responses made the COVID-19 pandemic an extreme context. Further, millions of people died all over the world, others were forever affected, and the massive economic impacts of shutdowns and social distancing made COVID-19 an extreme context with wide-ranging consequences for nearly every aspect of daily life.

With the virus widespread, governments had to create strategies to deal with the virus; for instance, they had to create emergency hospitals in football stadiums, or other facilities to assist covid-19 patients and to avoid further contagions. In line with this, healthcare institutions had to change job procedures, daily routines, schedules, and teams due to the covid-19, either because there was an increased search for medical assistance (urgencies were filled with patients), or sick leave from healthcare workers who get infected with covid-19.

Moreover, one cannot ignore healthcare workers who had to be on the front line fighting the COVID-19 virus, watching patients dying, sometimes far away from their loved ones - to avoid physical contact with them and minimize the virus contagion. This class of professionals has experienced diverse psychological impairments such as increased fatigue due to the long working hours, anxiety, and psychological distress during the COVID-19 pandemic (Chingono et al., 2022). They had to work when most

workers were both laid off or teleworking and this increased their work overload and their working hours. Moreover, other factors that made these professionals vulnerable to both physical and psychological risks were insufficient supplies of personal protective equipment – at least at the beginning of the virus appearance - perceived increased risk of covid-19 contagion, limited treatment options for patients with COVID-19 (due to the lack of a vaccine and the unknown of the virus), personal fear of infecting their loved ones, isolation from family members and being quarantined (Chingono et al., 2022).

All in all, healthcare workers were very important in the COVID-19 context because they were responsible for the diagnosis and treatment of patients infected with the virus, implementing appropriate infection prevention and control measures, vaccinating, and ensuring the service provision for other health conditions even when they were vulnerable to be infected and to suffer psychological distress (Nagesh & Chakraborty, 2020). Hence, together with the institutional changes that were made on the job routines and procedures, this made clear that healthcare workers needed training to deal with this context and its inherent changes.

Theoretical background

Training

Training encompasses formal on- and off-the-job structured activities focused on the development of knowledge, skills, and abilities (KSAs) (Garavan et al., 2021). It is a human resource process of high importance particularly at a time when labor relations are unstable and uncertain, as it allows individuals to develop the necessary strength to perform their duties (Ahadi & Jacobs, 2017). Training includes a set of formal and informal experiences that allow learning and updating knowledge (Costa et al., 2018). It

is an organized, directed, and challenging response to job demands, which guarantees solutions based on knowing how to be and how to do it. Organizations aim to improve creativity, interdisciplinarity, and knowledge transfer among professionals (Shin et al., 2020).

One type of recurrent training is on-the-job training. On-the-job training is valued for its flexibility regarding space, time, employees, and trainer availability (Pastore & Pompili, 2020). This has four factors that guide its success: (1) training: explaining the concepts of work, giving clues to its integration and relevance; (2) description of activities: explaining causes, consequences, and results. It is important to detail how, why, where, when, and with whom to do it. This information guides the execution of activities, demonstrating and allowing the trainee to replicate them; (3) trainee performance: the planned activities are carried out under the supervision of the trainer, allowing the trainee's performance to be assessed; (4) systematic follow-up allows the trainee to consolidate learning.

Several authors have defended the existence of a symbiosis between training, performance, and competitiveness, as a result of the focus on valuing human capital, reflecting a concern for continuous learning (Garavan et al., 2021; Hatch & Dyer, 2004). The idea of continuum reinforces the training process as a dynamic approach, suitable for each situation, employee, and organization, with a common denominator – the goal of better performance (Caetano, 2008). When training is carried out in the workplace it provides a more complete and comprehensive view of the employees about their work (Garavan et al., 2020; Shah et al., 2014).

In this way, it can be said that on-the-job training incorporates a set of advantages for all actors involved. For instance, Kim and Plyhart (2014) showed that training develops employees' knowledge, skills, and abilities that, in turn, enhances

their flexibility and adaptability to the context and job changes (Garavan et al., 2022). This is particularly important when training is a reaction to a crisis or occurs under extreme contexts characterized by high uncertainty and complexity (Garavan et al., 2020). When employees are faced with extreme events that may threaten their safety and health, training may be a strategy to help them effectively deal with such events and uncertainty (Cheng et al., 2023). Moreover, as highlighted by Hughes et al. (2020) and Lundgren and Poell (2020) training improve skill depth and enable employees to develop specialized knowledge and skills to help them to better deal with crisis, changing situations, and volatilities at work. Further, training is an important step to ensure conditions for an adequate and quick response to different situations that generate anxiety, fear, and uncertainty, such as the COVID-19 pandemic crisis (Liang et al., 2020). These solutions can find an answer in the knowledge and acquisition of technical skills, developed in on-the-job training, which organizations offer to their employees. Their qualifications add knowledge, the ability to do, and individual and collective skills in a dynamic perspective, to be mobilized internally according to the situations that in turn enhance employee's flexibility and adaptability (Paananen, 2021).

Learning transfer

Training will only make some difference in personal, professional, and organizational growth if the acquired knowledge is transferred to the workplace and allows for improved performance. Although on-the-job training is the one that allows the application and retention of knowledge in real-time the frequency of training *per se* does not guarantee the transfer of skills (Tho, 2017).

