Tackling technology and social ties: the stressful implications of organizational videoconferencing on employees during COVID-19

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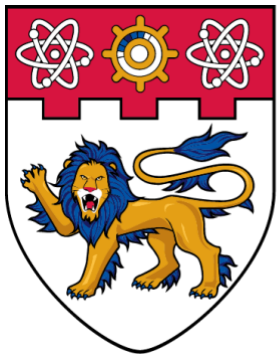

NANYANG TECHNOLOGICAL UNIVERSITY
SINGAPORE

TACKLING TECHNOLOGY AND SOCIAL TIES: THE STRESSFUL IMPLICATIONS OF ORGANIZATIONAL VIDEOCONFERENCING ON EMPLOYEES DURING COVID-19

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WEE KIM WEE SCHOOL OF COMMUNICATION AND INFORMATION

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A thesis submitted to the Nanyang Technological University in partial fulfilment of the requirement for the degree of Master of Communication Studies

2022

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Contents

Summary

The outbreak of the Coronavirus Disease (COVID-19) across the world in the first quarter of 2020 impelled organizations to drastically move their workforce to a remote working or a Work from Home (WFH) setup, where physical interaction was ceased indefinitely. Videoconferencing soon became the predominant mode of organizational communication. However, extensive use of videoconferencing led to repercussions among remote working employees such as technostress, both in terms of the stress experienced from the technology of videoconferencing as well as from the employees' estranged relationships such as family, roommates, friends, and colleagues and managers. There has been a gap in the research on stress, strain, and coping from videoconferencing in an organizational context, especially among employees of different hierarchies, and its repercussions from a socio-relational perspective.

With technostress as the theoretical framework, this study explored the techno and socio-relational stressors of videoconferencing, the strains incurred, and the coping measures adapted by employees to counter the stress from videoconferencing in Singapore. Through interviews with 30 fulltime WFH employees in Singapore across various industries, and 7 diary studies from the interviewees, and by using qualitative data analysis, the study examined how employees experience socio-relational stress more than technostress as they switched to videoconferencing during the pandemic and what coping strategies they employ to manage the strains they experienced. This study suggested a relook at the existing concepts of videoconferencing and technostress which are applicable to the incumbent working scenario and provided a perspective into employees' changing relationship dynamics from remote videoconferencing, especially employees across different hierarchies.

CHAPTER I

Introduction

The outbreak of the Coronavirus Disease (COVID-19) across the world in the first quarter of 2020 (World Health Organization, 2020) impelled organizations to drastically move their workforce to a remote working or a "work from home" (WFH) setup, where physical interaction was ceased indefinitely. This overnight transition also saw a shift in organizational communication patterns, which moved from a traditional mix of face-to-face and digital to purely digital patterns, leading to a sharp increase in the use of technology (Vargo et al., 2021). The most popular among these digital patterns has been videoconferencing, with organizations adapting various online apps such as Zoom, Microsoft Teams, etc., to restore social interaction among employees (Riva et al., 2020).

Videoconferencing, a virtual mode of communication consisting of both audio and video elements, has many advantages from an organizational communication perspective—it allows for full two-way communication of content, reduces negative environmental impact, and creates better accessibility and reach among remote working employees (Rop & Bett, 2012). On the flip side, videoconferencing can be stress-inducing. Studies have shown problems with internet connectivity and distorted audio and video quality (Irani, 2019), along with concerning ramifications such as technology and information overload from its various components known as technostress (Zito et al., 2021). These relate to the impact of videoconferencing. Lockdowns also deprived individuals of social connection (Liu et al., 2021). Studies have also shown ramifications such as restricted amounts of time individuals spend online and a lack of informal communication and social interactions with colleagues (Blanchard, 2021), which relate to how Information and Communications Technologies (ICTs) affect employees' interpersonal relationships. While ICTs such as emails and phone calls have shown to create stress among employees (Vuillème, 2020), studies exploring the

impact of videoconferencing during COVID-19 on employees through the stressors experienced and strain incurred are nascent and scarce. While the impact can be measured in various spheres, this study particularly deals with the concepts of stress on employees from videoconferencing, the strain or the psychological effects experienced by them, and the coping mechanisms they have been using to counter the stress.

This study becomes especially relevant in the context of Singapore. Since its first confirmed case in January 2020, Singapore reported a local outbreak of COVID-19 and implemented drastic measures to curb the spread by suspending both foreign visitor entry and local mass gatherings (Tandoc Jr & Lee, 2020). At an organizational level, there was an overarching fear of contracting the virus from colleagues as the virus' symptoms replicated those of the common flu, and the Singaporean work culture of being physically present despite cold or flu symptoms posed a threat to the safety of the employees (Shorey et al., 2020). As a result, Singapore, being one of the busiest economies in the world, went into a formal nation-wide lockdown in April 2020 (Kuguyo et al., 2020) with the introduction of the circuit breaker from April to June 2020 (Baker, 2020) and making WFH the default option (Sin, 2020; Mohan & Min, 2020). This resulted in decreased mental health, stress, and fatigue among employees in Singapore (Rajah, 2021). A study also showed that 61 percent of WFH employees in Singapore felt stressed, which was more compared to COVID-19 front liners (Teo, 2020). With prolonged WFH which extended throughout 2020 and 2021, and continuing to be the default option even as of September 2021 (Mohan, 2021), it becomes imperative to explore stress among employees especially in relation to their use of videoconferencing, which has increased by 86% among users, out of which 44% respondents reported feeling drained from videoconferencing during the pandemic (Nanyang Technological University, 2021).

Thus, some gaps in research are evident. Given the recent and unprecedented nature of the pandemic, research on videoconferencing while remote working and manoeuvring virtual relationships are still nascent and have many unanswered questions. Additionally, studies have often measured technostress through employees' levels of technological support and use of ICTs (Salazar-Concha et al., 2021) rather than accounting for their roles or work-life balance (Ragu-Nathan et al., 2008). Furthermore, there has been a gap in studying individual employee experiences from technostress, as employees are usually studied as an organisational collective entity (Lickel et al., 2000; Blanchard, 2021).

This study aims to explore how stress has been experienced by employees in Singapore as they turn to videoconferencing following pandemic-related restrictions. For this, I will delve into the literature of stress and map links between stress and employees' workplace, their interpersonal relationships, and their use of videoconferencing, and explore the strains experienced by them from both sources, and the coping mechanism they have implemented to counter the stress. These will be studied using the phenomenon of technostress (Brod, 1984), which delves into the stress resulting from technology overload, invasion, uncertainty, complexity, and insecurity (Ragu-Nathan et al., 2008). With this framework, the study aims to explore the stressors and strain that employees experience as they use videoconferencing while working from home (WFH), thus providing more nuance to our understanding of the how employees experience an abrupt shift in working processes that require both technological and sociological adjustments, and what coping mechanisms are engaged with. Such understanding can help to benefit employees, organizations, and organizational communication studies. Additionally, it also seeks to explore how these stressors, strains, and coping mechanisms are perceived across the different hierarchies in organizations, especially the difference in experiences between frontline or entry-level employees and managerial or mid-level employees.

