Mitigating teleworkers' perceived technological complexity and work strains through supportive team communication

Received 2 May 2023
Revised 9 June 2023
Accepted 7 July 2023

Ingrid Wahl
Department of Communication, Faculty of Social Sciences, University of Vienna, Wien, Austria
Daniel Wolfgruber
Department of Communication, Faculty of Social Sciences, University of Vienna, Wien, Austria and
Pôle D, HEC Montréal, Montréal (Quebec), Canada, and
Sabine Einwiller
Department of Communication, Faculty of Social Sciences, University of Vienna, Wien, Austria

Abstract

Purpose – Teleworkers need to use information and communication technology (ICT) to communicate and collaborate with their team members, however, when new and complicated information systems should be used, this can lead to stress. Receiving adequate information and emotional support from team members could reduce the stress caused by technological complexity and subsequent work and occupational strains.

Design/methodology/approach – Participants ($N = 400$) teleworked at least half of their working hours and were employed in organizations with a minimum of 250 employees. Data from the online survey were analyzed using structural equation modeling.

Findings – Results demonstrate that aspects of informational and emotional communication contribute to perceived social support from team members, with emotional communication explaining more variance. Stress from technological complexity is mitigated by both supportive team communication and the extent of telework. Perceived stress from technological complexity, however, still increases work and occupational strains.

Practical implications – The findings emphasize the importance of supportive internal communication to foster a collaborative telework environment. Practitioners in internal communication need to encourage teleworkers to help each other with adequate information and provide also emotional support to overcome the negative effects of complex ICT.

Originality/value – The study shows that supportive communication among team members is important for teleworkers to reduce work and occupational strains, especially when facing difficulties with complex ICT.

Keywords Techno-complexity, Work and occupational strains, Stress, Social support, Virtual teamwork, Teleworking

Paper type Research paper

This research was funded by the Academic Society for Management & Communication (project title: Employee Communication in Times of Virtual Collaboration).

Conflict of interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Corporate Communications: An International Journal
Vol. 29 No. 3, 2024
pp. 329-345
Emerald Publishing Limited
1356-3289
DOI 10.1108/CCIJ-05-2023-0061

Introduction

Due to vast and rapid technological developments, employees are enabled to work, communicate and cooperate from geographically dispersed sites outside of official office spaces. This form of work is called telework but is also known as telecommuting, mobile work or remote work. Even before the COVID-19 pandemic, many employees used the possibility of telework on a regular basis, and the number of teleworkers has been on the rise for several years (Bitkom Research, 2017; Global Workplace Analytics and Flexjobs, 2017). Yet, during the years of the pandemic in early 2020s, the number of teleworking employees increased tremendously, as governments throughout the world prompted organizations to allow telework wherever and whenever possible. This posed many challenges for employees and working teams as many did not have the necessary technical equipment at their disposal and lacked training regarding the use of collaborative information and communication technology (ICT) tools. Even though full teleworking has declined after the pandemic ebbed away, projections expect that the rate of part-time telework will considerably increase from 42% in 2021 to 81% in 2024 (Incisiv, AT&T Business and Dubber, 2022).

Teleworking employees frequently report several disadvantages including reduced feelings of belonging to the organization, isolation, lack of separation between work and private life, higher needs for self-discipline, lack of professional support, lack of career advancements and over-availability (Harpaz, 2002). The demands of teleworking oftentimes reduce employees' work-life balance and work satisfaction with perceived stress from telework mediating the relationship (Sandoval-Reyes *et al.*, 2021). Furthermore, the more employees depend on technology for their work the more stress from ICT use they perceive (Shu *et al.*, 2011). Especially, teleworking employees who work in teams have to rely heavily on ICT for communication and collaboration (Mitchell and Zigurs, 2009), which makes the mastery of the provided working tools essential.

If communication and collaboration tools are not working properly while teleworking, receiving support is more challenging than when working on-site, because ICT tools are also needed to get collegial support in a teleworking setting. When teleworkers lack ICT skills and problems occur, getting help from remote colleagues can be difficult. Being on one's own with technical problems causes a special form of stress which further adds to already existing work and occupational strains. To help employees cope with uncertain situations, providing technical and emotional support was identified as useful (Diaz-Soloaga and Diaz-Soloaga, 2023). Accordingly, when coworkers and team members support each other by sharing adequate information and communicating compassionately, stress caused by technology might be reduced. Hence, the present study aims to contribute to research on ICT-induced stress by (a) distinguishing between informational support and emotional support from team members, (b) focusing on stress resulting from teleworkers' perceptions that the technology used is complex and (c) widening research from on-site work to the context of telework. Thus, the general research question is:

RQ. To what extent does supportive team communication mitigate the stress caused by technological complexity and perceptions of work and occupational strains?

Literature review

Job demands-resources model

The Job Demands-Resources Model (Bakker and Demerouti, 2007) distinguishes between two job characteristics influencing employee well-being (i.e. job demands and job resources). Job demands are aspects of work that demand constant physical and/or psychological effort and, as a result, can lead to work and occupational strains. Job resources are aspects of work that help achieve work goals, reduce job demands and/or promote employee development and,

consequently, can increase employees' motivation. Job demands and resources are assumed to interact, where job resources are most often considered to buffer the effects of job demands on job strains (i.e. acting as a moderator); however, there is also a negative relation suggested between job demands and resources, which indicates that the two job characteristics might affect each other directly (e.g. when high job demands such as time pressure interfere with available job resources such as collegial support).

The stated research question focuses on the direct impact of job demands on work and occupational strains. Supportive communication among work team members serves as a job resource, while stress perceived from complex technology is understood as a job demand, causing work and occupational strains. According to the proposed negative relation between job demands and resources, supportive team communication may mitigate the perceived stress from technological complexity, and subsequently technological complexity could still increase work and occupational strains. Based on these assumptions and after defining supportive team communication, we draw on empirical evidence on the mitigating effects of supportive communication on perceived technological stress and findings demonstrating the positive effect of technological complexity on work and occupational strains to derive three hypotheses to be tested. Although the theoretical model states that job demands and job resources directly affect each other, we propose a unidirectional model. Supportive communication (i.e. job resource) can reduce job demands (i.e. technological complexity) as colleagues might help each other to overcome technological obstacles; conversely, however, technological complexity cannot affect social support.

Supportive communication among coworkers

The teleworking context creates several challenges because of employees' geographical dispersion, electronic dependence and frequent structural changes; these can be met with a psychologically safe communication climate (Gibson and Gibbs, 2006). According to Eisenberg and Krishnan (2018) problems regarding communication and knowledge sharing in teams of teleworkers can be solved through transparency, good top-down communication and encouraging mutual teaching and learning in organizations. Knowledge sharing among teleworking team members increases mutual trust and collaboration (Alsharo *et al.*, 2017). Research furthermore shows that teleworkers receiving support from their coworkers and superiors reported higher levels of job satisfaction and lower levels of psychological strain (Bentley *et al.*, 2016). In the case of newly implemented ICT, seeking support from colleagues reduced anger and anxiety (Beaudry and Pinsonneault, 2010).

