



The Effects of Technostress on Well-Being and Performance.

The Role of Social Support

A study among childcare workers in the Netherlands

Master's Thesis Human Resource Studies

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Project period:	2019 - 2020
Thesis theme:	Lost in Digitalization? Determinants and Consequences of Technostress in the Workplace
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Table of Contents

Abstract.....	3
1. Introduction.....	4
2. Theoretical Framework.....	7
2.1 Technostress through the lens of Conservation of Resources Theory.....	7
2.2 Technostress, Well-Being, and Performance.....	8
2.3 Social Support	13
3. Methods.....	16
3.1 Research Design, Sample and Procedure	16
3.2 Measures and Instruments.....	18
3.3 Analysis	21
4. Results	21
4.1 Descriptive Statistics	21
4.2 Hypothesis Testing	24
5. Discussion.....	27
5.1 Theoretical Implications.....	28
5.2 Practical Implications	30
5.3 Limitations and Directions for Future Research	30
6. Conclusion	31
References.....	32
Appendix.....	42

Abstract

The recent technological revolution has brought consistent changes in the modern workplace. Although it has allowed work to be performed faster and in a more efficient way, many employees are not completely at ease with its implementation since fast-changing ICT can be overwhelming. As a result, users have started to experience stress deriving from technology (technostress), which has negative consequences on individuals. Making use of Conservation of Resources (COR) theory, this paper explores the effects of technostress on 196 employees in childcare facilities in the Netherlands. Specifically, it investigates its effects on well-being and performance and the potential moderating role of social support. When analysing the role of social support, this paper contributes to the already available literature by making a distinction between the source of social support, namely supervisor and co-worker support. Results reveal that technostress has a negative impact on employee well-being, causing low work engagement and high emotional exhaustion, and it leads to a decrease in performance in terms of quality of care delivered. Moreover, well-being has a mediating role on these negative effects and can help reducing the impact of technostress. The hypotheses regarding the moderating role of social support could not be confirmed. Neither perceived supervisor support, nor co-worker support, gave significant results. As the complexity and ubiquity of ICTs increase, the present research identifies some critical issues that childcare facilities face and that must be addressed. It is important that the implementation and use of ICTs in the workplace is managed correctly in order to utilise those technologies in a more effective way.

Keywords: Technostress, well-being, emotional exhaustion, work engagement, performance, quality of care, social support, supervisor support, co-worker support, COR theory, education, childcare

1. Introduction

The recent technological revolution has brought consistent changes in the modern workplace. The widespread use of Information and Communication Technologies (ICTs) has led to improved working conditions in all sectors, allowing to fasten certain processes and the way business occurs, facilitating communication and exponentially increasing productivity, thus making people's job much easier (Berg-Beckhoff, Nielsen & Ladekjær Larsen, 2017; Cascio, & Montealegre, 2016; Schwarzmüller, Brosi, Duman, & Welp, 2018). However, individuals are also starting to report issues arising from the overwhelming and fast-changing ICTs (Wang, Shu & Tu, 2008). An increasing number of workers are experiencing stress when using technology, which is also referred to as "technostress" (Ragu-Nathan, Tarafdar, Ragu-Nathan, & Tu, 2008). Research has found that this has a significant negative effect on both workers' physical and mental health, with consequences for organisations. Technostress, in fact, can lead to higher absenteeism and turnover intentions, which are a threat to organisational outcomes (Ragu-Nathan, Tarafdar, Ragu-Nathan, & Tu, 2008).

One of the sectors which is starting to implement the use of technology into day-to-day business and activities, is the education sector. Due to the more extensive use of technology and its reported positive effects on learning processes, schools are starting to integrate ICT as a tool into the regular curriculum and classroom activities (Isikoglu, 2003). Moreover, teachers are often asked to constantly update online portfolios that are available for parents and co-workers to view. These portfolios share information concerning the activities and practices in the classroom as well as the quality of care delivered (Kankaanranta, 2001; Woodland, 2017).

Workers in childcare facilities have been found to have the second-worst occupation with regards to work-related health problems, (Løvgren, 2016), they appear to have especially high levels of stress which lead to high turnover, high absenteeism and, consequently, to poor quality of care towards children (Carson, Baumgartner, Matthews, & Tsouloupas, 2010). One of the many factors that have been found associated with stress in teaching is, indeed, technology. A study by Al-Fudail and Mellar (2008) has proven the presence of technostress when technology is used in the classrooms. The increased use of technology can be overwhelming for teachers. In addition to taking care of children and carrying out their usual activities, teachers now need to set up ICT,

facilitate its use, and fix potential technical issues or malfunctioning of the devices (Isikoglu, 2003). This adding up to the already high stress levels that childcare teachers tend to experience.

To guarantee the children's well-being, it is important for caretakers to be healthy themselves (Carso et al., 2010). The focus of the present study will be on childcare facilities in the Netherlands; the Dutch government invests almost 50% of the total education expenses in quality, development, and innovation of childcare centres to maintain the high quality of care (CBS, 2018). Therefore, healthcare, and specifically childcare, are extremely relevant sectors that need to be monitored to identify what threatens teachers' well-being and performance and to guarantee a high level of care.

An emerging body of research is addressing the impact of technologies on employees' well-being and performance (Berg-Beckhoff, Nielsen & Ladekjær Larsen, 2017; Tarafdar, Pullins & Ragu-Nathan, 2015). Because of the advantages of ICTs, employees are under pressure as they are expected to perform faster and more productively, always being reachable and connected (Wang, Shu & Tu, 2008). This could potentially lead to burnout over time and to less engaged employees, thus affecting their performance (Salanova, Llorens & Cifre, 2013).

General stress literature addresses the role of social support to mitigate the impact of stress on employee's health and well-being (Hobfoll & Freedy, 1993). It presents a promising avenue and is currently one of the most frequently researched coping resources, however, the role of social support is still not well understood and urges further research on the extent to which it would have an impact on stress (Gorgievski, Halbesleben, & Bakker, 2011). Social support in the workplace refers to positive, beneficial, and advantageous interactions with other colleagues and managers at work (Daniels et al., 2013). Paying attention to employees' health and increasing their well-being results in higher organisational efficiency and performance (Wang, Shu & Tu, 2008). For this reason, it is important to investigate the impact of ICT-related stress on workers and the possible variables within the work context which could influence how workers react to- and cope with technostress. As social support appears to reduce fatigue, exhaustion and, in general, the impact of stress on employees (Salanova, Llorens & Cifre, 2013), it could also have a moderating influence on the effects of technostress on workers, given that TS is a form of stress itself. It is important to gain a better understanding of which factors could reduce technostress experiences since technostress was found to have consequences for employee well-being and performance.

In addition, performance appears to be positively related to well-being (Warr & Nielsen, 2018) but more research is needed to explore whether the relationship between these two variables might instead flow in the reverse direction, from good performance to well-being. Another possibility is that influence might be reciprocal, making well-being and performance mutually dependent. Moreover, a further causal possibility is that both could be influenced by a third variable, in this case technostress, making them independent from each other (Warr & Nielsen, 2018).

The present study will analyse the link between technostress, well-being, and performance, furthermore it will investigate the role of social support. The first contribution of this research will be to stress literature as it will investigate the effects of technostress on employee well-being and performance. Also, when analysing the role of social support on this effect, this paper will contribute to the already available literature by making a distinction between the source of social support, namely supervisor and co-worker support (Salanova, Llorens & Cifre, 2013). Eventually, the relationship between well-being and performance will be analysed allowing to further explore the nature of the link between these variables. In particular, the study will consider childcare facility workers within the Netherlands. Observing the effects of TS in such a particular environment can be very valuable. There have been calls for more research on technostress in particular contexts which involve specific and diverse types of ICTs, roles, or tasks (Johns, 2006; Tarafdar, Pullins & Ragu-Nathan, 2015). Context-specific studies are very important as they allow to gain further and deeper understanding on how general phenomena may apply to dissimilar contexts (Johns, 2006).

Overall, the present research will address the following research questions:

To what extent does technostress affect childcare teachers' well-being and performance? How does social support affect these relations? Additionally, is performance also affected by well-being?

