Technostress and quality of care; does leadership help?

The impact of technostress on the quality of care and how leadership can affect this relationship within childcare organizations.

Master Thesis

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Abstract

The purpose of this study is to examine the relationship between technostress and the quality of care within childcare organizations. This study also examines whether leadership as a moderator can buffer or enhance the effects of technostress on the quality of care. The conceptual model is constructed with the underlying transactional model of stress and coping (TMSC) model, in which people personally examine the negative effects of stress and whether they have the ability to cope with these negative effects with the use of available resources (Lazarus & Folkman,1991). Furthermore, technostress is defined as the negative feelings related with the use of information and communication technology (ICT) (Salanova, Llorens & Cifre, 2013). The respondents (N = 196) were childcare workers that currently work within childcare centres in the Netherlands. The questionnaire was constructed using Qualtrics and spread via e-mail. The collected data was analysed with IBM Statistics SPSS 24 with an OLS regression and PROCESS analysis by Hayes (2017). The results found a negative effect relationship of technostress on the quality of care delivered. However, no significant moderating effect was found of leadership on the relationship between technostress and quality of care delivered. Additional analysis revealed no significant mediating relationship between the three concepts. The strengths, limitations and direction for future research are discussed

Key terms: technostress, quality of care, leadership, leader-member exchange theory, empowering leadership, transactional model of coping and stress model, quantitative research, childcare workers.

Introduction

On the surface, the environment of a classic childcare centre gives the impression of a delighted and cheery atmosphere, with the increasing use of equipment's like iPad's, tablets, smartphones, digital whiteboards and beamers by the children and the childcare workers (Woodland, 2017). However, the job of a childcare worker is much more demanding and stressful than many may think as these workers have the second-worst occupation regarding work-related health problems (Løvgren, 2016). For example, compared to other human services and white-collar jobs, these workers have the highest burnout levels (Kalimo & Hakanen, 2000).

The current digitalization of the childcare centres is designed to empower and enhance the productivity of the workers and increase the quality of care delivered (QCD) (Woodland, 2017). The QCD is determined by the combination of multiple aspects such as the human capital of the worker, effort, team, equipment and group size of the children. It is a measure of what goes on in the childcare centre, for example, the way workers interact with children, the nature of the curriculum (e.g. integrate learning development within different activities) and the environment of the childcare centre (Blau, 1997). However, the increased use of technology can have a negative effect on the workers QCD. These effects influence the communication, collaboration and relationships in terms of QCD and can create symptoms such as lack of trust, poor decision making, difficulty in memorizing and reduced effective use of work-related ICT (Fagerström, Tuvesson, Axelsson & Nilsson, 2017).

Scholars suggest these phenomena can be attributed to *technostress,* which is the negative psychological state associated with the use of information and communication technology (ICT) or threat of ICT use in the future in combination with feelings of anxiety, mental fatigue, scepticism and inefficacy (Salanova, Llorens & Cifre, 2013). Technostress can be seen as a form of stress in which there is an incapability to manage the use of the constantly changing technology in a healthy manner (Tacy, 2016). People who experience stress will try to deal with this stress to mitigate the negative effects, by coping (e.g. one's own conscious effort, to solve, mitigate, deal with). Thus, the emphasis is on the incapability of analysing and successfully using the resources available for the worker, which fits within the transactional model of stress and coping (TMSC) (Hobfoll & Schumm, 2009; Devonport, 2013). Within this framework of Lazarus and Folkman (1991), this process is defined as the personal judgement whether the levels of stress experienced exceeds the individual's ability and resources available, which can be used to cope with the negative effects.

The negative effects of (techno)stress can be explained by the transactional model of stress and coping (TMSC). This model states that negative effects can develop due to the

incapability to cope with (techno)stress (Lazarus & Folkman, 1984; 1991). For example, repeatedly having an argument with your boss can hinder the coping ability of a worker in a high work stress environment, which in turn can reduce the QCD (Weigl, Schneider, Hoffmann & Angerer, 2015; Ma et al., 2018). As leadership is regarded as one of the key factors for organizational success and is related to QCD (Yukl & Mahsud, 2010; Boo, Araujo & Tomé, 2016), it might be the case can buffer and/or exacerbate the (techno)stress formation process because the TMSC model emphasises that external variables can influence the coping capability (Turel & Gaudioso, 2018). This role of leadership is important to how employees perceive support from their management regarding the challenges in their work (Schaufeli, 2015). However, both the work of the leader and the childcare workers are heavily changing due to the digitalization (Larjovuori, Bordi, Mäkiniemi and Heikkilä-Tammi, 2018). So, are there 'successful' leadership approaches that can deal with the negative effects of technostress on the QCD?

In this study, leadership was conceptualized in two ways. Firstly, leadership as performance-oriented, which is typified by empowering leadership (EL) (Srivastava, Bartol & Locke, 2006). An empowering leader focuses on performance by enabling self-leadership and enhancing meaning of work commitment (Audenaert & Decramer, 2018). Past research suggests that this leadership style increases the trust between the leader and worker, which can buffer the negative effect of technostress (Houghton, Wu, Godwin, Neck & Manz, 2011). Because the emphasis in this study is regarded the resources provided, EL fits this better than transactional leadership, in which the self-leadership and self-motivation already has to be apparent within the employees (Zhu, Sosik, Riggio & Yang, 2012).

Secondly, leadership as relationally and interaction orientated, which is typified by the leader-member exchange theory (LMX) (Tummers & Knies, 2013). To specify within the LMX theory, the focus is on the social LMX (SMLX) approach, which emphasis on the relationship and the interaction with his or her employees (Martin, Guillaume, Thomas, Lee & Epitropaki, 2015; Kuvaas, Buch, Dysvik & Haerem, 2012). SLMX is in line with the traditional notion of LMX, so further in this research LMX refers to SLMX (Walumbwa, Cropanzano & Goldman, 2011). A high level of LMX provides an environment in which the supporting relationship between leader and worker can be used as a coping resource and therefore motivates the worker to perform better (Gerstner & Day, 1997; Martin, et al., 2015). These arguments suggest both leadership styles could, indirectly, buffer the negative effects of technostress on the QCD. Furthermore, understanding the determinants of QCD is important because, within childcare organizations, workers deal with the development of young children (Roeters & Bucx, 2017). As stated by Hayes, Palmer and Zaslow (1990) poor quality of care can damage and threaten the child's development.

Moreover, childcare management can use this information to understand the importance of leadership as a possible solution to enhance the QCD regardless of the technostress.

This study contributes to the current literature by integrating leadership (e.g. EL and LMX) as an indirect determinant of the relationship between technostress and QCD, in line with the TMSC framework. The inclusion of leadership is important because, based on a theoretical perspective, the TMSC framework emphasises the importance of specific external variables ranging from leadership styles, to the capability to cope with (techno)stress (Lazarus & Folkman, 1991). Hereby, this study extends earlier research by Turel and Gaudioso (2018) who found that leadership styles can buffer and/or worsen the negative effects of technostress by using the TMSC framework. Moreover, this study aimed to identify if the qualities within EL and LMX are influential for the current negative effects of digitization in regards to the quality that childcare workers deliver. This provides guidelines for successful leadership aspects when dealing with digital enhancements and implementations. Furthermore, on a practical and societal point of view, the Dutch government invests almost 50 percent of the total education expenses into childcare centres (CBS, 2018). Therefore, it is important for the government and childcare centres to understand the determinants of quality of care, such as leadership and invest strategically in order to buffer the effects of technostress. Based on the above-mentioned information, the research question of this study is: *''How does technostress, moderated by empowering leadership and LMX, affect the quality of care delivered within childcare organizations in the Netherlands?''*

The remainder of this master thesis reviews the literature of previous researches on these key concepts and produce a total of three hypotheses. These hypotheses were quantitatively tested. The approach of testing is described in the method section. The results are presented using tables in the order of the hypotheses and additional analysis is provided. Concluding with the discussion with the findings and linkages to the expectations from the introduction.