Thus, in the following chapters, I will examine current literature on videoconferencing and stress; Chapter II will examine literature on videoconferencing and technostress to explore the technological factors of the study. Chapter III will examine literature on stress by looking at its components of stressors, strain, and coping, thereby exploring these constructs from a social perspective, along with providing a synthesis and proposing the research questions.

CHAPTER II

Literature Review – Technostress and Videoconferencing

This chapter examines current literature on videoconferencing as a technology tool, as well as on technostress, which is used as both an implication of videoconferencing as well as the theoretical framework for this study.

Videoconferencing

Defining Videoconferencing

Videoconferencing has been classified as a technology tool (Lowden & Hostetter, 2012), a mode of communication (Denstadli et al., 2012), a way of virtual interaction (Littman, 1995), and a system for effective online meetings (Henry & Shellenbarger, 2020). As a technology tool, videoconferencing comprises of audio and visual elements and audio-visual components such as videoconferencing software, screens and microphones, and internet connection, making it easy to transmit information between two or more members (Hart, 2019). Lowden & Hostetter (2012) have described videoconferencing as a technology that includes various telecommunication systems and devices used to transmit voice, pictures, and data to produce a face-to-face-like feature. As a mode of communication, videoconferencing has been defined as a "manifestation of computer-mediated communication phenomena" and has been studied extensively through its media richness and social presence (Ferran & Watts, 2008, p. 1566). It comprises video and audio elements that transmit feed real time, making it the most effective mode of communication in terms of media richness after face-to-face communication (Denstadli et al., 2012). Videoconferencing, thus, becomes a valuable tool in terms of both transmission of data (technology) and message (communication) with an almost face-to-face like comparability, establishing its dominance in today's technology-driven environment.

Origin and Development

While there is little information on how videoconferencing as a term was coined, video communications have been around ever since the debut of the motion video telephone by the American Telephone and Telegraph Company (AT&T) at the 1964 New York World's Fair (Noll, 2013). Videoconferencing evolved in the subsequent years and through the 1980s, it was digitized by using the Integrated Services Digital Network (ISDN) lines for transmitting audio and video. With the expansion of the internet, videoconferencing involved Internet Protocol (IP) or web-based transmission, which reduced its cost significantly and enhanced its quality and transmission speed (Dudding, 2009). The technological advancements to the otherwise restricted properties of videoconferencing such as teleconference rooms and desktop-videoconferencing (Tang & Isaacs, 1992), have shifted the focus from the technology of videoconferencing to the value it provides from its social interaction (Lowden & Hostetter, 2012). In his study, Wang (2004) proposed a typology on the criteria for effective videoconferencing:

> Thus, there are three major factors that determine relevant criteria: the synchronous and interactive nature of the learning environment, the distance among the learners and education provider, and oral/aural-visual interaction. On the basis of these considerations, the following criteria are proposed: (a) acceptable video and audio quality, (b) reliability, (c) user friendliness, (d) other features of pedagogical value, and (e) low cost (p. 382-383).

Over the decades, these properties have been finessed and sharpened through various technological advancements such as better internet connection, desktops and laptops with better video and audio quality, low to free of cost videoconferencing applications and reliable tools and characteristics, making it an easy-to-use tool for users of all ages and preferences. For the same reason, the recent years have brought along more adaptable and remotely

accessible forms of videoconferencing platforms such as *Zoom, Cisco WebEx, Skype, Microsoft Teams*, and *Google Meet/Google Hangouts* (Henry & Shellenbarger, 2020).

Connectivity through Videoconferencing

With such advancements made, videoconferencing has become an asset to communication. One of its key advantages is its synchronous nature, as it enables real-time interaction among participants from remote environments, while allowing them to avoid travelling (Rist & Hewer, 1996; Wang, 2004). It also transmits a two-way interaction from one member to another, or even among multiple members (Wainfan & Davis, 2004), making it a dynamic tool which can be simultaneously accessed by several users. For example, applications like *Zoom* have the capacity to hold 100 members during the video meetings, while tools like *Google Meet* can hold up to 250 members and *Microsoft Teams* can hold up to 300 members in one video conference (Tan, 2020). Another advantage of videoconferencing is its exchange of information in terms of documents and presentation sharing (Rop & Bett, 2012), making this a more attractive and cost-effective mode of visual communication (Panteli & Dawson, 2001). It also helps in reduced environmental impact and lessens stress and fatigue from travel (Rop & Bett, 2012), and is geographically accessible, saving large amounts of money in international travel and trips (Lu & Peeta, 2009).

According to Blanchard (2021), videoconferencing enables "copresence," i.e., being seen or heard, which is facilitated by its technology (p. 292). She explains its contribution to group communication:

> How does copresence affect the "groupyness" (i.e., entitativity) of online groups? Specifically, the copresence aspect of "being seen" may be more important in small groups, explaining our need to be on video with our remote work groups. However, as groups' size increases, for example, large organizational meetings and the copresence perception of "seeing others" may become more important. (p. 294)

With these merits to connectivity, videoconferencing has been studied extensively in various technology and communication-related frameworks. Effective videoconferencing use transpires from an amalgamation of factors, including environmental factors such as good internet bandwidth, videoconferencing infrastructure, and improved picture and sound quality (Larsen, 2015), personal factors such as outcome expectations (Lin et al., 2013), and other factors like contextual factors such as interaction and motivation factors such as interest (Giesbers et al., 2013). Many frameworks on technology acceptance and use have also predicted videoconferencing usage through the individuals' intentions and behaviors, such as the Technology Acceptance Model (TAM) (Davis, 1985), the extended TAM (Davis & Venkatesh, 1996) and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003). Videoconferencing has also been studied to affect or influence consequences such as user perceptions and social presence (Lowden & Hostetter, 2012), quality of experience (Schmitt et al., 2017), distance learning effectiveness and academic performance (Florit et al., 2012), and even virtual collaboration (Wainfan & Davis, 2004).

In summary, videoconferencing has been an essential tool in various fields such as B2B, B2C, education and health care; and organizations have utilized it for collaboration, improving their internal and external communication, and most recently, to ensure effective remote working since the spread of the COVID-19 pandemic and the resulting lockdown (Stone, 2020). Exploring the use and characteristics of videoconferencing in an anomalous environment with limited to no social interaction and other external influences can help in understanding its impact on employees further. Hence, this study focuses on organizational videoconferencing among employees post the onset of the COVID-19 pandemic. To understand this impact, it is essential to understand what organizational videoconferencing comprises of, and the changes it has incurred post COVID-19.

