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REMOTE WORKING, TECHNOSTRESS AND WELL-BEING DURING COVID-19:

A Generational Perspective

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Abstract

The quick change to remote work during the Covid-19 crisis increased technology usage, impacting employees' well-being. The collective report analyzes the relationship between remote work, technostress, and well-being during Covid-19 using the JDR-model. The present report will explore the same variables through a generational perspective as intergenerational characteristics can influence the individual's responses to historical events. Using three surveys, the 426 participants were divided into four generations based on their current age. Significant differences were found, especially between the younger generations. The findings show the importance of closer analysis between generations to avoid stereotype biases and promote better organization management.

Keywords: Remote Work, Technostress, Employee Well-Bing, JDR-model, Covid-19 Pandemic, Generations.

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List of Abbreviations

CEO	Chief Executive Officer
EU	European Union
ICT	Information and Communication Technology
JDR	Job Demand-Resources
OECD	Organisation for Economic Co-operation and Development
UK	United Kingdom
SD	Standard Deviation
X^2	Chi-Square
r	Correlation Coefficient
p	Significance Level
n	Observations

1. Introduction

The digital transformation during the late 20th century and the beginning of the 21st century significantly changed the common work environment and day-to-day work procedures (Attaran, Attaran, and Kirkland 2019). With the emergence of various information and communication technologies (ICTs), work gradually transformed from being static to dynamic and adaptable activity. The continual implementation and use of ICTs in the job particularly escalated with the proliferation of the global Covid-19 pandemic (Kniffin et al. 2021). As a substantial part of society was forced to stay at home, working remotely has become commonplace and might be the norm of working in the future (Molino et al. 2020). However, while teleworking models entail various benefits such as reduction in office space, fewer travel expenses, and greater flexibility and time for employees, contextual effects to increase productivity and well-being need to be considered. Additionally, the shift towards working outside the office implied a stronger integration of ICTs into everyday work (Wang et al. 2021). Thus, blurring the boundaries between work and leisure, which ultimately can increase the individual perception of stress (Taser et al. 2022). For this reason, it is crucial to understand the multiple conditions enabling a positive and fruitful remote working experience.

One of the major concerns impacting remote work satisfaction is labeled as technostress (Nelson 1990; Ragu-Nathan et al. 2008). As the very first, the psychologist Brod (1984) defined the term as follows "a modern disease of adaptation caused by an inability to cope with new computer technologies in a healthy manner." The current literature provides comprehensive insights on the psychological and physical interrelations of telework and technostress and job satisfaction (Molino et al. 2020; Grant, Wallace, and Spurgeon 2013; Taser et al. 2022). However, it faces major limitations due to the scarce practice of remote working to date. The number of people regularly working from home in Europe before Covid-19 laid around 2%, and remote work was primarily exercised by employees with leadership functions such as managers, executives, and board members (Parent-Thirion 2017; Desilver

2020). In the future remote working might be the "*new normal*," and the determinants of effective technostress management within telework hence gain greater importance (Wang et al. 2021).

With the surge in remote working, the consequences for individual well-being and stress have also become more relevant. Measures such as childcare, fitness studios, subsidized canteens, and direct contact with colleagues and superiors are no longer available. Organizations, therefore, have a responsibility to provide for the well-being of their employees in other ways. Well-being has a direct impact on productivity, turnover rates, sick leave, and absenteeism, so neglecting it could have significant downsides for the employer (Brough and O'Driscoll 2010; Brough et al. 2014). While the relationship between remote work and well-being is gaining ground in the literature (Anderson, Kaplan, and Vega 2015; Molino et al. 2020; Wang et al. 2021), the moderating effect of technostress has been less studied. As digitalization advances, multiple work models will emerge. Remote work and flex work were the pioneers. Therefore, it is even more relevant to set a basic conception of the interdependencies of remote work, technostress, and well-being.

Ultimately the goal of the paper is to take advantage of the unique opportunity created by the Covid-19 pandemic to deepen the existing knowledge on effective remote working conditions. At the same time, we want to gain a better understanding of the links between flexible working conditions and technostress. As we strongly believe that ICTs will continually be embedded into daily work, understanding how to reduce stressors and increase well-being will be necessary. Finally, as working conditions are being strongly disrupted, we want to draw practical implications for organizations and executives on how to effectively approach setting up new work models without risking any depletion in employee productivity or job satisfaction.

For this purpose, we performed a time-series survey with (N= 461 for Time 1), (N=252 for Time 2), and (N=183 for Time 3). First, we lay the theoretical framework regarding the topics of remote work, technostress, and well-being. At the same time, we provide a holistic overview of the most recent literature to apprehend the various contextual factors and interrelations between the stand-alone

subjects. As we provide a strong conceptional framework, the report will add to the themes from a unique perspective, using the data from our survey. Seeing that demographic characteristics impact the several conditions of remote work, technostress, and well-being, we will analyze our sample from three distinct dimensions. This collective report is complemented by three individual reports on: Gender, Generations, and Industries. Finally, results will be merged, and integrated and in-depth practical implications will be drawn. To firstly present current literature as well as our findings, an overview of our methodology and sample is needed.

2. Method and sample

2.1 Participant and Procedure

Three surveys were carried out in order to investigate potential impacts and implications for remote working conditions during the Covid-19 pandemic. Data was collected from a sample of participants who experienced remote working during the Covid-19 pandemic and were obtained through personal, professional, and social media networks. The participants were ensured that their data would be analyzed anonymously and gave their consent to participate in the surveys. In the first survey, demographical data from the participants was collected, such as gender, age, education, tenure of employment, and industry.

The three surveys were sent, each with a waiting period of at least seven days between them. This firstly allowed for time to send out multiple reminders to the participants and also ensured that common method bias was minorized. However, since the three surveys were sent staggered, a decrease in the return rate from each survey stage was to be expected. Thus, the sample of the first survey consisted of 461 participants, followed by a 45% decrease in the second survey with 252 participants, and lastly, a 27% drop in the return rate with 183 participants. It is noteworthy that in some cases, participants didn't complete the entire survey. However, they were considered in the sample as they still contribute valuable data to some variables being tested. Nonetheless, a sufficient sample was collected in order to significantly test each of the variables measured.

2.2 Demographics of the sample

For demographics, we are analyzing gender, age, nationality, marital status, household composition, level of education, and most recent employment status. When looking at gender, the sample was represented by a higher number of females than males (see appendix 1). The average age in the sample was 29.39 years (SD=9.07), with a range from 19 to 77 years (see appendix 2). Regarding nationality, the survey included people from 44 different nationalities, and most of the participants (approx. 63%) were from Germany and Brazil (see appendix 3). The marital status is mostly composed of people who are single or never married and people who are married or in a domestic partnership (see appendix 4). Looking at the household composition, the largest group (32.1%) is made up of people who live with one adult and no children. Furthermore, there is a balance between participants who live alone and participants living with a minimum of two adults and no children. The smallest group is made up of people who live with young children (see appendix 5). Looking at the level of education, most of the participants (43.1%) have a bachelor's degree and participants with master's, MBA, or Doctorate Degree (39.3%) (see appendix 6).

2.3 Firmographics

To understand the characteristics related to employment, the survey analyzed the most recent employment status, industry, type of organization, time in the current employer, and time working with the current supervisor/manager.

The most recent employment status of the survey is represented by a higher number of participants that are working in a full-time job and participants in an internship (see appendix 7). Participants that have been working in the company for less than one year represented 41.6% of the sample (see appendix 8), and 51.6% of the sample have been working for less than one year with the current supervisor/manager (see appendix 9). When looking at the industry and type of organization, most of

the participants are working in private companies (see appendix 10), and the industries are well distributed over the sample (see appendix 11).

3. Remote working during Covid-19

3.1 Conceptualizing stress in the workplace

According to the European Agency for Safety and Health at Work, stress is the second most frequent health problem in the workplace in Europe (EU-OSHA 2014), and the Occupational Safety and Health Administration of the US Department of Labor has even declared it as a workplace hazard (Rigó et al. 2020). Uncontrolled, prolonged periods of stress will have negative psychological, cognitive, and behavioral consequences on an individual and will also have consequences for the workplace as it increases healthcare costs and absenteeism as well as decreases job performance and work-life conflict (Ohu, Laguda, and Ogunyemi 2018). Due to the rapid transformation of labor markets, such as the restructuring of work organizations and globalization, there is the belief that work stress has been rising (Rigó et al. 2020). This belief could be verified through the recent work of Rigó et al. (2020) using the European working conditions surveys from 1995-2015, which confirm an increasing long-term trend in job strain during the last 20 years (Rigó et al. 2020). According to the authors, this increase in stress is mainly driven by the increase in psychological demands, such as the intensification of competitive pressure and the increasing use of information and communications technology (ICT) (Rigó et al. 2020). ICTs are commonly associated with high levels of stress, especially in the work environment, which can partially be explained through the intensification of work pace, the increased complexity of work and requirements to learn and adapt, as well as the invasion ICTs have on an individuals' life.

The JD-R model is one of the most common theories used to understand occupational stress in terms of work design and can be used to improve well-being and performance in different work contexts (Demerouti et al. 2001; Bakker and Demerouti 2007). According to Bakker, Demerouti, and Schaufeli

(2003), the JD-R model gives a perspective that, although each organization has its factors associated with work stress, health and motivation can be compromised by two general sets of working conditions: job demands and job resources.

Job demands refer to "the physical, social, or organizational aspects of the job that require sustained physical or mental effort and are therefore associated with certain physiological and psychological costs" (Demerouti et al. 2001, pg. 501). Job demands can be exemplified as work pressure, exhaustion, poor work environment. Job resources refer to the "physical, psychological, social, or organizational aspects of the job that are either/or: (a) be functional in achieving work goals; (b) reduce job demands and the associated physiological and psychological costs; (c) stimulate personal growth, learning, and development." (Bakker and Demerouti 2007, pg. 312). Bakker and Demerouti (2007) emphasize that job demands will only harm health and turn into job stressors if they are not balanced with job resources. According to the JD-R model, job resources are not only used to assist employees in accomplishing job demands (Mäkikangas et al. 2020), but they also have a motivational potential (Bakker et al. 2007). Digitalization has increased the usage of use of information and communication technologies (ICTs) in the workplace, and today it can be seen as both a demand and a resource, depending on how it is used. The JD-R framework of stress will serve as a fundament while analyzing the implication of Covid-19 on remote work characteristics, technostress, and well-being.

3.2 Implications of COVID-19 on remote work characteristics

In the past several decades, the use of remote working as a new model of work has increased as the capabilities of ICTs advanced (Wang et al. 2021). The term "remote work" is often used as a synonym for telework, telecommuting, distributed work, or flexible work, and although their characteristics are often overlapping, they each embody different conceptualizations of work (Allen, Gloden, and Shockley 2015). For example, telecommuting can be seen as a work practice where members of an organization substitute a portion of their work hours to work away from their central

workplace, using technology to interact with others (Allen, Gloden, and Shockley 2015). Meanwhile, in literature, the term flexible work, which is also often used as a synonym for remote working, encompasses telecommuting but often includes flexible work programs such as compressed workweeks (Allen, Gloden, and Shockley 2015). Typically, these definitional challenges also pose obstacles when reviewing scientific findings, as the terminology is used interchangeably (Allen, Gloden, and Shockley 2015). However, this isn't considered a challenge for the present report since remote working is generally considered broader than telecommuting and "can denote any form of work not conducted in the central office" (Allen et al. 2015, pg. 44). The authors Di Matrino and Wirth (1990, pg. 530) define remote-working as "a flexible work arrangement whereby workers work in locations, remote from their central offices or production facilities, the worker has no personal contact with co-workers there but is able to communicate with them using technology."

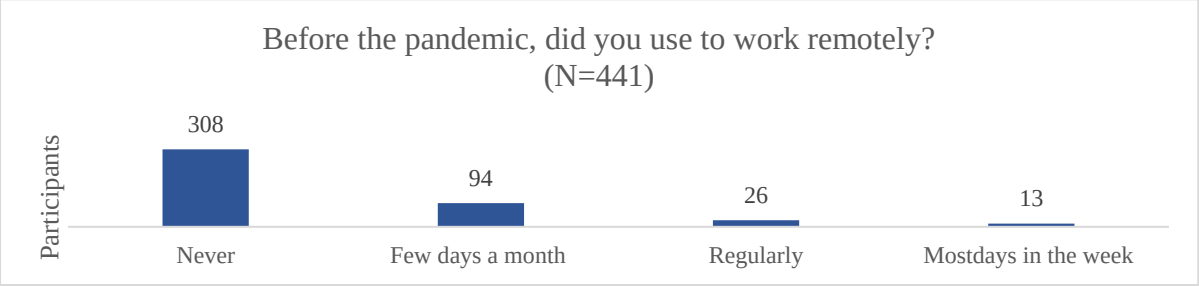
In early 2020, the Covid-19 pandemic somewhat accelerated the shift to remote working using ICT's due to social distancing policies (Eurofound 2020). Organizations are even considering further implementing remote working during the aftermath of the pandemic, potentially making it the new norm of work (Taser et al. 2021). This can be exemplified by the tech giant Meta, formerly known as Facebook, which stated people in eligible roles would be able to apply for full-time remote work post the pandemic. The company states that remote work is "the future," and Mark Zuckerberg even predicted that 50% of their employees could be working remotely within the next five to ten years (Nanji 2021). However, this development doesn't mean that offices have already become obsolete (PwC 2020). In the PwC US Remote Work Survey (PwC 2020), 73% of respondents stated that they would like to continue to work remotely after the pandemic, but for one or two days a week.

Remote working was not a widely used practice prior to the pandemic (Kossek and Lautsch 2018). According to Eurofound (2017), a mere 2% of employees teleworked from home in 2015. Similarly, although an increase of US employees working from home could be detected between 2005-2017, it still only made up 2.9% of the workforce. Desilver (2020) even points out that prior to the

pandemic, remote working was a luxury for the relatively affluent. According to Desilver (2020), most of the workers who had access to a flexible workplace in the US were largely highly paid managers and so-called knowledge workers, who generally do their work on computers. Thus, many companies and workers were unprepared for the sudden shift, turning the crisis into a massive natural experiment in using technologies that enable remote work (Oksanen et al. 2021).

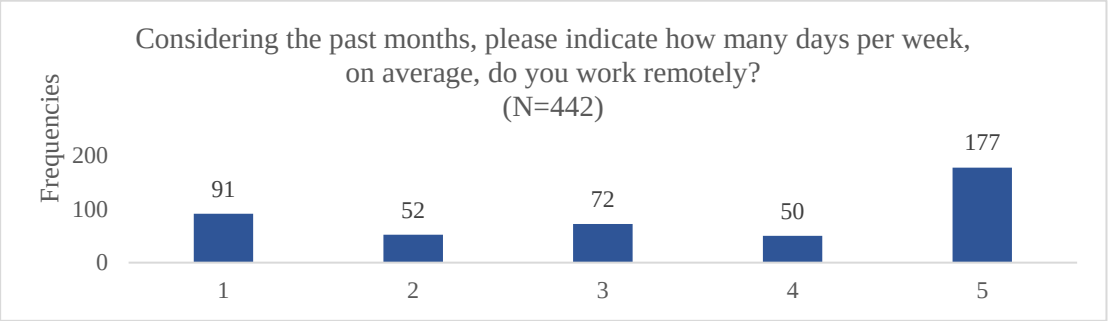
To gain a better conceptual understanding of the participants' remote working situation in our survey, the variables "remote work prior experience" and "remote work intensity" were analyzed. Remote work previous experience was measured using 1 item (see fig. 1) and a 4-point scale with 1= Never, two = Few days a month, 3= Regularly, 4= Most days of the week.