Theoretical framework

Technostress and quality of care delivered

The concept of technostress was first introduced by Brod (1984), who defines technostress as a modern disease of adaptation caused by the inability to cope with ICT in a beneficial way. Based on his work, multiple definitions have risen to the surface during the years. According to Sahin and Coklar (2009), technostress is a specific type of stress related to the use of technology, resulting from the rapid technological advancements. Tacy (2016) defined it as stress caused by working with ICT on a daily basis. Weil and Rosen (1997), moreover, described technostress as ''any negative effect on human attitudes, thoughts, behaviours and psychology directly or indirectly resulting from technology (p.5). These definitions share the same aspects relating to technostress, namely dosage, time, kind of effect and mental state. Salanova, Llorens and Cifre (2013) merge the essence of these previous definitions in their conceptualization of technostress as: ''the negative psychological state associated with the use or threat of ICT use in the future. This experience is related to feelings of anxiety, mental fatigue, scepticism and inefficacy'' (p. 423). This definition was used in this research.

The TMSC framework by Lazarus and Folkman (1984) implies workers go through a continuous evaluative process in which they personally determine whether the negative effects of stress are threatening to their performance in relation to their ability to cope with these negative effects. The effects of technostress can be described within the concepts of technostrain and technoaddiction. Technoaddiction is defined by Ookita and Tokuda (2001) as the addictive behaviour towards technology, which is usually related to workaholism and the uncontrollable compulsion to use ICT. These effects show a negative influence on their performance because people crave to use ICT and become anxious if they don't, which can increase fatigue (Salanova, et al. 2013; Huang, 2010). Workers experiencing technostrain feel a mixture of high levels of anxiety, fatigue, scepticisms and inefficacy (Salanova et al. 2013). These feelings are related to the daily use of ICT and the fear of fast technological development, which inhibits the coping capability (Sahin & Coklar, 2009). In the remainder of this study, the focus will be on technostrain and its effects, which is most influential and relevant by technostress for this research (Turel & Gaudioso, 2017).

The negative effects of technostrain can be subdivided into four categories. These consist of computer anxiety, information fatigue, scepticism and self-efficacy (Gaudron & Vignoli, 2002; Lewis, 1996; Schaufeli & Salanova, 2007; Salanova, Grau, Cifre & Llorens, 2000). The practical implications of these negative effects can be for example, making mistakes while using ICT and

therefore losing information and being less productive. Furthermore, the extensive and required use of smartphones, the internet and social media, which creates continuous information overload. Moreover, being doubtful about the use and added value of ICT within the workplace. These negative effects result in a chronic and overwhelming stress that reduces the individuals belief in his or her capacity to produce performance (Salanova, Grau, Cifre & Llorens, 2000). Within this study, these negative effects include within the concept of technostress.

These negative effects of technostress can be placed within the TMSC framework as the causing effect for the decrease in QCD and the inability to cope with this stress. This would occur because the pressure of the ICT-related tasks exceeds the available skills and resources within the workers capacity. E.g. when a stressful situation or experience occurs (e.g. technostress), the employee evaluates, assesses and identifies coping strategies to buffer the effects of technostress. Employees who are aware of their maximum stress level can devise coping strategies and resources in advance to deal with the effects of their stress (Lee, 2018). When the possibility of a stressful situation or experience is strong and the employees' ability to use his or her resources to cope is low, this can negatively affect multiple organizational and personal outcomes, including lower performance, well-being and QCD (Wazqar, Kerr, Regan & Orchard, 2017).

Within childcare organizations, the QCD affects the child's cognitive, language and social development (Barnett, 1995). Research indicates that children who receive a high quality of care during their stay within the childcare centre have better math, language and social skills as they enter school (Barnet, 1995; Blau, 1997; Neumann & Neumann, 2014; Strawhacker et al., 2018). Higher quality in care results in satisfaction for the child, parents, childcare workers, and better performance for the organization (Leana, 2009). Boo, Araujo and Tomé (2016) identify critical areas on which the QCD should be evaluated, which include the childcare centre coordinator's leadership. This further emphasise the importance of the role of leadership on the QCD.

Thereby, when workers are working with ICT, they experience prolonged, overwhelming stresses, which reduce the QCD (Weigl, Schneider, Hoffmann & Angerer, 2015; Ma et al., 2018). This technostress could lead to multiple negative outcomes including poor decision-making, difficulty in learning and diminished attention span (Salanova, et al., 2013; Lewis, 1996). In line with the TMSC framework, the workers could experience difficulty coping with these stressful effects regarding the use of ICT, resulting in a decrease in the quality of their job-related performance (Ayyagari et al., 2011). Based on the arguments above and the theory, this study suggests technostress and the inability to cope with it, inhibit the workers from ensuring their QCD to the children. Therefore, this study proposes the following:

H1: Technostress is negatively related to the QCD by childcare workers.

The role of leadership

The study of leadership, to date, encompasses multiple studies on the influence of the continuous organizational digitalization, however, the evolution of leadership and its effects has drastically changed throughout years (Schwarzmüller, Brosi, Duman & Welpe, 2018; Khan, 2016; Dinh et al., 2014). Winston and Patterson (2006) define leadership as the art of motivating and influencing a group of individuals to act willingly and enthusiastically towards achieving a shared goal, by using their abilities and skills in a collective coordinated way. Based on the TMSC framework, people will analyse their resources given by their leader within their work environment and make a specific judgement regarding which coping mechanism is more effective in a given situation (Lazarus & Folkman, 1984). Turel and Gaudioso (2018) found that the perceived leadership, conceptualized as an external variable within the TMSC model, could have a buffering or mitigating effect on the negative effects of technostress. For example, when experiencing a high level of technostress, which could negatively affect the performance, the resources provided by the leader can be used as a coping mechanism by the worker (Ahearne, Mathieu & Rapp, 2005; Harris et al., 2015).

The resources provided by the leaders are based on being task-oriented and relationship-oriented. EL includes the importance of passing control and power, by encouraging self-leadership, autonomy and openness (Liu, 2015). Furthermore, the leader enhances the meaning of work, the tasks and the feelings of being responsible for their own decisions, which evidently causes the followers to willingly and enthusiastically work independent (Audenaert & Decramer, 2018). LMX includes the influence of the leader on the follower to expand their spiritual, emotional energy by their relationship (Martin, et al., 2015). Moreover, the mechanism of LMX theory can be drawn into two aspects, namely the atmosphere and communication. The atmosphere is the extent of how the employee perceives their working relationship with his or her leader, positive or negative (Dienesch and Liden, 1986). The communication is the extent to how the employee and leader experience and foster their relationship the way they talk and behaviour towards each other, which includes the social involvement within mutual respect, affection, support and loyalty (Uhl-Bien & Maslyn, 2003). Based on the research of Brunetto and colleagues (2012) these two kinds of leadership approaches have often been linked with the QCD, which gives theoretical and empirical reasons to select these two approaches as moderates to the relationship of technostress on the QCD by childcare workers.

Empowering leadership (EL) is a relatively recent leadership style within literature compared to the LMX theory. Based on the studies of Audenaert and Decramer (2018), Liu (2015) and Schaufeli (2015) empowering leadership is an approach offering leaders understanding of granting more autonomy, self-leadership and control over the employees work environment. This generates better work performance and quality because the employees feel responsible for their own work and choices (Ahearne, Mathieu & Rapp, 2005). The transaction process between the leader and his/her employees, in which the leader is required to provide support, encourage self-management and increase empowerment while setting an example by providing information, resources and trust. The roles between the leader and employees are more about collaboration and two-way interactions (Humborstad, Nerstad & Dysvik, 2014). This improves the trust which enhances the quality of the performance of both parties (Amundsen & Martinsen, 2014).