2. Theoretical Framework

2.1 Technostress through the lens of Conservation of Resources Theory

When trying to understand the nature of stress, an explanatory theory is the Conservation of Resources (COR) theory. This is a well-established theory and is one of the main ones in psychological stress literature to theorise individual stress (Goetz & Boehm, 2020). Fundamental for this theory is the concept of (valued) resources. According to Hobfoll and Freedy (1993) people actively “strive to obtain and maintain that which they value” (p. 117). Stress occurs when circumstances in the work environment obstruct individuals from obtaining or maintaining resources, namely those elements that one values, specifically objects, states, and/or conditions that can help to achieve goals (Hobfoll & Freedy, 1993). In order to protect their resources, people can draw from the other resources that they own. Resources can encourage personal growth and development as well as help workers accomplish work goals. Moreover, they reduce the stress related to their job because they make people feel prepared for handling the given situation (Harris, Harris, Carlson, & Carlson, 2015).

According to COR theory, some resources, such as money or energy, get consumed when used and can terminate, hence a persona can run out of a certain resource (Hobfoll, Freedy, Lane & Geller, 1990). Following COR theory, when using technology, individuals have to invest their resources to manage increasing ICT demands; for example, when having their work frequently interrupted by emails or phone calls. If employees feel that their resources (energy, time, reputation) are threatened and/or that they might struggle to devote these resources to competing tasks, they are likely to experience technostress, thus reducing their performance (Harris et al., 2015). Applying this reasoning to the childcare environment, technological issues such as device malfunctioning or connectivity problems can take a large amount of time to get addressed and solved, thus disturbing the normal teaching flow, and causing frustration and stress in teachers.

Since resources are often difficult to obtain and maintain, resource loss is considered to be more salient and of a greater impact compared to resource gain. It is important for individuals to protect themselves from losing resources as this would cause them stress (Hobfoll & Freedy, 1993). For teachers, for example, difficulties in managing children, negative interactions with parents or negative evaluations by their supervisors will have a bigger impact than any other

reward or positive feedback they might receive during the day. When workers experience (techno)stress, this constitutes a threat to their resources. As a result, they will invest more time and effort in trying to conserve resources rather than focusing on their job.

Although maintaining resources and preventing their loss is more important than gaining resources, it is by no means irrelevant. Being rich in resources places people in a less vulnerable position and ensures them to be less likely to experience stress as resources help to cope with job requirements (Hobfoll & Freedy, 1993; Salanova, Llorens & Cifre, 2013). Certain elements could possibly mitigate or aggravate the negative effects of technology use and technostress (Hobfoll & Freedy, 1993). Co-workers or supervisors can often help individuals to manage resources by being a source of social and work-related support. They can, for instance, distribute tasks, and clarify priorities or task instructions, thus reducing employees' stress. COR theory can help explain the importance of social support; individuals have limited resources available and, especially when under stress, they may find their resources inadequate. Social support could act as both a way to gather resources as well as a resource itself. Through social support, people can rely on others to provide those resources that they lack, to strengthen their resources, or to remove them from a stressful situation allowing them to gain other resources or to recover the ability to use those they already have/possess (Hobfoll et al., 1990). Recognizing that technology is a part of today's workplace, social support might play a fundamental role in how technology is experienced by employees (Harris et al., 2015).

Until now, only a limited number of studies (Daniels et al., 2013; Harris et al., 2015; Morgeson & Humphrey, 2008) has been able to provide empirical evidence regarding the way resources, and particularly social support, benefit the worker. It is, therefore, one of the aims of the present research to contribute to this body of literature and try to fill this gap.

2.2 Technostress, Well-Being, and Performance

The increased (ab)use of technology has created feelings of stress in some users (La Torre, Esposito, Sciarra, & Chiappetta, 2019). Stress is generally referred to as a response of the people to adapt to certain factors, called stressors, which alter a person's balance. A short-term response to stress has usually positive effects on performance as it represents "the mechanism of resilience of healthy humans" (La Torre et al., 2019, p. 13), thus referring to their ability to overcome obstacles and be successful. In the long-term, however, this response can become unhealthy and

pathological (La Torre et al., 2019). When the stressor is represented by the use of ICTs, the long-term reaction can lead to a phenomenon called *technostress* (TS).

One of the most common definitions describes technostress as the “reflection of one’s discomposure, fear, tenseness and anxiety when one is learning and using computer technology directly or indirectly that ultimately ends in psychological and emotional repulsion and prevents one from further learning or using computer technology” (Wang, Shu & Tu, 2008, p. 3004). It is a negative psychological experience in which people report feelings of frustration, scepticism, and inefficacy beliefs regarding the use of technologies (Salanova, Llorens & Cifre, 2013). Simply put, TS is the experience of stress when using technologies (Ragu-Nathan, Tarafdar, Ragu-Nathan, & Tu, 2008).

Technostress is defined (and analysed) by four components (Salanova, Llorens & Cifre, 2013). Firstly, there is *anxiety* which is characterised by high physiological activation, tension, and discomfort regarding/in relation to technologies. This component includes, for example, the fear of making a mistake and losing information, and being intimidated by computers. Secondly, users can experience *fatigue* deriving from the increased amount of information (information overload). The third component is *scepticism*, namely a distant, detached, cynical attitude toward the use of ICTs. Finally, the fourth dimension is *inefficacy* (beliefs) related to the correct way to use technology, thus influencing the choice of whether or not to use it (Salanova, Llorens & Cifre, 2013).

To explain the effects of stress and to understand teacher’s technostress, it is once more possible to make use of COR theory. Following COR-theory it is expected that technostress will reduce employees’ well-being and their performance. This is supported by empirical evidence that is pointing out a negative association between technostress and users’ well-being and performance (Brooks, 2015; Salanova, Llorens & Cifre, 2013; Suharti & Susanto, 2014). As previously mentioned, COR theory claims that stress occurs when resources are threatened, actually lost or when no resource is gained after a substantial resource investment (Hobfoll & Freedy, 1993). In order to reduce loss, people actively engage in coping efforts, thus investing more resources. In this process, unless gains are accomplished to counterbalance the resource deterioration, people experiencing technostress may enter a spiral of loss (Westman, Hobfoll, Chen, Davidson, & Laski, 2004). The stress occurring due to this situation would cause many health issues such as emotional exhaustion, anxiety, depression, and burnout (O’Driscoll, Brough, Timms, & Sawang, 2010).

Hobfoll and Freedy (1993) put emphasis on the dynamic aspect of the development and maintenance of stress, explaining that stress is unavoidable since the rate by which TS drains resources is much faster than the rate by which they can be replenished (Westman et al., 2004).

Happy, healthy, and engaged employees are proven to be more creative and performing, thus contributing to the business' innovation, competitiveness and making a significant difference in regard to organisational success (Bakker & Schaufeli, 2008). It is of great relevance to pay attention to employees' well-being as this can affect their performance. The present study will analyse employees' well-being in terms of work engagement and emotional exhaustion which are characteristics that are both perceived by children and, over time, can have a negative effect on their well-being too (Schaufeli, Leiter, Maslach, & Jackson, 1996; Schaufeli, Shimazu, Hakanen, Salanova, & De Witte, 2017; Wirtz, Rigotti, Otto, & Loeb, 2017). *Work engagement* is defined as "a positive, fulfilling, work-related state of mind" (Schaufeli et al., 2017) and it has been found to be significantly and positively related to well-being. High engagement also leads to more optimistic, satisfied, creative and productive employees (Sarath & Manikandan, 2014). For instance, it has been related to improved mental and physical health among workers. In fact, work engagement is associated with a lower risk of sickness absence, several indicators of job performance, and workplace safety (Hakanen, Ropponen, Schaufeli, & De Witte, 2019). *Emotional exhaustion* refers to a persistent state of physical and emotional depletion that originates from constant stress, pressure and/or high job demands. It is described as a feeling of being emotionally overwhelmed and exhausted by one's job. It can manifest as physical fatigue and as a sense of feeling both psychologically and emotionally "drained" (Carson et al., 2010). This state can have a significant impact on interpersonal relationships at work as well as on people's behaviour. For example, it has been found to relate to poorer performance, lack of motivation and enthusiasm, difficulty concentrating and increased rates of absences from work: all important characteristics for a teacher. Stress deriving from technology usage can also lead to such negative outcomes as well as to avoidance of-, and resistance to-, ICTs. These effects have an impact on people's (psychological) well-being and, in turn, reflect on organisational performance (O'Driscoll et al., 2010). Applied to the educational context, not being able to effectively deal with ICT due to lack of time, energy or other resources, and not being able to regain these resources fast enough, could create (techno)stress in teachers who could start feeling emotionally exhausted and/or less engaged. Based on this reasoning, the following hypotheses were stated:

H1a: Technostress is negatively related to childcare workers' work engagement.