Figure 1: Remote work previous experience



The result from our survey demonstrates very limited prior experience in a remote working setup. Over 400 participants never worked or worked just a few days a month from outside the office. That's in line with previous research emphasizing that remote work is primarily conducted by executive personnel. Thus, limiting research on remote work. To see if the shift to remote working has accelerated through the pandemic, the remote work intensity was analyzed from participants. Remote work intensity was measured using one item (see fig. 2) and a five-point scale, representing the number of days, respectively.

Figure 2: Remote work intensity

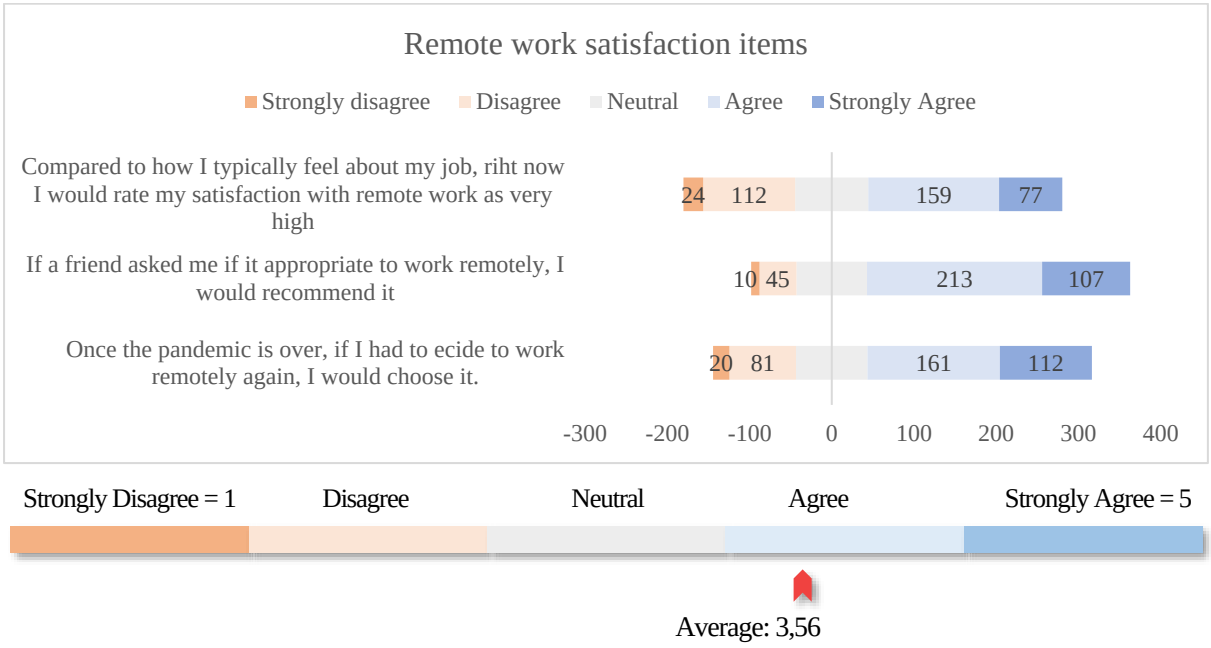


In contrast to the implementation of remote working models prior to the Covid-19 pandemic, the adoption during the pandemic skyrocketed. Almost 70% of our sample worked three or more days remotely. Thus, enabling us to draw more sophisticated and detailed knowledge on the conditions and characteristics of remote work conditions.

There has been a plethora of studies related to the remote working experience, which already demonstrate that it can result in both positive and negative effects for employees such as enhanced autonomy as well as work intensification (Hoeven and Van Zoonen 2015). However, knowledge about remote working accumulated prior to the COVID-19 crisis might lack contextual relevance, as it was generated in a context where remote work was infrequently and largely voluntarily practiced by those who had access in the first place (Wang et al. 2021). In their analysis of the COVID- 19 crisis and digital stressors at work, the authors Oksanan et al. (2021) were able to demonstrate an advantage in terms of stress caused by technology and work exhaustion, for employees with prior remote working experience and technological skills, by testing their "well-prepared" hypothesis. Thus, previously identified positive and negative effects of remote working might only apply to those who intrinsically want to or were able to engage in remote working prior to the pandemic (Kaduk et al. 2019).

Remote work satisfaction was also analyzed as a measure in our survey using three items (see fig. 3), adapted from (Toscano and Zappalà 2020). The measure was assessed using a 5-point Likert scale from 1= strongly disagree to 5= strongly agree, and the responses achieved internal consistency (Cronbach's alpha = 0.86)

Figure 3: Remote work satisfaction



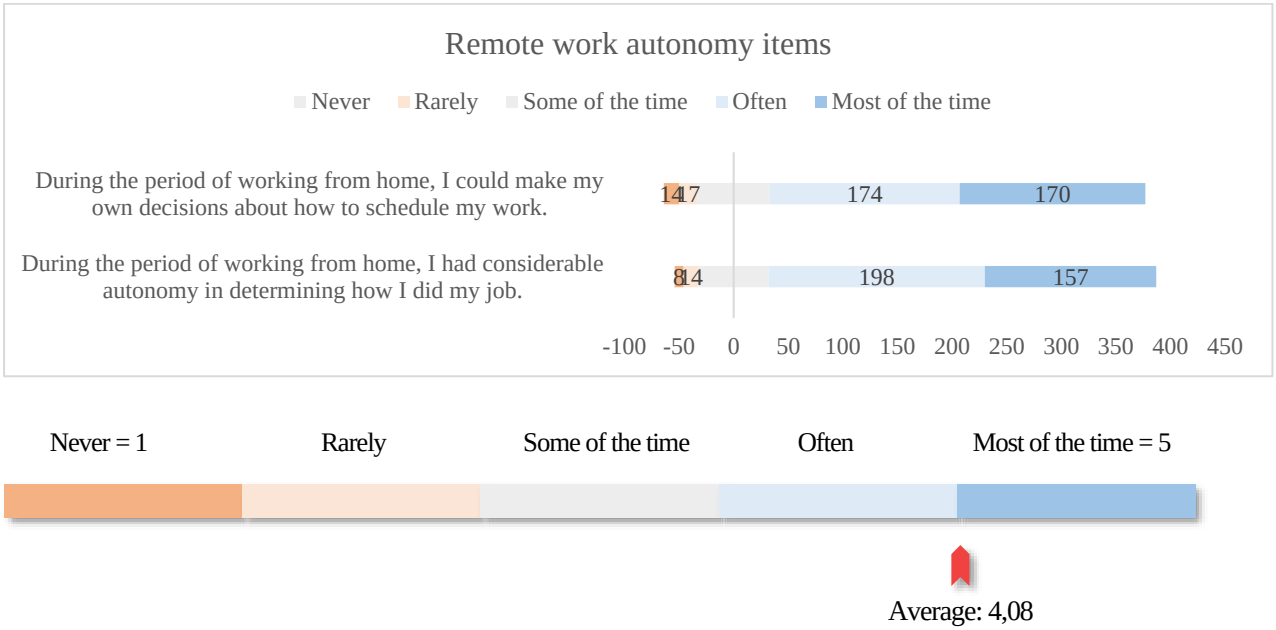
As our sample showcased a significant surge in remote working, our focus lied on understanding the various drivers of effective remote work. Therefore, we first tried to understand the perception of telework by our sample. Our findings testify a strong favour for remote work. In particular, the paper demonstrates that 273 out of 442 (62%) participants would decide to continue working remotely after the pandemic is over.

Therefore, in a situation where the mandatory order of remote work becomes the "new normal," the authors' Wang et al. (2021, pg. 18) suggest a shift in the focus in research from "understanding whether or not to implement remote work to understanding how to get the most out of remote working." To achieve this shift, the authors build their analysis on the theoretical perspective of work design. As previously mentioned, stressors can be derived from working conditions within a working design and can negatively impact an employee's wellbeing (see chapter 5). The JD-R model (see chapter 3.1) can again serve as a theoretical framework in order to identify which working conditions, categorized into resources and demands, affect the remote working experience and, therefore, employee wellbeing (Galanti et al. 2021). Using the JD-R model, the authors Galanti et al. 2021 integrate existing research on remote work during the COVID-19 into their own quantitative analysis.

3.3 Job resources and demand during the Covid- 19 pandemic

In terms of job resources, Galanti et al. (2021) argue that positive effects of job autonomy can be observed or even accentuated during enforced remote working and is positively associated with productivity and engagement. Job autonomy is one of the most prominent remote job resources (Bakker and Demerouti 2017) and refers to the control an employee has over their work schedule, work location, and the use of communication technology (Hoeven and Van Zoonen 2015). Job autonomy was also identified as a positive work characteristic by Wang et al. (2021), who states that employees with higher levels of autonomy can choose the most productive ways to do their work as they can balance work and rest. They also identify that job autonomy can be beneficial for work-family balance. Remote work autonomy was measured, making use of the two-item scale adapted from Wang et al. (2021), and assessed using a 5-point Likert scale from 1= strongly disagree to 5= strongly agree. Responses had internal consistency (Cronbach's alpha = 0.78). Results indicate elevated autonomy means (see fig. 4).

Figure 4: Remote work autonomy

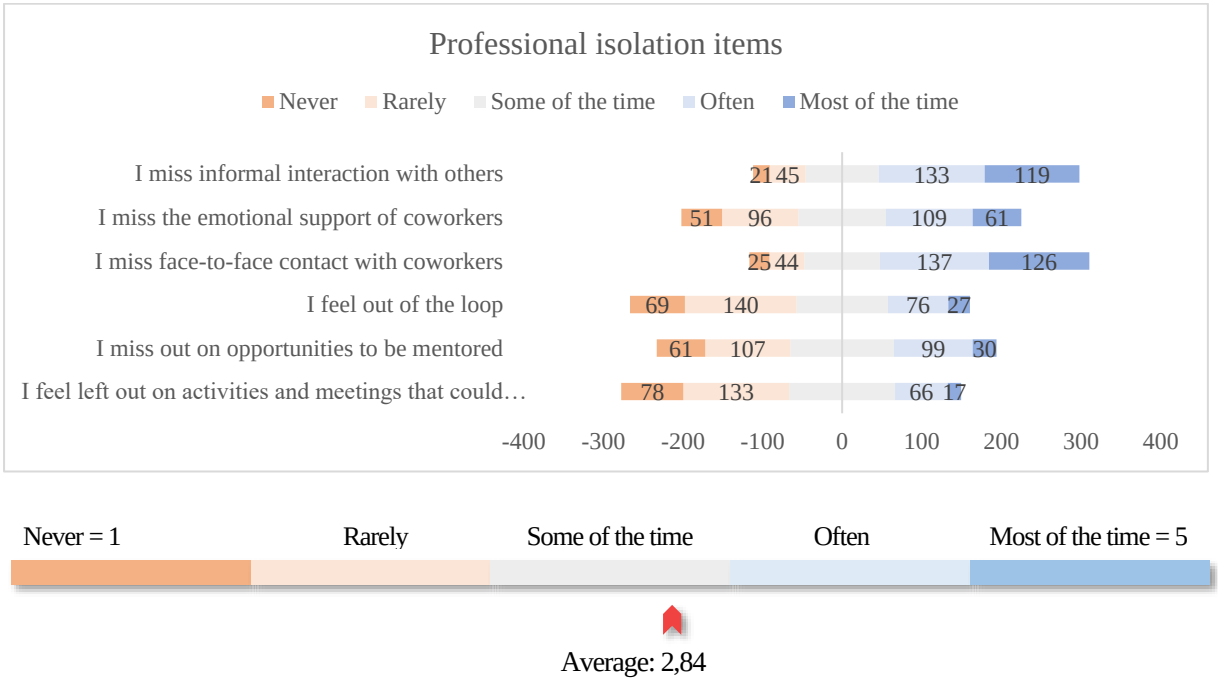


Our results may be a further indication that the sudden shift caused by the pandemic led to an increase in job autonomy due to the application of remote working models. This is in line with findings by Nicks et al. (2021). Looking further at job demands in remote working, Galanti et al. (2021) considered and significantly tested the characteristics: lack of social context related to the perception of being isolated and the difficulty of creating a suitable workstation at home.

Through social confinement and no in-person contact with employees, Galanti et al. (2021) see social isolation as the second demand. This is based on the findings of previous research, which show that the use of ICTs to communicate only partially mitigate employees' feelings of loneliness, compared to the social interactions usually experienced in the workplace or when meeting friends (Fonner and Roloff 2012). Isolation can be defined as "the perception of a lack of availability of support and recognition, missed opportunities for informal interactions with co-workers, and not being part of the group" (Van Zoonen and Sivunen 2021). Professional isolation has been recognized as a potential obstacle to the effectiveness of remote working (Golden, Veiga, and Dino 2008) and can be defined as the belief that one is out of touch with other employees (Diekema 1992). As the feeling of professional isolation rises, so does the reduced sense of belonging and frustration (Lewandowski 2003). In their study, Golden and, Veiga and Dino (2008) define professional isolation as missing face-to-face interactions and social support from co-workers, as well as feeling left out of career-enhancing activities and opportunities to be mentored. Furthermore, the authors were able to identify a significant negative relationship between professional isolation and job performance.

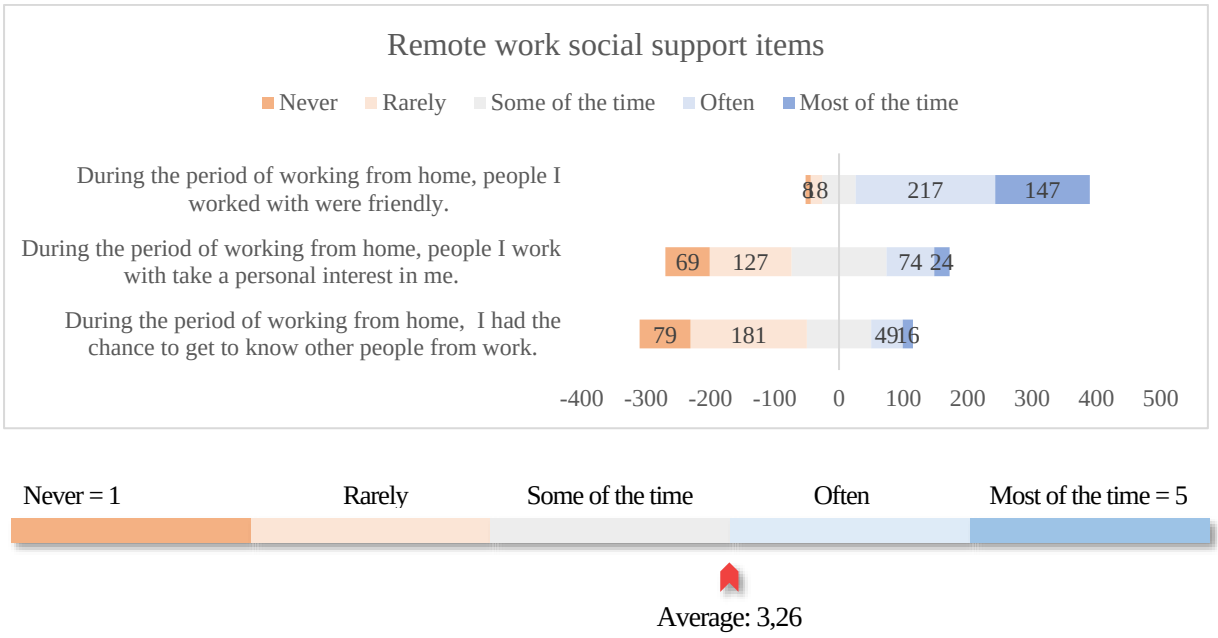
Professional isolation, in the form of reduced collaboration, was tested as a measure in our study. In accordance with the authors Golden and, Veiga and Dino (2008), professional isolation was measured using seven items (see fig.5). The items were measured using a 5-point Likert scale from 1= rarely to 5= most of the time, and the responses show internal consistency (Cronbach's alpha = 0.87).