Nevertheless, empowerment can interfere with the individuals' perception because of the added assignment and responsibility from the leader, which increase the individuals stress and in turn hinders the performance and quality (Cheong, Spain, Yammarino & Yun, 2016). However, employees that perceive high levels of empowerment while engaging in a task are more likely to experience success in performing. This success is due to the identification of the necessary coping resource, which minimizes the negative effects of technostress on QCD (Houghton et al., 2011). Therefore, this study builds further on the TMSC model by defining the stressor as ICT-related by placing it as the causing effect and EL as a coping mechanism. Consequently, EL can be used to indirectly buffer the negative effects of technostress on QCD (Audernaert & Decreamer, 2018; Lazarus & Folkman, 1984; 1991). Given the nature of QCD, EL thus helps in establishing a work context in which childcare workers can be empowered to perform quality care, even with the increase of ICT-related tasks. Hence, this leads to the second hypothesis:

> H2: Empowering leadership moderates the relationship between technostress and the quality of care delivered in a way that the higher the EL the less positive the relationship between technostress and QCD.

Leader-member exchange (LMX) theory emphasises the importance of the dyadic relationship between leaders and employees. It suggests leaders exhibit different behaviours and actions towards different members, which can be a high-quality relationship and a low-quality relationship (Harris, Harris, Carlson & Carlson, 2015). A low LMX includes being less likely to help or to provide non-required social or job-related support and involves hostile, aggressive and abusive behaviour in which the relationship is more formal and mainly basic with minimal exchanges and

communication (Lapalme et al., 2009). A high LMX is viewed as more favourable, has a higher level of trust and support, improves performance and includes a relationship which is more informal. Furthermore, the interaction is more relaxed and extends beyond the formal job description, where the aim is to increase employee's ability to cope with stress and to motivate them to perform better (Gerstner & Day, 1997; Martin, et al., 2015; Harris et al., 2015).

Moreover, the work environment becomes less stressful, downplays perceived threats and improves the coping capacity (Bakker, Hakanen, Demerouti & Xanthopoulou, 2007). Within the nature of this study, these stressors can be ICT related, which links this style of leadership to the relationship between technostress and QCD. Drawing from the TMSC framework, LMX can either buffer or intensify the negative consequences resulting from technostress on the QCD (Byrne, 1994). The argument for this integration of LMX as an indirect determinant arise because the leader-member relationship quality represents a coping resource capable of mitigating the negative effects. Wilk and Moynihan (2005) found that the coping ability improves when the quality is high. This is because leaders have the capability to provide direction, manage resources, divide tasks, clarify the priorities and give task instruction (Harris, Harris, Carlson & Carlson, 2015). This can help workers make sense of possible stressful situations through an increase of encouragement and information, causing them to be more able to deal with the negative effects (Harris & Kacmar, 2006; Harris et al., 2015). Furthermore, leaders can help manage resources, provide additional guidance, foster better communication and be a source of social and work-related support to the employees (Harris, et al., 2015; Turel & Gaudioso, 2018).

So, when the technostress within the work environment is high, workers in a high LMX relationship can see the leader as their protector, be grateful for this protection and extra help, and as a result, are able to cope better with the negative effects of technostress. Thus, the resources provided by the leader plays a vital role in how childcare workers can cope with the consequences of technostress and performed quality care. This leads to the last hypothesis:

> H3: LMX positively moderates moderates the relationship between technostress and the quality of care delivered in a way that the higher the LMX the less positive the relationship between technostress and QCD.

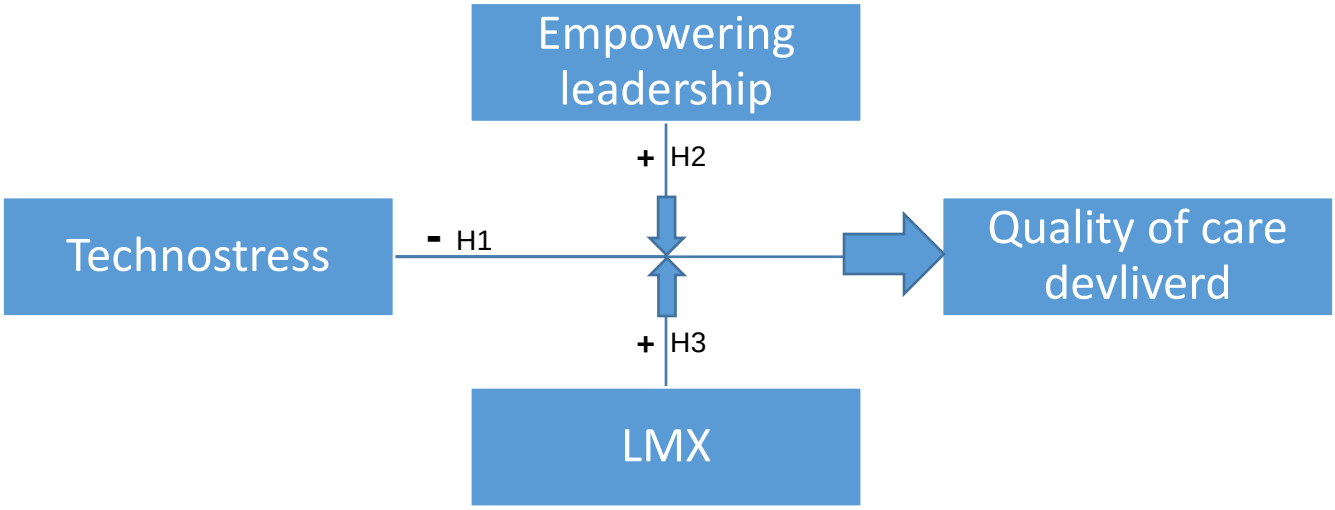

Figure 1 Conceptual model

Method

Research design

This quantitative case study answers the two main questions; the relationship between technostress and QCD by childcare workers in the Netherlands, and the moderating effect of leadership (LMX & EL) on this relationship. The study had a correlational design, in which the relationship between variables was tested by using statistical analyses (Tharenou, Donohue & Cooper, 2007). Data was collected through digital surveys executed with Qualtrics. By nature this research was more exploratory, because of the combination of the concepts of technostress, leadership and QCD had not been studied clearly before in general, let alone within the group of childcare workers. Since resources were limited, the choice was made to perform a cross-sectional study. As such all data originates from a specific point in time within the month of November 2019 (Tharenou, et al., 2007).

Sample and procedure

The participants of this study were childcare workers working in childcare facilities in the Netherlands. This excludes primary school, after-school care workers and the management of the childcare facilities, because of the focus on childcare workers. Childcare workers needed to fulfil a variety of tasks within their job, such as supervising and monitoring children, organizing activities, developing schedules and observing and keeping records of children's development. There was no specific sampling regarding age, gender or ethnicity. This means the sample was a simple

random sample, which is meant to be an unbiased representation of the childcare workers (Bacon-Shone, 2013). Furthermore, the sampling was performed in a way that the workers were selected based on their availability and willingness to participate. In the Netherlands, every childcare facility regulated on quality by the GGD (Dutch municipal health service) and government was registered at the National Childcare Registry (NCR) (Rijksoverheid, 2019). In total, 2193 childcare facilities were contacted. The address details for sending the questionnaire was used, in order to contact these childcare centres. Furthermore, with active sampling multiple child care organizations were approached for the study. These childcare organizations were mostly located within living distant.