Organizational Videoconferencing post COVID-19

Videoconferencing has become one of the prevalent modes of organizational communication as it supports employee collaboration with the inclusion of all stakeholders and organizers on one platform (Creighton & Adams, 1998; Sonnenwald et al., 2003). It is also a tool which ensures that employees can be seen, heard, and socially connect with their teams (Lowden & Hostetter, 2012). Additionally, the nature of videoconferencing also provides attributes that meet the communication needs of managers, making them more likely to facilitate organizational communication via this platform (Pease, 1989).

Since the onset of the COVID-19 pandemic, videoconferencing has been the preferred mode of communication for individuals, especially to keep in touch with family, friends, etc., as most contact and communication have been done through individuals' own phones or videoconferencing apps (Lebow, 2020). Videoconferencing statistics found by *GetVoIP* depict that 43% of remote and in-house teams use videoconferencing, 78% of corporates use a video calling software, 83% of businesses with over 250 employees are likely to purchase video calling tools, and 27% of small businesses are likely to purchase video calling tools (Stone, 2020). Videoconferencing services like *Zoom* have also seen a ten-fold increase in their usage, while internet services in general have increased from 40% to 100% in their usage post-lockdown, and with organizations moving to a remote working environment, their preference for these advanced videoconferencing apps have increased, as there has been an increase in investments towards bandwidth expansion, network equipment, and cloud-based software (Pandey & Pal, 2020). Settings on the new platforms such as *Zoom, Microsoft Teams,* etc., have caused familiarity, as employees worldwide have started utilizing videoconferencing for different scenarios such as "virtual morning teas" or "after work (social) zooming" (Richter, 2020). Organizations have encouraged their employees to use videoconferencing extensively to maintain social connection, continue meetings, and discuss ideas and plans. Furthermore, this kind of participation and employee presence has also

become one of the prerogatives for performance management, as WFH employees lack social interaction which could act as a hurdle when discussing performance goals (Aguinis & Burgi-Tian, 2021).

On the flip side, however, videoconferencing can be stress-inducing on many accounts. There is evidence that ICTs have been associated with anxiety, psychological distress, and high levels of stress, especially when there is a disconnect between the user and the technology environment (Obrovac Sandqvist et al., 2020). Problems with internet connectivity leading to distorted audio and video quality (Irani, 2019), restricted amount of time individuals spend online, along with differing physical environments and lack of informal communication and social interactions with colleagues (Blanchard, 2021) could add to the already fear-inducing environment of a pandemic. From a socio-relational perspective, videoconferencing can create hindrances in employees' relationships with their colleagues, supervisors, and leaders, as it has before shown to cause a lack of non-verbal cues and delay of signals (Wegge et al., 2007), in addition to lowered mutual trust and loyalty (Kydd & Ferry, 1994). Furthermore, it may be an unsuitable platform for employees engaging in interactions like conflict resolution and negotiation due to a possibility of information ambiguity and need for clarification and feedback (Sedgwick & Spiers, 2009).

While there are studies on videoconferencing in the organizational context, especially post COVID-19, there remains a gap in research with respect to the psychological and behavioural ramifications individuals perceive from both technological and social stressors because of videoconferencing in a remote work environment. Often, the effects and impact of technostress are studied in the context of the technology itself; they have often only delved on technology usage as an outcome or technological impact on the system rather than on the individuals themselves (Christian et al., 2020). Additionally, there has been a lack of studies on the impact of videoconferencing on an employee's interpersonal relationships, including

both work and personal relationships which have been impacted since the pandemic. This paves a way to explore the extent of videoconferencing impact on employees' work experience since the pandemic—both in terms of the challenges with the technology as well as the repercussions from videoconferencing on employees' social spectrum through the concept of stress. By using the framework of technostress (Brod, 1984), this study seeks to explore the above dimensions.

Technostress

Technostress has been defined as a "modern disease", which refers to the stress caused by "one's inability to cope or deal with ICTs in a healthy manner" (Ayyagari et al., 2011, p. 832, Brod, 1984). Developed by Craig Brod in 1984, this phenomenon refers to the stress accumulated from factors such as overdependence of ICTs, constant updates and upgrades and introduction of new advancements, multitasking, social isolation, and distractions from work (Ragu-Nathan et al., 2008), having theoretically backed itself by the Cybernetic Theory of Stress, Coping, and Well-Being in Organizations (Edwards, 1992; Fischer & Riedl, 2015) and the Transactional Model of Stress and Coping (Lazarus & Folkman, 1987). While technostress has been used both as a construct as well as a theoretical framework across various fields such as education (Qi, 2019), social media usage (Maier et al., 2015), and individual trait studies (Lee et al., 2014), it has mostly been studied in an organizational context, due to its relevance and magnitude of impact among employees (Salazar-Concha et al., 2021).

Historically, research into technostress bases its inception on three factors—an increasing dependence of individuals and employees on ICTs, a gap in the knowledge of performing tasks using the increasingly updated ICTs, and the impact of ICTs on the work environment and work culture over the past decades (Ragu-Nathan et al., 2008). These factors have changed the dynamics of the relationship between individuals and their use of

technology. With the rise of new technologies and the advent of more real-time, online ICTs such as emails, web-based phone calls, chats, and videoconferencing, individuals have become susceptible to information and work overload, invasion of privacy and private life, the inability to deal with complex technology, job security, and uncertainty (Tarafdar et al., 2007). With this, Ragu-Nathan et al. (2008) suggested that technostress is created among individuals through factors such as techno-overload, techno-invasion, techno-complexity, techno-insecurity, and techno-uncertainty.

Techno-overload refers to an overload of high-speed usage of technology over an extended period of time, or an overload due to a change of work habits or work speed as a result of using new technology (Ragu-Nathan et al., 2008; Tu et al., 2005). *Techno-invasion* refers to connectivity overload or invasion which muddles work-life balance (Tarafdar et al., 2007). This results in less time being spent with family or for oneself, as the same time is directed towards learning or adapting to the new technology (Tu et al., 2005). *Techno-complexity* refers to a gap in knowledge when adapting to advanced ICTs. This leads to employees making extra effort to learn about the diverse features of the new ICTs (Zainun et al., 2020). *Techno-insecurity* refers to the fear of failure or loss of one's job due to gaps in understanding technology (Ragu-Nathan et al., 2008). Through techno-insecurity, employees also have the fear of being replaced by people who are more skilled with ICTs, creating a stress of upskilling themselves (Tu et al., 2005). *Techno-uncertainty* refers to uncertainty created from upgrades and changes in functions of ICTs (Tarafdar et al., 2007). This causes individuals to feel disturbed due to the constant upgrades and shifts in the ICTs (Zainun et al., 2020).