Figure 5: Professional isolation



Our sample demonstrates great contrasts when it comes to perceived professional isolation. Although many of the participants state they are missing the emotional support and informal interactions with their co-workers, they mostly don't feel out of the loop or miss out on important career development opportunities. In line with Golden, Veiga and Dino's (2008) findings and Galanti et al. (2021) identification of social isolation being a remote job demand, Wang et al. (2021) identify social support as a necessary resource to accomplish tasks and combat loneliness in remote work, through their qualitative research. In addition to this, their empirical research showed social support to be the most powerful work design factor in terms of impact and is negatively associated with loneliness. The social support received during remote working was also measured in our survey. Remote work social support was measured using three items (see fig.6) items, which were adapted from Wang et al. (2021). Participants answered the items using a 5 -point Likert scale from 1= never to 5= always. Responses had internal consistency (Cronbach's alpha = 0.62).

Figure 6: Remote work social support



Looking at the received social support during the crisis, an understanding towards the favor, but also the reluctance towards remote work can be gained. While our sample mostly agreed on people being friendly in a remote working setup, the lack of networking and mutual interest is clearly recognizable.

The third work demand that the authors identify, the difficulty of creating a suitable workspace from home, is directly related to the current pandemic, as employees must share their workspace with family and can easily become distracted (Galanti et al. 2021). They base this demand on prior studies, which suggest that the quality of the workspace, such as control over light and acoustics, as well as sufficiently separated work- / living space, are associated with a positive full-time remote working experience (Raguseo, Gastaldi, and Neirotti 2016).

The last notable demand of remote working during the pandemic is the sudden digital leap that many employees were forced to take. Due to the new remote working situation, which was imposed onto employees, the dependency on ICTs grew, as work meetings and information sharing primarily took place online (Oksanen et al. 2021). The way in which technology acts as a demand within work design will be discussed in the form of technostress in the next chapter.

4. Technostress

4.1 Defining Technostress

ICTs, such as collaborative applications and connectivity tools, have not only become fully integrated into our personal but also in our professional lives. Through the use of ICTs, employees are exposed to an increased amount of available information to process as well as constant connectivity (Molino et al. 2020). The development of new ICTs is limitless, however, an individual's capacity to process new information is limited (Salazar-Concha et al. 2021). Thus, employees are often exposed to more information than they can efficiently manage (Fisher and Wesolkowski 1999). This leads to a common negative feeling among ICT users of not having enough time to complete tasks and making the constant effort to be efficient (Molino et al. 2020).

The term "Technostress" was first coined in the 1980s as "a modern disease of adaptation caused by the inability to cope with new technologies in a healthy manner" (Brod 1984). Technostress can be seen as a managerial issue that organizations are facing as they become more dependent on technology (Hung, Chen and Lin 2015). From an organizational perspective, technostress is caused by the individual struggle and attempt to keep up with constantly evolving ICTs, and, therefore, changing cognitive, physical, and social requirements which are related to their use (Tarafdar et al. 2007). The authors of one of the most cited articles of technostress, Tarafdar et al. (2007), state that it is a phenomenon caused by a combination of demands which lead to stress.

4.2 Technostress creators

Technostress creators or techno- stressors can be seen as technology-related job demands that provoke technostress, in accordance with the JD-R model (Molino et al. 2020). Two main techno-stressors have already been mentioned in the definition of technostress above, namely information overload and constant availability (La Torre et al. 2019). In this project, we will focus on two widely accepted techno-stressors: techno-invasion and techno-overload. These stressors can impact an

individual on both a private and organizational level (Brivio et al. 2018). Techno invasion encapsulates constant availability and connectivity (Brivio et al. 2018). Without the boundaries of space and time, an employee's work-life balance can be affected as work-related tasks spill over in their personal lives due to techno- invasion (Tarafdar et al. 2007). Techno overload can be understood as a situation where the use of ICT forces an employee to work faster and longer (Tarafdar, Tu and Ragu-Nathan 2010). Techno overload can also be seen as communication information overload, which results from an individual receiving information from multiple channels simultaneously (Brivio et al. 2018). Individuals could struggle to prioritize or to decide how to best use the information received, making it hard to manage (Tarafdar et al. 2007).

Ragu-Nathan, Tarafdar and Ragu-Nathan (2008) point out two contributing factors of techno-stress that are notable. The first factor has already been mentioned, namely, the fatigue and discomfort that can result from multitasking, as the use of ICTs may demand more tasks to be completed in a lesser amount of time. The second factor is the lack of support that employees may be receiving during the testing, implementation, and daily use of the ICTs (Ragu-Nathan, Tarafdar and Ragu-Nathan 2008).

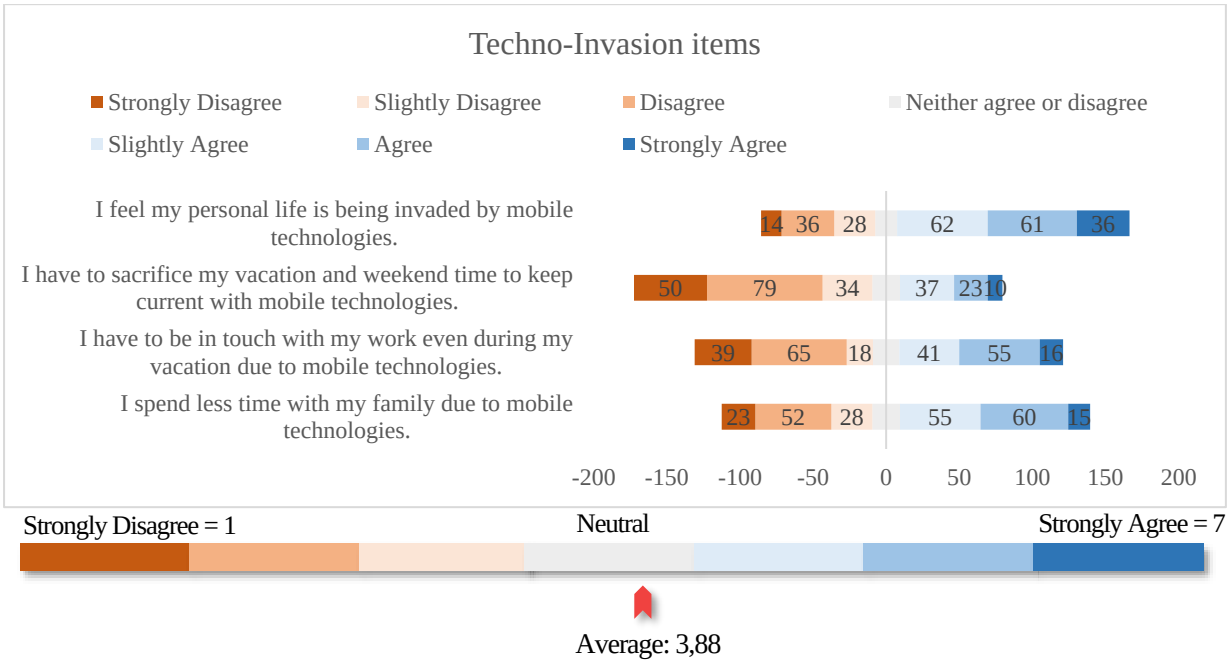
4.3 Technostress in the Covid-19 pandemic

The use of ICTs was accelerated in remote working (Taser et al. 2021), and as previously mentioned, an additional work demand was created as employees were forced to take a digital leap. Intensive exposure to ICT can negatively impact physical and mental health, leading to technostress, especially due to the absence of boundaries between work activities and non-work activities (Taser et al. 2021). The authors Oksanen et al. (2021) found a substantial increase of technostress during the pandemic in 17% of their sample, while 69% reported little or no change. The research conducted through Taser et al. (2021) during the COVID-19 pandemic was also able to confirm that remote work has a negative correlation with technostress (Suh and Lee 2017).

In a recent meta-analysis of 96 empirical studies (N= 34, 350), Gerdiken, Reinwald, and Krunze (2021) identified some of the most prominent technostress effects on employees within a working context. The authors found that technostress had the strongest effects on employee health measures, followed by attitudinal and behavioral measures. For example, Gerdiken, Reinwald, and Krunze (2021) found a significant negative relationship between technostress and job satisfaction and a positive relationship between technostress and job burnout, as well as turnover intentions.

In our survey, the participant's individual perception of their level of technostress was analyzed by measuring techno-invasion and techno-overload. Based on the works of Ragu-Nathan, Tarafdar, and Ragu-Nathan (2008), techno-invasion was measured using three items (see fig. 7). Participants answered using a 7-point Likert scale from 1= strongly disagree to 7= strongly agree. Internal consistency was achieved in the responses (Cronbach's alpha = 0.74). Looking at the technostress creator techno-invasion, one may clearly see great contrasts within the sample.

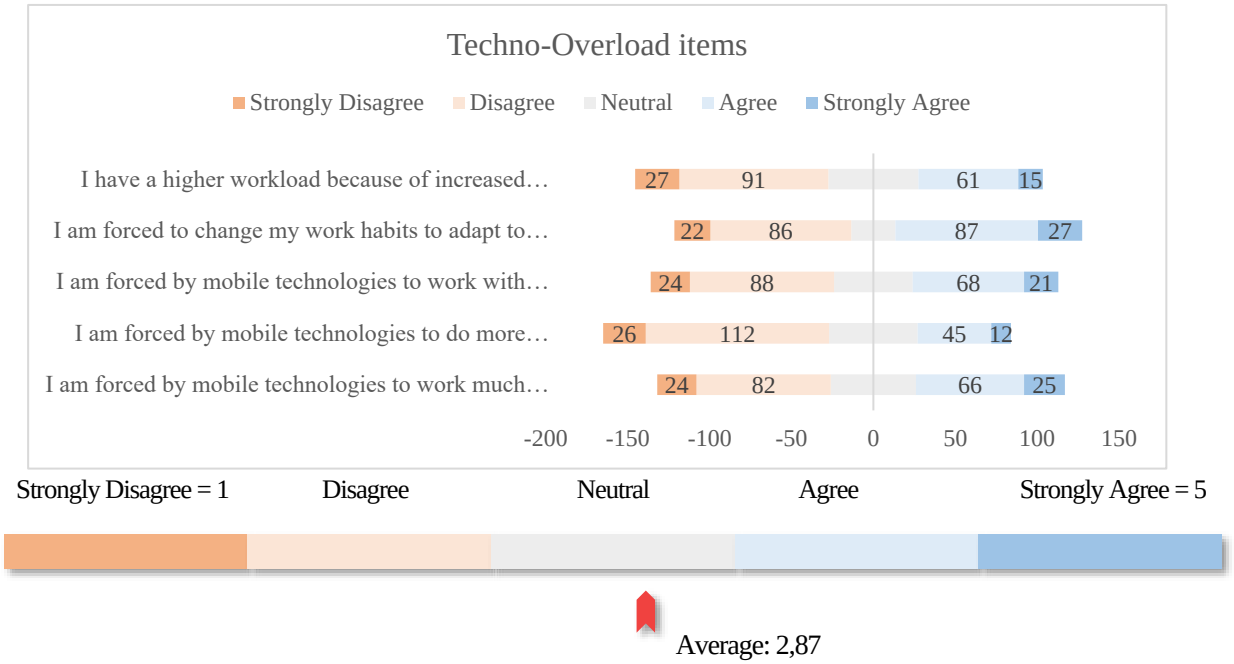
Figure 7: Techno-Invasion



Techno-overload was measured using five items (see fig. 8) and a 5-point Likert scale, from 1= strongly disagree to 5= strongly agree. The items are also adapted from Ragu-Nathan, Tarafdar & Ragu-Nathan (2008). Responses had internal consistency (Cronbach's alpha = 0.87). The sample provides

similar results for techno-overload. Although almost half of our participants stated that they are not experiencing any overload due to ICTs, the other half clearly demonstrate increased strain.

Figure 8: Techno-Overload



Incorporating new work models and the intense use of ICTs demands employees' preparation and adaptation to ensure a successful transition (Allen, Golden and Shockley 2015). In accordance with this, organizations need to provide formal processes and procedures which will more likely lead to positive outcomes (Wheatley 2012). According to Van Zoonen and Sivunen (2021), several factors need to be considered for a successful transaction, such as commitment, satisfaction, productivity, the equilibrium between work and personal demands, and the effective management of distance that remote work creates between workers (Raghuram et al. 2001). For this reason, companies should ensure the right transition to facilitate a better work-life balance and well-being when working remotely (Galanti et al. 2021).

5. Well-being

Well-being, initially coined as "eudaimonia" or "quality of life," was regarded as the ultimate art of living and the highest form of individual character. Portraying timeless contentment with life and oneself (Bauer, McAdams, and Pals 2008). Nowadays, well-being is extensively explored in literature, and multiple subdisciplines emerged (Ryff 1989; Headey, Holmström and Wearing 1984). In the context of this paper, we will focus on well-being at the workplace and the several implications for the individual and the organization. With the social, technological, and demographic shift in the nineteenth to the twenty-first century, the work and well-being of employees gained significant attention. As researchers discovered the positive implications of happiness and job satisfaction on productivity and task performance, organizations made an effort to create a positive working environment in the office (Cooper and Robertson 2001). Especially with the emergence of large conglomerates, stress and risk of losing jobs shifted from blue-collar to white-collar workers. That's why well-being is increasingly regarded as a performance indicator of organizations and thus implemented in HR policies (Baptiste 2008; Grant, Christianson, and Price 2007).