Table 1 shows the demographic characteristics of the sample. A total of 196 respondents took part in this study. The respondents' age varied from 19 to 64 years (M=42 and SD=12). A total of 4% was male and 96% was female. The level of education over all respondents is displayed in percentages in table below.

Table 1. Demographic characteristics of the respondents and internal consistencies of technostress, quality of care delivered and leadership styles (LMX and EL)

	M	*SD*	*N*	*α*
Control variables				
Age in years	41.59	11.66	192	
Gender (female) in %	95.8%		191	
Educational level in %			196	
Lower general secondary education	2.0%			
Higher general secondary education	44.9%			
Pre-university education	1.0%			
Intermediate vocational education	2.0%			
University of applied science	43.4%			
Academic education	6.6%			
How many years are you working in the current childcare centre?	11.48	8.39	186	
Do you work full-time or part-time?	65.3%		196	
Use of digital parental environment?	67.3%		193	
Research variables (scales)				
Technostress	1.87	0.82	192	0.95
Quality of care delivered	6.01	0.86	191	0.71
Leader-member exchange	5.19	0.84	193	0.85
Empowering leadership	5.39	0.94	194	0.88

Note: The missed values were coded as 999. Gender is dummy coded (female ='2'= reference category). Fulltime/Part-time is dummy coded (Part-time ='2'= reference category). Digital parental environment is dummy coded (yes='1'= reference category)

Instruments

In this study, four concepts were measured, namely technostress, QCD, EL and LMX. This was achieved through a questionnaire. These concepts were measured with multiple, pre-validated scales from previous researches with good reliability and validity scores. All these scales were changed to a 7-point scale to prevent confusion.

Technostress was measured using the scale of Salanova and colleagues (2013), which uses 16 questions based on four factors, scepticism, anxiety, fatigue and inefficiency. An example of a question was: ‘‘I feel tense and anxious when I work with ICT’’. The reliability of this scale was measured as α=.952 suggesting that the items have high internal consistency (Martin & Bridgmon, 2012). The scale had a mean score of 1.87 and on the scale of 1 to 7, in which 1 ‘‘Fully disagree’’ and 7 means ‘‘Fully agree’’. The mean demonstrating the low prevalence of technostress in the sample. With the option ‘’ scale if item deleted’’ the current Cronbach’s alpha was at its highest.

A principal component analysis was conducted on the sixteen items with orthogonal rotation (varimax). The rotation was used to ensure that the factors are ‘‘rotated’’ into the best possible position, in which the factors were separated from or uncorrelated with one another (Edwards & Edwards, 2016). So, the rotation forces the factors to be independent and give a simple structure. The Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analysis, KMO =.927, and all KMO values for the individual items were <.9, which is well above the acceptable limit of .5 (Field, 2009). The Bartlett’s test of Sphericity ($\chi 2$ (120) = 2792.821, p<.001) was significant, indicating that the correlations between items were sufficiently large for PCA. An initial analysis was run to obtain eigenvalues for each component in the data. Three-component had eigenvalues over Kaiser’s criterion of 1 and the combination explained 76.7 per cent of the variance in all of the items. The scree plot displays that there is only one factor. Based on the rotated component matrix, there are multiple cases of cross-loading, in which an item loads at .30 or higher on two or more factors. The cross-loadings differ by more than .20, which concludes that the variables relate more strongly to their own factor than to another factor. In this case, the scale is checked for and good enough for further analysis.

QCD was measured by the scale of Aiken, Clarke, Sloane and International Hospital Outcomes Research Consortium (2002), which consist of three questions that examine the quality over time, the overall development of quality and satisfaction with the quality of care. An example question is: ‘’ In general, how would you describe the quality of care delivered to the children in the work environment?’’. This scale was previously used for examining the QCD by nurses in a hospital. The reliability of this scale was measured as α = .731 suggesting that the items have acceptable

internal consistency (Martin & Bridgmon, 2012). On a scale of 1 ’Fully disagree’’ to 7 ‘’Fully agree’’, the scale had a mean score of 6, demonstrating the high prevalence of QCD in the sample.

A principal component analysis was conducted on the three items with orthogonal rotation (varimax). The Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analysis, KMO =.634, and all KMO values for the individual items were <.6 which is above the acceptable limit of .5 (Field, 2009). The Bartlett’s test of Sphericity ($\chi 2$ (3) = 155.579, p<.001) was significant, indicating that the correlations between items were sufficiently large for PCA. An initial analysis was run to obtain eigenvalues for each component in the data. One component had an eigenvalue over Kaiser’s criterion of 1 and explained 66.9 per cent of the variance in all of the items. The scree plot displays that there is also one factor. The orthogonal rotation could not be extracted because there was only one component. Therefore, the scale is checked for and good enough for further analysis.

EL was measured by the scales of Pearce and Sims (2002), which consist of six items encompassing encouraging self-reward, independent action, opportunity thinking and self-development. An example is: ‘’My team leader (members) urges (urge) me to assume responsibilities on my own’’. The reliability of this scale was α = .878 suggesting that the items have good internal consistency (Martin & Bridgmon, 2012). The scale had a mean of 5.39 and on the scale of 1 to 7, in which 1 means ‘’Fully disagree’’ and 7 ‘’Fully agree’’. With the option ‘’ scale if item deleted’’ the current Cronbach’s alpha was at its highest.

A principal component analysis was conducted on the six items with orthogonal rotation (varimax). The Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analysis, KMO =.817, and all KMO values for the individual items were <.7, which is above the acceptable limit of .5 (Field, 2009). The Bartlett’s test of Sphericity ($\chi 2$ (15) = 625.640, p<.001) was significant, indicating that the correlations between items were sufficiently large for PCA. An initial analysis was run to obtain eigenvalues for each component in the data. One component had an eigenvalue over Kaiser’s criterion of 1 and explained 62.8 per cent of the variance in all of the items. The scree plot displays that there is also one factor. The orthogonal rotation could not be extracted because there was only one component. Subsequently, the scale is checked for and good enough for further analysis.

LMX is measured by the scale of Graen and Uhl-Bien (1995), which consists of seven questions examining the relationship experienced by the childcare workers with their leader. An example is: ‘’ How leader/supervisor recognizes my potential’’. The reliability of this scale was measured as α = .845 suggesting that the items have good internal consistency (Martin & Bridgmon, 2012). On the scale of 1 ‘’Fully disagree’’ and 7 ‘’Fully agree’’, the scale had a mean of 5.18. With the option

'' scale if item deleted'' the item '' my supervisor would help me out of a bad situation by taking the blame'' showed a higher Cronbach's alpha of α = .878. The difference between the two alphas is too little to remove the whole item on when examining the items at face value.

A principal component analysis with orthogonal rotation (varimax) was conducted on the seven items. The Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analysis, KMO =.858, and all KMO values for the individual items were <.6, which is above the acceptable limit of .5 (Field, 2009). The Bartlett's test of Sphericity ($\chi 2$ (21) = 678.345, p<.001) was significant, indicating that the correlations between items were sufficiently large for PCA. An initial analysis was run to obtain eigenvalues for each component in the data. Two-component had eigenvalues over Kaiser's criterion of 1 and the combination explained 72.884 per cent of the variance in all of the items. The scree plot displays that there are also two factors. Based on the rotated component matrix, there are multiple cases of cross-loading, in which an item loads at .30 or higher on two or more factors. The cross-loadings differ by more than .20, which concludes that the variables relate more strongly to their own factor than to another factor. In this case, discriminant validity is checked for and if found good enough for further analysis. Hence, the scale is checked for and good enough for further analysis.