Technostress, and the Focus on Employee Wellbeing

The characteristics of the technology used, the users of the technology, and the context of usage help determine the impact of technostress among individuals (Tarafdar et al.,

2015). With this, employees and working professionals are especially prone to technostress due to their work conditions and requirements. For example, studies have shown that the stress derived from excessive use of technology impacts employees' turnover intentions, productivity, organizational commitment, and job satisfaction, in addition to depleting manager-employee relationships and impacting bottom-line employees (Ayyagari et al., 2011), along with job autonomy, IT pace and task independence (Suh & Lee, 2017).

Especially since the onset of the COVID-19 pandemic, organizations have focused on employee wellbeing by helping in reducing employee stress and uncertainty through strategic, transparent, and positive communication (Lee et al., 2020), such as spreading positivity among employees through reiterating messages on values and culture, leadership, and teamwork (Bojadjiev & Vaneva, 2021). Organizations communicated to employees on various important topics such as social distancing policies, self-isolation requirements, working from home guidelines, health and wellbeing, and changes in IT infrastructure such as inclusion of new videoconferencing apps, and have used channels of communication such as videoconferencing apps, emails, intranet websites, newsletters, and phone calls for dissemination of such information (Macnamara, 2021).

However, the organizational focus on employee wellbeing and their use of ICTs for the same reason has resulted in two drawbacks. First, ICTs have a compounding effect on individuals, adding technostress to them instead of resolving their existing stress (Vuillème, 2020). Second, the methods adapted by organizations towards employee wellbeing are construed in an organizational context, where the benefits are inclined towards job satisfaction, employee turnover intention, and organizational commitment (Marchiori et al., 2019), rather than individual wellbeing and improvement of their psychological and behavioral states (Christian et al., 2020). Additionally, employees' organizational commitment as a consequence of technostress has been measured only through their levels of

technological support and use of ICTs (Salazar-Concha et al., 2021) rather than their roles or work-life balance, which are included in the factors or creators of technostress (Ragu-Nathan et al., 2008). This creates a gap between the focus on wellbeing from an organizational perspective and from an employee perspective.

The aim of this study is to address the above two drawbacks. First, this study discusses technostress in the context of videoconferencing, which has become a large component of the ICTs used during the pandemic (Blanchard, 2021), and the recent mass adoption of videoconferencing can help in bringing new insights into the concept of technostress. In an era where both technology and stress are at an all-time high, this concept will help in understanding their relation, especially in the context of videoconferencing. Technostress will thus be used in this study to identify the various characteristics of videoconferencing that lead to stressors (e.g., role ambiguity, technology overload), which in turn leads to psychological and behavioral strain among remote working employees, both in terms of their use of videoconferencing during remote working, as well as hindrances and impact on their interpersonal relationships.

Second, this study places technostress in the literature of the broader concepts of stress, strain, and coping, to explore the repercussions of videoconferencing on employees' strains through their interpersonal relationships, and the coping mechanisms implemented by employees to counter these strains. Technostress essentially helps in determining the strain caused from different stressors incurred from technology (Ayyagari et al., 2011; Suh & Lee, 2017). Strain from technology is the response of an individual when incurring different stressors, and studies which implement the theory of technostress often delve into the psychological and behavioral responses of an individual (Wang et al., 2008). Studies have often used survey questionnaires to analyze technostress from an organizational perspective through variables such as job satisfaction, individual performance and productivity,

innovation, and work and technological overload (Salazar-Concha et al., 2021). This study seeks to gather qualitative accounts of their individual experiences with technostress and the strains they encounter, especially with regards to their psychological wellbeing and their interpersonal relationships, and further add to Technostress, which is an evolving field yet to reach the point of maturity (Salazar-Concha et al., 2021).

In this chapter, I have examined both videoconferencing and technostress in relation to the aim of the study. To better understand and explore technostress in the broader literature of stress, the next chapter will examine literature on the concepts of stressors, strains, and coping, and will explore videoconferencing from a social perspective.

CHAPTER III

Literature Review – Stress

This chapter examines the literature on stress, especially in relation to videoconferencing, from a socio-relational perspective. While studies have shown that stress among individuals has been on the rise due to lifestyle and technology changes (Fink, 2010), it has become especially prevalent among WFH employees during the pandemic (Vinkers et al., 2020). To understand the role of videoconferencing and its repercussions in terms of stress, this chapter examines studies on stress through its components such as stressors, or the triggers or stimuli of stress; strain, or the outcome or psychological response to stress; and coping, or the measures taken by individuals to counter the stress (Wheaton & Montazer, 2010; Lazarus & Folkman, 1987).

Stress

Defining Stress

While stress is a term generically familiar with everybody, it has a vast history of research. Stress can be described as "a highly personalized phenomenon that varies between people depending on individual vulnerability and resilience, and between different types of tasks" (Fink, 2016). In his study on the history of stress, Fink (2010) found that stress had been observed since the ancient times through philosophers like Aristotle and Hippocrates, but it had been adapted into a concrete concept with Claude Bernard in the late 19th century, followed by Walter Bradford Cannon in the 1930s with his concept of *homeostasis*, i.e., "an immensely complex dynamic and harmonious equilibrium" which is threatened by external forces or "stressors", rendering it in a state of disharmony (Chrousos & Gold, 1992, p. 1245). However, it was Hans Selye, M.D, also dubbed as the "father of stress", who defined stress as, "the non-specific response of the body to any demand" (Fink, 2016, p. 12). Stress arises

from any condition in which an individual is aroused or feels fear or anxiety, triggering a fight or flight response (Fink, 2016).

Stress has many detrimental effects on individuals. It affects an individual's metabolism, growth, reproduction and thyroid function, gastrointestinal function, immune system, and triggers arousal while suppressing sleep (Chrousos, 2009). Prolonged stress can lead to acute diseases such as allergies and pains, or chronic diseases such as neuropsychiatric issues or even cardiovascular or metabolic disorders (Chrousos, 2009) and has shown to cause a lower quality of life (Ribeiro et al., 2018). The World Health Organization (WHO) has also labelled stress as the "Health Epidemic of the 21st Century" (Fink, 2010; HCA Healthcare Today, 2019). Additionally, stress is the top health concern of high school students and 80 percent of job holders in the USA, 91 percent of Australians feel stressed about important parts of their life, around 450,000 workers get physically ill from stress, and 86 percent of Chinese workers have reported feeling stressed (Patterson, 2021). Risk factors such as age and marital status, individual factors such as chronic illnesses, sleep deprivation and mental health concerns, and lifestyle factors such as job issues are consequential to stress (Cheung & Yip, 2015). The life crises of today and our lifestyles have made individuals more prone to high stress levels, resulting in health damage (McBride, 2021), and the numbers have only been growing with crises related to the economy (Langley, 2013; Can et al., 2019; van Giesen & Pieters, 2019), the internet and social media (Lim & Choi, 2017; van der Schuur et al., 2019), and most recently the COVID-19 pandemic (Vinkers et al., 2020; Salari et al., 2020), causing stress in employees working from home during the pandemic.