In (2012) a study by the Canadian Statistics Authority on mental health at the workplace illustrated the hazard of neglecting well-being. The study estimated a loss of approximately $50 billion due to the mismanagement of employees' mental health conditions. Thus, boosting stress, depression, and anxiety which leads to higher levels of absenteeism, turnover, and lower productivity (Cooper and Robertson 2001). A similar study in the US found out that illnesses within the national workforce cost around $576 billion. Of that amount, $227 billion is attributed to presenteeism. A condition where an employee is not absent from work, however, does not perform to his usual standards due to limiting conditions such as stress, fear, and a general lack of the ability to focus on work (Japsen 2012). Although well-being is influenced by a complex set of parameters, we will set our focus on the relationship between technostress and remote working. Already in (2008), Ragu-Nathan established that technostress has a deleterious effect on job satisfaction and commitment. According to common stress models such as the

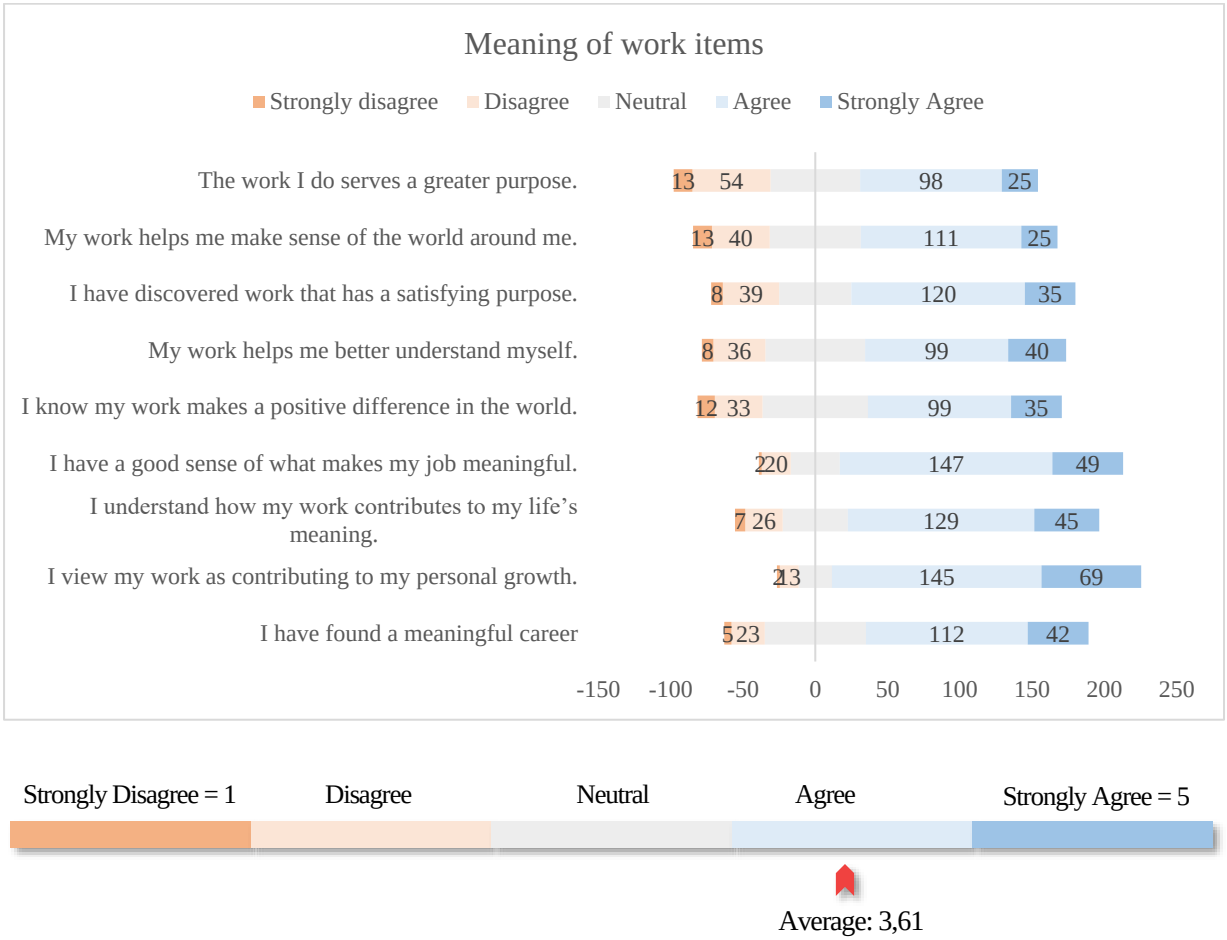
job demand resources model (Bakker and Demerouti 2007), these conditions are triggered by a disparity of perceived ability and required resources. This results in stress and dissatisfaction, which in turn reduces individual well-being (Pfaffinger, Reif, and Spieß 2020).

In addition, Santuzzi and Barber (2018) explored within their survey of 234 full-time employees the effects of ICT stress on physical and mental conditions. In the paper, the authors state that technostress and tele pressure can cause detachment from work, sleep problems, and increased fatigue. In particular, techno-invasion does arise from the advancing interference and lack of separation of daily work (Tarafdar et al. 2007). This has increased tremendously during the Covid-19 pandemic (Molino et al. 2020). However, the consequence of the matter for individuals was a decline in detachment from work, leading to negative effects on individual's well-being (Sonnentag and Fritz 2015).

According to (Seligman 2011) model of well-being, the term consists of five distinct elements. Positive emotions, engagement, relationships, meaning, and achievement represent PERMA, the means of achieving sustainable life satisfaction and well-being. For this paper, we will focus on the pillar of meaning in life and work. Purpose or meaning can be described as an overarching life goal, where limited resources are focused on achieving specific goals and making decisions guided by that vision. Meaning and purpose are often envisioned as the logical reasoning of everyday actions (McKnight and Kashdan 2009). In his pioneering paper, (Frankl 1985) highlighted the importance of meaning in life to increase productivity while also improving satisfaction. In this report, we will study the perception of purpose while conducting daily work and see whether it is associated with the experience of remote work, technostress, and well-being. whether it is associated with the experience of remote work, technostress, and well-being.

In our survey, the meaning of work was measured using nine items adapted from Steger, Dik, and Duffy (2012), the (see fig. 9) and a five-point Likert scale from 1=strongly disagree to 5= strongly agree. Internal consistency was given in the responses (Cronbach’s alpha = 0.90).

Figure 9: Meaning of Work



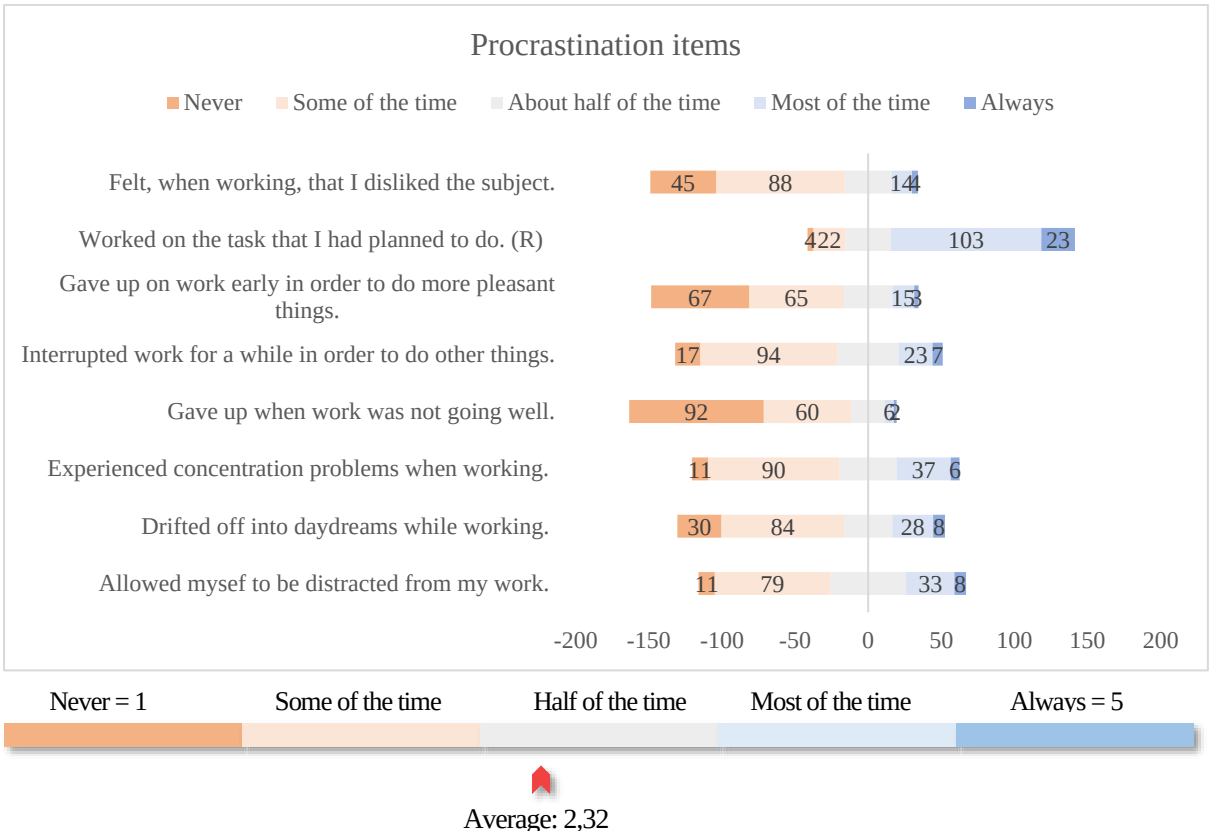
The mean level of meaning of work is fairly high, with 3.61 on a scale of 1-5. Once again, the feeling of a greater purpose at work might be an indicator of the great remote work satisfaction within our sample.

Another phenomenon directly affecting well-being is procrastination. The purposeful and unnecessary delay of an important or immediate task being aware of negative consequences is called procrastination (Krause and Freund 2014). A study regarding the interrelations of procrastination, self-esteem, and well-being (Duru and Balkıs 2017) examined the negative implications for self-esteem by failure and non-achievement of goals due to procrastination. That, in turn, can decrease optimism, motivation and increase anxiety, directly impacting well-being.

Procrastination was measured in Time 2 with six items developed by (Schouwenburg 1995) and (Krause and Freund 2014). Example items are: "Drifted off into daydreams while working" and

"Worked on the task that I had planned to do" (Reversed). Responses had internal consistency (Cronbach's alpha = 0.85).

Figure 10: Procrastination



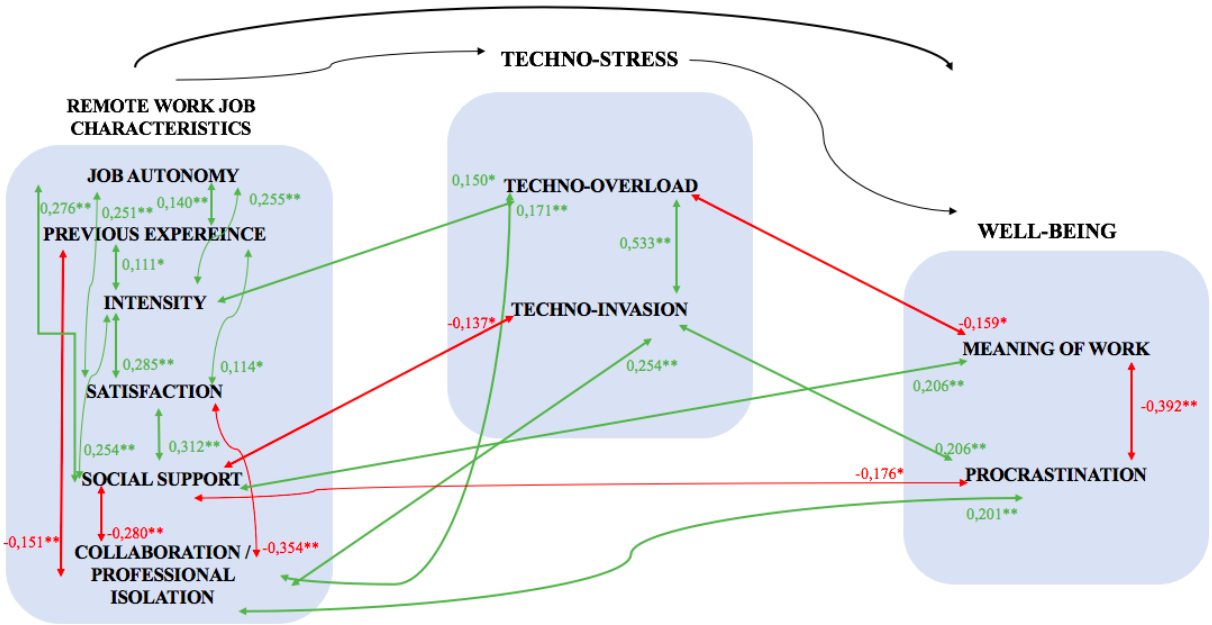
Though it is apparent that procrastination occurs within our sample (see fig. 10), the extent to which it appears is minor. The majority dislikes tasks are being interrupted or delays tasks some of the time. The next chapter will shed light on the subgroup differences through the isolated lens of gender, generations, and industries. The initial descriptive overview gave a first well-rounded impression concerning the opposites and similarities within the large sample.

6. Relationship between measures of remote work characteristics, Technostress and Well-being

Throughout the theoretical foundation of this paper, it becomes apparent that job demands, and resources have changed due to the sudden shift to remote working during the pandemic. As previously mentioned in the overview of the JD-R model, an imbalance of job demands and resources within

remote working characteristics can negatively impact an individual's well-being. Similarly, due to the shift to remote working, the enforced digital leap which many employees were forced to take represents a demand which may lead to higher levels of technostress, which in turn may negatively impact well-being. A model of the three overarching themes of this paper, namely remote working conditions, technostress, and well-being, as shown in the following graph, along with the measures analyzed in relation to each theme and any significant correlations.

Figure 11: Model of significant correlation between measures



Measures related to remote working conditions, technostress, and well-being were analyzed in the survey. Experience with remote working prior to the pandemic, the intensity of remote working during the pandemic, job satisfaction during remote work, perceived social support, and professional isolation in terms of collaboration are measured in relation to remote working conditions. The measures analyzed in relation to technostress are techno-invasion and techno-overload. Lastly, the meaning of work and procrastination were analyzed as measured related to well-being.

Demonstrated in the graph above (see fig. 11) and in the table below (see appendix 12), prior experience with remote working positively correlates with remote work intensity ($r = 0{,}11$; $p < .05$), as well as remote job satisfaction ($r = 0{,}11$; $p < .05$), and negatively correlates with professional isolation

(r = -0,15; p < .01). Although the correlations are significant, they are low. Remote work intensity moderately, positively correlates with remote work satisfaction (r = 0,29; p < .01) as well as remote work social support (r = 0,25; p < .01), and positively correlates to techno-overload (r = 0,15; p < .05) to a low degree. As can be seen in the graph, in addition to the table below, remote work satisfaction positively correlates with social support (r = 0,31; p < .01) and negatively correlates to collaboration (r = -0,35; p < .01). The correlation found between the measures is moderate. Looking at the measure social support, a low negative correlation can be found with techno-invasion (r = -0,14; p < .05), collaboration (r = -0,28; p < .01) and procrastination (-0,18; p < .05), as well as a positive correlation with meaning of work (r = 0,21; p < .01). In addition to the correlations found with social support, techno-invasion also shows a strong positive correlation with techno- overload (r = 0,53; p < .01) as well as a moderate positive correlation with procrastination (0,21; p < .01) professional isolation (r = 0,25; p < .01) in terms of collaboration. Techno-overload negatively correlates with the meaning of work (r = -.16; p < .05) to a low degree and positively correlated to professional isolation (r= 0.17; p < .01), also to a low degree. Additionally, meaning of moderately, negatively correlates with procrastination (r= -0,39; p < .01). Lastly, professional isolation in terms of collaboration correlates positively to procrastination (r= 0,20; p < .01). The following section of this paper will focus on individual sub-groups of our sample, starting with analysis of potential differences in the measures from a gender perspective.