Control variables are included in the analyses, to exclude the possible influence of these variables on the relationship. These include the age, gender, education level, full-time or part-time, amount of years working in childcare and if the respondent has children (Tarafdar, Tu, Ragy-Nathan, Ragu-Nathan, 2011). Gender was measured with the question: "Are you male or female?". The answer categories were male (1) or female (2). Age was measured with the question: "What is your age (in years)?", which was an open interval question. Educational level was measured with the question: "What is your educational level?". The answer categories of this questions were primary school (1), Lower general secondary education (2), higher general secondary education (3), pre-university education (4), intermediate vocational education (5), university of applied science (6) or academic education (7). The number of years working in childcare was measured with an open interval question. Whether the respondent works full-time or part-time was measured with answer categories full-time (1) and part-time (2). These control variables were used on the basis of the significant results in the studies of Salanova et all. (2013) and Tarafdar et all. (2011), in which they used the same control variables for testing technostress.

The complete list of the questions and statements can be found in the Appendix.

Analysis

For this study, the quantitative data was the results of the distributed questionnaire to the childcare

centres. To analyse this data, IBM SPSS Statistics 24 was used to test the three hypotheses. For the relationship between technostress (X) and QCD (Y), the ordinary least squares (OLS) regression was used to estimate the linear function of this model and so hypotheses 1 (Hutcheson, 2011). This study included moderating factors, for which PROCESS-macro version analysis will be used (Hayes, 2012). This test was used to estimate the direct and indirect effects in single and multiple moderation models. Model 2 which analyses the moderating effect of two moderation variables between the relationship of the independent variable and the dependent variable (Hayes, 2017). This analysis will include a simple mediation with the control variables.

Furthermore, the PROCESS-macro analysis determined whether the relationship between technostress and QCD is moderated by the value of LMX (M1) and EL (M2) for the second and third hypotheses. To perform these analyses, the data had to conform to seven assumptions. This includes, the dependent and independent variable being continuous, independence of observations (tested by Durbin-Watson statistic), linear relationship between technostress and QCD (tested by the OLS regression), all the variables have the same finite variance (homoscedasticity), no multicollinearity, no significant outliers and residuals are normally distributed (Aguinis, 2004; Jose, 2013). The data was conform to the above assumptions and therefore appropriate for the analyses.

Common source bias

The chance of common source bias (CSB) increases, involving that the questionnaire were made from limited sources. CSB happens when variations in responses are caused by the variables coming from one method or source rather than the actual inclinations of the respondents that the method or instrument seeks to uncover (Fuller, Simmering, Atinc, Atinc and Babin, 2015). In other words, the questionnaire could introduce a bias, hence variances, which falsely inflates or deflates the correlations (Conway & Lance, 2010). This biased results might cause incorrect conclusions for the researcher. While there are multiple papers that question if CSB exists and the necessity to address this within questionnaires and results (Brannick, Chan, Conway, Lance & Spector, 2010; Spector, 2006). However, with the use of two methods, there can be certain security and nuanced approach created for CSB and the results of this study (Fuller et al., 2015; George & Pandey, 2017).

The Harman's one-factor test indicated if the CSB is problematic if the exploratory factor analysis (EFA) with all variables produces an eigenvalue in which the first factor accounts for more than 50% of the variance (Harman, 1976). Harman's approach is to test for CSB, but not to control for CSB. So with the use of the correlational marker technique in which, within the survey, two unrelated questions were added and those shouldn't correlate with the scales of the used

variables of this study (Williams, Hartman & Cavazotte, 2010). Those questions are ‘’Are you more a dog person or a cat person?’’ and ‘’Are you worried about the (possible) climate changes?’’. After analysing the collected data, there was no treat found of CSB (variance = 23% and no significant correlation p<.05)

Results

Descriptive statistics and correlations (Uni- en bivariate results)

The means, standard deviations and Cronbach’s alphas for all measures used in this study are reported in Table 1. The mean of technostress experienced by the respondents was almost a two on the scale of one to seven, which is unexpectedly low and the mean of QCD was almost a six on the same scale. The correlations in Table 2 provide preliminary support for the first hypotheses. Technostress has negatively correlated to the QCD by childcare workers (r= -.269, p<.01). The effect size of technostress on the QCD is considered a small effect because the correlation is lower than .10 (Martin & Bridgmon, 2012). In addition, there was no significant correlation between the QCD and the control variables, except for working part-time (r= -.141, p<.05). Furthermore, there was a significant correlation was between using a digital parents environment and technostress (r= -.145, p<.05), which is also considered a small effect. In addition, the two leadership styles are both significantly correlated to technostress. LMX has a negative small effect (r= -.198, p<.01) and EL has a negative small effect (r=-.165, p<.05) on technostress. Regarding

Table 2. Means, Standard deviations and Correlations between the variables.

Variables	M	SD	1	2	3	4	5	6	7	8	9
1. Age	41.59	11.658									
2. Years working in the current childcare centre	11.48	8.398	0.550**								
3. Gender (Female)			-0.094	0.063							
4. Education (University of applied science)			0.090	0.116	0.109						
5. Part-time			0.147*	0.052	0.064	-0.076					
6. Use digital parents environment (Yes)			-0.052	-0.036	0.120	-0.071	0.041				
7. Empowering leadership	5.392	0.938	0.068	0.011	0.024	0.155*	-0.004	0.020			
8. Leader-member exchange	5.184	0.839	0.032	-0.056	-0.036	0.038	-0.175*	0.060	0.642**		
9. Technostress	1.872	0.817	0.061	0.068	0.122	0.029	0.092	-0.145*	-0.165*	-0.198**	
10. Quality of care delivered	6.013	0.856	-0.007	-0.052	-0.092	-0.050	-0.141*	-0.068	0.202**	0.228**	-0.269**

*Note: **p<.01, *p<.05. Variables 7-10 are scales*

the QCD, both LMX (r=.228, p<.01) and EL (r=.202, p<.01) are significantly positively correlated and have both a small effect on the QCD.

Technostress and quality of care delivered

The relationship between technostress and QCD was assessed using the linear regression OLS method. First, without the control variables, results of the regression revealed that technostress explained seven per cent of the variance and that the model fits the data well (F(1.191)=14.939, p<.001). It was established that technostress significantly predicted QCD (b= -.282, p<.001). This outcome helps to understand how much of this effect can be explained through the control variables. Displayed in Table 3, model 1 explains the relationship of QCD with the control variables. This showed that technostress was still strongly significant with the inclusion of the control variables (b= -.263, p<.001).

Second, with the control variables, finding that this model is significant (F(6,168)= 2,310 p<.05) and explained almost eight per cent of the variance in the QCD. These variables are continuous, independence of observations, based on the Durbin-Watson test, with a value of 1.724, which is inside the acceptable range of 1.5 and 2.5 (Albertson & Lim, 2010). The multicollinearity tolerance is at the acceptable level of a VIF less than ten (Martin & Bridgmon, 2012). The OLS regression analysis indicated that technostress has a significant negative effect on the QCD if all the control variables are constant (b=-.246, p<.01). This confirms hypothesis 1: the higher the technostress level experienced, the lower the quality of care delivered gets.

LMX and EL effect

Table 3 gives the result of the final hypnotized model, which included the moderation effect of LMX and EL. To ensure no interference between the two moderation, the PROCESS analysis is done twice, once with the LMX as moderated and once with the LMX as moderated. After performing the PROCESS analysis for both EL and LMX, there was no significant relationship found from both interactions as seen in table 3. Counter to expectations, both EL and LMX were both found not significant in regards to QCD with the control variables being constant. In both PROCESS analysis, technostress had a significant effect on QCD (1. b= -.239, p<.01) (2. b= -.242, p<.01). Since, both LMX and EL do not moderate the relationship between technostress and QCD, hypothesis 2 and 3 can be rejected.

Table 3. Results of regression analysis predicting the quality of care delivered.