In the context of on-site work, it was found that colleagues and supervisors providing social support can buffer work and occupational strains (Viswesvaran *et al.*, 1999). Social support is defined as verbal and non-verbal communication between two people—an "offerer" and a "recipient"—about situations, persons and relationships which improves the recipient's perception of life control (Albrecht and Adelman, 1987, as cited in Sias, 2009). Primary types of social support are either informational or emotional (House *et al.*, 1985). Informational support refers to concrete forms of help such as providing knowledge, advice and competencies. Emotional support, on the other hand, consists of more abstract forms of help such as listening to coworkers' concerns, venting, consoling and providing encouragement. A meta-analysis by Mathieu *et al.* (2019) on social support in the workplace demonstrates that both informational support and emotional support reduce role conflict, role ambiguity, role overload, work-family conflict, emotional exhaustion and turnover intentions while increasing job satisfaction and organizational commitment. Associations were stronger for the support received from superiors than from coworkers. Social support from colleagues also has several positive effects on employees' attitudes and their work outcomes. Receiving social support from colleagues increases job satisfaction and

commitment and reduces perceived workplace stress (Fonner, 2016) and burnout symptoms (Fonner, 2016; Miller *et al.*, 1990).

Informational support from coworkers, in particular, has several positive influences on employees' attitudes and work outcomes. A meta-analysis by Chiaburu and Harrison (2008) demonstrated that informational support from coworkers increases job satisfaction, involvement and commitment and reduces role ambiguity, role conflict and work overload. Further, receiving adequate helping information from coworkers reduces both emotional exhaustion and depersonalization (i.e. symptoms of burnout) and increases job satisfaction (Charoensukmongkol *et al.*, 2016). In times of crisis, informational coworker support reduces perceived uncertainties and mediates the negative relation between quality of communication and perceived uncertainty (Charoensukmongkol and Phungsoonthorn, 2022).

Correspondingly, emotional support from coworkers has several positive effects on work-related consequences. Perceiving emotional support enhances helping behavior of colleagues which in turn is followed by increased trust among team members (Halbesleben and Wheeler, 2015). Emotional support increases employees' coordination, cooperation and information sharing as well as trust and team commitment (Sheng *et al.*, 2010). Furthermore, talking with coworkers about positive aspects of work buffers work strains such as depression and frustration (Beehr *et al.*, 2000).

The influence of communicative support on perceived stress

Telework can be demanding and stressful because of the dependence on ICT, especially for employees who are not used to working with ICT. Ragu-Nathan *et al.* (2008) differentiate between three organizational factors that mitigate stress resulting from ICT usage, namely, technical support provision, involvement facilitation and literacy facilitation. Technical support provision concerns help received from organizational facilities, such as help desks, which solve end users' ICT-related problems. Involvement facilitation concerns organizations' information policy on new ICT, including provided justifications, expected effects and fostering employees' usage. Literacy facilitation comprises different organizational processes which motivate employees to share gained knowledge on ICT. Thus, it encourages colleagues to support each other to learn about and use new ICT. These three factors mainly refer to informational but also emotional support which is communicated either horizontally between colleagues at the same hierarchical level (i.e. literacy facilitation, technical support) or vertically from management to employees (i.e. involvement facilitation).

Research has shown that horizontal as well as vertical communicative support reduces stress resulting from ICT usage (Jena, 2015; Tarafdar *et al.*, 2011, 2015). One aspect of stress which is especially prevalent with new forms of technology concerns users' stress from perceiving their ICT skills as inadequate and from having to learn additional aspects of tools already in use. This form of stress is termed "techno-complexity" (Tarafdar *et al.*, 2007). An experimental study by Weinert *et al.* (2020) demonstrated that social support in the form of provided technical information reduced physiological stress reactions caused by a computer freeze. A study following a mixed-method approach using qualitative and quantitative data revealed a decrease in perceived techno-complexity when mutual support within workgroups and a central contact person for first-level ICT support were available (Valta *et al.*, 2021). Further, literacy facilitation was found to reduce the perceived techno-complexity of teachers (Califf and Brooks, 2020).

Since informational as well as emotional support are inherently communicational concepts, they can exert influence on the communication climate in organizations or teams. Communication climate refers to organizational members' shared homogeneous perceptions of the organizational environment in terms of communication, such as management listening, employee communication or the trustworthiness of information provided (Smidts *et al.*, 2001).

Among other aspects, the communication climate is shaped by information adequacy, level of contact with colleagues, openness and candor and supportiveness of colleagues (Bartels *et al.*, 2010; Dennis, 1974). Information adequacy refers to the extent to which employees are provided with meaningful information by managers (i.e. vertical informational support). Level of contact to colleagues describes task-related communication between employees (i.e. horizontal informational support). The aspect of openness and candor includes the attitudes of employees to talk to other employees and also to listen to them (i.e. horizontal emotional support). Supportiveness from colleagues relates to employees' empathic understanding of each other (i.e. horizontal emotional support).

Incorporating different forms of communicative social support enhances the understanding of which aspects of communication (i.e. informational, emotional, horizontal, vertical) are more prominent in supportive team communication and thus are more likely to mitigate stress caused by complex ICT. As communication between colleagues and receiving information from the organization seems to be crucial to reduce stress caused by technological complexity, the following is hypothesized:

H1. The more teleworkers assess the communication among their team members as supportive, the less stress they experience from technological complexity.

The frequency of telework affects the relationships between employees and their propensity to share information. While extensive telework reduced the relationship quality with on-site colleagues no effect was found for teleworking less than 50% of working hours (Gajendran and Harrison, 2007); however, a high teleworking frequency increased support among teleworking colleagues (Collins *et al.*, 2016). Further, when teleworking frequently the quantity of information exchange was reduced, but its quality was not affected (Fonner and Roloff, 2010).

It can be expected that employees who frequently work with ICT will experience less stress due to technological complexity. On-site workers—who are more similar to part-time teleworkers than full-time teleworkers in their work arrangements—prefer face-to-face interactions, phone calls and e-mail correspondence to share knowledge within the team over more complex tools (Snyder and Lee-Partridge, 2013). When part-time teleworkers work from home, they choose tasks which are independent of other team members and therefore require less communication than when they work at the office (Morrison-Smith and Ruiz, 2020). Since the use of complex ICT tools for collaboration is not part of their daily work, they have to specifically familiarize themselves with these tools, which could cause stress due to technological complexity. Teleworkers with a high extent of telework, however, are familiar with these tools as they use them regularly to communicate with their team members, which means they should experience less complexity and consequently less stress. Thus:

H2. The greater the extent of telework, the less stress employees experience from technological complexity.