H1b: Technostress is positively related to childcare workers' emotional exhaustion.

Stress in general and its impact on individual performance are topics that have been researched extensively in the field of organisational behaviour. However, stress related to ICTs and its impact on performance has only recently gained attention in research (Suharti & Susanto, 2014). In this study, performance in childcare facilities will be measured through *quality of care delivered* (Aiken, Clarke, Sloane, & International Hospital Outcomes Research Consortium, 2002). Low quality of care can, in fact, significantly threaten and damage a child's development, it is therefore an extremely relevant and key aspect in day-care facilities (Aiken et al., 2002).

The possible negative impact of technostress on performance (Suharti & Susanto, 2014) is supported by multiple studies that have reported negative outcomes when individuals are under stress conditions. Among others: higher levels of absenteeism, lower levels of productivity, lower organisational commitment, higher turnover, and reduced quality of interpersonal relationships (Ayyagari, 2007; Carson et al., 2010; Quinn, 2007; Ragu-Nathan et al., 2008). Up until a certain level, stress and pressure can push and encourage the employee to increase productivity (Brillhart, 2004) but if it exceeds the tolerance limit, stress can become counterproductive and dysfunctional (Pusey, 2013). Considering the relevance of human capital within organisations, it is important for HR managers to focus on reducing levels of technostress. Having to dedicate a large amount of resources to the correct setting up and functioning of ICT, reduces the amount of resources that are available for teachers to properly take care of their students. The following hypothesis was therefore developed:

H1c: Technostress is negatively related to childcare workers' performance.

A lack of well-being can have extensive costs in both human and financial terms. Depression, alcoholism, low self-esteem, and hypertension are associated with reduced well-being in the workplace (Quick, Wright, Adkins, Nelson, & Quick, 2012). In turn, these variables have been found to have a negative effect on several important work outcomes including job performance (Wright & Huang, 2012). Empirical research has observed a consistently positive, however small, association between employees' well-being and performance: employees with

high well-being tend to perform better in their jobs (Van De Voorde, Paauwe & Van Veldhoven, 2012; Warr & Nielsen, 2018).

As already mentioned, and following COR theory, when employees experience technostress, their well-being diminishes. If, on the one hand, poor well-being can be a cause of TS, on the other hand, increased well-being could be a resource to individuals. Thus, allowing them to face technological demands in a more effective way and reduce (the effects of) technostress. Being healthy does not only refer to the absence of disease but also to the ability to recover from- and react to- illness and other problems (Warr & Nielsen, 2018). Following this line of thought, employees' well-being could affect their performance. Employees with high well-being, in fact, might have higher work engagement and lower emotional exhaustion, thus would be less absent from work, would be able to concentrate better and would be more creative, motivated, and enthusiastic (O'Driscoll et al., 2010; Sarath & Manikandan, 2014).

Building on COR theory, and the above-mentioned reasoning, the following hypotheses were developed:

H2a: Childcare workers' performance is positively related to their work engagement.

H2b: Childcare workers' performance is negatively related to their emotional exhaustion.

If H1a, b, c and H2a/b were to be confirmed, then emotional exhaustion and work engagement could mediate the relationship between TS and performance. More specifically, work engagement could act as a resource to individuals, helping them to cope with technostress and allowing them to better focus on their performance. Contrarily, emotional exhaustion could cause resource loss, reducing the ability to cope with stress and lowering individual's performance (Carson et al., 2010). For this reason, further hypotheses were stated:

H3a: Work engagement positively mediates the relation between childcare workers' technostress and performance. Specifically, the relation between teacher's TS and their performance will be stronger among those individuals with lower work engagement and weaker among those with higher work engagement.

H3b: Emotional exhaustion negatively mediates the relation between childcare workers' technostress and performance. Specifically, the relation between teacher's TS and their performance will be stronger among those individuals with more emotional exhaustion and weaker among those with lower emotional exhaustion.

In order to seek a more balanced approach between the interests of employees and employers, this study will explore the nature of the relationship between well-being and performance.

2.3 Social Support

(Techno)stress, as previously stated, can have negative effects on workers' health and a harmful effect on well-being (Daniels et al., 2013). In line with the COR theory, resources such as social support can play a significant role when managing job demands and, in this case, ICT demands. Social support could, in fact, be used to help employees deal with technology in a more effective way, thus reducing the effects of technostress (Hobfoll & Freedy, 1993). Social support is a point of major interest because of its relation to both psychological well-being and physical health (Hobfoll et al., 1990). Individuals who are more supported are able to preserve psychological and physical well-being in stressful situations, and in general, throughout their lifetime.

According to a study by Goelman and Guo (1998), levels of social support have an impact on how stress and burnout are experienced by teachers in day-care centres, specifically, lower levels of support lead to higher levels of stress due to job demands. Similar results were found in a more recent study by Ducharme and colleagues (2007) who observed that work-based social support and especially co-worker support effectively reduced participants' feelings of emotional exhaustion and stress and in turn decreased their turnover intentions.

A growing body of literature (Harris et al., 2015; Karasek & Theorell, 1990; Nahum-Shani, Bamberger, & Bacharach, 2011) reports the moderating role of social support that lowers employee stress arising from job demands. Following this line of thought, it could also lower the negative impact of technology use on the workplace that leads to technostress (Daniels et al., 2013; Salanova, Llorens & Cifre, 2013). Moreover, investigating social support following COR theory, it is possible to argue that resources help employees in managing the workload, thus reducing stress, and improving well-being (Daniels et al., 2013; Nahum-Shani, Bamberger & Bacharach, 2011). Considering this point of view, social support would be a resource from which workers can draw when managing demands and stressful situations (Nahum-Shani, Bamberger & Bacharach, 2011). COR theory suggests that resources are not only depleted when used but can also be replenished by certain facilitating factors (Hobfoll & Freedy, 1993); in this case receiving support

could facilitate the replenishment of resources such as time, energy, or motivation. Following this line of thought, social support would act as both a resource and a facilitator towards resource replenishment.

Although most research points to the benefits of social support, some studies have led to inconsistent results (Beehr, Farmer, Glazer, Gudanowski, & Nair, 2003; Salanova, Llorens & Cifre, 2013). Receiving support was sometimes, paradoxically, found to be associated with negative outcomes (Bolger, Zuckerman & Kessler 2000; Salanova, Llorens & Cifre, 2013). This would occur because people feel not “worthy” of help or feel inefficacious, as they were not able to solve the problem by themselves but needed a little help from others (Nahum-Shani, Bamberger & Bacharach, 2011; Salanova, Llorens & Cifre, 2013). These contrasting findings highlight the need to analyse the role of social support and focus on understanding the conditions that lead to its perception as helpful, consequently leading to positive outcomes (Beehr et al. 2003). The COR theory provides a theoretical explanation for how and why technostress would negatively affect an employee's well-being and performance at the workplace. In line with this theory, social support, as a resource, could have an important role in helping individuals to cope with TS, mitigating its negative effect and reducing its impact. The study of Salanova, Llorens and Cifre (2013) offers some interesting insight about the ambivalent role of social support in predicting TS, however, does not make any distinction regarding the source of social support.

This paper will analyse two typical sources of social support in the working context, namely supervisors and co-workers. These are usually termed in literature as perceived co-worker support and perceived supervisor support (Guchait, Paşamehmetoğlu & Dawson, 2014). *Perceived supervisor support* (PSS), refers to the degree to which employees perceive that their supervisors value their contributions and care about their well-being (Guchait, Paşamehmetoğlu & Dawson, 2014). Supervisors often act as agents of the organisation and individuals are likely to interpret their supervisor's support (toward them) as an indicator of organisational support. Employees who perceive high support from their supervisor, and thus from the organisation, feel obliged to repay the organisation through positive attitudes and behaviour (Eisenberger et al., 1990). For this reason, high perceptions of supervisor support results in enhanced employee performance (Guchait, Paşamehmetoğlu & Dawson, 2014). Managerial actions have been reported to be the most important contributing factor in shaping and influencing human capital's behaviour (Branson, 2008). Therefore, PSS is expected to reduce employees' work-related stress and enhance

their self-esteem which, in turn, will result in better performance (Guchait, Paşamehmetoğlu & Dawson, 2014).