Organizational Stress and the Role of Communication

Organizational stress has become a very concerning and evident category of stress. Lukić & Lazarević (2018) defined workplace stress as:

> Workplace stress, occupational stress, organizational stress, stress on job are the expressions used to describe stress experienced by employed people. Even though workplace stress is only one of the numerous types of stress that a person is exposed to, it is considered to be among the most distinctive ones, because employees spend most of their time at work which represents the foundation of their existence and standard of living. (p. 218)

Chronic stress in the workplace can result in burnout. The WHO has classified burnout as a "syndrome", which is a result from "chronic workplace stress that has not been successfully managed" (Burg, 2019). Cities like Tokyo (Japan), Mumbai (India) and Seoul (South Korea) are some of the cities with the highest workplace burnout in a study (Corporate Vision, 2019). A survey in 2019 had also found out that 92 percent of working Singaporeans feel stressed (Life Skills Institute, 2019). Statistics have also noted that workplace stress has estimated to cause 120,000 deaths and $190 billion of healthcare costs yearly (The American Institute of Stress, 2019).

There are many forms of stress in an organizational context. Staff shortages, conflicts, technical problems, efficiency problems, role frustration, short lead times and too many meetings have deemed immensely stressful (Parasuraman & Alutto, 1981). Caplan (1971) connected organizational stress and heart disease to job characteristics like work overload and deadlines, which has been plaguing occupational groups like tax accountants, medical students, white collar workers and professionals with general responsibilities. Adverse life events and perceived racial discrimination have also contributed towards organizational stress, in combination with low institutional support and excessive work demands (Zambrana et al., 2021).

Communication thus becomes a catalyst in the measures to tackle work stress, and build productivity and employee wellbeing (Zito et al., 2021). A study by Eisen et al. (2008)

found that stress-management interventions like mini-relaxation sessions have helped reduce the high stress among employees. Especially since the onset of the pandemic, organizations have leveraged ICTs for communication in a remote working or teleworking environment, as it not only helps in employee engagement and interaction, but also in solving employee isolation (Davies, 2021). But while ICTs have been involved to tackle pandemic-related organizational stress, they themselves have caused stress among employees. For example, email and phone usage have led to stress and distress in a remote environment. Undoubtedly, extensive use of emails and phone calls have had detrimental effects on employees, especially with regards to emails sent out-of-hours, and poor email etiquette (Vuillème, 2020). Emails additionally also take longer to respond and receive from colleagues. However, there has been a boom in videoconferencing usage since the pandemic, making it the focus of this paper. While newer studies have delved into the importance and significance of videoconferencing, as well as its side effects like videoconference fatigue, there has been a gap in studies of the different kinds of stressors experienced by employees by videoconferencing in an organizational context during the pandemic, the psychological and behavioural strains experienced by employees, and the coping mechanisms implemented by them to counter it. Here, the terms *stressors*, *strain,* and *coping* have been used to depict the nature of stress and response to it, as analysed in conjunction in prevalent models on stress like Selye's biological stress model of 1956 (Wheaton & Montazer, 2010) and Lazarus & Folkman's (1987) transactional model of stress and coping. These three terms are thus explained as follows.

Stressors, Strain, and Coping

The terms stressors, strain and coping are interconnected and interdependent, and have been studied in conjunction especially in the context of organizational stress (Osipow & Spokane, 1984; Richard & Krieshok, 1989; Cope, 2003). These studies have depicted

workplace or occupational stress as an environment which comprises of (a) stressors, which are the stimuli or perceptions of stress, leading to, (b) strain, which is the outcome or psychological response to stress and, (c) coping, which is the measure taken by individuals as well as organizations to counter the high stress. Studies have shown that the higher stress leads to higher strain, and higher coping among employees lessens the strain experienced by them (Decker & Borgen, 1993). Thus, stress can be measured in terms of the strain experienced, and coping can in turn affect the amount of strain, making the study of the three concepts in conjunction both relevant and important in studies on stress. These concepts thus become imperative to explore with respect to the videoconferencing-induced stress in this study, especially in the context of organizational stress.

Stressors. What triggers stress? Certain conditions or factors that threaten the inherent equilibrium of an individual are called stressors. Wheaton & Montazer (2010) have defined stressors as, "conditions of threat, challenge, demands, or structural constraints that, by the very fact of their occurrence or existence, call into question the operating integrity of the organism" (p. 173). Stressors, collectively, can be categorized based on many factors. In terms of their classification, they can be categorized into physical and psychological stressors. Physical stressors include any physical threats or disturbances, such as external extremes like heat or cold, physical strain, injuries, etc., while psychological stressors include any emotional or behavioral threats that result in fear or anxiety (Johnson et al., 1992). In terms of their nature, stressors can be divided into micro or macro stressors. Micro stressors are those which occur during everyday life, while macro stressors occur at a level of a social system that extends beyond the individuals themselves (Wheaton, 1999).

While these are the broader categorizations, stressors can be individual conditions inducing certain kinds of stress and are not necessarily grouped. For example, catastrophic events, child maltreatment, stressful life events and minority stress can be epidemiological

evidence in the study of alcohol use disorders (Keyes et al., 2011). Similarly, employment instability, employment uncertainty, economic deprivation and economic strain can be described as objective and subjective stressors in relation to employment and income in the study of economic stress (Probst, 2005). Likewise, stressors like family and teacher expectations, attending social events, adjusting and managing romantic relationships, confidence, and not getting financial support also come together to study stress in college going students (Pariat et al., 2014).

The nature of stressors can also lead them to multiply among themselves, leading to stress proliferation, which is "a process in which an initial stressor gives rise to additional stressors, much like ripples spreading outward from a stone tossed into a pond" (Thoits, 2010, p. S45). For example, a study on children's health after experiencing parental incarceration found evidence of intergenerational stress proliferation, which led to depleting health outcomes among children (Turney, 2014). Stressors, thus, can be any isolated or collective conditions causing stress among individuals, either directly or through proliferation. This shows the dynamism of stressors and indicates how prevalent and deleterious stress can be.