The relationship between perceived stress and work and occupational strains

Stress stemming from ICT usage has mostly negative consequences. Riedl's (2013) review on biological stress reactions reports increased levels of skin conductance, blood pressure and heart rates as well as higher amounts of the stress hormones adrenaline and cortisol when using technology. Literature reviews also highlight the negative effects of work-related ICT use on employees' productivity (Borle *et al.*, 2021; La Torre *et al.*, 2019; Nisafani *et al.*, 2020) and job satisfaction (La Torre *et al.*, 2019; Nisafani *et al.*, 2020). Additional literature reviews found employees' ICT use as being positively associated with consequences of work and occupational strains such as depression (Dragano and Lunau, 2020) and burnout (Berg-Beckhoff *et al.*, 2017; Borle *et al.*, 2021; Dragano and Lunau, 2020). Salanova *et al.*

(2014) incorporated different studies from Spain and found that one-third of employees using ICT already experienced burnout.

Moreover, stress caused by technology is also positively associated with work exhaustion in different countries and occupational sectors. Studies conducted in China found a positive relationship between stress from technology and work exhaustion for employees in the IT sector and female employees in differing sectors (Ma *et al.*, 2021). Also, Italian samples consisting of either IT professionals or government employees showed a positive relation between technostress and work exhaustion (Turel and Gaudioso, 2018). Similar results were found for salespersons (Fieseler *et al.*, 2014) and employees who work with mobile devices (Kim *et al.*, 2015). All of the above-mentioned studies on work exhaustion combined questions on techno-complexity with questions regarding other areas of technological stress (e.g. techno-invasion) to a general scale measuring technostress.

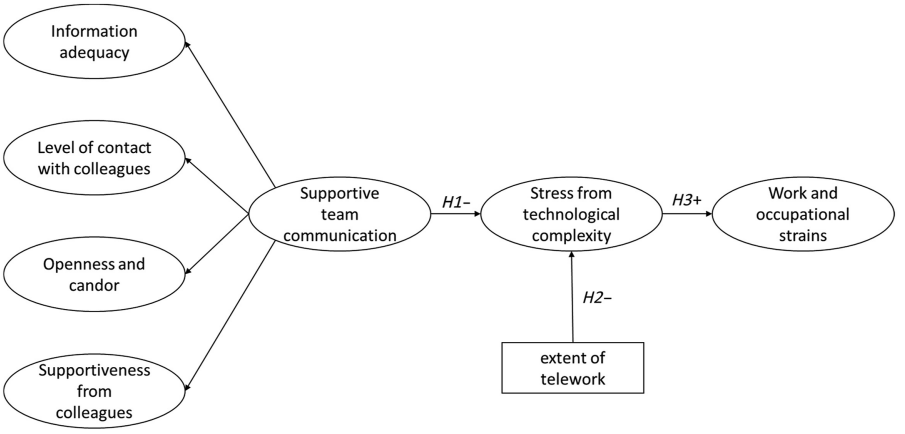
Focusing on techno-complexity rather than generally addressing technostress expands knowledge about this specific form of ICT stress and its impact on work and occupational strains. Further, examining the effects of techno-complexity related to telework and not just ICT use also contributes to the existing body of research. Hence, it is hypothesized that techno-complexity increases employees' occupational and work strains.

H3. The more stress employees experience from technological complexity, the more they experience work and occupational strains.

The hypothesized model is depicted in Figure 1.

Empirical research

Procedure and sample. The hypothesized model was tested by means of an online survey among people working in organizations in Austria and Germany with a minimum of 250 employees. To participate in the study, people had to telework for at least half of their working hours. Upon approval by the institutional review board, data were collected by the



Note(s): −Indicates a negative relation, + indicates a positive relation; supportive team communication is a second-order factor comprising the first order-factors information adequacy, level of contact with colleagues, openness and candor, and supportiveness from colleagues

Source(s): Author's own work

Figure 1.
Hypothesized model

global market research service provider Dynata using a pool of registered panel members. In total, 400 participants provided their informed consent to participate and completed the survey between August 23 and September 20 of 2021. Of these 185 (46.3%) were females and 215 (53.8%) were males with ages ranging from 21 to 69 years (M = 46.62, SD = 10.82, Mdn = 48.00). Most participants held a university degree (43.0%), 26.8% had graduated from high school, 26.3% had completed a 3-year secondary school or an apprenticeship, and 4.0% held a primary school education. A total of 39.5% of participants held a management position and 60.5% had no management responsibilities. Half of the participants teleworked between 50 and 70%, whereas the other half reported their share of remote work to be between 80 and 100%. Most of the participants (40.8%) were given the opportunity to telework with the onset of the COVID-19 pandemic, 27.3% had already worked remotely for some time before the COVID-19 pandemic, 30.5% had been teleworking for several years and 1.4% did not indicate since when they were allowed to telework. The extent to which various media/communication channels were used breaks down as follows: email (M = 4.46, SD = 0.83, Mdn = 5.00), video conferencing (M = 4.08, SD = 1.04, Mdn = 4.00), telephone (M = 3.83, SD = 1.09, Mdn = 4.00), collaborative tools (M = 3.63, SD = 1.29, Mdn = 4.00), instant messaging (M = 3.51, SD = 1.28, Mdn = 4.00) and onsite-meetings (M = 3.05, SD = 1.14, Mdn = 3.00). Participants worked in a variety of industries, with most working in the public sector (15.5%), manufacturing (14.5%), finance (13.0%), media and communications (8.0%) and transport and logistics (7.5%).

Measurements

Established scales from previous research were compiled into a questionnaire to measure the constructs. Measurements that were only available in English were translated by means of iterative forward and backward translation with the help of a native English speaker also proficient in German. For consistency, all items were answered from 1 = "does not apply at all" to 5 = "applies fully". Scales from Bartels *et al.* (2010), which are adapted from an instrument developed by Dennis (1974) measured the supportiveness of communication among working teams. From the instrument by Bartels *et al.* (2010), which assesses vertical and horizontal communication with seven subscales, the present study only used the four that distinguish different forms of supportive team communication. First, the vertical informational dimension of team support was gauged by the subscale "information adequacy". Second, the horizontal informational aspect of team support was assessed with the subscale "level of contact with colleagues." Third, the horizontal emotional aspect of supportive communication within teams was quantified with the two subscales "openness and candor" and "supportiveness from colleagues". The measures on supportive team communication were introduced by stating "In the following, we would like to ask you about communication within your team. Your team includes your colleagues as well as your team management and direct supervisors." To efficiently identify how complex participants perceived the used technologies, Nimrod's (2018) shorter and more recent version of the scale on "stress from technological complexity" was included in the survey, rather than the long version by Ragu-Nathan *et al.* (2008). Questions on "work and occupational strains" were taken from Weyer *et al.* (1997). Table 1 shows the items' wording and provides detailed statistical information on scales and indicators. The average extent of telework was measured dichotomously, reflecting two to three days and four to five days of telework for full time employment in the studied region (i.e. 50–70% telework; 80–100% telework). These cutoffs were chosen because it can be assumed that up to 70% telework still involves a reasonable amount of on-site work with considerable workplace interactions, while telework of more than 80% of working hours greatly reduces these face-to-face interactions. In addition, the extent to which various media/communication channels (i.e. video