Burke and Hutchins (2007) stated that knowledge transfer is characterized by the applicability of knowledge, skills, techniques, and behaviors acquired in training, to the

work context, during a specific period. This transfer should reflect behavioral changes acquired during training (Nafukho et al., 2022; Velada, 2007). Whenever training promotes changes in behavior, attitudes, and knowledge, there is an effective learning transfer thereby contributing to professional and organizational growth. In this way, the learning transfer is related to the degree to which employees effectively apply in their work what they have learned in the training (Grohmann & Kauffeld, 2013; Yusof, 2012).

Learning transfer is a multidimensional concept that requires looking at it from different perspectives, because conceiving it only as the mere applicability of knowledge is a limited view, and ignores the influences of the environment, training, and trainees, in the processes of learning. It is through this transfer that employees develop themselves (Randall et al., 2022). Wexley and Latham (2002) and Cheng and Hampson (2008) suggested that transfer analysis should be classified into three dimensions: positive, negative, and neutral. The transfer is positive when the training produces an increase in employees' performance. In contrast, when there is a decline in performance, the transfer is assumed to be negative. On the other hand, maintenance of performance reflects a null or neutral transfer. This relationship between learning and performance reflects the effectiveness of learning transfer (Gessler & Hinriches, 2015).

In the literature, two lines of investigation have sought to explain the success of learning transfer: one oriented toward results (Kirkpatrick, 1996) and another toward processes (Holton et al., 2000). For instance, in a well-known results-based model, Kirkpatrick (1996) proposed four dimensions to assess the process of learning transfer. The goal was to measure the reaction of employees to training, their learning process, their behavior, and the training results (Kirkpatrick, 1996).

Another model was developed by Chen and Ho (2001), and highlighted the importance, in the transfer process, of the motivation that precedes training, learning, performance, and the consequences of the transfer. Accordingly, the transfer only occurs if the trainees have the motivation to learn and to transfer what they learned.

The learning transfer system inventory (LTSI) was developed by Holton, Bates, Seyler, and Carvalho (1996), and later updated by Holton, Bates, and Ruona, 2000. For the authors, training only led to increased performance when learning was transferred to work. Accordingly, the model proposed three dimensions of learning transfer: training design, trainees' characteristics, and the work environment, operationalized as learning, individual and organizational performance. Accordingly, the instrument measures 16 dimensions likely to influence training transfer; 11 specific factors, that relate to the specific training course the trainee was attending (e.g., motivation to transfer), and five general factors, that are likely to influence any training program conducted (e.g., transfer effort-performance expectations) (see Table 1).

Training under an extreme context: the role of job resources on the motivation transfer and performance after training

In Holton's model (1996, 2005) the motivation to transfer has a direct influence on the training transfer. According to Holton et al. (2005), motivation to transfer is the direction, intensity, and persistence of effort toward utilizing in a work setting skills and knowledge learned. Considering that all trainees have different levels of motivation, it is that degree of motivation that will determine the knowledge transfer to work. Although the influence of motivation to transfer seems evident as a predictor of effectiveness after training, there are still few studies that empirically demonstrate this relationship under extreme working settings in the healthcare sector.

We rely on the JD-R model (Bakker & Demerouti, 2007) to further sustain the conceptual framework under study (see Figure 1). The model proposes that there are two job characteristics, resources, and demands, that shape the motivational and health process (Schaufeli, 2017). Demerouti, Bakker, Nachreiner, and Schaufeli (2001; p. 501) defined job demands as "aspects of the job that require sustained physical or mental effort and are therefore associated with certain physiological and psychological costs". That is, job demands are the unexpected or bad things that occur at work and drain energy and other resources, such as job insecurity or uncertainty (Schaufeli, 2017). On the other hand, job resources are the characteristics that may: (a) be functional in achieving work goals; (b) reduce job demands and the associated physiological and psychological costs; and (c) stimulate development and learning (Schaufeli, 2017). Examples of job resources are support from others (which may enhance learning and minimize stress) and adaptability (which might reduce job demands and help employees cope with the uncertainties of the job). Overall, job resources and demands can be physical, social, psychological, and organisational in nature, and are linked with employees' work-related outcomes, such as performance (Collie et al., 2020).

The JD-R model assumes that while working employees may experience two psychological processes. The first process - the stress process - is flashed by excessive job demands and scarcity of resources that — via burnout — leads to negative outcomes such as poor performance, and low motivational outcomes. Accordingly, when job demands are high and are not balanced with job resources, an employee's energy is progressively drained (Bakker & Demerouti, 2007). In turn, this may result in a state of mental exhaustion ('burnout'), which leads to negative outcomes both for the individual (poor health) and for the organization (poor performance). Second, the motivational process is activated by high job resources (e.g., perceived support) and may — through

work engagement — lead to positive outcomes such as higher motivational levels, more commitment, and higher performance (Bakker & Demerouti, 2017). Indeed, job resources have inherent motivational qualities; they develop other relevant resources - as argued by the core tenet of the COR (Hobfoll et al., 2018) - such as employees' energy and make them feel engaged, which, in turn, may promote learning, development, and performance.