Strain. Simply put, strain is the outcome—or response—of stress on individuals. Personal strain, also known as distress, among individuals has been defined by Timberlake (1991) as, "the individual's experienced difficulties with work performance, psychological adjustment, interpersonal relationships, and physical health" (p. 11).

Strain has been classified into various types. In the same study, Timberlake (1991) terms strain as "stress response" which can be categorized as psychological, behavioral, or physiological in nature, with symptoms including "anxiety, irritability, concentration difficulties, avoidance behaviors, sleep disturbances, headaches, backaches, and stomach problems" (p. 7). The Personal Strain Questionnaire (PSQ) developed to measure strain

consists of four scales such as vocational strain (problems with work attitude and quality), psychological strain (psychological problems, emotional problems), interpersonal strain (disruption in interpersonal relationships), and physical strain (physical illness, poor self-care; Layne et al., 2004). In their study on social support with regards to occupational stress and health, LaRocco et al. (1980) have also termed "job-related strains" as job dissatisfaction, boredom, and work overload, while also categorizing physical and mental strains such as anxiety, depression, irritation, and somatic symptoms. Strains can also be behavioral in nature, such as adverse work performance and indulging in smoking or drinking (Cope, 2003). This shows the different kinds of strains caused by multiple stressors in work and life.

Thus, strain has also been studied with various approaches. Richard & Krieshok (1989) have provided a methodology into the measure of strain, which includes physiological, psycho-physiological and psychosomatic methods (electrocardiography (EKG), blood pressure, blood volume, etc.), as well as self-report measures (MMPI, State-Trait Anxiety Inventory, Derogatis Stress Profile, etc.). While these approaches focus more on the medical measures of calculating the strain to provide further consultation and treatment, stress response in individuals also triggers their inherent coping strategies, which measures the kind and amount of strain perceived and handles it accordingly (Matheny et al., 1986).

Coping. Studies on coping heightened in the 1970s and 1980s as the concept became "a major factor in adaptational outcomes such as subjective well-being, social functioning and health" (Lazarus & Folkman, 1987, p. 146). Timberlake (1991) defined coping in terms of, "the resources available that could potentially moderate the effects of stress and strain. These are recreational activities, self-care (e.g., exercise and diet regulation), social support, and rational/cognitive skills (e.g., systematic problem solving)" (p. 11).

Thus, different stressors elicit different coping strategies or methods. Lazarus & Folkman (1987) classified coping in terms of its function and measurement as problem-focused or emotion-focused coping:

> Although it is tempting to classify any given coping thought or act as either problem-focused or emotion-focused, in reality any coping thought or act can serve both or perhaps many other functions, as is usually assumed in psychoanalytic thought. Thus, whereas taking a tranquilizer during an exam or performance may seem to be an emotion-focused act designed to control anxiety, the ultimate purpose may be as much to facilitate performance that might be disrupted by it as to regulate distress. Those who classify coping thoughts and acts on their face, without a contextual basis for doing so, risk confusion. (p. 152)

Coping can be as small as taking a break or falling asleep to a more focused strategy such as therapy or psychological consultation, or medical treatment. Accordingly, in their study on occupational stress, strain and coping, Layne et al. (2004) noted occupational coping factors from the Personal Resources Questionnaire (PRQ) resources, including scales on recreation (deriving pleasure from recreational activities), self-care (personal or self-care activities to alleviate stress), social support (gaining support from people around the individuals), and rational or cognitive coping (using cognitive skills on encountering work-related stress). By adapting such strategies, coping may lead to consequences such as alteration of perceptions like personal characteristics and one's environment, alteration of desires such as performance aspirations, and alteration of importance with regards to giving importance to such perceptions or desires (Edwards, 1988). However, coping strategies cannot always be wholly favorable, and unfavorable factors differing in their variability and stability may result in additional coping mechanisms (Lazarus & Folkman, 1987).

Thus, in conjunction with stress, strain, and coping, the relationship of each concept becomes perspicuous. Decker & Borgen (1993) define strain as an outcome which results from the stressors and the coping mechanisms the individual uses to deal with the stress. They summarize the relationship of the three concepts as:

> The overall picture of stress, strain, and coping is rather clear. Higher levels of occupational strain result from higher occupational stress and lower coping resources. These basic direct effects between stress-strain and coping-strain are commonly found. (p. 470)

Osipow & Spokane (1984) have also clarified that strain is a function of stress and is moderated by coping. This interconnection of the three concepts thus becomes relevant in the study of technology-related and socio-relational stress, strain and coping measures which result from organizational videoconferencing post COVID-19. Thus, this paper seeks to address this very dimension by understanding the impact of videoconferencing on employee stress by (a) exploring the characteristics of videoconferencing and determining its "stressors", (b) exploring the stress formed in employees, along with the resulting "strain" reflected in them and, (c) exploring the "coping" mechanisms used by employees to counter this stress.

Employee Stress during COVID-19

The pandemic has induced a lot of fear, anxiety, and stress for employees in a remote working environment where social and emotional cues are limited in contrast to their high social or psychological concerns, health-related issues, and economic concerns (Kniffin et al., 2021). Individuals have developed anxiety-related behaviors with regards to their perceptions of safety and risk of contagion, information overload and fear of the unknown, quarantine and confinement, stigma and social exclusion, and financial loss and job insecurity (Hamouche, 2020). These factors thus exacerbated by the pandemic can be categorized into psychological

stress, which includes post-traumatic stress disorder, fear and depression, and economic stress, which includes unemployment, poverty, and recession (Islam et al., 2020). However, while these are broader categories, the purpose of this study is to deep dive into the factors contributing to stress with respect to employees' technostress, as well as the stress from their workplace and their interpersonal relationships.

Employee Stress and Technology. A key category of stress has been noted with employees' use of technology during the pandemic. New technologies have become the crux of organizational work, activities, and communication. However, continuous remote connectivity has become a key factor in inducing stress among employees. Use of technology, here, includes emails, chat, calls, and videoconferencing among employees, along with their associated factors such as screen time, internet and WiFi connectivity, new applications and technological upgrades, and more. Studies have shown a drastic increase in the use of technology post the onset of the pandemic (Vargo et al., 2021). Among employees, continuous connectivity and remaining online or at work for longer hours, or "living online" have become some of the stressors affecting them (Irwin et al., n.d., p. 17). Studies have also expounded various technology-related stressors on employees since the pandemic, such as application multitasking, system upgrades, information overload, and technology uncertainty. These factors are collectively referred to as Technostress (Zito et al., 2021), which will be explained and used as a theoretical component for this study.

Employee Stress and the Workplace. The COVID-19 pandemic has contributed towards high levels of stress among employees, both psychological and emotional, especially among younger employees when compared with older employees (Mimoun et al., 2020). Women employees and workers especially have been seen to suffer more severely (Tengilimoğlu et al., 2021), and many due to psychological, financial, and domestic disparities, in addition to gender-based violence than male workers (Malik & Naeem, 2020).