Construct/Indicators	*SL*	α	*CR*	*AVE*
Supportive team communication			0.90	0.70
Information adequacy	0.70	0.85		
Level of contact with colleagues	0.61	0.85		
Openness and candor	0.98	0.91		
Supportiveness from colleagues	0.98	0.90		
Stress from technological complexity		0.90	0.91	0.78
I often find the technology too complex to use	0.88			
I do not know enough about this technology to use it effectively	0.89			
The constant developments and upgrades in the technology are a burden for me	0.88			
Work and occupational strains		0.95	0.96	0.71
In the evening after work I am exhausted	deleted			
Problems often arise at my work that are very difficult to overcome	deleted			
Sometimes I think that I am taking on too much with my work	0.83			
I sometimes have the feeling that I simply cannot cope with my work anymore	0.86			
I feel under constant pressure at work	0.89			
I often feel a bit rushed at work	0.88			
I get quite carried away by my professional life	0.82			
I am usually very tense at work	0.81			
I work under a lot of time pressure	0.83			
Sometimes I don't feel up to the demands that the job places on me	0.80			
I would need more breathers at work	0.86			
Subscales of supportive team communication				
Information adequacy			0.88	0.72
I receive enough information to be able do my job	0.83			
I receive information I need in a timely fashion	0.88			
The information I receive is generally useful	0.83			
Level of contact with colleagues			0.85	0.66
I talk to colleagues about daily routines	0.73			
I talk to colleagues about developments in our field	0.85			
I talk to colleagues about ins and outs within our organization	0.85			
Openness and candor			0.91	0.77
In general, colleagues in my department are honest to each other	0.87			
In general, colleagues in my department are open to each other	0.89			
My direct colleagues are open to opinions of others	0.87			
Supportiveness from colleagues			0.92	0.79
My direct colleagues show understanding	0.85			
If I talk to my direct colleagues, I feel taken seriously	0.89			
In general, my contact with colleagues is positive	0.92			

Table 1. Statistical information on the measurement model

Note(s): *SL* = standardized loadings, *α* = Cronbach's alpha, *CR* = composite reliability, *AVE* = average variance extracted; all standardized loadings are significant on a level of $p < 0.001$
Source(s): Author's own work

conferencing, collaborative tools, instant messaging, email, telephone, onsite-meetings) were used was captured using a 5-point response format (i.e. 1 = "not at all" to 5 = "to a very high extent"). The dataset, survey and codebook can be found at https://data.mendeley.com/datasets/54s8jzbsw8/1.

Results

As recommended by Anderson and Gerbing (1988) and Kline (2011), a two-step structural approach was followed to test the hypothesized model. First, the measurement model was established using confirmatory factor analysis (CFA), and second, the hypothesized model

was tested by applying structural equation modeling (SEM). Both analyses used Maximum Likelihood estimation in SPSS AMOS 26.0.0. In both steps, standardized root mean squared residual (SRMR), root mean squared error of approximation (*RMSEA*), Comparative Fit Index (*CFI*) and Tucker–Lewis Index (*TLI*) were used to assess the model fits as recommended by Hu and Bentler (1999). Critical values which indicate a good fitting model are $SRMR < 0.08$, $RMSEA < 0.06$, $CFI > 0.95$ and $TLI > 0.95$ (Hu and Bentler, 1999).

Measurement model

Seventeen multivariate outliers were excluded based on Mahalanobis distances being significant at a level of $p < 0.001$ (cf. Byrne, 2001). All other requirements (i.e. linearity, normality of items: skewness <3.00 and kurtosis <10.00, no collinearity; cf. Kline, 2011) were met without any modifications.

The measurement model contained "supportive team communication" as a second-order factor with the subscales "information adequacy", "level of contact with colleagues", "openness and candor" and "supportiveness from colleagues." Further, the two factors "stress from technological complexity" and "work and occupational strains" were included in the measurement model. Due to insufficient loadings, two items of the scale measuring "work and occupational strains" were removed and two covariances between items measuring "work and occupational strains" were allowed to correlate as they measure related concepts. The final measurement model showed a good model fit ($\chi^2 = 500.416$, $df = 243$, $p < 0.001$, $SRMR = 0.056$, $RMSEA = 0.054$ [90% *CI*: 0.047, 0.061], $CFI = 0.966$, $TLI = 0.962$). All standardized factor loadings of the modified measurement model were above 0.70. The subscales demonstrated good reliability and convergent validity, with all Cronbach's Alphas being above 0.84, composite reliabilities ranging between 0.90 and 0.96 (threshold >0.70; Hair *et al.*, 2019), and the minimum average variance extracted being 0.66 (threshold >0.50; Hair *et al.*, 2019; see Table 1). As the square roots of the average variance extracted are higher than the correlations between the scales and also the heterotrait-monotrait ratio of correlations is below 0.85 discriminant validity can be assumed. The plugin Amos26-HTMT (Gaskin *et al.*, 2019) was used to calculate the heterotrait-monotrait ratio of correlations. Table 2 provides all information on discriminant validity estimates.

Structural model and hypotheses testing

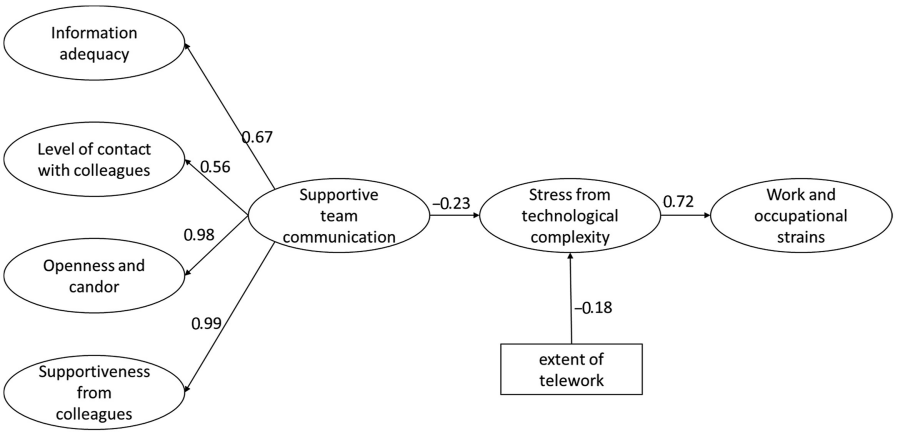
The structural model showed a good model fit ($\chi^2 = 522.016$, $df = 267$, $p < 0.001$, $SRMR = 0.057$, $RMSEA = 0.050$ [90% *CI*: 0.044, 0.056], $CFI = 0.968$, $TLI = 0.964$). Figure 2 depicts the results of the structural model.