Although the JD-R model has not been empirically applied to occupational training, the motivational process may likely be applied to understand how some resources may lead to higher motivation to transfer and, as a consequence, improve employees' performance.

In this regard, several empirical studies have demonstrated that social support (from leaders and colleagues) may lead to higher rates of transferring knowledge to work (e.g., Tafvelin & Stenling, 2021). Perceived social support theories (Rhoades & Eisenberger, 2002) argue that perceiving social support from others is an important resource that may lead to motivational outcomes (Kurtessis et al., 2017) and behavioral ones (i.e., performance; Jyoti & Kour, 2017).

Albrecht and Adelman (1987, p. 19) defined social support as the "communication between recipients and providers that reduces uncertainty about the situation, the self, the other or the relationship and functions to enhance the perception of personal control in one's life experience." Thereby, perceived social support is the ability to reduce the stress associated with working in a new, volatile, and extreme environment (Kraimer et al., 2001).

Support from the supervisor – that is, the extent to which supervisors-managers support and reinforce the use of training on the job (Holton et al., 2005) - and colleagues – the extent to which peers reinforce and support the use of learning on the

job can be found in behaviors of appreciation, encouragement, feedback, empowerment, recognition, and patience with colleagues that try to apply the training on the job (Bates et al., 2012). It is expected that this type of support will be more relevant in work contexts that organize human resources by teams, reflecting an interdependence between colleagues and direct managers, as is the case of the healthcare sector (Bates et al., 2000). For instance, some studies have shown that employees who receive sufficient support from their co-workers and supervisors are more able to adjust themselves to uncertain, volatile, and complex working environments (Karapete, 2012; Lee & Kartika, 2014). Employees with social support may meet the expectations of their supervisors and co-workers by showing active approaches to problem resolution through positive attitudes toward problem-solving and hard work (Ito & Brotheridge, 2003). Hence, social support appears to play an important role in supporting employees when they are going through tough times (Lee, 2010, p. 3800; Lee & Kartika, 2014), which helps them perform better.

Other studies, in the context of training have highlighted the role of social support for performance-related outcomes; for instance, Brinkerhoff and Montesino (1995) showed that support from the leader increased the transference of knowledge learned in the context of training. Also, Facteau et al. (1995) highlighted the role of supervisors' support on motivation for transferring learning to work. Grossman and Salas (2011), and Martin, Zerbini, and Medina, in 2019, showed that support from supervisors and colleagues was a positive predictor of motivation to transfer learning to work. Further, Seyler et al. (1998) showed that colleagues' support influenced motivation to transfer more than the supervisor's support. A meta-analysis carried out by Reinhold, Gegenfurtner, and Lewalter, in 2018, showed that colleagues' support was the strongest predictor for transferring learning to work. Thus, social support as an

important job resource may increase performance levels through increased levels of motivation to apply learned content (Lee & Kartika, 2014). Therefore, based on the literature, we expected that (Figure 1):

H1. Motivation to transfer knowledge mediates the relationship between a supervisor's perceived support and performance in extreme contexts.

H2. Motivation to transfer knowledge mediates the relationship between perceived peer support and performance in extreme contexts.

Training under an extreme context: the role of personal resources on the motivation transfer and performance after training

Alongside the importance of diverse contextual factors like job resources, the JD-R model also highlights the role of personal resources in predicting employees' functioning and performance at work (Collie et al., 2020). As emphasized earlier, personal resources have been pointed out as important in the motivational process proposed by the JD-R (Schaufeli, 2017), as they influence an individual's perceived ability to successfully control and contribute to their environment (Hobfoll, 1989), and for that have been positively linked to a wide range of positive outcomes, and include capacities such as adaptability (Mérida-López et al., 2019; Putwain & von der Embse, 2019).

Adaptability is the individual's ability to manage their thoughts, emotions, and behaviors in response to new, uncertain, and changing situations (Martin et al., 2012) helps them deal with these changes, novelties, and uncertainties in the work context

(Collie et al., 2020). Hence, adaptability is a personal resource crucial to situations involving novelty, change, and uncertainty, as it was the COVID-19 working context.

Adaptability is a personal resource that individuals draw upon in different types of situations, and it is particularly relevant to healthcare workers because they often experience uncertainties, and volatilities in their daily working life. For instance, nurses and doctors are enrolled very frequently with a great deal of novelty, change and uncertainty, which was significantly increased when COVID-19 appeared for the first time. At this time, they were required to adapt in response to these changing working conditions, to the complex demands that were arising, the changing needs of their patients, shifts in timetables, changing policies, and new rules and safety procedures. Furthermore, both doctors and nurses were called upon to deal with diverse emotional demands, including for instance, social distance, the loss of loved ones, together with heavy workloads, competing demands, and the high death rates that hospitals were experiencing. Likewise, healthcare workers were involved in many instances of challenges and setbacks.