Perceived co-worker support (PCS), on the other hand, refers to the extent to which individuals trust that their co-workers will be willing to assist them in performing and completing work-related tasks. This includes encouraging and supporting each other and sharing knowledge; simply put, helping one another at work (Zhou & George, 2001). Employees who perceive higher support from their co-workers are likely to obtain access to more job-related resources that allow them to handle stress, to solve problems, to improve their performance, and to eventually reduce stress and turnover (Guchait, Paşamehmetoğlu & Dawson, 2014). Simply put, it is expected that under higher levels of social support, the effects of technostress on performance will be less negative. Based on this reasoning, the following hypotheses were formulated:

H4a: Perceived supervisor support positively moderates the relationship between childcare workers' technostress and performance. Hence, as the levels of PSS increase the effects of TS on quality of care delivered decrease.

H4b: Perceived co-worker support positively moderates the relationship between childcare workers' technostress and performance. Hence, as the levels of PCS increase, the effects of TS on quality of care delivered decrease.

If hypotheses 3a and 3b were to be confirmed, it would be possible that the moderating role of social support also affects the relation between WE and EE and performance. Social support could decrease the effects of TS on well-being and consequently have an impact on performance. Following this line of reasoning, the following hypothesis was stated:

H5a: Perceived supervisor support (PSS) moderates the indirect positive relationship between technostress and performance via work engagement. Specifically, among childcare workers who experience higher PSS, there will be a lower effect of TS on performance through work engagement.

H5b: Perceived co-worker support (PCS) moderates the indirect positive relationship between technostress and performance via work engagement. Specifically, among childcare workers who experience higher PCS, there will be a lower effect of TS on performance through work engagement.

H5c: Perceived supervisor support (PSS) moderates the indirect positive relationship between technostress and performance via emotional exhaustion. Specifically, among childcare workers

who experience higher PSS, there will be a lower effect of TS on performance through emotional exhaustion.

H5d: Perceived co-worker support (PCS) moderates the indirect positive relationship between technostress and performance via emotional exhaustion. Specifically, among childcare workers who experience higher PCS, there will be a lower effect of TS on performance through emotional exhaustion.

Summarising, this research will analyse the effects of technostress on well-being and performance with a focus on the role of social support. In line with the COR theory, it is expected that social support will act as a moderator on the effect of technostress on employee well-being and performance, reducing the impact of TS. The research questions and hypotheses are visually represented in a conceptual model (Figure 1).

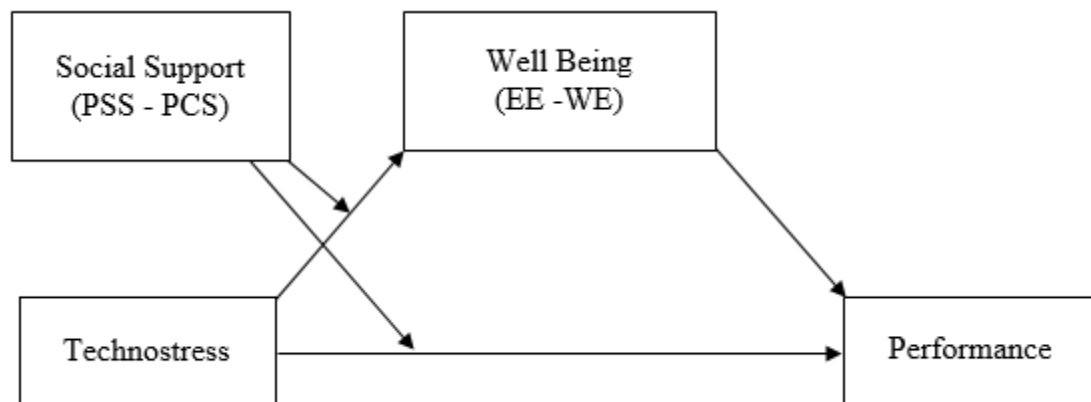


Figure 1: Conceptual Model

3. Methods

3.1 Research Design, Sample and Procedure

The present cross-sectional, quantitative study aims to examine the relationship between technostress and individual's well-being and performance, with the possible moderating role of social support. The hypothesised relations between variables were tested through statistical analyses.

A total of 2193 childcare facilities in the Netherlands, registered in Landelijk Register Kinderopvang (LRK, i.e. National Childcare Registry) were contacted to take part in the study. The National Childcare Registry contains childcare facilities that have been checked for quality and safety by the GGD (Community Health Service) and the municipality (Rijksoverheid, 2019). Participants included in the present study are childcare workers working within day-care facilities in the Netherlands. Workers in primary schools or after-school care were not taken into consideration. There were no criteria of inclusion and exclusion regarding the participant's gender, age, or ethnicity, which make the final sample an unbiased representation of the general population of childcare workers (Bacon-Shone, 2013).

The data collection occurred through an online survey (software platform Qualtrics), written in Dutch, which was approved by the Ethics Review Board of the School of Social and Behavioural Sciences, part of Tilburg University. The first page of the online survey contained a cover letter which explained the purpose and procedure of the study, contact information and, most importantly, it included an informed consent form. Confidentiality of respondents was guaranteed by using the data in an aggregate and anonymous way and by keeping it only accessible to researchers. This way the social desirability bias was reduced. The questionnaires were distributed at the end of September 2019 and data collection continued until the end of October 2019. During this period of time, researchers contacted some of the childcare facilities personally and sent reminders to maximize the final sample size. Participants were asked to answer each question as honestly as possible. A sample size of at least 200 respondents was desirable and, as a rule of thumb, was considered, to be fair for performing an analysis (Reise, Waller, & Comrey, 2000). In addition, the larger the sample size, the easier it is to generalize the results (Pallant, 2013).

A total of 196 of the invited participants fully completed the questionnaire. The majority was female ($n = 183$; 93.4%) with an average age of 41.59 ($SD = 11.66$). The sample included 128 part-time workers (65.3%) and 68 full-time workers (31.7%). Concerning educational level, most of the participants held an MBO degree (44.9%) or an HBO degree (43.4%), followed by a University degree (6.6%), a VWO level degree (2.0%), a VMBO level degree (2.9%) and lastly only 1.0% of the sample held a HAVO degree.

3.2 Measures and Instruments

Before proceeding with the analysis, it was important to assess whether the data was suitable for running factor analysis. For the data to be considered suitable, the Kaiser-Meyer-Olkin (KMO) value, a measure of sampling adequacy (Kaiser, 1970, 1974), had to be at least .5 or higher (Tabachnick & Fidell, 2013). Also, Bartlett's Test of Sphericity (Bartlett, 1954) had to be significant ($p < .05$) (Pallant, 2013). Through the principal axis components (PAF) it was, then, possible to choose which items to include in the scale. Items with a value greater than $\lambda .5$ were kept (Gujarati, 2009). A value of α higher than .7 provided evidence for the scales' reliability (Pallant, 2013). Full items and factor loadings are shown in Appendix A.

The questionnaire contained items from different, already established and previously validated scales. Each instrument was conformed to a 7-points scale in order to prevent confusion in participants.

Technostress was measured by the scale by Salanova and colleagues (2007; 2013; see Appendix B). This scale uses 16 items assessing technostress in terms of anxiety, fatigue, scepticism, and inefficacy (beliefs). Example items are respectively: *"I feel tense and anxious when I work with ICT"*, *"It is hard to focus after working with ICT"*, *"Every time I use ICT I feel less involved in their use"* and *"In my opinion, I am inefficacious when using ICT"*. When assessing the sampling's adequacy, the KMO value resulted to be .928; Bartlett's Test of Sphericity was significant ($p < .01$) and Cronbach's α was .95. All items were maintained in the scale as deleting one of the sixteen items would have caused the reliability to decrease or remain unchanged. Technostress was considered as a whole/as one variable; the reason behind this decision is that the focus of the research was on the general effects of TS on performance and well-being. Thus, on the outcomes and not on the specificities of its single components.

Well-Being was analysed in terms of Emotional Exhaustion (EE) and Work Engagement (WE). The Maslach Burnout Inventory – General Survey (MBI-GS) provides five items regarding the **emotional exhaustion** scale which describe feelings of both physical and emotional/psychological exhaustion (Schaufeli, Leiter, Maslach, & Jackson, 1996). An example question is: *"Working with people all day is really a strain for me"*. The data was suitable for running a factor analysis, since Bartlett's Test of Sphericity was significant ($p < .001$), the measure of sampling adequacy value was higher than .5 (KMO = .829) and all correlation coefficients were greater than .50. The scale showed good reliability and good levels of internal consistency ($\alpha =$

.920). Deleting one of the items would have caused the reliability to decrease and all items were, for this reason, retained.