As hypothesized in H1, a negative relation between supportive team communication and perceived stress from technological complexity was revealed ($\beta = -0.23$, $p < 0.001$), i.e. the more supportive the communication is perceived the less stress from technological complexity is experienced. The found significant negative effect of the extent of telework

	Supportive team communication	Stress from technological complexity	Work and occupational strains
Supportive team communication	0.83	0.18	0.29
Stress from technological complexity	−0.28***	0.88	0.74
Work and occupational strains	−0.16**	0.73***	0.84

Note(s): Values below the diagonal are the correlations between the constructs, values in the diagonal represent the square root of *AVE* (average variance expected), and values above the diagonal are the *HTMT* values (heterotrait-monotrait ratio of correlations), ***$p < 0.001$, **$p < 0.01$
Source(s): Author's own work

Table 2. Information on the measurement model's discriminant validity



Note(s): $\chi^2 = 522.016$, $df = 267$, $p < 0.001$, $SRMR = 0.057$, $RMSEA = 0.050$ [90% CI: 0.044, 0.056], $CFI = 0.968$, $TLI = 0.964$; extent of telework: 1 = between 50 and 70%, 2 = between 80 and 100%, $p < 0.001$ for all path coefficients

Source(s): Author's own work

Figure 2.
Structural model

on perceived stress from technological complexity ($\beta = -0.18$, $p < 0.001$) is proposed in H2, i.e. employees who telework more than 80% of their work hours experience less stress from complex technology than employees who telework fewer hours. The effect of supportive team communication and the extent of telework results in an R^2-value of 0.09 for stress from technological complexity. Further, stress from technological complexity was positively related to work and occupational strains ($\beta = 0.72$, $p < 0.001$), which supports H3, i.e. the more complex the employees' perception of ICT, the higher their work and occupational strains. R^2 for work and occupational strains was 0.52.

To examine indirect effects, 10,000 samples were bootstrapped. The analysis indicates a significant indirect effect from supportive team communication to work and occupational stains ($\beta = -0.39$, $p < 0.001$, *95% CI*: −0.61, −0.20), indicating that social support from team members reduces work and occupational strains. The indirect effect from "extent of telework" to work and occupational strains was also significant ($\beta = -0.27$, $p = 0.001$, *95% CI*: 0.43, −0.12), which means that a higher amount of telework is associated with fewer work and occupational strains.

Discussion

Lockdowns in the wake of the COVID-19 pandemic meant that many employees had to telework unexpectedly and were often unprepared for the use of the ICT tools needed to communicate and collaborate. Due to a lack of skills and the requirement to learn additional features, ICT is perceived as complex and frequently triggers additional stress. The present study examined whether social support through communication with team members and managers reduces teleworkers' stress from technological complexity. Additionally, it was analyzed which further effects team support and stress from technological complexity have on teleworkers' work and occupational strains. Results indicate that social support from team members, as well as the extent of telework, reduce stress from technological complexity; however, stress from technological complexity still increased teleworkers' work and

occupational strains. Indirect effects reveal a buffering effect from supportive team communication and the extent of telework on work and occupational strains.

Results show the positive effect of internal communication between coworkers—specified as informational and emotional support (House *et al.*, 1985)—on teleworkers' stress from perceived technological complexity. First, receiving support through information from colleagues reduces technologically induced stress, namely techno-complexity (Valta *et al.*, 2021; Weinert *et al.*, 2020). Second, emotional support from coworkers also reduces teleworkers' perceived techno-complexity (Califf and Brooks, 2020; Valta *et al.*, 2021). Third, emotional support from team members is more effective in mitigating techno-complexity than informational support. As the present study considers different forms of supportive team communication, it expands knowledge about the effects of internal communication processes. While a large body of previous research has focused on informational support, emotional support has been demonstrated to play a more prominent in reducing techno-complexity. Further, it was found that supportive team communication mitigates stress caused by technological complexity, emphasizing the important role of internal organizational communication.

Although techno-complexity is reduced by supportive communication, it still enhances teleworkers' work and occupational stress. This result is in line with research on ICT use showing that technologically induced stress has negative effects on on-site employees (Berg-Beckhoff *et al.*, 2017; Borle *et al.*, 2021; Dragano and Lunau, 2020; Kim *et al.*, 2015; La Torre *et al.*, 2019; Ma *et al.*, 2021; Nisafani *et al.*, 2020; Riedl, 2013; Turel and Gaudioso, 2018). While these studies generally addressed technostress, the present study examined the sub-area of techno-complexity and thus contributes to research on technostress. Further, previous research examined the effects of techno-complexity mainly for on-site ICT use, with the present study, these insights were expanded to the context of telework.

The observed indirect effect of supportive communication on work and occupational strains via techno-complexity continues to demonstrate the central role of communication with team members. With techno-complexity mediating the relationship, the findings furthermore indicate that the more support teleworkers received from their team members, the lower their reported work and occupational strains. This is in line with previous research that demonstrated that teleworkers who obtained informational or emotional social support from coworkers also reported reduced negative consequences from work (Beaudry and Pinsonneault, 2010; Bentley *et al.*, 2016).

Conclusion

The present study contributes to the existing body of research in three ways. First, it demonstrates that emotional support from coworkers is more prominent in reducing techno-complexity than informational support, advancing internal communication research. Second, stress due to technological complexity is specifically considered, expanding the knowledge on technostress. Third, it shows that techno-complexity also increases work and occupational strains of teleworkers, not just on-site employees, also adding to research on technostress.

As for the practical implications of this study, internal communication practitioners are advised to find (new) ways to create a supportive work environment in which teleworkers are communicatively connected. While teleworking, chance meetings do not take place and teleworkers must actively establish contact with their colleagues. These chance encounters, however, are often the cornerstone of social support from colleagues, as this is how they get to know each other and talk about private, but often also work-related issues, which can lead to mutual support. Hence, organizations should encourage teleworkers to casually meet online without a specific agenda to simulate these chance meetings so that employees are subsequently prepared to provide information and emotional support to their colleagues.

Early and regular face-to-face meetings, however, are still recommended to increase team cohesion, trust among team members, communication and social as well as emotional relationships (Powell *et al.*, 2004), which could subsequently lead to supportive behaviors within a team. Further, in organizations with a high degree of telework, online onboarding processes need to be developed and established to ensure social support for new team members as well. Which processes eventually contribute to fostering informational and emotional social support in teams of teleworkers and how they are best implemented should be scrutinized in further studies.

The study also has some limitations. To measure communicative support by team members and managers, subscales from Bartels *et al.* (2010) on vertical and horizontal communication were adapted for the research context. Thus, comparability with previous studies that used different measures is somewhat limited. Settoon and Mossholder (2002), for example, developed scales on interpersonal citizenship behavior that were revised to measure employees' perception of informational and emotional social support (Charoensukmongkol and Phungsoonthorn, 2022; Tews *et al.*, 2013; Usman *et al.*, 2021; Xu *et al.*, 2018). Yet, the subscales from Bartels *et al.* (2010) reflect aspects of internal communication more closely, which demonstrates the importance of internal communication, particularly of team communication among teleworkers.