The uncertainty triggered by extreme contexts and hard times has been a constant for healthcare professionals (McCabe & Sambrook, 2019; 2014). Therefore, adaptability can be a key feature to encourage learning after on-the-job training, and consequently performance, in this type of employee. In the context of training, trainees' adaptability plays a significant role in learning transfer and also in performance after training (Ratique et al., 2018; Zeng et al., 2021). Empirically, Tannenbaum and Yukl (1992) showed the existence of a positive relationship between adaptability and learning transfer to work. For the authors, one of the essential premises for trainees to feel motivated to transfer training to work is based on their ability to adapt. Clark et al. (1993) also showed that employees with greater motivation to transfer learning tend to

be more adaptable and, therefore, perform better. Froehlich and Gegenfurtner, in 2019, showed that the motivation to transfer mediates the relationship between adaptability and learning transfer. That is, the greater the adaptability, the greater the motivation to transfer learning, which contributes to organizational competitiveness (Acton & Golden, 2002; Karia & Ahmad, 2000).

Although prior research has shown that adaptability predicts several positive outcomes under training settings (Ratique et al., 2018), the extent to which the same is true among healthcare workers under an extreme context remains unknown. We thereby suggest this is important to examine to better understand the unique nature and role of this personal resource in healthcare professionals' work, as well as to help guide future interventions that aim to boost these workers' psychological functioning at work mainly during extreme working settings. In this study, we took a domain-specific approach by examining adaptability to the working settings that healthcare workers were experiencing at the time (i.e., adjusting in response to the high levels of uncertainty in their work). Thus, we hypothesized the following:

H3. The motivation to transfer knowledge mediates the relationship between adaptability and performance in extreme contexts.

--FIGURE 1--

Method

Research setting

The study was conducted in a Portuguese healthcare institution named IPSS (private institutions of social solidarity). IPSS are private non-profit social solidarity institutions that develop social solidarity activities and seek to respond to social emergencies, supporting the most vulnerable citizens. This institution, founded in 2000,

was located in Portalegre - an inland city in Portugal. The District of Portalegre is considered a low-density territory (CIC, 2021), characterized by a high rate of aging, recorded in the 2021 census (Pordata, 2021), and is reflected by the strong presence of IPSS, to take care of this aging population. The patients in this IPSS were mostly elderly.

Recruitment and Training

The training was a necessary reaction to the first peak of the COVID-19 crisis in Portugal (May of 2020) which was evolving at a higher pace at the time and was creating higher uncertainty and complexity among healthcare workers. At this time, the government declared a state of calamity as the number of contagions and deaths was rising significantly every day. The trainees, all of them healthcare professionals, were enrolled in a 3-hour COVID-19 safety plan training during the extreme context characterized by the pandemic. During the subject presentation (coinciding with the first session), the trainees were informed of the training goals, schedule, and methodology to be followed. Participation was mandatory as this training was part of the safety rules and procedures imposed by the General Health Direction (GHD).

The training was performed in the first week of May 2020, by a healthcare senior professional (a Ph.D. in public health) with specific training in healthcare processes during adversity and crisis moments and consisted of three sessions of one hour each, for a total of three hours. The training occurred during one week with the three sessions occurring on Monday (first session), Wednesday (second session), and Friday (third session). The training followed hybrid learning, in which the first session was face-to-face, and the following ones occurred online to facilitate the professional's availability. Table 1 presents, in detail, the content of each session. For the sessions, the

expositive and interrogative methodologies were used. The expositive methodology was used to give the trainees objective information regarding the imposed rules, procedures, and safety norms that have been imposed by the National GHD. Group work was also followed to stimulate interaction and experience sharing, and reflective exercises were included because the evidence showed that they can increase awareness about emotions (Ozcan et al., 2011). Before the sessions, documentation was provided, and questions were clarified.

--TABLE 1--

Participants

From the universe of IPSS employees, a non-probabilistic, convenience sample was selected, according to the criterion of having had training in the work context alluding to COVID-19, to apply the LTSI. The sample was collected without any type of restriction in terms of age, gender, or function performed in the healthcare institution.

The sample consisted of 291 participants aged between 20 and 66. Most of them were employees in the 50-59 age group (31.1%), followed by the 30-39 age group (25.65%). Most participants were female (85%). In the professional category of the participants, most of them were health technicians (53%), followed by doctors (36.5%), and then nurses (10.5%).

Procedure

The self-reported questionnaire was applied online, one week after the training, through Google Forms and sent to the workers' email. The survey was only collected once. Data confidentiality and anonymity were guaranteed to all of them (in the third training session) before they answered the questionnaire. The response rate was 100% as all professionals who attended the course answered the questionnaire.

The survey was collected online and included measures to assess learning transfer, performance, and adaptability to the crisis context.

Instruments

Learning transfer. One week after the training, we used the LTSI (Holton et al., 2000) to collect data. We resorted to 13 factors from the LTSI because we wanted to explore in greater detail factors related to the climate and the motivation to transfer the learning to the workplace. Hence, we used (1) training transfer climate (support from supervisor; supervisor sanctions; peer's support; positive personal outcomes; negative personal outcomes; feedback and coaching; openness to change; $\alpha = 0.78$); (2) motivation to transfer learning (motivation to transfer; self-efficacy; effort expectations to transfer - performance; performance expectations - results; personal ability to transfer; the opportunity to use; $\alpha = 0.83$) (see Table 2). The items were answered on a 5-point Likert scale, where "1" corresponded to "*completely disagree*" and "5" to "*completely agree*".