	Model 1		Model 2		Model 3		Model 4	
	b	SE	b	SE	b	SE	b	SE
Control variables								
Age	0.002	0.007	0.004	0.006	0.002	0.007	0.022	0.007
Gender (Female)	-0.267	0.256	-0.159	0.252	-0.143	0.208	-0.164	0.214
Education (University of applied science)	-0.075	0.128	-0.051	0.125	-0.049	0.124	-0.088	0.126
Years working in the current childcare centre	-0.004	0.009	-0.005	0.009	-0.004	0.009	-0.004	0.009
Part-time	-0.200	0.134	-0.156	0.131	-0.123	0.140	-0.157	0.137
Use digital parents environment (Yes)	-0.099	0.132	-0.174	0.131	-0.195	0.132	-0.185	0.131
Dependent variable								
Technostress			-0.263***	0.077	-0.239**	0.086	-0.242**	0.088
LMX					0.124	0.088		
EL							0.137	0.078
Interactions								
LMX*TS					0.127	0.121		
EL*TS							0.056	0.106
R^2	0.029		0.092		0.116		0.116	
Adjusted R^2	-0.005		0.055					
df	6,174		7,171		9,169		9,169	
F	0.862		2.473*		2.564**		2.685**	

*Note: N=179 *p<.05, **p<.01, ***p<.001. Model 1 and 2 were analysed with OLS regression. Model 3 was analysed with PROCESS macro model 1 (Hayes, 2013).*

Additional analysis

Based on the paper of Larjovuori, and co-workers (2017) and the found correlations between the concepts, the possibility of a mediating effect can be considered. The scales of LMX, EL were analysed in PROCESS as a mediator with model 4 (Hayes, 2012). In table 5, the results of the multiple models are presented and in all of them the influence of technostress on QCD was significant (b= -0.263, p<.001). Al three Sobel tests could not find a significant mediation. So, LMX, EL and combined did not mediate the relationship between technostress and QCD.

Table 5. Additional results of PROCESS analysis with EL, LMX and combined as the mediator

Predictors	**b**	**s.e**	**t**	**F**	**df**	**R^2**	**Total R^2**	**Sobel Z**
				QCD				
Technostress	-0.263	0.766	-3.434	2.473*	(7,171)	0.092	0.092	
				Model 1				
LMX	0.125	0.076	1.659					

Technostress	-0.242**	0.077	-3.124	2.530*	(8,170)	0.014	0.106	-1.252
Model 2								
EL	0.136*	0.066	2.045			0.067		
Technostress	-0.235**	0.077	-3.085	2.727**	(8,170)	0.022	0.114	-1.409

*Note: N=179 *p<.05, **p<.01, ***p<.001. Analysed with PROCESS macro model 4 (Hayes, 2013).*

Discussion

Technostress is a phenomenon with an increasingly scientific and societal interest because of the vast use of ICT both in organisations and private life. In the childcare sector, this digitalization is designed to empower and enhance the QCD (Woodland, 2017), which is beneficial for the development of the young children (Hayes, et al., 1990). However, this digitalization is also related to multiple negative effects like technostress (Larjovuori, et al., 2017), which was defined as the negative psychological state associated with the use of ICT, combined with symptoms as anxiety, mental fatigue, scepticism and inefficacy (Salanova et al., 2013). Within the TMSC model, the (techno)stress can be dealt with the coping capability of employees and their available resources (Lazarus & Folkman, 1991), The role of leadership as a resource within this model seems like an evident and effective tool for management to deal with the negative effects of technostress on employees (Turol & Gaudioso, 2018). Especially with the constantly changing work and perceived leadership due to the digitalization.

Theoretical contributions

This study aimed to examine the possible effect of technostress on the quality of care delivered by childcare workers and how two different kinds of leadership styles could influence this possible relationship. More specifically, the proposed hypotheses were that technostress has a negative influence on the QCD by the childcare workers and that LMX or EL could buffer this negative influence. After analysing the data, the conclusion could be drawn that the increase of technostress indeed caused a decline in the QCD, which supports with the research of Weigl et al., (2015) and Ma et al., (2018). This supports the first hypotheses. So, when childcare workers are working with ICT and experience prolonged and overwhelming stresses, their quality of care delivered to the children reduces. Furthermore, the moderating or mediating effect of LMX and EL was not found to be significant on the relationship of technostress and QCD. Therefore the second and third hypotheses were rejected. Hence, there was no buffering effect from both leadership's styles to the negative effect of technostress on QCD. Additional analysis could not find a mediating effect of leadership on the relationship either. Thus, our study supports the claim

that technostress decreases the QCD but doesn't show the buffering effect of LMX and EL on these negative effects.

In line with the theory of the TMSC model, the coping ability of the employee determine how the negative effects of (techno)stress are dealt with and influence the performance (Lazarus & Folkman, 1991). However, even with these low levels of technostress, the negative influence on QCD was strongly present, which emphasise the importance of this digitalization phenomena. Elaborating on these findings using the model the assumptions can be made that the coping process could suffer when the technostress level gets higher. So, these findings strengthen the importance of the coping process of employees to effectively deal with the negative effects of technostress.

Furthermore, the TMSC model included external resources that could influence this coping process. Within this study, the perceived leadership styles EL and LMX were examined as these external resources, in search of the 'successful' leadership. A possible indirect effect of leadership on the negative effect of technostress on QCD was not found within the data. However, there were correlations found of both leaderships with technostress and QCD separately. So, when workers perceive a high EL or LMX, the technostress decreases and the QCD increased. The possibility of an additional chain within the model is possible, like for example technostress → personal trait → EL of LMX → QCD. This furthermore emphasis the possible importance of perception and personal experience regarding concepts of leadership. Furthermore, there is the possibility that because the average technostress within this data was low and the QCD high, the chance finding a significant buffering relationship becomes smaller, which contributes to a type 2 error. Consequently, this can explain the reason that there were no significant findings regarding the influence of leadership as a moderator or mediator.

Contradicting with the results found in Turel and Gaudioso (2016), the data analysis could not find a buffering relationship of these leadership approaches. This brings an insight into the current leadership literature and their influence on the coping process. Apparently, these leadership approaches were not perceived as the needed resource for these childcare workers to help with the coping process. Moreover, influence of EL and LMX on the QCD or performance, in general, can be different depending on the contextual and personal factors of employees (Liu, Lepak, Takeuchi & Sims, 2003; Martin et al., 2016). Hence, the possibility of EL not being suitable for the workers and that opens the options of different leadership approaches. Furthermore, the LMX theory was not fully utilized and opening up to the economic LMX could create a balanced approach (Dysvik & Haerem, 2012) So, this study contributes to the literature by finding that, EL

and LMX are not the complete answer here for dealing with the negative effects of technostress on QCD and are not universal for these childcare workers.

. Some patterns emerged, which were not entirely expected. There was a correlation found between technostress and the use of the digital parental environment. So, the use of digital parental environment decreases the perceived technostress. This is contradicting result, regarding the personal understanding that the use of the digital parental environment is an extra technological task that the workers have to deal with. However, this result could indicate a possible side effect of technoaddiction, in which some workers are so used to the technology, that they have a higher maximum stress level and can cope better with the negative effects in advance (Lee, 2018).

Furthermore, working part-time negatively influenced the QCD and LMX within this data. This would mean that when childcare workers work part-time, they have perceived less of meaningful relationship with their management and lower quality of their care delivered. This could be explained by the fact that full-time and part-time childcare workers have to do the same amount of tasks, but that the part-time workers have less time for it. This could differ how they perceive their relationship with their management because of the limited time spend with their supervisor at the childcare centre than their full-time colleagues. Furthermore, the added pressure could explain the decrease of QCD.