The scales used, however, focus on informational and emotional support among team members and informational support of managers and neglect the vertical emotional dimension. Future research should therefore also examine how managers' emotional support affects teleworkers' perceived techno-complexity and work and occupational strains. Further, to measure techno-complexity Nimrod's (2018) scale on "stress from technological complexity" was used. Fischer *et al.* (2021) recently developed the Digital Stressor Scale with a "complexity" subscale which captures techno-complexity more comprehensively.

Although the present study is based on the Job Demands-Resources Model (Bakker and Demerouti, 2007), it neglects both the possible moderating effect of job resources and the impact of job resources on employees' motivation. Thus, future research on team communication and perceived stress from technological complexity should consider the full model, which includes both techno-complexity (i.e. job demands) and team communication (i.e. job resources) as moderators, as well as increases in teleworkers' motivation through supportive team communication.

The more frequently persons use ICT to work from home (i.e. the higher the extent of telework), the more experience they will gain and the more they will consider their skills and abilities to be sufficient. This is related to the concept of self-efficacy, which is defined as a person's belief in their ability to achieve certain goals (Bandura, 1977). In the study at hand, however, only the extent of telework, and not teleworkers' self-efficacy regarding ICT, was measured and used as a moderator. Future research should address this shortcoming and also include self-efficacy as a possible moderating variable.

References

Albrecht, T.L. and Adelman, M.B. (1987), *Communicating Social Support*, Sage, Thousand Oaks, CA.

Alsharo, M., Gregg, D. and Ramirez, R. (2017), "Virtual team effectiveness: the role of knowledge sharing and trust", *Information and Management*, Vol. 54 No. 4, pp. 479-490, doi: 10.1016/j.im.2016.10.005.

Anderson, J.C. and Gerbing, D.W. (1988), "Structural equation modeling in practice: a review and recommended two-step approach", *Psychological Bulletin*, Vol. 103 No. 3, pp. 411-423, doi: 10.1037/0033-2909.103.3.411.

Bakker, A.B. and Demerouti, E. (2007), "The job demands-resources model: state of the art", *Journal of Managerial Psychology*, Vol. 22 No. 3, pp. 309-328, doi: 10.1108/02683940710733115.

Bandura, A. (1977), "Self-efficacy: toward a unifying theory of behavioral change", *Psychological Review*, Vol. 84, pp. 191-215, doi: 10.1037/0033-295X.84.2.191.

Bartels, J., Peters, O., de Jong, M., Pruyn, A. and van der Molen, M. (2010), "Horizontal and vertical communication as determinants of professional and organisational identification", *Personnel Review*, Vol. 39 No. 2, pp. 210-226, doi: 10.1108/00483481011017426.

Beaudry, A. and Pinsonneault, A. (2010), "The other side of acceptance: studying the direct and indirect effects of emotions on information technology use", *MIS Quarterly*, Vol. 34 No. 4, pp. 689-710, doi: 10.2307/25750701.

Beehr, T.A., Jex, S.M., Stacy, B.A. and Murray, M.A. (2000), "Work stressors and coworker support as predictors of individual strain and job performance", *Journal of Organizational Behavior*, Vol. 21 No. 4, pp. 391-405, (200006)21:4<391::AID-JOB15>3.0.CO;2-9, doi: 10.1002/(SICI)1099-1379.

Bentley, T.A., Teo, S.T.T., McLeod, L., Tan, F., Bosua, R. and Gloet, M. (2016), "The role of organisational support in teleworker wellbeing: a socio-technical systems approach", *Applied Ergonomics*, Vol. 52, pp. 207-215, doi: 10.1016/j.apergo.2015.07.019.

Berg-Beckhoff, G., Nielsen, G. and Ladekjær Larsen, E. (2017), "Use of information communication technology and stress, burnout, and mental health in older, middle-aged, and younger workers: results from a systematic review", *International Journal of Occupational and Environmental Health*, Vol. 23 No. 2, pp. 160-171, doi: 10.1080/10773525.2018.1436015.

Bitkom Research (2017), "Jedes dritte Unternehmen bietet Arbeit im Homeoffice an [One in three companies offers home office work]".

Borle, P., Reichel, K., Niebuhr, F. and Voelter-Mahlknecht, S. (2021), "How are techno-stressors associated with mental health and work outcomes? A systematic review of occupational exposure to information and communication technologies within the technostress model", *International Journal of Environmental Research and Public Health*, Vol. 18 No. 16, p. 8673, doi: 10.3390/ijerph18168673.

Byrne, B.M. (2001), *Structural Equation Modeling with AMOS: Basic Concepts, Applications, and Programming*, Lawrence Erlbaum, Mahwah.

Califf, C.B. and Brooks, S. (2020), "An empirical study of techno-stressors, literacy facilitation, burnout, and turnover intention as experienced by K-12 teachers", *Computers and Education*, Vol. 157, 103971, doi: 10.1016/j.compedu.2020.103971.

Charoensukmongkol, P. and Phungsoonthorn, T. (2022), "The interaction effect of crisis communication and social support on the emotional exhaustion of university employees during the COVID-19 crisis", *International Journal of Business Communication*, Vol. 59 No. 2, pp. 269-286, doi: 10.1177/2329488420953188.

Charoensukmongkol, P., Moqbel, M. and Gutierrez-Wirsching, S. (2016), "The role of coworker and supervisor support on job burnout and job satisfaction", *Journal of Advances in Management Research*, Vol. 13 No. 1, pp. 4-22, doi: 10.1108/JAMR-06-2014-0037.

Chiaburu, D.S. and Harrison, D.A. (2008), "Do peers make the place? Conceptual synthesis and meta-analysis of coworker effects on perceptions, attitudes, OCBs, and performance", *Journal of Applied Psychology*, Vol. 93 No. 5, pp. 1082-1103, doi: 10.1037/0021-9010.93.5.1082.

Collins, A.M., Hislop, D. and Cartwright, S. (2016), "Social support in the workplace between teleworkers, office-based colleagues and supervisors", *New Technology, Work and Employment*, Vol. 31 No. 2, pp. 161-175, doi: 10.1111/ntwe.12065.

Dennis, H.S. (1974), "A theoretical and empirical study of managerial communication climate in complex organizations", Unpublished doctoral dissertation, Purdue University, Ann Arbor, MI.

Diaz-Soloaga, P. and Diaz-Soloaga, A. (2023), "Forced telecommuting during the COVID-19 lockdown: the impact on corporate culture in Spain and Kazakhstan", *Corporate Communications: An International Journal*, Vol. 28 No. 2, pp. 193-212, doi: 10.1108/CCIJ-02-2022-0018.

Dragano, N. and Lunau, T. (2020), "Technostress at work and mental health: concepts and research results", *Current Opinion in Psychiatry*, Vol. 33 No. 4, pp. 407-413, doi: 10.1097/YCO.0000000000000613.