--TABLE 2--

Performance. To measure performance, we used the task performance scale from the Individual Work Performance Questionnaire (Koopmans et al., 2013). It consisted of 13 items (e.g., "How do you rate the quality of your own work?") answered on a 5-point Likert scale (1-*insufficient*; 5-*very good*). The Cronbach α was 0.85.

Adaptability. Adaptability was assessed with eight items by Koopmans et al. 2013. An item example is "I have demonstrated flexibility, even in times of crisis as is this COVID-19". For these items, participants rated their answers on a 5-point Likert scale (1-*seldom*; 5-*always*). The Cronbach α was 0.79.

Data analysis

First, the internal consistencies and descriptive analyses of the variables under study were analyzed, as well as their correlations. Subsequently, to test the hypotheses, mediation analyses were carried out, through model 4 of the PROCESS macro (Hayes, 2018), through which the bootstrapping method was used (5000 times) to obtain confidence intervals and verify the model significance.

Results

Descriptive statistics

Table 3 shows all the descriptive statistics, correlations, and Cronbach's alfas.

--TABLE 3 –

Exploratory analysis of the factors that contribute to the knowledge transfer to work

To analyze the factors that influenced knowledge transfer to work, a linear regression analysis was conducted. The results showed that the most significant predictors of transference were self-efficacy (B = .50, $t_{(1, 286)}$ = 9.91, p < .001) and the positive expectation that effort leads to increased performance (motivation) (B = .09, $t_{(1, 286)}$ = 2.640, p < .01). The model was statistically significant and explained 41% of the data (R^2 = .41, $F_{(1, 286)}$ = 76.44, p < .001). The factors of support from supervisor and peers, supervisors' sanctions, positive and negative outcomes, feedback and coaching, openness to change, personal capacity to transfer, and opportunities presented non-significant relations with knowledge transfer.

Exploratory analysis of the factors that stimulate the employees' adaptability to the pandemic situation

The results showed that the most significant predictors of adaptability were self-efficacy (B = .49, $t_{(1, 286)}$ = 7,194, p < .001), peer's support (B = -.15, $t_{(1, 286)}$ = -3,168, p

< .001) and the opportunity to use the knowledge (B = .11, $t_{(1, 286)}$ = 2,366, p < .01). The model proved to be statistically significant and explained 39% of the data (R^2 = .39, $F_{(1, 286)}$ = 28,321, p < .05).

Hypotheses testing

To test the hypotheses, a mediation analysis (model 4) was conducted through PROCESS (Hayes, 2018).

Hypothesis 1. Hypothesis 1 expected that the relationship between the supervisor's support and performance would be mediated by the motivation to transfer. The results showed a significant indirect effect (.08, CI 95% [.04, .13]). Furthermore, the model explained 33% (R^2=.33) of the performance variance and was significant (p < .01). The relationship between supervisor's support and motivation to transfer (a; B = .25, p <.01), and the relationship between motivation to transfer and performance (b; B = .32, p < .00) were significant. Likewise, the total effect was significant (c; B = .22, p < .01). After the introduction of motivation to transfer, the effect of the supervisor's support on performance remained significant (c'; B = .14, p < .01) indicating a partial mediation. As such, hypothesis 1 was supported (see Figure 2).

--FIGURE 2--

Hypothesis 2. Hypothesis 2 expected that the relationship between peer support and performance would be mediated by the motivation to transfer. According to the results, the indirect effect of motivation to transfer was .11, with a 95% CI [.05, .18] indicating a significant indirect effect. Furthermore, the model explained 33% (R^2=.33, p < .01). The relationship between peer support and motivation to transfer (a; B = .35, p <.01), and the relationship between motivation to transfer and performance (b; B = .31, p < .01) were significant, as was the total effect (c; B = .20, p < .01). After the

introduction of motivation to transfer, the effect of peer support on performance remained significant (c'; $B = .09$, $p < .05$), indicating a partial mediation. As such, hypothesis 2 was supported (Figure 3).

--FIGURE 3--

Hypothesis 3. Hypothesis 3 expected that the relationship between adaptability and performance would be mediated by the motivation to transfer. The results showed a significant indirect effect (.06, CI 95% [.02, .10]). Furthermore, the model explained 55% (R^2=.55, p< .01). The relationship between adaptability and motivation to transfer (a; $B = .39$, p <.01), and the relationship between motivation to transfer and performance (b; $B = .14$, $p < .01$) were significant. The total effect (c; $B = .65$, $p < .01$) was also significant. After motivation to transfer entered the model, the effect of adaptability on performance remained significant (c'; $B = .59$, $p < .01$), indicating a partial mediation. As such, hypothesis 3 was supported (see Figure 4).