Work engagement will be evaluated through three items from the UWES-3 scale in terms of vigour, dedication, and absorption (Schaufeli et al., 2017). An example question is: *“I am enthusiastic about my job”* (measuring dedication). Bartlett’s Test of Sphericity resulted significant ($p < .001$) and the KMO value was .703. Cronbach’s α was .83. A total of three items was inserted in the scale; if one of the items were to be deleted, the reliability score (α) would have decreased.

Performance was devoted to scales regarding the quality of care delivered (QCD) which has been evaluated through three items from the scale by Aiken, Clarke, Sloane and the International Hospital Outcomes Study Consortium (2002; see Appendix B) These items were adapted to the childcare context, an example is: *“In general, my child care centre offers qualitative care to children”*. Once again, it was possible to run a factor analysis as Bartlett’s Test of Sphericity was significant ($p < .001$), and the KMO measured .634. Reliability and internal consistency levels were appropriate ($\alpha = .71$). By excluding one of the items, the α would have raised to .78, however, the scale consisted of only three items, and thus it was decided to not delete any of them / to maintain them for the analysis.

Social Support was measured by two variables, namely perceived supervisor support and perceived co-worker support. **Perceived supervisor support** was evaluated through four adapted items from the Survey of Perceived Organisational Support (Eisenberger, Huntington, Hutchison, & Sowa, 1986; see Appendix B). An example question is: *“My organisation really cares about my well-being”*. For the present study, the term organisation was replaced with supervisor. Bartlett’s Test of Sphericity was significant ($p < .001$), the KMO value was .825 and the scale presented overall good internal consistency as well as good reliability ($\alpha = .87$). The value of Cronbach’s α could have risen to .89 by deleting one of the items. Still/yet, the scale only contains four items and, considering that it already has good reliability, all items were maintained. **Perceived co-worker support** was assessed through the scale by Van Veldhoven Prins, Van der Laken and Dijkstra (2015; see Appendix B). An example question is: *“I can ask my colleagues for help when I need it”*. The KMO value was .752 and Bartlett’s Test of Sphericity resulted to be significant ($p < .01$). Cronbach’s α was .91. By deleting one of the four items, however, the scale’s reliability would decrease considerably. Every item was, therefore, kept.

Control variables were used to exclude an influence on the measured relationships due to those variables (Tarafdar, Tu, Ragu-Nathan, & Ragu-Nathan, 2011). Firstly, gender (0 = female, 1 = male) was included in order to assess whether technostress explained any variance in well-being and performance, on top of what is explained by gender. It appears that females feel lower levels of stress compared to males after experiencing a stress stimulus (Riedl, 2012). Similarly, the cross-sectional study of Ragu-Nathan et al. (2008) revealed that men experience more technostress than women.

The second control variable included was age. A positive relationship between age and technostress was found in a cross-sectional study by Shu, Tu and Wang (2011), implicating that the level of technostress experienced increased with age. Different results were, however, found by Ragu-Nathan and colleagues (2008) who observed that younger people tend to experience higher levels of technostress compared to older people. In any case, this demonstrates the need to control for age.

The analysis included possible individual differences due to education. The levels of education of respondents were: basic education (no or basic qualification), junior general secondary education and middle-level applied education (VMBO, MBO), senior general education (HAVO), pre-university education (VWO) and higher education (HBO, University). A higher level of education has a positive effect on the perceived ease of technology usage (Igbaria & Parsuraman, 1989; Agarwal & Prasad, 1999). The assumption is that people with higher education learn more rapidly and experience less stress when having to learn how to use new ICTs. This is confirmed by research by Ragu-Nathan and colleagues (2008) which pointed to a decrease in levels of TS the higher the level of education. No dummy variable was created for basic education as the respondents all held a higher level of education. The majority of the sample (50%) held a higher education degree (HBO or University), for this reason the grouping was used as the reference category.

Finally, whether people had a full- or part-time type of contract (0 = full time, 1 = part time) was also included as a control variable. Childcare workers who work full-time are expected to use ICT in a more intensive way compared to part-time workers. Research by Salanova (2013) indicates that non-intensive ICT users are more likely to experience technostress.

3.3 Analysis

The hypotheses of this study were tested by using IBM SPSS Statistics 24 for Windows and PROCESS v3.0 macro (Hayes, 2017). The collected data was first reviewed for errors, missing values, and outliers. Participants who failed to complete the questionnaire entirely were removed from the sample. Each item was scored through a 7-point Likert scale. The scores of negatively worded items were reversed in order to make their value match the positively worded items. After calculating each participant's score, hypotheses H1a/b/c and H2a/b were tested through ordinary least-squares (OLS) regression, while hypotheses H3, H4 and H5 were tested through PROCESS macro to test mediations, moderations and moderated mediations (Hayes, 2017). All calculations were controlled for gender, age, education and full-time or part-time type of contract. PROCESS macro produces bootstrap confidence intervals; thus, it allows to make assumptions about the general population based on the sample size of the current study (Mooney, Mooney, Mooney, Duval, & Duvall, 1993). To assess the mediation effects in H3a/b, model 4 of PROCESS macro (Hayes, 2017) was used. The moderation effect hypothesized in H4a/b, was tested using model 1 of PROCESS macro (Hayes, 2017). Finally, model 8 of PROCESS macro (Hayes, 2017) was instead used to test the moderated mediation effects of this study, covering H5a/b/c/d.

4. Results

4.1 Descriptive Statistics

Descriptive statistics including means, standard deviations, and correlations between the variables for the stratified sample are shown in Table 1. A negative significant correlation was found between Technostress and Performance ($r = -.245, p < .001$), this is in line with H1c. Hypotheses 1a and 1b were also provisionally supported as the correlation analysis showed/found work engagement negatively correlated to TS ($r = -.205, p < .01$) and EE positively related to TS ($r = .381, p < .001$).

EE and WE (the two categories of WB) were both correlated to performance. It appears that performance is negatively correlated to EE ($r = -.322, p < .001$) and positively correlated to work engagement ($r = .391, p < .001$). This is in accordance with H2a and H2b.

Performance had also a small, positive correlation with perceived supervisor support ($r = .212, p < .01$) and perceived co-worker support ($r = .156, p < .05$). Moreover, both co-worker ($r = -.194, p < .01$) and supervisor ($r = -.308, p < .001$) support, as well as work engagement ($r = -.488, p < .001$) were found negatively correlated to emotional exhaustion. Work engagement was found positively correlated to the two dimensions of social support (supervisor: $r = .283, p < .001$ and co-worker: $r = .332, p < .001$). Suggesting that people who perceive low social support and/or are low in work engagement, might be more likely to experience emotional exhaustion and thus be lower in well-being. It is possible that making employees feel supported in the workplace will decrease their emotional exhaustion and increase work engagement, thus increasing their well-being.

Finally, there was a small positive correlation between full-time/part-time type of contract and performance ($r = .141, p < .05$), indicating that people working full time are expected to perform slightly better compared to people working part-time.