Eisenberg, J. and Krishnan, A. (2018), "Addressing virtual work challenges: learning from the field", *Organization Management Journal*, Vol. 15 No. 2, pp. 78-94, doi: 10.1080/15416518.2018.1471976.

Fieseler, C., Grubenmann, S., Meckel, M. and Müller, S. (2014), "The leadership dimension of coping with technostress", *47th Hawaii International Conference on System Sciences, presented at the 47th Hawaii International Conference on System Sciences*, pp. 530-539, doi: 10.1109/HICSS.2014.73.

Fischer, T., Reuter, M. and Riedl, R. (2021), "The Digital Stressors Scale: development and validation of a new survey instrument to measure digital stress perceptions in the workplace context", *Frontiers in Psychology*, Vol. 12, 607598, doi: 10.3389/fpsyg.2021.60759.

Fonner, K.L. (2016), "Communication among coworkers", in Berger, C.R., Roloff, M.E., Wilson, S.W., Dillard, J.P., Caughlin, J. and Solomon, D. (Eds), *The International Encyclopedia of Interpersonal Communication*, Wiley, Chichester, pp. 1-10.

Fonner, K.L. and Roloff, M.E. (2010), "Why teleworkers are more satisfied with their jobs than are office-based workers: when less contact is beneficial", *Journal of Applied Communication Research*, Vol. 38 No. 4, pp. 336-361, doi: 10.1080/00909882.2010.513998.

Gajendran, R.S. and Harrison, D.A. (2007), "The good, the bad, and the unknown about telecommuting: meta-analysis of psychological mediators and individual consequences", *Journal of Applied Psychology*, Vol. 92 No. 6, pp. 1524-1541, doi: 10.1037/0021-9010.92.6.1524.

Gaskin, J., James, M. and Lim, J. (2019), "Master validity tool".

Gibson, C.B. and Gibbs, J.L. (2006), "Unpacking the concept of virtuality: the effects of geographic dispersion, electronic dependence, dynamic structure, and national diversity on team innovation", *Administrative Science Quarterly*, Vol. 51 No. 3, pp. 451-495, doi: 10.2189/asqu.51.3.451.

Global Workplace Analytics and Flexjobs (2017), "2017 state of telecommuting in the U.S. Employee workforce", *Global Workplace Analytics and Flexjobs, Carlsbad*.

Hair, J.F., Black, W.C., Babin, B.J. and Anderson, R.E. (2019), *Multivariate Data Analysis*, 8th ed., Cengage, Andover.

Halbesleben, J.R.B. and Wheeler, A.R. (2015), "To invest or not? The role of coworker support and trust in daily reciprocal gain spirals of helping behavior", *Journal of Management*, Vol. 41 No. 6, pp. 1628-1650, doi: 10.1177/0149206312455246.

Harpaz, I. (2002), "Advantages and disadvantages of telecommuting for the individual, organization and society", *Work Study*, Vol. 51 No. 2, pp. 74-80, doi: 10.1108/00438020210418791.

House, J.S., Kahn, R.L., McLeod, J.D. and Williams, D. (1985), "Measures and concepts of social support", in Cohen, S. and Syme, S.L. (Eds), *Social Support and Health*, Academic Press, New York, NY, pp. 83-108.

Hu, L. and Bentler, P.M. (1999), "Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives", *Structural Equation Modeling: A Multidisciplinary Journal*, Vol. 6 No. 1, pp. 1-55, doi: 10.1080/10705519909540118.

Incisiv, AT&T Business and Dubber (2022), "State of the industry: future of work".

Jena, R.K. (2015), "Technostress in ICT enabled collaborative learning environment: an empirical study among Indian academician", *Computers in Human Behavior*, Vol. 51, pp. 1116-1123, doi: 10.1016/j.chb.2015.03.020.

Kim, H.J., Lee, C.C., Yun, H. and Im, K.S. (2015), "An examination of work exhaustion in the mobile enterprise environment", *Technological Forecasting and Social Change*, Vol. 100, pp. 255-266, doi: 10.1016/j.techfore.2015.07.009.

Kline, R.B. (2011), *Principles and Practice of Structural Equation Modeling*, 3rd ed., Guilford Press, New York, NY.

La Torre, G., Esposito, A., Sciarra, I. and Chiappetta, M. (2019), "Definition, symptoms and risk of techno-stress: a systematic review", *International Archives of Occupational and Environmental Health*, Vol. 92 No. 1, pp. 13-35, doi: 10.1007/s00420-018-1352-1.

Ma, J., Ollier-Malaterre, A. and Lu, C. (2021), "The impact of techno-stressors on work–life balance: the moderation of job self-efficacy and the mediation of emotional exhaustion", *Computers in Human Behavior*, Vol. 122, 106811, doi: 10.1016/j.chb.2021.106811.

Mathieu, M., Eschleman, K.J. and Cheng, D. (2019), "Meta-analytic and multiwave comparison of emotional support and instrumental support in the workplace", *Journal of Occupational Health Psychology*, Vol. 24 No. 3, pp. 387-409, doi: 10.1037/ocp0000135.

Miller, K.I., Hartman Ellis, B., Zook, E.G. and Lyles, J.S. (1990), "An integrated model of communication, stress, and burnout in the workplace", *Communication Research*, Vol. 17 No. 3, pp. 300-326, doi: 10.1177/009365090017003002.

Mitchell, A. and Zigurs, I. (2009), "Trust in virtual teams: solved or still a mystery?", *ACM SIGMIS Database: The Data Base for Advances in Information Systems*, Vol. 40 No. 3, pp. 61-83, doi: 10.1145/1592401.1592407.

Morrison-Smith, S. and Ruiz, J. (2020), "Challenges and barriers in virtual teams: a literature review", *SN Applied Sciences*, Vol. 2 No. 6, p. 1096, doi: 10.1007/s42452-020-2801-5.

Nimrod, G. (2018), "Technostress: measuring a new threat to well-being in later life", *Aging and Mental Health*, Vol. 22 No. 8, pp. 1086-1093, doi: 10.1080/13607863.2017.1334037.

Nisafani, A.S., Kiely, G. and Mahony, C. (2020), "Workers' technostress: a review of its causes, strains, inhibitors, and impacts", *Journal of Decision Systems*, Vol. 29 No. 1, pp. 243-258, doi: 10.1080/12460125.2020.1796286.

Powell, A., Piccoli, G. and Ives, B. (2004), "Virtual teams: a review of current literature and directions for future research", *ACM SIGMIS Database: The Data Base for Advances in Information Systems*, Vol. 35 No. 1, pp. 6-36, doi: 10.1145/968464.968467.

Ragu-Nathan, T.S., Tarafdar, M., Ragu-Nathan, B.S. and Tu, Q. (2008), "The consequences of technostress for end users in organizations: conceptual development and empirical validation", *Information Systems Research*, Vol. 19 No. 4, pp. 417-433, doi: 10.1287/isre.1070.0165.