--FIGURE 4--

Additional analyses

Based on previous results, both from regressions and from mediations, a moderated mediation model was tested, using PROCESS model 7 (Hayes, 2018). This aimed to test whether the indirect effects would be conditional on the level of self-efficacy. First, we tested the moderation of self-efficacy on the indirect effect of supervisors' support and performance via motivation to transfer. The results showed a significantly moderated mediation index (-.09, CI 95% -.14, -.04]. This significant interaction indicated that the indirect effect varied according to the different levels of the moderating variable, in this case, self-efficacy. A simple slope analysis recommended by Dawson and Ritcher (2006) was performed. It demonstrated that the indirect effect was significant and stronger for lower ($B = .09$, $\beta = .03$, $p < .01$, CI 95%

[.03, .14]), or mean levels of self-efficacy (B = .03, β = .02, p < .05, CI 95% [.01, .06]). The indirect effect was no longer significant when self-efficacy showed higher levels (B = -.02, β = .01, p > .05, CI 95% [-.05, .00]) (see Figure 5).

--FIGURE 5--

Then, we tested the moderation of self-efficacy on the relationship between peer support and performance via motivation to transfer. The results evidenced a non-significant moderated mediation index (-.04, CI 95% [-.11, .01]).

At last, we tested the model with adaptability as the predictor. The results demonstrated a significantly moderated mediation index (-.03, CI 95% [-.08, -.01]). The significant interaction showed that the indirect effect varied according to the self-efficacy levels. A simple slope analysis demonstrated that the indirect effect was significant when self-efficacy was higher (B = -.01, β = .01, p < .05, CI 95% [-.03, -.01]). The indirect effect was no longer significant for lower (B = .02, β = .02, p > .05, CI 95% [-.01, .07]) or mean values of self-efficacy (B = .00, β = .01, p > .05, CI 95% [-.02, .03])(Figure 6).

--FIGURE 6--

Discussion

This study, conducted under an extreme context – the COVID-19 pandemic crisis - answers the call for studies on training under these contexts (Hällgren et al., 2018). Further, healthcare workers were faced with extreme (social isolation) and unusual job demands (high death rates of their patients) which made this the centre of the extremeness that characterized the lives of those who worked in the healthcare settings. Hence, understanding how healthcare workers learn and apply learned content in an extreme context is of crucial importance to delineate what can be done to improve learning in these contexts.

Extreme contexts are triggered by crises, threats, and turmoil (Hällgren et al., 2018); and, as such are characterized by high complexity, uncertainty, and demands that are not used to be experienced in ordinary contexts. The first peak of COVID-19 in Portugal was an extreme working context, especially for healthcare workers. These workers were facing daily challenges – some of them never imagined – and included for instance, long working hours, psychological distress, and concerns about their own health and about their loved ones – to whom they had to be far away due to the likelihood of infection. Hence, training in extreme contexts is different from regular training because it implies trainers and trainees dealing with a high degree of uncertainty (high death rates) and ambiguity (role conflict and changes in safety rules and procedures) which means that the methods, the length, and the exercises in the training have to be adjusted to the uncertainty of the moment to facilitate the learning process (Li & Pilz, 2023). Indeed, training under extreme contexts is beneficial because it helps employees understand new procedures and rules needed to deal with such settings (Garavan et al., 2021, a, b).

This study used the JD-R model (Bakker & Demerouti, 2007) to explore the role of job resources (support from the supervisor and colleagues) and personal resources (adaptability) as predictors of learning transfer and performance in an extreme context – the COVID-19 healthcare context. Furthermore, this study demonstrates the existence of a personal resource – self-efficacy- that may amplify this positive effect and as such highlights its importance for extreme working contexts.

First, the results show that one of the explanatory factors of training transfer is the trainees' motivation to transfer. That is, the greater the motivation of individuals to apply knowledge, the greater the transference of this knowledge to work. The motivation to transfer learning reflects the willingness to apply the training content to

the workplace (Zeng et al., 2021), and reflects the direction, intensity, and persistence of the effort to use it to perform the job (Holton et al., 2005; 2012). This result is consistent with other empirical demonstrations. For instance, Yang and Watson (2022) demonstrated that motivation to transfer positively predicted the transfer of knowledge to work. Nafukho and colleagues (2022) also showed that the motivation to use knowledge and the opportunity for it positively influence the transfer of knowledge. Therefore, there is consensual support to suggest that the individual's motivation is a crucial resource for knowledge transfer after training even if employees are in extreme working settings.

Self-efficacy is also another resource that seems to have an influence both on knowledge transfer and on fostering adaptability to extreme situations. It refers to an individual's personal belief about their ability to perform his/her work effectively (Bandura et al., 1999). Recent studies have shown the predictive power of self-efficacy on adaptability and satisfaction (Şahin & Gülşen, 2022). Plus, when individuals believe that they can adapt to the context, even when this is an extreme one, they become more focused and motivated to learn and to transfer their knowledge to work. Enhancing self-efficacy can help trainees to develop adaptability to extreme contexts (Zammitti et al., 2020).

Finally, the opportunities to put into practice the knowledge acquired in training seem to be a relevant factor for the employee's adaptability. Endres (2018) highlighted the importance of management in creating opportunities to increase adaptability and improve performance.