Table 1. Descriptive statistics and correlations (N=196)

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11
1. Technostress	2.11	1.09											
2. Performance	6.01	.86	-.245***										
3. Emotional Exhaustion	2.29	1.28	.381***	-.322***									
4. Work Engagement	5.76	.87	-.205**	.391***	-.488***								
5. Supervisor Support	4.86	.62	-.303***	.212**	-.308***	.350***							
6. Co-worker Support	6.27	.72	-.102	.156*	-.194**	.332***	.278***						
7. Gender	.04	.20	-.128	.047	-.076	.008	.016	-.006					
8. Age	41.59	11.66	.089	-.007	-.009	.082	-.017	.001	.077				
9. Full-time/Part-time	.35	.48	-.077	.141*	.005	.066	.131	.112	.121	-.147*			
10. VMBO_MBO	.47	.50	.29	.000	-.036	.022	-.002	-.050	-.091	-.151*	-.084		
11. HAVO	.01	.10	-.078	.018	.024	.048	-.059	.015	-.021	.004	.033	-.095	
12. VWO	.02	.14	.047	-.073	.086	-.070	-.025	-.029	.153*	.018	.046	-.136	-.015

Note. * $p < .05$ ** $p < .01$ *** $p < .001$; reference category for Education = HBO_Uni

Gender was dummy coded as 1= Male, 0= Female

Full-time/Part-time was coded as 0= PartTime, 1= FullTime

4.2 Hypothesis Testing

The relationship between technostress, well-being, and performance

To test the relationship between TS and the two dimensions of well-being as well as to predict employee's performance in relation to technostress (H1a/b/c), a linear regression was fitted to the data. A significant negative effect of technostress on work engagement was found ($b = -.236$, $SE = .075$, $t(191) = 40.281$, $p < .01$). The model explained approximately 5% of the total variance in work engagement ($R^2 = .049$, $F[1, 191] = 9.795$, $p < .01$). A linear regression was also fitted to predict emotional exhaustion based on technostress ($R^2 = .169$, $F[1, 191] = 38.834$, $p < .001$) and a significant positive effect was found ($b = .644$, $SE = .103$, $t(191) = 5.189$, $p < .001$). Technostress is thus negatively related to childcare workers' work engagement and positively related to childcare workers' emotional exhaustion. Hypotheses H1a and H1b were, therefore, confirmed. Finally, the linear regression of performance on technostress had an R^2 of .073 ($F[1, 191] = 14.939$, $p < .001$). A significant negative effect of technostress on performance was found ($b = -.282$, $SE = .073$, $t(191) = 43.807$, $p < .001$). The third hypothesis (H1c) was, therefore, confirmed, namely the higher the level of technostress, the lower the level of performance.

The relationship between well-being and performance

The linear regression performed in order to predict performance in relation to emotional exhaustion gave significant results. Specifically, a negative significant regression coefficient was found ($b = -.216$, $SE = .046$, $t(193) = 54.272$, $p < .001$) $R^2 = .104$, $F[1, 193] = 22.337$, $p < .001$. The relationship between work engagement and performance was also found to be significant. ($b = .383$, $SE = .065$, $t(193) = 10.076$, $p < .001$); $R^2 = .153$, $F[1, 193] = 34.788$, $p < .001$. Childcare workers' performance is thus positively related to their work engagement and negatively related to their emotional exhaustion. Results fully confirming H2a and H2b.

The mediating role of well-being in the relationship between TS and performance

To test whether the relationship between TS and performance is in part or fully mediated by well-being, namely hypotheses 3a/b, a mediation analysis was performed through PROCESS macro, using model 4 (Hayes, 2017). The indirect effects were estimated with a 95% confidence interval, based on 10000 bootstrap samples. The indirect effect of technostress on performance through emotional exhaustion, as well as the indirect effect of technostress on performance through

work engagement, showed significant results ($p < .01$). Results, controlled for gender, age, education and type of contract, are presented in Table 2. Findings indicate that well-being mediates the relationship between technostress and performance thus it reduces the negative effects of TS on childcare workers' performance.

Table 2. Indirect effects on Performance

Predictor Variable	Mediator	<i>b</i>	BootSE	95% CI	
				LL	UL
Technostress	Emotional Exhaustion	-.074	.0337	-.153	-.022
	Work Engagement	-.048	.0234	-.105	-.011

Note. Executed by using PROCESS macro model 4 (Hayes, 2013)

The moderating role of social support

To test the moderating role of social support, namely hypothesis 4a and 4b, model 1 of PROCESS macro was used (Hayes, 2017). Both model summaries were significant ($p < .01$, $R^2 = .106$, $F[9, 179] = 2.513$; and $R^2 = .108$, $F[9, 179] = 2.489$ respectively) however, results revealed that both interaction effects were non-significant. Meaning that the hypotheses about social support (both supervisor and co-worker support) moderating the predictive relation between technostress and performance, could not be confirmed and that hypotheses 4a and 4b had to be rejected. Results can be found in Table 3.

Table 3. Regression results

Outcome: Performance	Model 1 (H4a)				Model 2 (H4b)			
	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>
Constant	5.928	.246	24.086	.000	5.936	.248	23.939	.000
Gender	.038	.288	.133	.89	.055	.288	.193	.85
Age	.002	.005	.313	.75	.001	.005	.220	.83
Full-Time/Part-Time	.170	.135	1.257	.21	.159	1.135	1.184	.24
VMBO_MBO	-.019	.127	-.148	.88	-.002	.127	-.017	.98
HAVO	-.025	1.107	-.023	.98	-.033	1.019	-.033	.97
VWO	-.434	.235	-1.849	.06	-.441	.224	-1.805	.07
Supervisor Support	.104	.078	1.333	.18				
TS x Supervisor Support	.076	.103	.745	.46				
Co-worker Support					.099	.085	1.184	.25
TS x Co-worker Support					.168	.114	1.48	.14
R	.326				.329			
R ²	.106				.108			
df1	9.00				9.00			
df2	179.00				179.00			
F	2.51				2.49			
<i>p</i>	.009				.01			

Note. N = 196. **p* < .05; ***p* < .01; ****p* < .001 ; reference category for Education = HBO_Uni

Gender was dummy coded as 1= Male, 0= Female

Full-Time/Part-Time was coded as 0= PartTime, 1= FullTime

Executed by using PROCESS macro model 1 (Hayes, 2013)

Moderated mediation

To test hypotheses 5a, 5b, 5c and 5d, PROCESS macro model 8 was used (Hayes, 2017). Supposing that for higher levels of well-being the negative effect of TS on performance would be lower, and expecting that social support plays a role in moderating the relationship between TS and well-being, it was expected that social support would also have an effect on the indirect effect of well-being on performance. Thus, for higher levels of social support, it was expected that the effect of TS on performance would be weaker. However, the hypothesis about the moderating role of social support could not be confirmed. When adding social support as a moderator, the interaction effect of social support and technostress on performance through well-being, was not significant. Both supervisor and co-worker support lead to non-significant results. The relationship between TS and performance through WB, may be contingent on social support. The mediating effect of well-being from technostress to performance provides a weak mediating relation, but social support also has an impact on such relation. Even if the moderation effect is non-significant, it could be argued that the mediating process varies due to the moderator's functions. No

significant results were found in relation to the control variables either. Results are shown in Table 4.

Table 4. Moderated mediation results

Mediator variable models								
	Emotional Exhaustion				Work Engagement			
	<i>b</i>	SE	<i>t</i>	CI	<i>b</i>	SE	<i>t</i>	CI
Technostress	.338***	.100	3.384	[.141, .535]	-.091	.070	-1.297	[-.229, .047]
Supervisor Support	-.262*	.101	-2.590	[-.462, -.062]	.267***	.064	4.154	[.140, .394]
TS x Supervisor Support	-.092	.091	-1.012	[-.271, .087]	-.088	.065	-1.347	[-.216, .041]
Technostress	.411	.094	4.369	[.225, .596]	-.126*	.059	-2.128	[-.243, -.009]
Co-worker Support	-.289*	.131	-2.198	[-.548, -.029]	.375***	.092	4.079	[.193, .556]
TS x Co-worker Support	.078	.120	.652	[-.159, .316]	.029	.092	.319	[-.152, .210]
Dependent variable models								
	Performance				Performance			
	<i>b</i>	SE	<i>t</i>	CI	<i>b</i>	SE	<i>t</i>	CI
Technostress	-.081	.067	-1.214	[-.214, .051]	-.105	.058	-1.813	[-.219, .009]
EE/WE	-.155*	.064	-2.403	[-.282, -.028]	.320***	.077	4.123	[.167, .473]
Supervisor Support	.072	.070	1.018	[-.067, .211]	.027	.071	.381	[-.113, .167]
TS x Supervisor Support	.031	.069	.450	[-.105, .167]	.073	.068	1.072	[-.062, .208]
Technostress	-.107	.060	-1.778	[-.225, .012]	-.136*	.055	-2.457	[-.244, -.027]
Well-Being (EE/WE)	-.167*	.067	-2.500	[-.299, -.035]	.317***	.078	4.046	[.162, .472]
Co-worker Support	.060	.082	.735	[-.102, .222]	-.010	.082	-.124	[-.172, .152]
TS x Co-worker Support	.154	.084	1.843	[-.011, .319]	.132	.085	1.551	[-.036, .299]
Conditional indirect effect								
int_1	.014	.016		[-.011, .057]	-.028	.022		[-.081, .008]
int_2	-.013	.022		[-.065, .025]	.009	.029		[-.048, .067]

Note . N = 196. *p < .05; **p < .01; ***p < .001 ; CI = 95% confidence interval

int_1 = TS x Supervisor Support ; int_2 = TS x Co-worker Support

All variables controlled for Gender, Age, Education and Type of Contract

Executed by using PROCESS macro model 8 (Hayes, 2013)

5. Discussion

Purpose of this research was to investigate whether technostress had an effect on childcare workers' well-being and performance. The regression analyses revealed statistically significant results: technostress has a negative effect on work engagement and a positive effect on emotional exhaustion. However, these effects are not particularly large. Performance was found to be explained, to some extent, by TS and by well-being, more precisely by high work engagement and low emotional exhaustion. Significant was also the mediating role of well-being on the relationship

between TS and performance. Results showed that both EE and WE reduce the effect of technostress on quality of care delivered. People who are high in work engagement, as well as those who are low in emotional exhaustion, tend to experience less technostress. Hypotheses regarding the moderating role of social support (both supervisor and co-worker) could not be confirmed and had to be rejected. Still, receiving support was associated with better performance and better quality of care delivered; moreover, it also appeared to reduce the effects of technostress.