Riedl, R. (2013), "On the biology of technostress: literature review and research agenda", *ACM SIGMIS Database: The Data Base for Advances in Information Systems*, Vol. 44 No. 1, pp. 18-55, doi: 10.1145/2436239.2436242.

Salanova, M., Llorens, S. and Ventura, M. (2014), "Technostress: the dark side of technologies", in Korunka, C. and Hoonakker, P. (Eds), *The Impact of ICT on Quality of Working Life*, Springer, Dordrecht, pp. 87-103.

Sandoval-Reyes, J., Idrovo-Carlier, S. and Duque-Oliva, E.J. (2021), "Remote work, work stress, and work–life during pandemic times: a Latin America situation", *International Journal of Environmental Research and Public Health*, Vol. 18 No. 13, p. 7069, doi: 10.3390/ijerph18137069.

Settoon, R.P. and Mossholder, K.W. (2002), "Relationship quality and relationship context as antecedents of person- and task-focused interpersonal citizenship behavior", *The Journal of Applied Psychology*, Vol. 87 No. 2, pp. 255-267, doi: 10.1037/0021-9010.87.2.255.

Sheng, C.-W., Tian, Y.-F. and Chen, M.-C. (2010), "Relationships among teamwork behavior, trust, perceived team support, and team commitment", *Social Behavior and Personality: An International Journal*, Vol. 38 No. 10, pp. 1297-1305, doi: 10.2224/sbp.2010.38.10.1297.

Shu, Q., Tu, Q. and Wang, K. (2011), "The impact of computer self-efficacy and technology dependence on computer-related technostress: a social cognitive theory perspective", *International Journal of Human–Computer Interaction*, Vol. 27 No. 10, pp. 923-939, doi: 10.1080/10447318.2011.555313.

Sias, P.M. (2009), *Organizing Relationships: Traditional and Emerging Perspectives on Workplace Relationships*, Sage, Los Angeles, CA.

Smidts, A., Pruyn, A.Th.H. and Van Riel, C.B.M. (2001), "The impact of employee communication and perceived external prestige on organizational identification", *Academy of Management Journal*, Vol. 44 No. 5, pp. 1051-1062, doi: 10.5465/3069448.

Snyder, J. and Lee-Partridge, J. (2013), "Understanding communication channel choices in team knowledge sharing", *Corporate Communications: An International Journal*, Vol. 18 No. 4, pp. 417-431, doi: 10.1108/CCIJ-03-2012-0026.

Tarafdar, M., Tu, Q., Ragu-Nathan, B.S. and Ragu-Nathan, T.S. (2007), "The impact of technostress on role stress and productivity", *Journal of Management Information Systems*, Vol. 24 No. 1, pp. 301-328, doi: 10.2753/MIS0742-1222240109.

Tarafdar, M., Tu, Q., Ragu-Nathan, T.S. and Ragu-Nathan, B.S. (2011), "Crossing to the dark side: examining creators, outcomes, and inhibitors of technostress", *Communications of the ACM*, Vol. 54 No. 9, pp. 113-120, doi: 10.1145/1995376.1995403.

Tarafdar, M., Bolman, E.P. and Ragu-Nathan, T.S. (2015), "Technostress: negative effect on performance and possible mitigations", *Information Systems Journal*, Vol. 25 No. 2, pp. 103-132, doi: 10.1111/isj.12042.

Tews, M.J., Michel, J.W. and Ellingson, J.E. (2013), "The impact of coworker support on employee turnover in the hospitality industry", *Group and Organization Management*, Vol. 38 No. 5, pp. 630-653, doi: 10.1177/1059601113503039.

Turel, O. and Gaudioso, F. (2018), "Techno-stressors, distress and strain: the roles of leadership and competitive climates", *Cognition, Technology and Work*, Vol. 20 No. 2, pp. 309-324, doi: 10.1007/s10111-018-0461-7.

Usman, M., Cheng, J., Ghani, U., Gul, H. and Shah, W.U. (2021), "Social support and perceived uncertainties during COVID-19: consequences for employees' wellbeing", *Current Psychology*. doi: 10.1007/s12144-021-02293-3.

Valta, M., Pflügner, K. and Maier, C. (2021), "Guiding companies to reduce technostress: a mixed-methods study deriving practice-oriented recommendations", *Proceedings of the 54th Hawaii International Conference on System Sciences, presented at the 54th Hawaii International Conference on System Sciences, Hawaii International Conference on System Sciences (HICSS)*, Honolulu, pp. 6275-6284, doi: 10.24251/HICSS.2021.757.

Viswesvaran, C., Sanchez, J.I. and Fisher, J. (1999), "The role of social support in the process of work stress: a meta-analysis", *Journal of Vocational Behavior*, Vol. 54 No. 2, pp. 314-334, doi: 10.1006/jvbe.1998.1661.

Weinert, C., Maier, C., Laumer, S. and Weitzel, T. (2020), "Technostress mitigation: an experimental study of social support during a computer freeze", *Journal of Business Economics*, Vol. 90 No. 8, pp. 1199-1249, doi: 10.1007/s11573-020-00986-y.

Weyer, G., Hodapp, V. and Neuhäuser, S. (1997), "Subjektive Zufriedenheit und Belastung von Arbeit und Beruf", *Zusammenstellung sozialwissenschaftlicher Items und Skalen (ZIS)*. doi: 10.6102/ZIS3.

Xu, S., Martinez, L.R., Van Hoof, H., Tews, M., Torres, L. and Farfan, K. (2018), "The impact of abusive supervision and co-worker support on hospitality and tourism student employees' turnover intentions in Ecuador", *Current Issues in Tourism*, Vol. 21 No. 7, pp. 775-790, doi: 10.1080/13683500.2015.1076771.

About the authors

Ingrid Wahl is a senior researcher in the Corporate Communication Research Group at the Department of Communication at the University of Vienna. She studied Psychology at the University of Vienna, Austria, and obtained her PhD in Social Sciences also from the University of Vienna. Among her research interests are internal communication, cooperation in social dilemmas, work psychology, diversity, distance learning, and teleworking. Ingrid Wahl is the corresponding author and can be contacted at: ingrid.wahl@univie.ac.at

Daniel Wolfgruber earned his PhD in communication studies at the University of Vienna and is currently a postdoctoral fellow at HEC Montréal's Pôle D in the Department of Management. His research focuses mainly on organizational communication in the contexts of strategizing, organizational culture, (un)ethical behavior in and of organizations, diversity and inclusion, and the use of humor in the workplace.

Sabine Einwiller is the Professor of Public Relations Research at the University of Vienna, Austria, Department of Communication where she heads the Corporate Communication Research Group. She studied Psychology at the University of Mannheim, Germany, and received her PhD in Business Administration from the University of St. Gallen, Switzerland. Her main research areas comprise employee communication, CSR communication, corporate reputation management, and the effects of negative publicity and complaining.