Limitations and future directions

The combination of technostress and childcare workers is relatively new within the scientific literature, while also having a practical and societal impact on the health of the childcare workers and the development of the children. This study found a negative relationship between the level of technostress and the QCD. These results give a clarification that this phenomenon is apparent within the childcare sector, which is societally important in regards to the health of the childcare workers and the development of young children. Furthermore, the level of technostress within this study was surprisingly low, while the QCD was high. This creates an interesting insight into the previous literature, in which the technostress level was mostly high. This contradiction increases the possible explanations of the TMSC model, in which the available resources and skills can already lower these level within these childcare workers. However, the mediating effect of leadership was not found, there was a correlation found between both leadership styles and technostress and leadership and QCD.

These findings are similar to the research of Turel and Gaudioso (2018) and Yukl and Mahsud (2010) put together in one research. The use of the TMSC model created the option of analysing

resources, like leadership style, to the buffering effect on the negative influence of technostress. Although, the results of this study, this conceptual model can be further analysed with different resources, which creates a whole theoretical framework that can be used in future research on the relationship between technostress and QCD. Moreover, because of the used quantitative method, the results of the data can be considered representative of the population and be generalized over the entire population (Martin & Bridgmon, 2012).

The weakness in this research is that only the effects of technostrain were examined, which based on the literature of Salanova et al., (2013), combined with technoaddiction is defined as technostress. Therefore, not the whole concept of technostress is measured and limits the possible influence of technoaddition. This can be overcome in the future by using both sides of technostress when the resources and time is available.

The scope of this study is also limited to one-time frame, in which the respondents could feeling different from their usual self, because of personal reasons. This could give a skewed view of the data and the results. To observe the coping capability towards technostress, longitudinal research would assess the possibility of a maximum level of technostress and its long-term consequences on the QCD or performance.

Furthermore, EL and LMX were conceptualized on a single level, in which only the effects of employee reacting to leader or environment is measured. By using the multi-level approach, the multiple conceptual levels of the leadership experiences and its outcomes can be measured simultaneously (Batistič, Černe & Vogel, 2017). Furthermore, this approach enables measuring the cross-level relationship of the examined constructs. Combining this approach and other leaderships like transformational, transactional, servant and autocratic can be used to further explore the possible buffering of mitigating effects on technostress.

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Interview with director

After discussing the results with a director of a childcare centre in Amsterdam, she claimed that is definitely a problem regarding technostress, on the basis of the number of workers having a burnout and calling in sick after a period of time. This negative effect is in line with the finding of this study. This amount is also noticeable in the data of CBS (2018), in which the sick leave rate was at 4.4 in 2018 in the Netherlands. These eventual social costs could be mitigated when the importance of technostress increases.

Within her centre, she notices and hears multiple times that the leadership she shows towards her employees have a big impact on the perceived technostress and the QCD. This leadership included the relationship, communication and expectations of the director towards the childcare

workers. This claim supports the found pieces of literature within the theoretical framework (Houghton, Wu, Godwin, Neck & Manz, 2011; Martin et al, 2015; Gerstner & Day, 1997). However, this study cannot support this impact of regarding EL and LMX.

When asking about her opinion about technostress in general, she explained that she notices that technostress in itself is not really the problem, but the issue that employees don't feel heard by their management regarding the perceived negative effects of technostress. This is in line with the limitations of this study, in which leadership is personally perceived and based on context (Devonport, 2013). There is a possibility that over time, the phenomena of technostress has been developed into a structural part of the work and that the management cannot successfully deal with it. Moreover, this theory suggests that technostress has become part of the work for employees instead of a negative effect of digitization.

Similar to the research of Lui et al., (2003), the personal context has an influence on the type of leadership used, because she noticed that her ''lower'' education workers respond better to LMX and ''higher'' education workers better to EL. This could be explained that people with higher education are trained to be more independent and empower in comparison to people with lower education that prefer more given structure and support from their management.

Within the Netherlands, there are national laws regarding the quality of childcare centres. However, every city also has its own additional law and regulations regarding the expected quality of the childcare centres. The amount and pressure perceived by these additional laws differ from city to city. The quality laws and regulations can create more work and administrative pressure on the employees.

Practical implications

The results of this study have direct implications for the management in childcare centres in general. The knowledge of increased technostress decreases the QCD should motivate them to study this negative effect within their employees and possibly make policies that reduce this stress. A possible policy that organisations could implement consists of childcare workers asking for a separate time period to perform the ICT-related administration. This could encourage the childcare workers to put their priority on the quality of their care, which is better for the development of the young children (Hayes, Palmer & Zaslow, 1990). Organizations could further look into the technological administration that is present and done by the childcare workers every day, which possibly could be performed by an assistant or outsourced. The study programs on pedagogy in the Netherlands already try to prepare new childcare workers on the importance of technology within childcare. This inclusion trains the childcare workers to know how to deal with

the negative sides of technology and benefits from these advancements (NCOI, 2019). Moreover, changing and clarifying the expectation parents have on the digital parents' environment could relieve pressure on the childcare workers and the parents.

Conclusions

In essence, this study hopes to give more insight into the contribution of the quality that workers deliver and keep the development of young children at a beneficial level. The current trend to improve everything with the use of technology within organizations is on many aspects efficient and beneficial. However, organizations should constantly question if the implementation of a certain technology is necessary and beneficial for the employees using it. Without this criticism and acknowledgement, the benefits of technology could be overshadowed by the negative effects and missing its aim of increasing the performance. Furthermore, the leaders should invest in their relationship and communication with their employees even though they don't have ''al the answers'' because eventually, that's beneficial for the whole organisation and the people they serve. Since the phenomena of technostress and its negative influence are apparent and highly influential.

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Appendix

Questionnaire

Variables	Subcategories	Question
Technostress	Anxiety	- *I feel tense and anxious when I work with ICT* - *It scares me to think that I can destroy a large amount of information due to the inadequate use of them.* - *I doubt when using technologies because of fear to make mistakes.* - *Working with them makes me feel uncomfortable, irritable, and impatient.*
	Fatigue	- *I find it difficult to get myself relaxed after a day of work using ICT.* - *When I finish working with ICT, I feel exhausted/worn out.* - *I am so tired when I finish working with ICT that I cannot do anything else.* - *It is hard to focus after working with technologies.*
	Scepticism	- *As time goes by, ICT interest me less and less* - *Every time I use ICT I feel less involved in their use.* - *I am more cynical regarding ICT's contribution to my work.* - *I doubt about the meaning of work with those technologies.*
	Inefficacy	- *In my opinion, I am inefficient when using technologies.* - *It is difficult to work with ICT.* - *People say I am inefficient using technologies.* - *I am unsure about properly finishing my tasks when using ICT.*
QCD		- In general, how would you describe the quality of care delivered to the children in your work environment? (Excellent, Good, Fair, Poor) - How would you describe the quality of care delivered on your last shift? - Overall, over the past year would you say the quality of care in your organizations has been? (Improved, remained the same, deteriorated)
Empowering leadership		- My supervisor encourages me to search for solutions to my problems without his/her direct input. - My supervisor encourages me to search for solutions to my problems without his/her supervision.

		- My supervisor urges me to assume responsibilities on my own. - My supervisor advises me to solve problems when they pop up without always getting a stamp of approval. - My supervisor encourages me to view unsuccessful performance as a chance to learn. - My supervisor encourages me to develop myself.
Leader-member exchange		- My supervisor understands my work-related problems and needs. - I know where I stand with my supervisor. - My supervisor recognizes my potential. - My supervisor would use his / her influence to help me solve work-related problems. - My supervisor would help me get out of a bad situation by taking on the blame. - I defend and justify my supervisor's decisions when he/shehe is not present. - I have an effective working relationship with my supervisor.