7. Relevance of Generations

Different generations compose the workforce nowadays, and the understanding of its differences allows managers and companies to deal with intergenerational differences related to attitudes, desires, values and have a better understanding of the dynamics across them (Lyons & Kuron 2014; Van Rossem 2018). Authors suggest that misunderstanding the differences between generations

can lead to problems concerning working relationships, satisfaction, productivity, well-being, and difficulty adapting to innovation (Becton, Walker & Jones-Farmer 2014).

Studies can analyze generational theories from different perspectives (Rudolph & Zacher 2017). The most common generational theories are based on two main perspectives: social and cohort. From a social perspective, generations are represented by a multidimensional and inter-related group of individuals who share the same historical process in time. From the cohort perspective, generations are defined by individuals born in similar periods (Lyon & Kurn 2014). The theory of Mannheim is one of the most used theories because it embraces both dimensions: the biological process of aging and the effects of social and historical events (Lyon & Kurn 2014).

On his theory, Mannheim (1952) defines generations from the same cohort as "individuals with a common location in the social and historical process, and thereby limit to a specific range of potential experiences, predisposing them for a certain characteristics mode of thought and experience and a characteristic type of historically relevant action" (Mannheim 1952 pg. 291). According to Joshi, Dencker & Franz (2011), the theory also brings a second important dimension that, defining generation as a group of individuals sharing the same social and historical process, results in a conscientious process of each social cohort trying to adapt to existing traditions and social patterns. The result of this process brings social changes that shape future generations. These specific events and experiences also result in a collective memory that can be used as a basis for behaviors and attitudes in the future (Lyons & Kuron, 2014).

Despite his theory being one of the most used for generations definitions, it's important to highlight that not all people from the same generation will be influenced equally (Van Rossem 2018). Cultural, regional, and even personal differences can influence individuals' behaviors, and these distinctive characteristics between intergeneration's can also impact the workplace (Twenge & Campbell 2008; Lyons & Kuron 2014; Parry 2014).

Generations that compose the workforce nowadays can be defined in four categories: Baby Boomers, Gen X, Millennials or Gen Y, and Gen Z. Baby Boomers were born between 1946 and 1964. This generation was influenced by historical events such as Vietnam War, the civil rights movement, Kennedy and King assassinations, and sexual revolution (Adams 2000; Dixon, Mercado & Knowles 2015). This generation tends to be achieved oriented and competitive for resources and opportunities (O'Bannon 2001; Lancaster & Stillman 2002; Becton, Walker & Jones-Farmer 2014). They also respect authority, value conventional traditions, and are loyal to organizations (Leslie et al. 2021; Mintel 2019; Berezan et al. 2018; Becton, Walker & Jones-Farmer 2014).

Gen X, born between 1965 and 1979, experienced economic uncertainty and recession, inflation, and high unemployment rates (Kupperschmidt 2000; Becton, Walker & Jones-Farmer 2014; Lyons, Duxbury, and Higgins 2007). They are known as independent, with low organizational loyalty and a high focus on work-life balance (Dixon, Mercado & Knowles 2015; Eisner, 2005; Becton, Walker & Jones-Farmer 2014).

Millennials or Gen Y is represented by individuals born between 1980 and 1995. These individuals were influenced by historical events such as 11/9, terrorist attacks, and natural disasters. They are known as the first high-tech generation (Downing 2006; Dixon, Mercado & Knowles 2015), born during globalization and intensive mediatization (Liesem 2017; Leslie et al. 2021). Some authors suggest that this generation prioritizes family and prefers working in a meaningful job, distrusting organizations (Ryan 2000; Becton, Walker & Jones-Farmer 2014).

Gen Z is the last generation present in the workplace. They were born between 1996 and 2009, and they're known as the first generation of digital natives, focusing on achieving goals (Mintel 2018; Leslie et al. 2021). Regarding their values, some authors suggest that they prefer to work in companies with social impact (Marron 2015; Singh & Dangmei 2016; Kirchmayer & Fratriová 2018; Leslie et al. 2021).

Companies have an increasing age diversity. While Gen Z is now entering the workplace, Baby Boomers are starting to retire. Historical events, such as Covid-19, followed by social isolation and new work arrangements, can impact them differently. Age-based stereotypes can influence biases about specific generations and create adverse outcomes for organizations and performance (Urick 2021). For this reason, the next chapter will analyze how individuals from different generations respond to remote work, technostress, and well-being during the Covid-19 pandemic.

8. Sample Information

As mentioned in the collective report, the sample size consists of 461 participants. However, 35 participants omitted their demographic information. For this reason, we are considering only the 426 participants that answered the information regarding the demographics for the generation sample. The participants were divided into four different generations based on their current age. Baby Boomers represent 2.6% of the sample with 11 participants, Gen X 8.0% with 34 participants, Gen Y or Millennials 32% with 139 participants, and Gen Z 56.8% with 242 participants. Considering that not all the participants answered the three surveys, the number can vary between the variables.

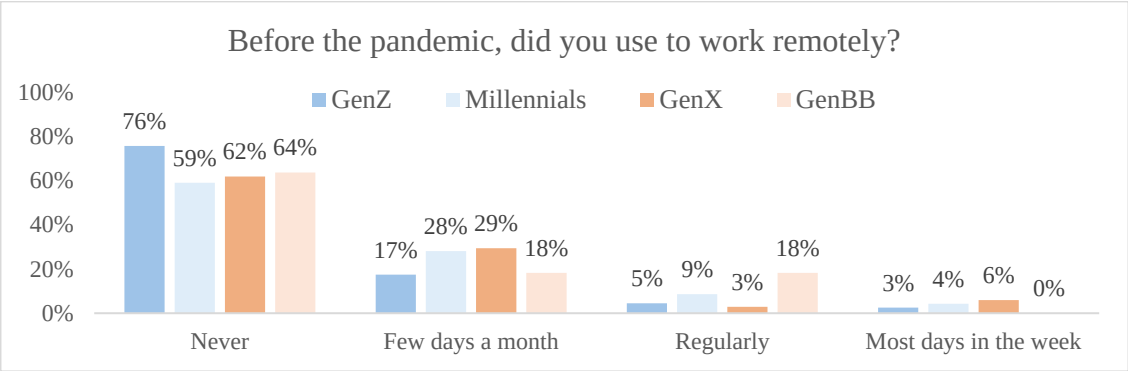
9. Main Findings and discussion

9.1 Remote work

According to Eurostat 2020, the percentage of individuals from the four different generations (between 15 and 64 years old) employed in the European Union in 2019, only 5.4% usually worked from home. The percentage of older people who usually work remotely is slightly higher than younger individuals. The Deloitte Global Millennial Survey 2020 also shows that 45% of the Millennials and Gen Z have never worked remotely before the pandemic. In our survey, we were able to confirm that most of the individuals from all four generations had never experienced working from home before the

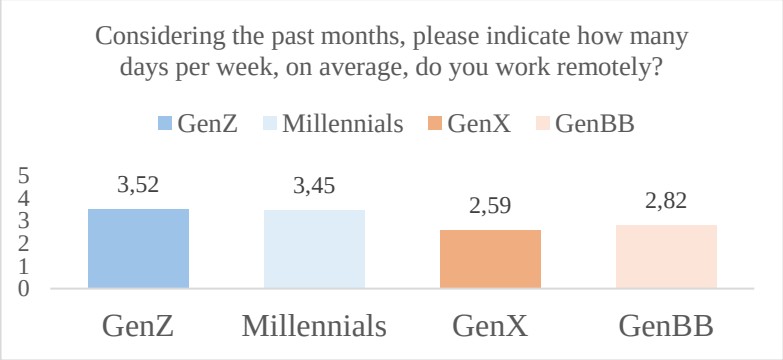
pandemic (see figure 12). However, we were not able to find a dependency of remote work prior experience on generations (Qui-square test) X2 (12, N = 426) = 18.6, p = 0.098. The individuals that regularly or most days of the week work remotely before the pandemic represent only 18% of the Baby Boomers, 13% of Millennials, 9% of Gen X, and only 8% of Gen Z.

Figure 12: Generational differences in remote work prior experience



We can observe a significant increase in remote work after the pandemic when looking for the same group of individuals. Through an ANOVA test, we can see that the intensity of days working remotely is dependent on the generation (F(3, 422) = 4.15, p = 0.007). Post hoc analysis shows that a significant difference between Gen Z and Gen X, and Millennials and Gen X. Gen Z (average = 3.52) and Millennials (average = 3.45) are reporting more days working remotely after the pandemic compared to Gen X (average = 2.59) (see figure 13).

Figure 13: Generational differences in remote work intensity

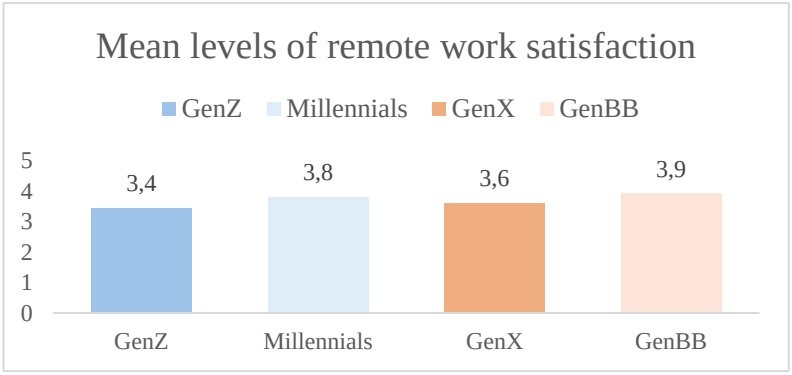


The rapid transformation to virtual workplaces can generate more significant challenges inside organizations (Oksa et al. 2021). When looking at remote work satisfaction, social support, professional

isolation, and autonomy, the current literature diverges about those specific topics related to generations during the pandemic. Some research shows that Millennials and Gen Z tend to adapt better to technology than older generations because they were born during digitalization. However, when it comes to crises situations, older generations have an advantage despite their beliefs in traditional conventions (Oksa et al. 2021).

The global research conducted by the Center for Generational Kinetics (2020) shows that Gen X and Millennials have a better experience working remotely. They communicate better and have a better experience trusting their co-workers and managers. The same research also showed that Gen Z, compared to the other four generations, is struggling more with remote working. When looking at our data of remote work satisfaction, the ANOVA test indicates that remote work is also dependent on generations ($F(3, 422) = 4.91$, $p = 0.002$). Post hoc analysis reveals that a significant difference between Gen Z and Millennials. Gen Z presents lower levels of satisfaction (average = 3.43) compared to Millennials (average = 3.81) (see figure 14).

Figure 14: Generational differences in remote work satisfaction



The recent study conducted by Microsoft (2021), the Microsoft 2021 Work Trend Index, also showed that Gen Z is struggling more than other generations with new work arrangements, mainly because they're now starting their careers. The absence of previous experience working inside companies results in difficulty creating networking, bringing new ideas, and getting the word during meetings, resulting in higher levels of professional isolation. The Society for Human Resources Management (2020) highlights that the same way historical events as 11/09 impacted the Millennials,

the Covid-19 pandemic is affecting Gen Z, and the impact is even more prominent as they are in formative years. In our survey, we were able to find that professional isolation is dependent on generation through an ANOVA test ($F(3, 406) = 7.31$, $p < 0.001$) (see figure 15). Our data shows, though a post hoc analysis, a found a significant difference between Gen Z and Millennials and Gen Z and Baby Boomers related to professional isolation. Gen Z reported the highest levels of perceived professional isolation (average = 3.00) compared to Millennials (average = 2.66) and Baby Boomers (average = 1.96). This indicates again that younger workers feel more the negative impact of remote working in activities that could enhance their careers, opportunities to be mentored, and social interaction levels with coworkers.

Regarding social support, according to Mariano et al. (2021), the balanced use of technology can be associated with higher levels of social support due to the possibility of technological tools corroborate with relationships through online interactions. For this reason, digital natives and generations born into technology can have an advantage. Before the pandemic, the research conducted by Vilas-Boas et al. (2017) identified significant differences regarding social support and generations. The study results show that younger generations tend to perceive higher social support levels than older generations. However, the study conducted by Shimura et al. (2021) during the pandemic showed no significant differences in social support and generation. An ANOVA test in our sample revealed a dependency on generation ($F(3, 422) = 5.21$, $p = 0.002$). Through a Post hoc analysis, we found a significant difference between Baby Boomers and Gen Z, Baby Boomers and Millennials and Baby Boomers and Gen X. In sum, we can conclude that Baby boobers are the ones that felt more the impact of remote work, presenting lower levels of social support (average = 2.37) in their social job resources compared to the other three generations (see figure 16).

Figure 15: Generational differences in remote work professional isolation

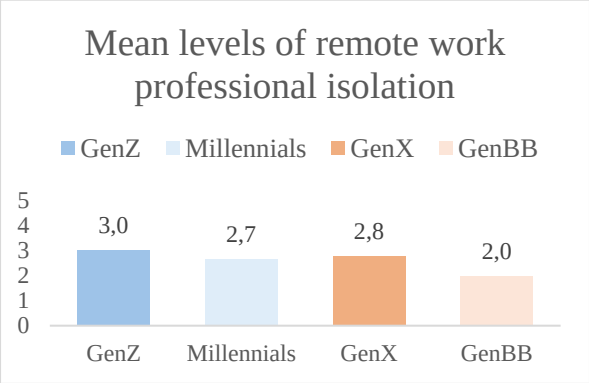
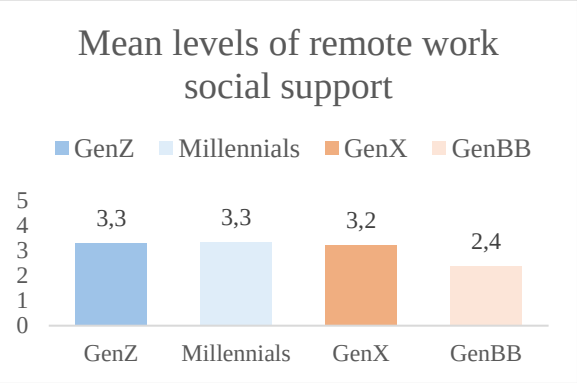


Figure 16: Generational differences in remote work social support



As remote working can influence levels of perceived autonomy, the study conducted by Heyns & Kerr (2018) evaluated the levels of autonomy across generations. The results have shown that compared to other generations, Millennials reported a higher sense of autonomy. However, all four generations presented higher levels of perceived autonomy. In our sample, we were not able to find a dependency in autonomy on generations in remote working ($F(3, 422) = 1.68$, $p = 0.170$). All four generations presented higher levels of autonomy when working remotely (see appendix 14).

9.2 Technostress

As mentioned before, organizational demands to adapt to new technologies can lead to technostress if not well balanced (La Torre, De Leonardis, and Chiappetta 2020). The current literature about technostress and the relation with generations also diverge. Nimrod (2018) suggests that older individuals perceive more technostress because, unlike the digital generation of Gen Z and Millennials born into technology, older individuals introduced to the usage of technology at a later age, having more difficulty adapting to the use of ICTs (Nimrod, 2018).