The findings suggest that both job and personal resources are important to the motivational process proposed by the JD-R (Schaufeli, 2017), as both increase the motivation of employees to transfer the learned content and, this, in turn, improves their

performance. Specifically, the relationship between the supervisor's support and performance is mediated by the motivation to transfer. The role of the supervisor appears to be crucial under an extreme context and may thereby make a significant difference in their employees' motivation to transfer what they learned. For instance, when employees perceive support from their supervisor and appraise them as more effective, they become more motivated to surpass their standards (Junça-Silva & Caetano, 2023). Iqbal and Dastgeer (2017) showed that the motivation to transfer mediated the relationship between self-efficacy, retention of training, and learning transfer. In a study carried out with 3600 individuals, Martin et al., (2019) evidenced that support from managers was positively related to the motivation to learning transfer. Hence, under extreme contexts, supervisors play a key role in helping and supporting their employees, providing them with opportunities to learn, and empowering them on the job (Bozionelos et al., 2020; Yaghi & Bates, 2020).

Additionally, the findings show that when peer support is higher, motivation to transfer tends to increase which in turn leads to improved performance. The results are in line with the literature (Zeng et al., 2021). Peer support is related to the colleague's tendency to help the learning transfer to work (Seyler et al., 1998). Peer support is expected to be more relevant in work contexts that organize human resources into teams, reflecting an interdependence between colleagues – which is the case of healthcare workers (Bates et al., 2000). In this perspective, peer support is a positive influence that is operationalized in behaviors of appreciation, encouragement, expectation, and patience with colleagues who try to apply training at work. In a context characterized by high uncertainty and complexity, perceiving empathy from peers may gauge employees' motivation to learn and transfer knowledge to the work context (White et al., 2020). Bell et al. (2017) showed that peer support can determine the

learning transfer to the workplace, stating that the motivation to do it is positively affected by this support. Martin et al., (2019) also showed that peer support and motivation to transfer had a positive impact on trainees' performance. A meta-analysis carried out by Reinhold et al. (2018) showed that peer support was the strongest predictor of motivation to transfer learning to the workplace.

All in all, both types of social support are important job resources that help to develop motivational resources responsible for increasing performance after training in extreme contexts.

Theoretical implications

The results also show that adaptability influences performance through employees' motivation to transfer the learned knowledge in an extreme working context. Hence, adaptability is a personal resource important not only in common working settings but even more relevant when workers need to adapt to highly changing conditions (Collie et al., 2020). Under extreme contexts, as was emphasized earlier, workers need to invest their energy and other resources to better adjust to highly changing working conditions. On the opposite, in normal working conditions, although adaptability is an important resource, workers have to make less effort and invest less energy to feel motivated to transfer knowledge and, as a result, to perform better (Collie et al., 2020).

Consistent with the argument of the JD-R, personal resources reinforce the motivational pathway needed to deliver motivational responses after training. Specifically, healthcare employees' adaptability increases the motivation to transfer learning and as a result, their performance is promoted in the extreme working context in which they are living and working. As it was mentioned, healthcare workers were experiencing extreme (social isolation; for instance, sometimes they avoided going

home as a strategy to prevent contagion) and unusual job demands (high death rates of their patients and new norms and safety procedures to learn); hence, adaptability was of increased necessity for them to adjust to these uncertain and complex times.

Adaptability has been highlighted as an important performance-related indicator (Park & Park, 2019). Employees who tend to be adaptable to changes, uncertainties, daily hassles, or other unexpected occurrences, also deal effectively with such contextual influences (Junça-Silva & Silva, 2022). Hence, in extreme working settings, adaptability plays a crucial role in employees' motivation to learn, apply, and perform. One of the essential premises for trainees to feel motivated to transfer training content to work is their ability to adapt to new realities and circumstances (Park & Park, 2021). Hence, adaptable individuals not only tend to be more motivated to learn but also have more willingness to use it in their working life, even in uncertain and complex circumstances.

Additionally, this study looked for an answer to understand under what conditions these relations occur. A set of complementary analyses shows that self-efficacy is a condition through which the indirect effect of job (peers and supervisors' support) and personal resources (adaptability) influence performance via motivation to transfer knowledge. The relationship between the supervisor’s support and performance via motivation to transfer depends on self-efficacy levels, in such a way that the relationship is stronger for lower levels of self-efficacy. That is, a supervisor’s support tends to increase performance through motivation to transfer, in particular for those with lower levels of self-efficacy. Hence, individuals who are less confident in themselves regarding performance, need more support from supervisors, than those who have higher levels of self-efficacy. For these, having higher support from the supervisor may

indeed be counterproductive, as it is shown to decrease performance (even though not significantly).

The opposite occurs with the relationship between adaptability and performance via motivation to transfer. That is, this relationship is stronger when self-efficacy is higher. Self-efficacy seems to be a relevant condition to raise not only the motivation to transfer knowledge but also the employee's performance. Self-efficacy allows a person to feel more comfortable implementing new knowledge, even in crises, such as the COVID-19 pandemic (Bahora et al., 2008). Hence, for more adaptable workers, self-efficacy may further amplify the motivational process proposed by the JD-R (Shcuafeli, 2017) and lead to higher performance in extreme working settings. This may imply that the interaction between personal resources (adaptability and self-efficacy) strengthens the employees' motivational responses that increase positive behaviours and benefit performance. They may be able to adjust themselves but if they believe that they can do it, they tend to become more motivated to do it, which results in a better performance.