Results

Table 1. Demographic characteristics of the respondents and internal consistencies of technostress, quality of care delivered and leadership styles (LMX and EL)

	M	*SD*	*N*	*α*
Control variables				
Age in years	41.59	11.66	192	
Gender (female) in %	95.8%		191	
Educational level in %			196	
Lower general secondary education	2.0%			
Higher general secondary education	44.9%			
Pre-university education	1.0%			
Intermediate vocational education	2.0%			
University of applied science	43.4%			
Academic education	6.6%			
How many years are you working in the current childcare centre?	11.48	8.39	186	
Do you work full-time or part-time?	65.3%		196	
Use of digital parental environment?	67.3%		193	
Research variables (scales)				
Technostress	1.87	0.82	192	0.95
Quality of care delivered	6.01	0.86	191	0.71
Leader-member exchange	5.19	0.84	193	0.85
Empowering leadership	5.39	0.94	194	0.88

Note: The missed values were coded as 999. Gender is dummy coded (female ='2'= reference category). Fulltime/Part-time is dummy coded (Part-time ='2'= reference category). Digital parental environment is dummy coded (yes='1'= reference category)

Table 2. Means, Standard deviations and Correlations between the variables.

	Variables	M	SD	1	2	3	4	5	6	7	8	9
1.	Age	41.59	11.658									
2.	Years working in the current childcare centre	11.48	8.398	0.550**								
3.	Gender (Female)			-0.094	0.063							
4.	Education (University of applied science)			0.090	0.116	0.109						
5.	Part-time			0.147*	0.052	0.064	-0.076					
6.	Use digital parents environment (Yes)			-0.052	-0.036	0.120	-0.071	0.041				
7.	Empowering leadership	5.392	0.938	0.068	0.011	0.024	0.155*	-0.004	0.020			
8.	Leader-member exchange	5.184	0.839	0.032	-0.056	-0.036	0.038	-0.175*	0.060	0.642**		
9.	Technostress	1.872	0.817	0.061	0.068	0.122	0.029	0.092	-0.145*	-0.165*	-0.198**	
10.	Quality of care delivered	6.013	0.856	-0.007	-0.052	-0.092	-0.050	-0.141*	-0.068	0.202**	0.228**	-0.269**

*Note: **p<.01, *p<.05. Variables 7-10 are scales*

Table 3. Results of regression analysis predicting the quality of care delivered.

	Model 1		Model 2		Model 3		Model 4	
	b	SE	b	SE	b	SE	b	SE
Control variables								
Age	0.002	0.007	0.004	0.006	0.002	0.007	0.022	0.007
Gender (Female)	-0.267	0.256	-0.159	0.252	-0.143	0.208	-0.164	0.214
Education (University of applied science)	-0.075	0.128	-0.051	0.125	-0.049	0.124	-0.088	0.126
Years working in the current childcare centre	-0.004	0.009	-0.005	0.009	-0.004	0.009	-0.004	0.009
Part-time	-0.200	0.134	-0.156	0.131	-0.123	0.140	-0.157	0.137
Use digital parents environment (Yes)	-0.099	0.132	-0.174	0.131	-0.195	0.132	-0.185	0.131
Dependent variable								
Technostress			-0.263***	0.077	-0.239**	0.086	-0.242**	0.088
LMX					0.124	0.088		
EL							0.137	0.078
Interactions								
LMX*TS					0.127	0.121		
EL*TS							0.056	0.106
R^2	0.029		0.092		0.116		0.116	
Adjusted R^2	-0.005		0.055					
df	6,174		7,171		9,169		9,169	
F	0.862		2.473*		2.564**		2.685**	

*Note: N=179 *p<.05, **p<.01, ***p<.001. Model 1 and 2 were analysed with OLS regression. Model 3 was analysed with PROCESS macro model 1 (Hayes, 2013).*

Table 4. Items and factor loadings.

		QCD	TS	EL	LMX
Name item	Full statement				
QOC1	Quality of care - ... qualitative care is generally offered to the children.	0.882			
QOC2	Quality of care -… qualitative care was offered to the children on my last shift.	0.846			
QOC3	Quality of care - ... the quality of care for the children has improved in the last year.	0.718			
TES1	Technostress (scepticism) - As time goes by, I am less and less interested in IT.		0.853		
TES2	Technostress (scepticism) - I feel less and less involved in the use of ICT.		0.838		
TES3	Technostress (scepticism) - I am very cynical about the contribution of ICT to my work.		0.808		
TES4	Technostress (scepticism) - I doubt the added value of working with IT.		0.764		
TES5	Technostress (fatigue) - I find it difficult to relax after a day of working with IT.		0.803		
TES6	Technostress (fatigue) - When I'm done working with IT, I feel exhausted.		0.788		
TES7	Technostress (fatigue) - When I'm done working with IT, I'm so tired that I can't do anything else.		0.807		
TES8	Technostress (fatigue) - I find it difficult to concentrate after working with IT.		0.817		
TES9	Technostress (anxiety) - I feel tense and anxious when working with IT.		0.714		
TES10	Technostress (anxiety) - The thought that I can destroy a large amount of information due to the improper use of ICT scares me.		0.749		
TES11	Technostress (anxiety) - I have doubts about the use of IT, for fear of making mistakes.		0.799		
TES12	Technostress (anxiety) - By working with IT, I feel uncomfortable, irritable and impatient.		0.786		
TES13	Technostress (inefficiency) - In my opinion, I am not effective when I use IT.		0.671		
TES14	Technostress (inefficiency) - It is difficult to work with IT.		0.823		
TES15	Technostress (inefficiency) - People say that I am inefficient when I use IT.		0.753		
TES16	Technostress (inefficiency) - I am not sure if I can perform my tasks properly when using ICT.		0.735		
EMPL1	Empowering leadership - My supervisor encourages me to look for solutions without his / her direct input.			0.852	
EMPL2	Empowering leadership - My supervisor encourages me to look for solutions without his / her guidance.			0.834	
EMPL3	Empowering leadership - My supervisor encourages me to take responsibility.			0.833	
EMPL4	Empowering leadership - My supervisor advises me to solve emerging problems myself, without always asking for her / her approval.			0.787	
EMPL5	Empowering leadership - My supervisor encourages me to see unsuccessful achievements as learning opportunities.			0.739	
EMPL6	Empowering leadership - My supervisor encourages me to learn by developing myself.			0.696	
LMX1	LMX - My supervisor understands my work-related problems and needs.				0.831
LMX2	LMX - I know where I stand with my supervisor.				0.896
LMX3	LMX - My supervisor recognizes my potential.				0.877
LMX4	LMX - My supervisor would use his / her influence to help me solve work-related problems.				0.759
LMX5	LMX - My supervisor would help me get out of a bad situation by taking on the blame.				0.889
LMX6	LMX - I defend and justify my supervisor's decisions when he/she is not present.				0.760
LMX7	LMX - I have an effective working relationship with my supervisor.				0.736

Note: TS and LMX portray rotated loadings, with the highest loading

Table 5. Additional results of PROCESS analysis with EL, LMX and combined as the mediator

Predictors	b	s.e	t	F	df	R^2	Total R^2	Sobel Z
				QCD				
Technostress	-0.263	0.766	-3.434	2.473*	(7,171)	0.092	0.092	
				Model 1				
LMX	0.125	0.076	1.659					
Technostress	-0.242**	0.077	-3.124	2.530*	(8,170)	0.014	0.106	-1.252
				Model 2				
EL	0.136*	0.066	2.045			0.067		
Technostress	-0.235**	0.077	-3.085	2.727**	(8,170)	0.022	0.114	-1.409

*Note: N=179 *p<.05, **p<.01, ***p<.001. Analysed with PROCESS macro model 4 (Hayes, 2013).*