In contrast to this research, the study conducted by Hauk, Göritz, and Stefan Krumm (2019) showed that older individuals perceive a lower level of technostress than younger coworkers. They suggest that older individuals tend to have less maladaptive behaviors toward technology when experiencing stress. Ragu-Nathan (2008) also found higher technostress levels in younger users than

old coworkers. Oksa et al. (2021) emphasize that despite some studies are showing that young generations have a positive attitude toward technology, the increasing usage of ICTs is destroying the barriers between work and non-work activities. Thus, individuals work overtime, negatively impacting organizational satisfaction and productivity.

In our study, using a ANOVA test, we were able to find a dependency of techno-invasion on generation ($F(3, 441) = 3.08$, $p = 0.028$), however no dependency regarding on techno-overload and generation was found ($F(3, 440) = 1.62$, $p = 0.184$) (see figure 17). The Post hoc analysis shows a significant difference between Gen Z and Baby Boomers regarding techno-invasion (see figure 18). Baby Boomers tend to disagree that they are having an impact due to the usage of ICTs (average = 1.9). In contrast, the younger generation Gen Z tend to feel more the impact of techno-invasion (average = 4.0).

Figure 17: Generational differences in Techno-Overload

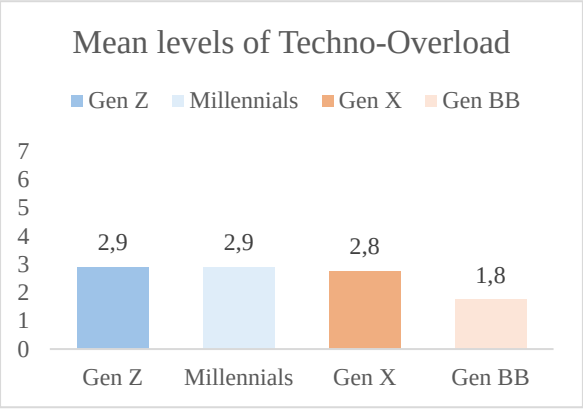
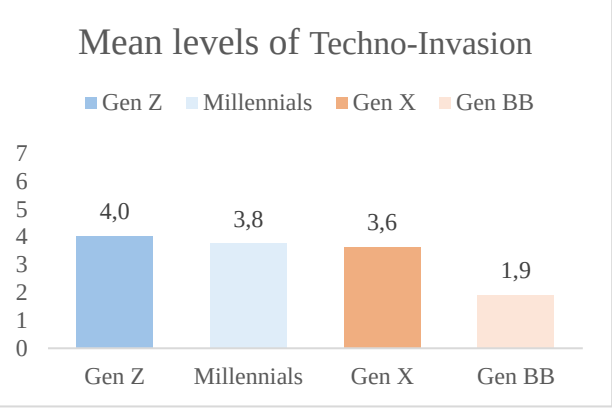


Figure 18: Generational differences in Techno-Invasion



9.3 Well-being

As described in chapter 1, some specific characteristics can be found in each generation. According to the literature, Millennials tend to prefer to work in meaningful jobs. Gen Z wants to find opportunities with social impact, Gen X seeks work-life balance, and Baby Boomers prefer to look for opportunities and achieve goals.

Meaning of work is one of the main characteristics associated with well-being. The recent survey conducted by Korolevich (2021) showed that Gen Z is the generation facing more work-life

balance problems, followed by Baby Boomers. The study also showed lower levels of finding the meaning of work in both generations. In contrast, Millennials are the most fulfilled with their work, and 60% of the participants affirm that they could find meaning and purpose in their jobs. The research conducted by Magni & Manzoni (2020) also showed that Millennials tend to expect more regarding the meaning of work from their jobs compared to other generations.

In our data, using an ANOVA test, we were able to find a dependency of the meaning of work on generation ($F(3, 441) = 4.35$, $p = 0.005$). A significant difference between Gen Z and Millennials was found through a Post hoc analysis. Millennials tend to present higher work meaning levels (average = 3.78) than Gen Z (average = 3.47) (see figure 19).

Other characteristics, such as procrastination, can also influence the well-being of employees (Yang, 2021). The research conducted by Beutel et al. (2016) revealed that higher levels of procrastination were found across the younger generation (between 14 and 29 years old) and declining compared to the old ones. In our data, through an ANOVA test, we were able to find a dependency of procrastination on generation ($F(3, 174) = 4.51$ $p = 0.004$). The Post hoc analysis shows a significant difference between Gen Z and Gen X, and Gen Z and Baby Boomers. In accordance with the research conducted by Beutel et at. (2016), the youngest generation presents higher levels of procrastination compared to the oldest generations (see figure 20).

Figure 19: Generational differences in meaning of work

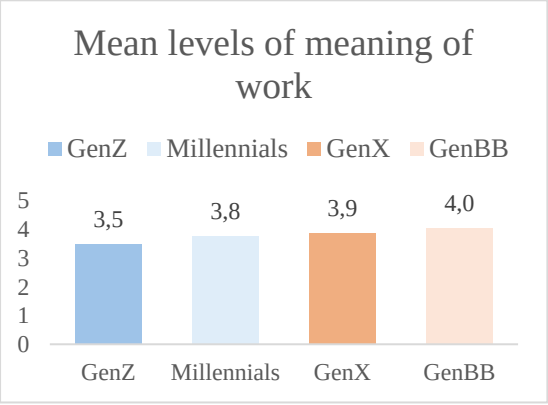
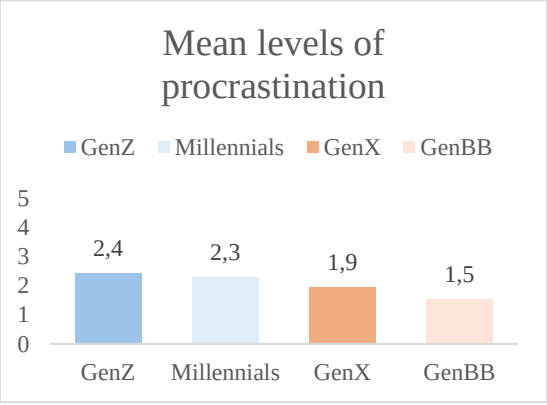


Figure 20: Generational differences in procrastination



10. Recommendations

The results of our previously discussed sample responses lay the foundation to prioritize recommendations. Our sample has high levels of procrastination as they tend to procrastinate „half of the time“(see fig. 10) and also indicate to only receive social support “some of the time”. (see fig. 6) and feel professionally isolated (see fig. 5) “some of the time”. These findings indicate that recommendations should firstly focus on reducing procrastination and professional isolation, as well as increasing the levels of social support. Thus, these three variables represent “first-tier” recommendations.

The results from our overall sample show contrast in the perceived amount of both techno-invasion and techno overload, as some participants feel high levels of technostress while others feel lower levels. Due to these contrasting answers, an average that indicates a “neutral” response towards techno invasion (see fig. 7) and -overload (see fig. 8) is inherently created. However, recommendations on reducing levels of technostress are needed for participants who indicated higher levels of such. Seeing that there is also a large part of the sample who aren’t experiencing technostress, the recommendations for techno-invasion and overload have a secondary priority. Thus, techno-invasion and techno-overload represent “second-tier” recommendations.

Our sample shows overall high levels of remote work satisfaction (see fig. 3), meaning of work (see fig. 9), and job autonomy (see fig. 4), which indicates a lower need for recommendations. Even though there is always room for improvement, recommendations should prioritize more the more pressing issues of level of procrastination, social support, and professional isolation. Due to this, remote work satisfaction, meaning of work, and job autonomy represent the “third-tier.”

10.1 First-Tier Recommendations

10.1.1. Procrastination

Procrastination is a moderate issue in our sample, and, on average, participants tend to procrastinate between "some of the time" and "half of the time." Looking at the three sub-set samples, significant differences in procrastination were found between generations. A significant difference between Gen Z and Gen X, and Gen Z and Baby Boomers. The youngest generation presents higher levels of procrastination compared to the oldest generations. The analysis on gender and industries didn't yield any significant differences. According to our model, procrastination negatively correlates to social support, as well as the meaning of work, and positively correlates with professional isolation and techno-invasion. Thus, decreasing the levels of procrastination may positively impact employees' remote work experience, levels of technostress, and well-being.

Seeing that procrastination correlates with professional isolation, it is to be expected that similar recommendations may apply. If managers create a career plan with their employees and discuss progress steps as well as possible obstacles on a weekly basis, it could motivate employees to stay diligent and procrastinate less. With a set action plan and concrete goals, employees are able to see which impact their work in the present moment can have for their next steps, which may increase their work meaning. This can be extremely important for the younger generation, which is now entering the market and apparently presents higher levels of procrastination. Managers can also implement an accountability partner program within their teams, in which employees who actively want to procrastinate less are paired together, set goals for themselves on a daily basis, and regularly check in with each other. Employees will partially have to take over the responsibility of reducing their procrastination if companies choose not to constantly monitor them, and therefore granting more autonomy. However, managers should equip their employees with the right tools on how they can achieve their desired results.

On an individual level, employees should firstly define boundaries by creating a designated space in their own home to work in, so they can minimize disruptions and maximize concentration levels. When working on a project, managers should help team members set intermediate milestones and deadlines, so that employees know where to start and don't enter a state of avoidance due to a lack of clarity and accountability. Employees should also be aware of their individual productivity cycles and take advantage of. For instance, if individuals know that they have greater concentration in the morning, they should start with more difficult tasks early. Lastly, managers should inform employees on productivity practices such as the "Pomodoro technique" where workers alternate between scheduled periods of working and resting.

10.1.2. Professional Isolation

Due to the sudden shift to remote working and no in-person contact, informal and face-to-face conversations have naturally been reduced, which has implications for collaboration and perceived professional isolation. Through our analysis, significant gender and generational differences were found in terms of professional isolation. Looking at gender, women were more likely to feel they were missing employee support and face-to-face contact as well as opportunities to be mentored and be in the loop when compared to men. In terms of generations, younger individuals, especially from Gen Z, are struggling more to adapt to professional isolation. Our general sample shows a medium degree of professional isolation, as the sample perceives it "some of the time."

However, this leaves room for improvement as professional isolation is negatively correlated to social support, remote work satisfaction and positively correlates to techno- overload, techno-invasion, and procrastination, as can be seen in our model (see fig. 11). Due to its strong influence on other factors contributing to remote work experiences, technostress, and wellbeing, the level of professional isolation should be reduced. To combat professional isolation, Farrer (2019) suggests three perspectives that need to be considered, namely resource isolation, opportunity isolation, and

development isolation. Resource isolation refers to the overwhelming experience workers may have when they need to find resources virtually, such as a work form or contact, alone in-home office (Farrer, 2019). Firstly, companies could implement cloud-based software for all documents and collaboration tools to ensure that all employees have equal access to resources. However, adequate onboardings on how to efficiently use the software need to be carried out so that employees know how to help themselves, influencing their sense of autonomy and ability to collaborate.

Opportunity isolation embodies the saying "out of sight out of mind," as the lack of visibility and informal conversations in remote work may allow employees to be overlooked for assignments or opportunities (Farrer, 2019). In a remote work setting, managers need to shift their views of productivity measurement since they can't always "see" the work which is being done. Productivity, and therefore means for promotions and opportunities, needs to be tracked using more tangible measurements. Using KPIs to measure if individual performances are effectively meeting the objectives proposed by the organization, as well as feedback to help employees grow professionally and raise the standard of service quality, can also combat opportunity isolation. In line with this recommendation, creating a "career plan" with employees may also help to reduce missed opportunities. Everyone should fill out a form with predefined questions such as "where do you see yourself in 1 year", "what skills do you want to learn", "how do you envision your next steps to get there". Using weekly One on One meetings, this data will serve as the foundation for managers to track progress, support their employees in defining and reaching their goals, as well as increase employees' recognition. Career plans could be especially useful for employees feeling a higher level of professional isolation as a set plan gives an individual more accountability and managers more transparency when it comes to career goals. This recommendation is especially useful for females and Gen Z as they are more vulnerable to professional isolation, according to our data.

Lastly, development isolation needs to be considered to ensure that employees are equally mentored and engaged in the workforce (Farrer, 2019). Building a network is a crucial element of

reducing professional isolation since the observation of strategies and success from others may allow inspiration for individual growth. Thus, along with company culture, management should encourage and facilitate the building of employees' individual networks. This can, for instance, be achieved by implementing "roulette coffee chats" where employees are randomly paired, and each individual is sent the name of the other. Employees need to actively contact each other, meaning they may choose to participate or not. This would give employees the opportunity to network outside their own circle, widening their perspectives. In addition to this, monthly town hall meetings where employees can connect with each other and discuss company strategy, vision, and next steps with higher superiors can be used to improve development opportunities. On a more individual level, mentoring systems provide less experienced or underrepresented employees with valuable insights and guidance, which may help them achieve their career aspirations. Since our data show that women are more likely to feel professionally isolated compared to men, companies should initiate a "women in leadership" mentoring program, acting as a catalyst to women's networks and empowering them to widen their access to knowledge and support.

10.1.3. Remote Work Social Support

As mentioned in chapter 3.3, social support is an essential resource during remote working to avoid loneliness, as social support can increase online social interaction and fulfill belonging needs. Also, a fundamental job resource to accomplish tasks during remote working (Wang et a., 2021). Our data show significant differences regarding social support in industries and generations. In industries, we found a substantial difference between the Secondary and Quaternary sectors, being the Quaternary sector the one that is receiving higher levels of social support. In generations, when compared to the other three generations, Baby Boomer are receiving lower social support. Our model shows that social support correlates positively with the meaning of work and negatively correlates with techno-invasion, professional isolation, and procrastination.

Social support is a powerful resource when working remotely. Aspects of the workplace need to assist social connections between employees and lead to a better remote working experience. Companies can promote time for social activities while working remotely through online team buildings, increasing the feeling of belonging and trust between colleagues. Also, virtual coffee dates and weekly icebreaker meetings can be implemented. It is an opportunity for chatting between colleagues to create engagement and restore energy inside the team. In times of remote working, actively celebrating colleague's accomplishments became extremely important. It is a chance for team members to recognize their co-workers, socialize, and get to know each other, creating a feeling of connection. Buddy systems for new employees inspire a friendly work environment and employee engagement for new and old employees. This can be a specific recommendation for Baby Boomers. It is a chance for them to be buddies of new employees and share all their experience and knowledge about the organization. For the industries, we recommend laying a specific focus on digital inclusion. Further, companies need to assess macroeconomic risk factors in a more precise way to combat any sector-specific turmoil, as we have seen during the pandemic. Finally, it is essential to highlight that organizational culture also plays a crucial role in facilitating a positive and friendly work environment. The encouragement of communication and social support inspires and motivates co-workers to work together for a mutual purpose.

10.2 Second-Tier Recommendations

10.2.1. Technostress

As mentioned in chapter 4.3, the use of ICTs accelerated through the shift to remote work, potentially blurring the lines between work and non-working activities. Looking at techno-invasion, significant differences were identified between generations, while the subsamples of gender and industries showed no differentiation. In generations, a significant difference between Gen Z and Baby Boomers. Gen Z perceives higher levels of techno-invasion. Our model (see fig. 11) shows that techno-

invasion negatively correlates with social support and positively correlates with professional isolation, procrastination, and techno-overload. Techno-overload showed no significant difference in the sub-samples gender, generation, or industries. However, a trend of increased techno-overload with each economic sector could be observed. According to our model (see fig. 11), techno-overload negatively correlates to meaning of work and positively correlates to professional isolation, remote work intensity, and techno-invasion. Seeing that techno-invasion and techno-overload have significant overlapping relationships with other variables and influence each other, recommendations on reducing technostress overall may be more efficient.