Remote working has also shown to be a challenge for employees. While remote working helps with regards to saved commuting time, office costs and addition and access to new technology, it also contributes towards stressors such as “workplace isolation, family disturbance, peer absence, lack of suggestions to the employees, and working too much or not working at all” (Prasada et al., 2020, p. 11). Statistically, some of the biggest challenges employees working remotely face are difficulties with collaboration and communication, loneliness, and being unable to “unplug” from their work, among other struggles like distractions, procrastination and lack of any absence or vacation (Buffer, 2020). Amid the above concerns, employees were expected to continue their work as usual by delivering on deadlines, upskilling, and reskilling themselves through webinars, etc., and even putting in the same hours of work if not more, which stretched their otherwise capped working hours (Arora & Suri, 2020). Through their study, Waizenegger et al., (2020) also gave an insight into “enforced” working from home, where employees have been facing challenges like restricted mobility and work duty arrangement, while also maintaining a business-as-usual viewpoint. Additionally, a lack of private space, having people in the background, or knowing that their privacy is being compromised can also be stressful for individuals (Marhefka et al., 2020). The restrictions that have been birthed from remote working induce stress among various aspects of an employee in relation to his/her workplace and job. Some critical divisions to this study would be to focus on the strain derived from the stressors related to performance and productivity, appraisal and rewards, relationships with manager and colleagues, work-life balance, overwork and time management, and holidays and breaks.

Employee Stress and Relationships. The pandemic has also seen a shift in the relationship dynamics among individuals towards their family, friends, colleagues, and significant others. These include stressors such as living together without breaks for extended periods of time, sharing one’s workplace, collective frustrations over health, confinement and

financial issues, and lack of private life. In terms of the impact of romantic relationships, including marital, cohabiting, and dating relationships, additional stressors such as contextual and individual vulnerabilities have also been found to impact the relationship quality with dyadic processes such as hostility, withdrawal, lack of support, etc. (Pietromonaco & Overall, 2021). Studies have also expounded on employees' concerns of lack of support from their families altogether and lack of stability in household life, garnering insight into the role of time management and clear communication (Wolor et al., 2020). Employees who are parents have also been seen to be suffering from continuous stress, due to their inability to go outside, food and financial concerns and increased workload with respect to their children, although in some cases familial relationships seemed to have improved (Brown et al., 2020). Another study expounded how partnerships with individuals encountering high levels of stress and those who have been in quarantine have declined, while individuals who have not been under stress have had improvements (Goodwin et al., 2020). Furthermore, the sharing of their workspace with their family, housemates or pets has been difficult for employees, with additional stressors such as conflicted priorities, debris and untidy workspaces, and invasion of space (Travers et al., 2020).

The pandemic itself can be counted as a stressor for impacted relationships among individuals, while also considering additional stressors such as increased role demands, arguments and fights, lack of communication and lack of socialization. This gives us an opportunity to understand the related strains encountered and how employees have been using coping mechanisms to improve their interpersonal relationships.

Technostress and Socio-relational Stress

From the above classifications of organizational stress and stressors, two divisions can be established. Individuals' association with their workplace and interpersonal relationships serve as a social framework for their actions and behaviors, and thus the stress incurred

through these two environments can be categorized into a more socio-relational stress, which not only studies the stress within the perception of oneself, but also other communicators as members of groups (Clark et al., 2020).

Previous studies of stress in the social context have often been linked to the concept of social stress, which studies the social distribution and variations of stress across social strata (Aneshensel, 1992). Aneshensel (1992) had provided a conceptualization of social stress, where aspects such as life events (event-specific stress) and chronic stressors (persistent or recurring stress) determine the stress levels in an individual. However, this concept is a wider approach to studying stress and has also been focused on overload in terms of information, communication, and action (Maier et al., 2014). While isolated studies have studied stress in a social context of individuals based on their identity (Burke, 1991), peer relations (Sontag et al., 2008) and discrimination (Meyer et al., 2008), the stress derived from individuals' socio-relational milieu have yet to be systematically explored. This study seeks to provide a more holistic approach to an individual's stress with respect to his/her social milieu, including self and interpersonal relationships. This can be further established in the socio-relational context of stress.

Similarly, individuals' relationship with technology post-pandemic can provide a more clear-cut insight into the effects of videoconferencing and stress with respect to technology. However, the effect of videoconferencing on an individual from a socio-relational context has seldom been delved into. Of course, through technostress, stressors like role ambiguity, work-home conflict, and invasion of privacy have been studied (Ayyagari, 2011; Suh & Lee, 2017). The socio-relational stress derived from videoconferencing, especially in a post-pandemic environment where relationship dynamics have undergone a sea of change, and the strains incurred from those can be an interesting route to pursue.

Technostress and socio-relational stress have always been studied separately through different contexts, and while some studies link the two (Maier et al., 2014), the direct relation to videoconferencing is lacking. There are various types of stressors that have sprung since the onset of the pandemic, both in a technology-related context and a socio-relational context, leading us to explore the strain—both psychological and behavioural—on employees.

RQ 1: What stressors do employees perceive from their videoconferencing experiences?

RQ 2: What kinds of strain do employees experience from videoconferencing-related stress?

In the same breath, this also paves the way to tap into the coping strategies employees have adapted to counter the stress and strain from videoconferencing, thereby providing an insight into coping in a post COVID-19 work environment and developing a trajectory of the ways employees can cope from any disruptions in near future. Coping thus steps in as testing factor, which can be analysed together with stress and strain, and the magnitude or measure of coping can help determine the extent of videoconferencing-related stress.

RQ 3: What coping mechanisms do employees adapt in response to the strains they experience?

Hierarchical Levels and Strain

To effectively understand the implications of technostress and socio-relational stress on WFH employees, it is also important to understand whether the levels of technostress vary among employees across different levels or hierarchies in the organizations. Literature on employees and their relationship with technology and technostress have often categorized all employees as an entitative group instead of individual employees (Lickel et al., 2000; Blanchard, 2021), due to their experiencing or processing the same information. This leaves

out the scope to explore varied experiences from them, especially in organizations which constitutes different hierarchies (Garicano, 2000).

Some studies on technostress from new ICTs have showed different consequences for different levels or hierarchies of employees. For example, Salazar-Concha et al. (2021) have shown the positive effects generated by technostress on frontline employees, who experienced positive or motivating pressures while using ICTs. Additionally, another study showed that among different hierarchies, managers found ICTs such as emails to be more stressful (Barley et al., 2011). Despite this, little progress has been made in the study of technostress from employee experiences on a hierarchical basis. This study also seeks to explore technostress and socio-relational stress, strains, and coping from individual experiences from different hierarchies, so as to involve different perspectives through their amount and frequency of videoconferencing use.