Limitations and Future Research Directions

This study has some limitations. First, the small sample size and the use of a convenience sample may trigger some bias. Moreover, most sample was composed of women, and this may create some bias in the conclusions of the study. Therefore, the results should be generalized with some caution to other healthcare institutions. Further, the use of self-reported measures may have led to the common bias method, as well as biases arising from social desirability (Podsakoff et al., 2012). Finally, the use of a cross-sectional study limits the generalization of results, as well as the comparative analysis between performance indicators before and after training.

Future research should expand the findings obtained in this study. First, future research should use alternative study designs, such as experimental or quasi-experimental designs, resorting to a control group and pre-and post-test measurements. Second, because individual characteristics may play significant moderating roles in these models, future studies should also consider the analysis of the role of other personalistic variables in these relationships, such as the big-5 or psychological capital. Third, future research should also consider exploring the within-person fluctuations in motivation to transfer and how it impacts the trainee's performance and adaptability to extreme situations or contexts. Within-person fluctuations are important because they translate the differences that occur in a given state or behavior from day to day (Junça-Silva, 2022); as such, conducting a daily diary study would be helpful to better understand it.

Practical implications

Training is for healthcare institutions a privileged mechanism for adapting knowledge and skills, or improving existing ones, to respond to the needs of professionals. The practical contribution of this investigation highlights the role of each trainee's motivation to improve performance under extreme working contexts. Extreme working contexts are filled with conditions that trigger uncertainty, high levels of adversities, risk, and pressure and impact the safety and health of workers (Cheng et al., 2023). Further, extreme contexts often demand employees to work and act outside of the normal working conditions and as such, require high levels of adaptability (Karthick et al., 2023). Hence, training employees in these contexts is especially challenging due to the characteristics that may threaten the learning process and consequently their performance and safety (Garavan et al., 2021).

The findings emphasize the importance of training to improve effective responses of both workers and organizations in these contexts. Under extreme contexts, organizations must provide conditions and training to develop employees' specialized skills, resilience, self-efficacy, and emotional regulation to effectively deal with the challenges and uncertainty triggered by the context. Moreover, training on safety protocols is crucial to ensure healthcare workers' well-being and safety in these contexts.

As emphasized earlier, in this specific extreme context, healthcare workers were faced with extreme job demands – extreme because they were highly uncertain, volatile, and often contrasting. But, as results highlight, having both job and personal resources may help employees to adjust themselves to such conditions, and at the same time strengthen their motivation to learn, and apply it at work. Even though, the focus on training is lower due to the inherent concerns with such uncertainties, perceiving support from others and being more adaptable may be key resources to improve the motivation to learn, and perform. Further, both types of resources may create a difference in learning and applying or being immersed in other thoughts and concerns and not learning. On the other hand, when applying it to non-extreme contexts, both job and personal resources are still important. However, in common contexts transferring knowledge may be easier as there are no extreme threats (e.g., being worried about the safety of the loved ones, or if will be there another change in the shifts that impede the person going home) to the common process of learning.

Thus, healthcare institutions should consider implementing training as a strategy to facilitate adaptability to extreme situations and provide additional sources of social support to enhance the motivation to learn and transfer it to work. Further, given the openness and acceptance of the training, even if one considers the peak of COVID-19

(when the number of deaths was increasing every day), it is important to emphasize that even in uncertain and complex times, training may be a suitable response that supports workers' questions, doubts, and their own uncertainties. It may also be a moment to share social support among others and create empathetic mechanisms that improve the perception of being supported and understood. Furthermore, as the results highlight training, even when there is high uncertainty, is beneficial for employees to understand and learn how to deal with new and uncertain situations. Indeed, training and the consequent learning transfer to work are of great importance for individual and organizational performance, increasing their ability to respond to uncertainty as has been seen in the COVID-19 pandemic.

Moreover, organizations must be responsible for creating environments and mechanisms that support the transfer and applicability of learning in the workplace. For instance, it should be useful to enhance leaders and peer support to facilitate learning transfer. Plus, the use of real simulations such as extreme situations would promote enhanced adaptability to these contexts and minimize experienced uncertainty. Trainees should feel that attendance and participation in training, in a real work context, have continuity and feedback from supervisors. This necessary symbiosis will allow for better training results in healthcare institutions.

On the other hand, the results show the positive role of both adaptability and self-efficacy in the motivation to transfer and performance. Organizations should consider these indicators to create training focused on these characteristics regularly and not only under extreme contexts. Promoting adaptability and self-efficacy among employees may not only create added value among the workforce but also trigger new venues for improved performances more regularly. The aim is not only personal

development but also professional one because when the organization has confident and adaptable employees, even in crises, it will be able to ensure its productivity.

Conclusion

The findings of this study show that the employee's motivation to transfer what is learned in training under an extreme context is a mechanism through which colleagues' and supervisors' support influences adaptability to the context and performance. Furthermore, these indirect effects are conditional on the levels of self-efficacy, in such a way that they are stronger when self-efficacy is higher. Thus, adaptability and support, both from colleagues and the supervisor, are determining factors for knowledge transfer and resultant performance in extreme contexts, such as the COVID-19 pandemic crisis.

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