In order to reduce technostress in the workplace, managers should first educate their employees on what technostress is and how they can identify the negative impacts of technostress. With this awareness, employees are able to take immediate action and seek help before more serious consequences unfold. In order to not be overwhelmed by too much information at once, employees can filter their emails so that the ones which require an immediate response are displayed at the top of the mailbox. Employees can also block incoming messages for a specific time if they know they require total concentration in a task. Technostress may also result from a poor work-life culture, where employees feel that they are not allowed to "unplug". Thus, managers should continuously encourage employees to set boundaries or when they are online and offline from work. The screen time of employees could be tracked, and a reminder to "unplug" can be sent once employees exceed a certain guideline. On an even higher level, governmental legislation may help to improve technostress by following Portugal's recent law, which states that companies will be fined if employees are contacted outside of their normal working hours (Minder, 2021). Using such legislation would help to enforce a more effective safety culture within a company and would avoid unfair advantages for workers who may still choose to stay "connected".

10.3 Third-Tier Recommendation

10.3.1 Remote Work Autonomy

Our survey results indicated the strongest relationship between remote work autonomy and satisfaction. Even though the subsample analysis did not present any differences between gender, generation, and sector, a general recommendation to increase or keep the autonomy at a sufficiently high level is essential to continue to ensure a positive outlook towards working remotely. Here, the corporate culture is, particularly in demand. If strict task supervision is part of the daily work, it should be questioned whether other mechanisms can be introduced that promote greater autonomy for the employee. The first element in increasing autonomy and reducing supervision is handing over greater trust to your workforce. Past studies revealed the immediate effect of trust on employee self-efficacy, which is necessary to accomplish tasks at an above-average level. It enables personnel to improve their individual belief about their abilities to accomplish certain duties. As this belief is significantly related to job performance, trusting your employees, and enabling them to experience independent success can lead to enhanced performance and thus boost remote working experience (Varshney and Varshney 2017). The emphasis should be on results and not on the underlying process. Leaving control of the working process to the employees increases autonomy. The leadership understanding of managers must focus on supporting rather than controlling the work. Especially micro-managing employees can lead to remote work exhaustion and decreased job commitment.

10.3.2 Remote Work Satisfaction

Remote work satisfaction significantly affects productivity, performance, and ultimately job satisfaction. Due to the continuous implementation of the working model during Covid-19 and with great certainty beyond, it is of upmost relevance to understanding the drivers of effective telework. Our results showcase varying remote work satisfaction for generations and industries. Generation Z tends to be less satisfied with remote working compared to older generations. This might be due to the greater

experience of decreased social support and professional isolation as employees of Gen Z had to start their careers in a remote setup with limited chances to embed into the organization. Further, our results made differences between occupations apparent. The secondary sector might have lacked critical job resources, which were more common in the quaternary sector. Regardless of the many possibilities of why subgroup differences exist, it is clear that different people have different job resources.

Therefore, highlighting the need for more customized remote work arrangements. In line with that, we see transparency and communication as the pillar for effective telework models. As our survey demonstrated, it seems like there is no one fits them all solution to provide successful remote work. As a result, companies need to listen carefully to their employees' concerns and doubts and integrate them into their decision-making process. One example of this is that companies can conduct surveys on various matters such as remote work setup models or remote work activities. In addition, certain decisions should be left to the employees themselves. How often one is able to work from home or when one starts working are highly dependent on multiple individual factors. That’s why giving the decision autonomy to the workforce while just setting up a general framework can increase remote work satisfaction significantly. Moreover, in an uncertain environment, a clear vision from upper management regarding future work models is crucial. While reducing insecurity, it gives employees a clear idea of what will happen and provides room for adjustments. By doing so, the general anxiety towards change can be reduced, and training or coaching becomes more effective. Finally, we believe a platform where concerns but also ideas regarding improvements of remote working are shared can increase satisfaction. Firstly, it gives the opportunity to stay connected in a disconnected environment, and secondly, it helps to put troubles into perspective. Often the impression of not being alone and being aware of the issues colleagues are facing can reduce one self’s strain and reduce the job demands arising through telework. In view of the sectoral differences in remote work satisfaction, it is certainly also crucial to provide employees with tailor-made training on the use of new ICTs. On the other hand,

employees beginning their careers in a remote setup should gain particular attention. Career days, mentorships, and regular virtual gatherings can help in changing the attitudes for the better.

10.3.3 Meaning of work

Meaning of work is one element presented in the model of well-being and guides individuals to find purpose in their actions. At the workplace, it also gives a feeling that your job is essential to making a difference. Our data show high levels of meaning of work, and a significant difference in subsample generation was found. The younger generation, Gen Z, tend to present lower meaning levels at work than Millennials. Our model also shows a negative correlation between the meaning of work and procrastination.

Meaning of work is a crucial feeling for individuals. Thus, companies need to be in line with their employees' purpose. The communication of the company goal is essential to build trust and give a sense of belonging. Also, they should encourage employees to use their skills and have autonomy on the job, increasing their motivation and sense of being part of something bigger. As previously mentioned, social support has a positive correlation with meaning of work, so a friendly environment where employees can inspire each other is also vital for organizations.

11. Limitations and future research

Several limitations need to be acknowledged throughout this paper. Firstly, our sample lacked representativeness in certain sub-groups. Looking at generations, the Baby Boomer subgroup is merely represented by three individuals in the third survey, firstly making it harder to find significant differences and secondly making findings less meaningful. In the case of gender, the sub-group “diverse” had to be excluded from analysis entirely due to its lack of representation with only one member. In the future, audiences from different sub-groups should be targeted directly as participants in order to ensure a more inclusive analysis. Another limitation in our sample can be attributed to the large proportion of participants (31% in total) who were either doing an internship or were employed

as working students (see appendix 7.). This is due to the fact that participants were mainly gathered from our direct contacts where many individuals haven't entered full-time employment yet.

The method through which the survey was distributed also posed several limitations. The first limitation is due to the fact that the surveys were sent out at three different time points. Even though this was done in order to minimize the common biased method, it greatly impacted the response rate with each new survey. This led to an overall decrease of around 60% of all participants between the first and second surveys. A contributing factor towards this drop rate may be due to the fact that participants were asked to include their email addresses in order to receive each consecutive survey. Many participants chose not to disclose this information, thus hindering the possibility of completing the complete set. A last limitation of the survey is the risk of participants answering in a socially desirable manner, and thus impacting the reliability of the data, especially since answers could be traced back to a specific email.

12. Conclusion

The goal of our report was to measure the impact of individual and organizational properties towards remote work, technostress, and well-being. Further we intended to understand the interplay of the topics which were often regarded as stand-alone subjects. With our novel approach to regard these matters through gender, generations, and industries, we managed to enhance existing knowledge. Making use of an unparalleled external event our goal was to better understand the drivers of the observed topics. As many organizations and corporations expect remote work to be the "new normal" in the future, a variety of studies are required to broaden the current knowledgebase. Especially in light of the forthcoming challenge of designing organizational regulations and work arrangements. Our study revealed that practical implementations need to consider the specific resources of employees. Applying the JD-R model to our analysis helped us to identify emerging job demands and resources in a more precise way. This can make the implementation of remote work more efficient, reduce technostress and increase satisfaction regarding the working arrangement and thus well-being.

Our study revealed the importance, but also, the need for further actions to address social support and professional isolation in a remote work setup. Moreover, procrastination turned out to be a concern worth examining more profoundly. Technostress indicated direct links to the intensity of remote work and the perception of social support. This should make companies more aware of the effects such a transition could have on their employees. While finishing the report, the global pandemic shows no sign of ending soon. Thus, we urge research to continuously make efforts to understand the effects of remote work and technostress. Our report indicated divergence for subgroups, further research could add on the findings and work out the root cause of those differences. Furthermore, we believe that besides, gender, generations, and industries far more characteristics are impacting the topics. Here again, researchers could assess more factors such as nationality, corporate function, or hierarchy level. We believe that our report demonstrated the need to investigate implications of remote work, technostress, and well-being in light of different considerations. Finally, we hope that our results and subsequent recommendations can aid managers by defining action plans to increase remote work satisfaction while decreasing technostress.

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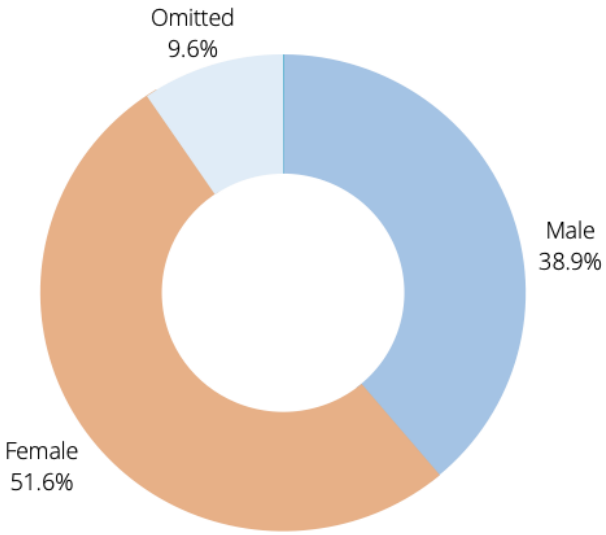
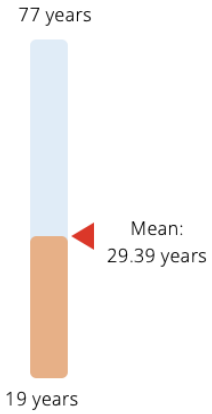
11. Appendix

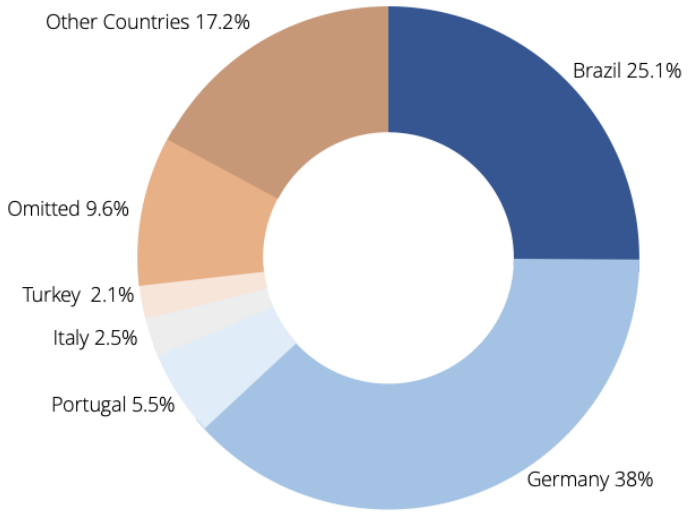
Appendix 1: Graph of gender distribution



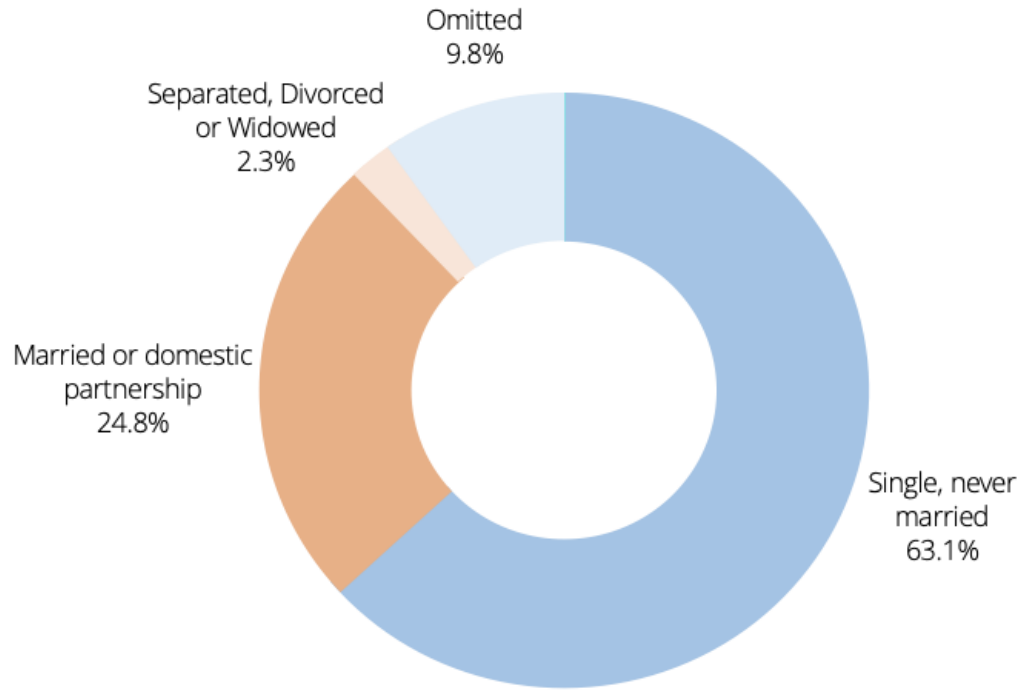
Appendix 2: Graph of average age distribution



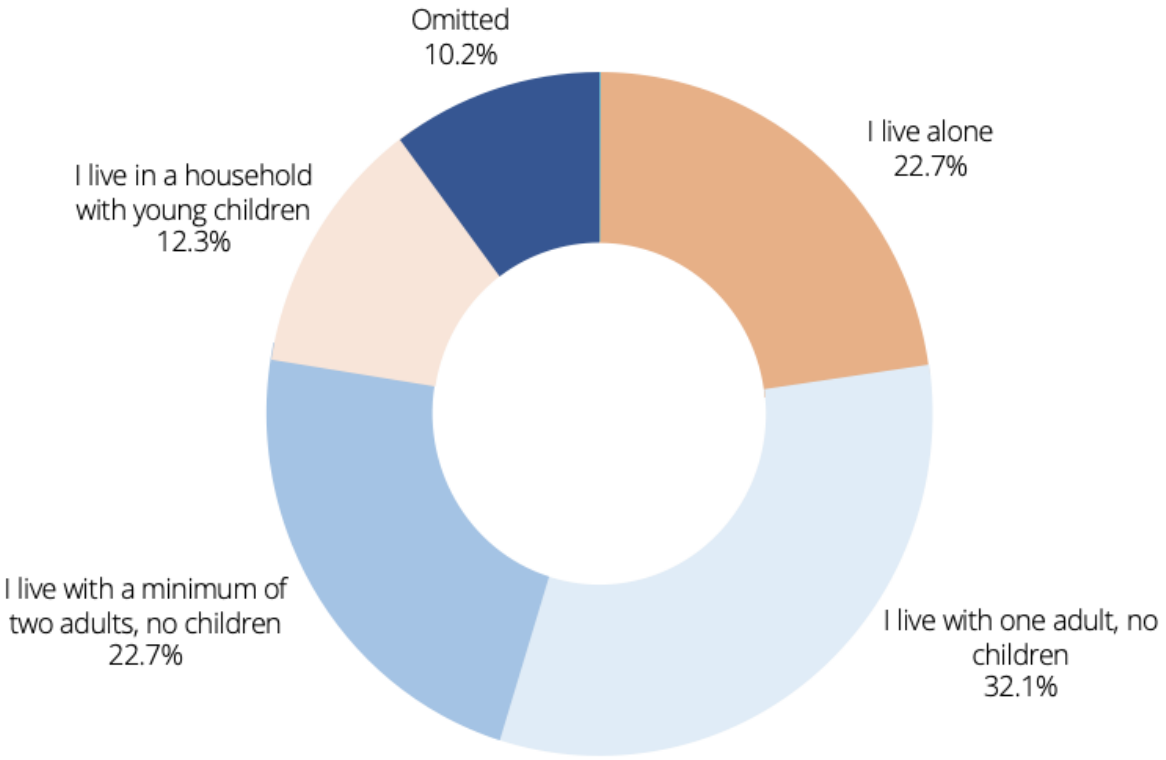
Appendix 3: Graph of nationalities distribution