5.1 Theoretical Implications

Childcare workers were found to have exceptionally high levels of stress and were identified as having the second-worst profession in relation to work-related health problems (Løvgren, 2016). This study investigated the reasons behind these health issues, finding a cause in the incorrect use or implementation of ICT which can lead to technostress. As the Dutch government is investing more and more into education, and is promoting the use of technology in classrooms, this research provides a more contextual understanding of technostress and analyses the effects of ICT in childcare facilities, which are non-traditional ICT environments, as well as part of a new and under researched sector.

The hypotheses are based on COR theory, which is one of the main theories in psychological stress literature to theorize individual stress. COR theory helps explaining how ICT demands interfere with work/job demands, each draining the resources of the other, thus starting a spiral of loss and consequently leading to negative outcomes on well-being and performance (technostress, emotional exhaustion, low engagement and poor quality of care delivered). The theory was further applied to examine whether certain resources (social support, but also well-being) could counterbalance this spiral of loss. This theory offers a novel and different way to observe technostress, since previous research did not much consider theories from other disciplines such as psychology (Goetz & Boehm, 2020). The present research demonstrates that TS can have negative impact on individual's performance and well-being and furthers current literature about the adverse effects and consequences of technostress (Ragu-Nathan et al., 2008; Salanova et al., 2013). However, past research still lacks on strategies about how to cope with TS in an effective and adequate way, especially from a non-technology-related organisational environment perspective. Following COR theory, it was possible to identify elements (or resources) that could

have a counterbalancing impact on these negative effects. First of all, well-being was identified; focusing on employee well-being can prevent and/or reduce stress deriving from technology and safeguard performance. The second element analysed was social support. One of the strengths of this study is that social support was considered as two separate variables, depending on the source of support. Previous research by Salanova et al. (2013) had observed the ambivalent role of social support; this paper contributes to expanding theoretical knowledge on what drives the effects of social support. Moreover, this research adopts social support as a moderator that affects the mediating effect of well-being. Even though results were not significant, they still allow to further investigate the role of these variables in the relationship between technostress and performance.

Findings pointed to a mediating effect of well-being on the relationship between TS and performance. Interestingly, when introducing social support as a moderator, the model turned non-significant. This suggests that when moderated moderation effects are non-significant, researchers could consider the moderator and claim that the mediating process varies because of its introduction. The transactional model of stress points out that not every individual will react in the same way to a possible stressor (Folkman & Lazarus, 1984). Likewise, not everyone will react in the same way to a potential buffer like social support. The extent to which social support is perceived as a helpful resource, determines whether providing more support to childcare workers will be perceived as beneficial (Folkman & Lazarus, 1984). In addition, it is possible that social support alone is not enough to counterbalance the negative effects of technostress and that there might be the need for a more structural solution.

Finally, making use of theories from other disciplines such as psychology, is of great value. Particularly, applying COR theory (from the psychological stress literature) to analyse the effects of TS allows to uncover more complex relationships. Also, this paper supports Tarafdar, Cooper, and Stich (2019), who emphasised the need for combining technostress research with research on (psychological) stress and organisational behaviour. The findings at hand can, therefore, be particularly relevant because they provide initial support for the high value of this research direction and allow to gain valuable theoretical insights on how to deal with technostress in times where ICT use is inevitable.

5.2 Practical Implications

Findings indicate that emotional exhaustion and work engagement are closely, negatively, and positively respectively, related to performance. A decreased quality of care delivered, is strongly related to a higher score on the EE scale or a lower score on the WE scale. To reduce employee's exhaustion and improve their engagement, childcare facilities in the Netherlands (and the Dutch government) could focus on promoting work engagement and providing sources to better cope with emotional exhaustion (Merillo & Domingo, 2019). Moreover, they might consider devoting resources in hiring to reduce workload for teachers. Managers within childcare facilities should put in place appropriate management mechanisms in order to counter the negative effects of technostress on the quality of care delivered by teachers. For instance, providing training and formation on new ICTs and increasing communication around the need and rationale for their use (Noe & Kodwani, 2018). Furthermore, it could be positive to schedule regular meetings between teachers and their supervisors, as well as encourage extensive communication between co-workers. These measures can serve to reduce technostress in the first place, moreover they can lead to an increase in well-being and performance (Gerrish, 2016).

5.3 Limitations and Directions for Future Research

The present study's findings should be considered in light of some limitations. First, given that the participants could decide themselves whether to take part in the research or not, the analysis is not based on random sampling. This could possibly have an impact on the results, as individuals who might have experienced greater technostress, might have been more interested in participating in the study. Second, all measurement instruments were self-reported scales, thus the findings point to effects of technostress on teachers' perceived well-being and performance. Although the use of self-reported single-item measures are considered as suitable for the study at hand, it is possible that the use of other measures might lead to slightly different findings. Advice for future research would be to adopt direct measures of these variables; this would also allow to further validate this study's findings. Third, these findings are based on a study sample representative for childcare workers in the Netherlands. This makes the generalizability to employees from different countries and/or cultures questionable. It is thus advised that future replication studies be conducted, not only in other countries, but also in different settings.

Direction for future research would also be to observe and analyse technostress by dividing it into its 4 components (anxiety, fatigue, scepticism, and inefficacy), as the present research considered technostress as a whole (Salanova, Llorens & Cifre, 2013). Separating this variable into its different components could give better insight on how emotional exhaustion and work engagement are able to mediate the effects of TS on performance. For example, emotional exhaustion might be particularly linked to (mental) fatigue and this might explain why a decrease in EE leads to a decrease in TS effects (Ragu-Nathan, Tarafdar, Ragu-Nathan, & Tu, 2008).

6. Conclusion

To what extent does technostress affect childcare teachers' well-being and performance? How does social support affect these relations? Additionally, is performance also affected by well-being?

Based on the analyses results, it can be concluded that technostress has a significant, however small, effect on childcare teachers' well-being as well as on their performance. Reducing the amount of technostress would definitely be beneficial for childcare teachers' well-being and would also lead to better performance. Evidence was also found in favour of implementing initiatives that aim to increase employee's engagement and/or decreasing emotional exhaustion, in order to enhance their performance. The implications of social support are still unclear; however, results partly lead towards what was already found in previous research, namely that receiving support in the workplace is beneficial to employees. Finally, performance is also affected by well-being. Specifically, a teacher who is highly engaged in his/her work tends to perform better (and deliver a better quality of care) compared to one who is not as engaged. Similarly, being high in emotional exhaustion will lead to lower levels of performance.

These findings contribute to the existing literature on the relationship between stress deriving from ICT and organisational outcomes. As the complexity and ubiquity of ICTs increase, the present research identifies some critical issues that organisations face and that must be addressed. It is important that the implementation and use of ICTs in the workplace is managed correctly in order to utilise those technologies in a more effective way.