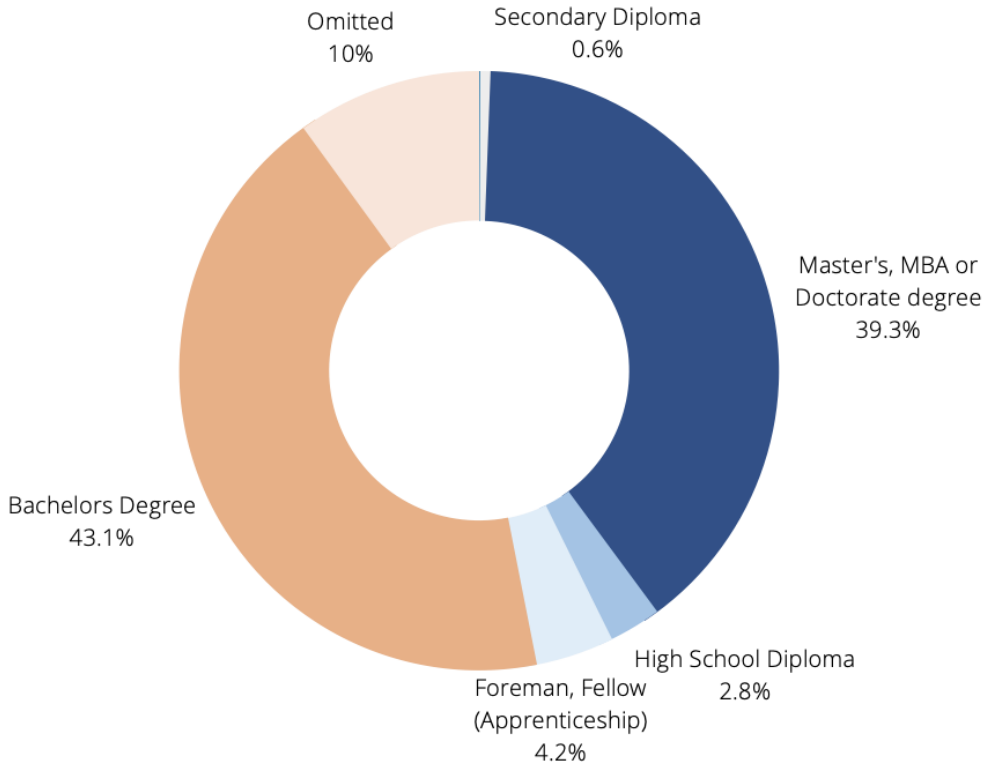
Appendix 4: Graph of marital status distribution



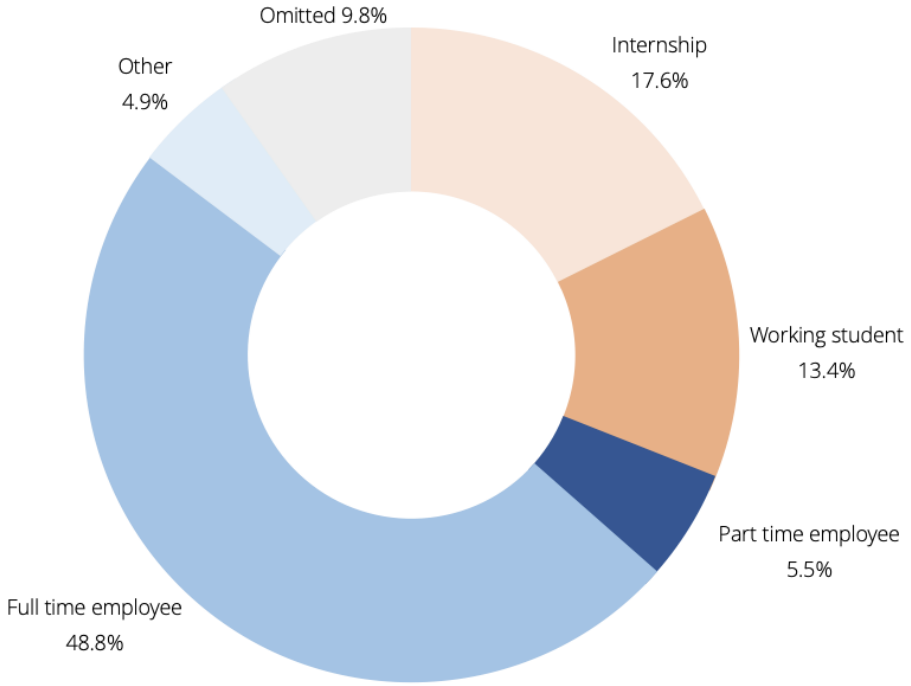
Appendix 5: Graph of household composition distribution



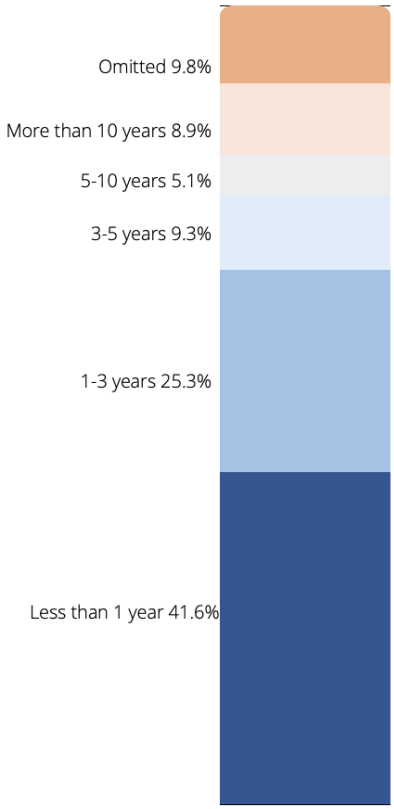
Appendix 6: Graph of education distribution



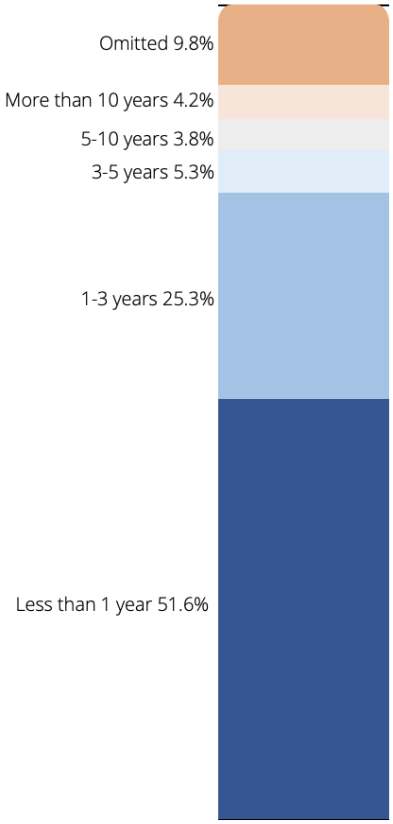
Appendix 7: Graph of most recent employment status distribution



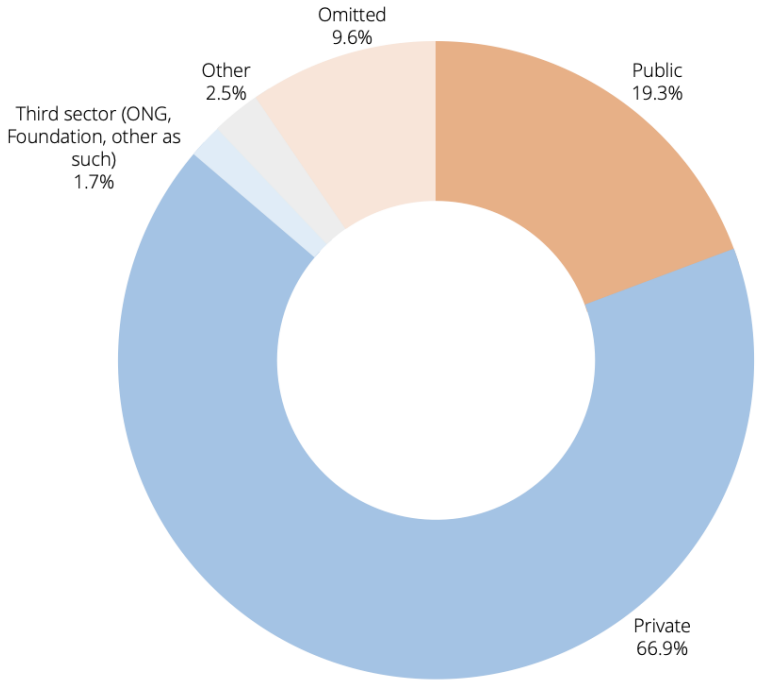
Appendix 8: Graph of time in current employment distribution



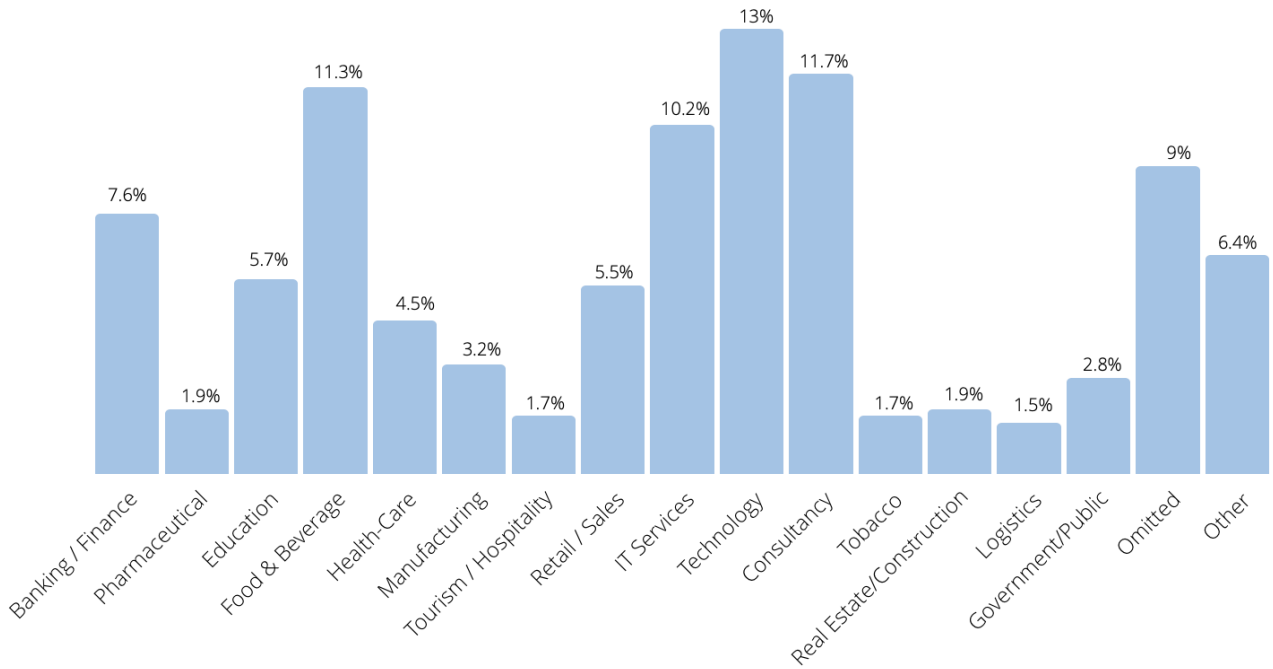
Appendix 9: Graph of time working with current manager/supervisor distribution



Appendix 10: Graph of industry type distribution



Appendix 11: Graph of industries distribution



Appendix 12: Table of significant correlations between measures

		Prior experience	Remote Work Intesity	RWSatisfaction_t1	RWSocialSupport_	TI_t2	TO_t2	MW_t2	COL_t1	PC_t3
Prior experience	Pearson Correlation	1	.111*	.114*	.041	-.037	-.022	-.002	-.151**	.110
	Sig. (2-tailed)		.020	.017	.385	.561	.733	.978	.002	.144
	N	442	442	442	442	245	244	245	411	178
Remote Work Intesity	Pearson Correlation	.111*	1	.285**	.254**	.053	.150*	-.092	-.084	.021
	Sig. (2-tailed)	.020		.000	.000	.405	.019	.153	.088	.785
	N	442	442	442	442	245	244	245	411	178
RWSatisfaction_t1	Pearson Correlation	.114*	.285**	1	.312**	-.125	-.055	.053	-.354**	-.110
	Sig. (2-tailed)	.017	.000		.000	.051	.395	.409	.000	.143
	N	442	442	461	442	246	245	246	411	178
RWSocialSupport_t1	Pearson Correlation	.041	.254**	.312**	1	-.137*	-.007	.206**	-.280**	-.176*
	Sig. (2-tailed)	.385	.000	.000		.032	.909	.001	.000	.019
	N	442	442	442	442	245	244	245	411	178
TI_t2	Pearson Correlation	-.037	.053	-.125	-.137*	1	.533**	-.110	.254**	.206**
	Sig. (2-tailed)	.561	.405	.051	.032		.000	.081	.000	.008
	N	245	245	246	245	252	249	252	231	165
TO_t2	Pearson Correlation	-.022	.150*	-.055	-.007	.533**	1	-.159*	.171**	.100
	Sig. (2-tailed)	.733	.019	.395	.909	.000		.012	.009	.203
	N	244	244	245	244	249	249	249	230	164
MW_t2	Pearson Correlation	-.002	-.092	.053	.206**	-.110	-.159*	1	-.128	-.392**
	Sig. (2-tailed)	.978	.153	.409	.001	.081	.012		.052	.000
	N	245	245	246	245	252	249	252	231	165
COL_t1	Pearson Correlation	-.151**	-.084	-.354**	-.280**	.254**	.171**	-.128	1	.201**
	Sig. (2-tailed)	.002	.088	.000	.000	.000	.009	.052		.009
	N	411	411	411	411	231	230	231	411	
PC_t3	Pearson Correlation	.110	.021	-.110	-.176*	.206**	.100	-.392**	.201**	167
	Sig. (2-tailed)	.144	.785	.143	.019	.008	.203	.000	.009	1
	N	178	178	178	178	165	164	165	167	183

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

Appendix 13: Variables Cronbach Alpha

Variables	Cronbach Alpha	Number of Items
Remote Work Previous Experience	-	
Remote Work Intensity	-	
Remote Work Satisfaction	0.862	3
Remote Work Social Support	0.624	3
Remote Work Autonomy	0.779	2
Professional Isolation	0.869	6
Techno-Invasion	0.740	4
Techno-Overload	0.867	5
Procrastination	0.846	8
Meaning of Work	0.904	9
Total	0.310	10

Appendix 14: Generational differences in remote work autonomy