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Appendix

Appendix A - Complete items and factor loading (PAF)

Appendix A. Items and factor loadings

		Technostress	Emotional Exhaustion	Work Engagement	Performance	Supervisor Support	Co- Worker Support
TES1	Naarmate de tijd verstrijkt, ben ik steeds minder geïnteresseerd in ICT.	.602					
TES2	Ik voel me steeds minder betrokken bij het gebruik van ICT.	.656					
TES3	Ik ben zeer cynisch over de bijdrage van ICT aan mijn werk.	.679					
TES4	Ik twijfel aan de meerwaarde van werken met ICT.	.717					
TES5	Ik vind het moeilijk om mezelf te ontspannen na een dag werken met ICT.	.723					
TES6	Als ik klaar ben met werken met ICT, voel me uitgeput.	.795					
TES7	Als ik klaar ben met werken met ICT, ben ik zo moe dat ik niets anders kan doen.	.765					
TES8	Ik vind het moeilijk om me te concentreren na het werken met ICT.	.781					
TES9	Ik voel me gespannen en angstig wanneer ik met ICT werk.	.822					
TES10	De gedachte dat ik een grote hoeveelheid informatie kan vernietigen vanwege het onveilig gebruik van ICT, maakt me bang.	.734					
TES11	Ik twijfel bij het gebruik van ICT, uit angst om fouten te maken.	.801					
TES12	Door met ICT te werken, voel ik me ongemakkelijk, prikkelbaar en ongeduldig.	.833					
TES13	Naar mijn mening ben ik niet effectief wanneer ik ICT gebruik.	.788					
TES14	Het is moeilijk om te werken met ICT.	.804					
TES15	Mensen zeggen dat ik inefficiënt ben wanneer ik ICT gebruik.	.682					
TES16	Ik weet niet zeker of ik mijn taken goed kan uitvoeren bij het gebruik van ICT.	.807					
EME1	Een hele dag werken vormt een zware belasting voor mij.		.755				
EME2	Aan het einde van een werkdag voel ik mij leeg.		.881				
EME3	Ik voel me mentaal uitgeput door mijn werk.		.870				
EME4	Ik voel me vermoeid als ik 's ochtends opsta en er weer een werkdag voor me ligt.		.816				
EME5	Ik voel me 'opgebrand' door mijn werk.		.869				
ENG1	Op mijn werk bruis ik van energie.			.684			
ENG2	Ik ben enthousiast over mijn job.			.869			
ENG3	Ik ga helemaal op in mijn werk.			.814			
QOC1	...wordt er over het algemeen kwalitatieve zorg aan de kinderen geboden.				.739		
QOC2	...werd op mijn laatste shift kwalitatieve zorg aan de kinderen geboden.				.896		
QOC3	...is de kwaliteit van de zorg aan de kinderen het laatste jaar verbeterd.				.512		
PSS1	Mijn supervisor vindt mijn mening belangrijk.					.880	
PSS2	Mijn supervisor geeft om mijn welzijn.					.853	
PSS3	Mijn supervisor houdt veel rekening met mijn doelen en persoonlijke waarden.					.839	
PSS4	Mijn supervisor toont weinig aandacht voor mij.					.659	
PCS1	Ik kan rekenen op mijn collega's als ik problemen heb met mijn werk.						.850
PCS2	Indien nodig, kan ik mijn collega's om hulp vragen.						.829
PCS3	Ik kan goed opschieten met mijn collega's.						.896
PCS4	Er heerst een goede sfeer tussen mij en mijn collega's.						.838

Appendix B – Questionnaire Items

Technostress Scale

(Salanova et al., 2007)

Volgende vragen gaan over hoe jij je voelt bij het gebruik van ICT voor werkdoeleinden. In welke mate gaan volgende stellingen voor jou op.

1 = Helemaal niet, 2 = In kleine mate, 3 = Eerder in kleine mate, 4 = Neutraal, 5 = Eerder in grote mate, 6 = In grote mate, 7 = In heel grote mate

Naarmate de tijd verstrijkt, ben ik steeds minder geïnteresseerd in ICT.

Ik voel me steeds minder betrokken bij het gebruik van ICT.

Ik ben zeer cynisch over de bijdrage van ICT aan mijn werk.

Ik twijfel aan de meerwaarde van werken met ICT.

Ik vind het moeilijk om mezelf te ontspannen na een dag werken met ICT.

Als ik klaar ben met werken met ICT, voel me uitgeput.

Als ik klaar ben met werken met ICT, ben ik zo moe dat ik niets anders kan doen.

Ik vind het moeilijk om me te concentreren na het werken met ICT.

Ik voel me gespannen en angstig wanneer ik met ICT werk.

De gedachte dat ik een grote hoeveelheid informatie kan vernietigen vanwege het oneigenlijk gebruik van ICT, maakt me bang.

Ik twijfel bij het gebruik van ICT, uit angst om fouten te maken.

Door met ICT te werken, voel ik me ongemakkelijk, prikkelbaar en ongeduldig.

Naar mijn mening ben ik niet effectief wanneer ik ICT gebruik.

Het is moeilijk om te werken met ICT.

Mensen zeggen dat ik inefficiënt ben wanneer ik ICT gebruik.

Ik weet niet zeker of ik mijn taken goed kan uitvoeren bij het gebruik van ICT.

Emotional Exhaustion Scale

(Schaufeli, Leiter, Maslach, & Jackson, 1996)

Volgende vragen gaan over jouw persoonlijke percepties en ervaringen op de werkvloer. We vragen naar brede zaken zoals hoe jij je doorgaans voelt en hoe je kijkt naar de kinderopvang waar je werkt. In welke mate kan jij je vinden in onderstaande stellingen over jezelf als kinderverzorger?

1 = Helemaal niet, 2 = In kleine mate, 3 = Eerder in kleine mate, 4 = Neutraal, 5 = Eerder in grote mate, 6 = In grote mate, 7 = In heel grote mate

Een hele dag werken vormt een zware belasting voor mij.

Aan het einde van een werkdag voel ik mij leeg.

Ik voel me mentaal uitgeput door mijn werk.

Ik voel me vermoeid als ik 's ochtends opsta en er weer een werkdag voor me ligt.

Ik voel me 'opgebrand' door mijn werk.

Work Engagement Scale

(Schaufeli et al., 2017)

In welke mate kan jij je vinden in onderstaande stellingen over jezelf als kinderverzorger?

1 = Helemaal niet, 2 = In kleine mate, 3 = Eerder in kleine mate, 4 = Neutraal, 5 = Eerder in grote mate, 6 = In grote mate, 7 = In heel grote mate

Op mijn werk bruis ik van energie.

Ik ben enthousiast over mijn job.

Ik ga helemaal op in mijn werk.

Performance Scale

(Aiken, Clarke, Sloane & the International Hospital Outcomes Study Consortium, 2002)

Volgende vragen gaan over jouw persoonlijke percepties en ervaringen op de werkvloer. We vragen naar brede zaken zoals hoe jij je doorgaans voelt en hoe je kijkt naar de kinderopvang waar je werkt. In welke mate kan jij je vinden in onderstaande stellingen over jouw kinderopvang?

1 = Helemaal niet, 2 = In kleine mate, 3 = Eerder in kleine mate, 4 = Neutraal, 5 = Eerder in grote mate, 6 = In grote mate, 7 = In heel grote mate

In mijn kinderopvang...

...wordt er over het algemeen kwalitatieve zorg aan de kinderen geboden.

...werd op mijn laatste shift kwalitatieve zorg aan de kinderen geboden.

...is de kwaliteit van de zorg aan de kinderen het laatste jaar verbeterd.

Perceived Supervisor Support Scale

(Eisenberger, Huntington, Hutchison, & Sowa, 1986)

Volgende vragen gaan over jouw supervisor. In welke mate ben je het eens met onderstaande stellingen?

1 = Helemaal oneens, 2 = Oneens, 3 = Eerder oneens, 4 = Neutraal, 5 = Eerder eens, 6 = Eens, 7 = Helemaal eens

Mijn supervisor vindt mijn mening belangrijk.

Mijn supervisor geeft om mijn welzijn.

Mijn supervisor houdt veel rekening met mijn doelen en persoonlijke waarden.

Mijn supervisor toont weinig aandacht voor mij.

Perceived Co-worker Support Scale

(van Veldhoven et al., 2015)

Volgende vragen gaan over jouw collega's. In welke mate ben je het eens met onderstaande stellingen?

1 = Helemaal oneens, 2 = Oneens, 3 = Eerder oneens, 4 = Neutraal, 5 = Eerder eens, 6 = Eens, 7 = Helemaal eens

Ik kan rekenen op mijn collega's als ik problemen heb met mijn werk.

Indien nodig, kan ik mijn collega's om hulp vragen.

Ik kan goed opschieten met mijn collega's.

Er heerst een goede sfeer tussen mij en mijn collega's.