RQ 4: How do employees from different organizational hierarchies experience stress, strain, and coping?

Synthesis

To summarize, this study seeks to understand how videoconferencing has impacted remote working employees during the pandemic by investigating both techno and socio-relational stress derived from videoconferencing usage, the subsequent strain they have encountered, and the coping mechanisms they practice or seek to practice post COVID-19. In the next chapter, I will propose the method for this study, including the sampling and data analysis.

CHAPTER IV

Method

This study explores the impact on remote working employees through the stress and strain from technostress and socio-relational stress induced by videoconferencing as a mode of organizational communication in a post-COVID-19 work environment. I adopted two qualitative research methods—semi structured interviews and a diary study.

Semi-Structured Interviews

The semi-structured interview is one of the most commonly used qualitative methods (Longhurst, 2010). Due to their free form, semi-structured interviews are well-suited for probing into and following-up, as the questions can be both close- and open-ended (Adams, 2015). Additionally, studies have shown that semi-structured interviews help capture individual beliefs and experiences in detail (Walker et al., 2016). Given the nature of this study, which calls for probing into employees' recollection of their day-to-day experiences of working from home and their use of videoconferencing post COVID-19, semi-structured interviews become useful in deconstructing specific questions into a more free-flowing conversation, especially for topics like stress.

Sampling

After obtaining an IRB approval (IRB-2021-845) from Nanyang Technological University, the interviews were conducted virtually, via the platform Zoom, with 30 employees engaged in WFH in Singapore. One interview was held with a frontline employee, but due to connectivity and background noises, the responses in the audio-recording were unclear, resulting in insufficient data for the analysis. Hence, this interview was discarded, and another participant was included in the study. As Singapore was still in a WFH-only setup at the time of the interviews, employees were recruited through a mix of snowball sampling and criterion sampling, a form of purposive sampling where the cases are selected

as per the criterion of interest (Palinkas et al., 2015). In this case, interviewees were identified through recommendations, and based on the extent of their videoconferencing usage. Additionally, they were also recruited on the basis of hierarchy, which were divided into frontline employees and managerial-level employees, so as to involve perspectives of different levels of employees by their amount of time spent and frequency of videoconferencing use. The interview questions were focused on the dimensions of the impact of COVID-19, videoconferencing use, stress experienced, and changes in their interpersonal relationships. Please see Appendix B for the interview questions.

The employees were interviewed between February and March 2022, with the longest interview being 63 minutes long, and the shortest interview being 24 minutes long. On average, the interviews lasted around 43 minutes. All interviews were audio-recoded on Zoom and were transcribed manually and orthographically, including hesitations, laughs, and pauses (Braun & Clarke, 2006). The length of the transcripts ranged from 13 to 29 pages, with the average length of 21 pages.

Sample Parameters

The participants encompassed various industries in Singapore, including Education, Consulting, Tech, Banking, Pharma, E-commerce, Ministry, Automotive, and Manufacturing. The age range of the participants were between 22 years and 57 years old, while a majority of the participants fell in the age bracket of 22-35 years old (N = 26). Out of the interviewees, 17 were male, and 13 were female employees. Additionally, 18 participants were frontline or individual-level employees, while 12 were managerial or mid-level employees. This was to ensure different perspectives on employees' stress, strain, and coping based on their hierarchies in an organization, which was a prerequisite for RQ4. Interestingly, many employees were new to their organization (N = 12), while some employees remained in their organizations for over 5 years (N = 8). Given the global pandemic, most employees were

WFH full-time (*N* = 24), while some worked in hybrid mode (*N* = 5). Only 1 employee was working full time in office at the time of the interview. The demographic and characteristics of the respondents can be seen in Table 1.

Table 1

Characteristics of Respondents – Interviews

Sample Characteristics	Number (*N* = 30)
Age	
21-35	26
36-55	3
56 and above	1
Gender	
Male	17
Female	13
Years in the Current Organization	
Under 1 Year	12
1 – 5 Years	10
5 Years and Above	8
Job Position	
Frontline / Individual-Level	18
Managerial / Mid-Level	12
Mode of Working	
WFH	24
Office	1
Hybrid	5
Currently Living With	
Family	18
Family (with children)	3
Flat mates	4
Partner	2

Furthermore, most interviewees were staying with their families during this time (N = 21), out of which, 2 interviewees were married with children, while 1 participant lived with children in his home. This provided a perspective of the employees WFH with child(ren) at home.

Diary Study

Diaries are self-report instruments that document natural, spontaneous, and retrospective experiences, and "offer the opportunity to investigate social, psychological, and physiological processes, within everyday situations" (Bolger et al., 2003, p. 580). Diary study methods have grown in organizational studies, especially in the contexts of collecting data on employee health and stress, emotions and interactions, and work-life balance (Ohly et al., 2010). This makes this method useful in understanding patterns in employees' videoconferencing in relation to their technostress, and furthermore, in relation to their interaction with their colleagues, friends and family in their own words and reflections. Additionally, they help in capturing activities soon after their completion as against discussing it at a later date, which may lead to forgetfulness (e.g., Hernon et al., 2004). This makes this method useful in understanding employees' reactions and experiences with stress right after a video conference.

Sampling

The diary study followed the interviews, where 7 employees were selected from the 30 interviewees from the criteria of their use of videoconferencing, their availability to participate in the study, and their proficiency in writing and maintaining the diary. As such, 5 frontline employees and 2 managerial-level employees were selected. This accounted for their current experiences with the same dimensions of COVID-19 impact, videoconferencing

use, stress experienced, and changes in their interpersonal relationships for the duration of one week. The diary entries included workdays as well as entries during the weekend, to show the difference between the two, and each entry by the participants was around 1 to 2 sentences in length.

The diary study was a combination of interval-contingent design, i.e., recording at regular intervals (in this case, the end of their working day), and event-contingent design, i.e., recording at the occurrence of an event (in this case, after a videoconferencing meeting; Bolger et al., 2003). A diary document with prompts related to the above dimensions was created online via Google Forms, and was divided into the above two designs through two parts, making it accessible and easy for the employees to fill both after a videoconference meeting and at the end of their day. Participants' diary entries were filled and submitted online every day for the duration of a week, and was and was monitored, collected, and analyzed accordingly. The demographic and characteristics of the respondents for the diary study can be seen in Table 2.

Table 2

Characteristics of Respondents – Diary Studies

Sample Characteristics	Number (N = 7)
Gender	
Male	2
Female	5
Job Position	
Frontline / Individual-Level	5
Managerial / Mid-Level	2
Currently Living With	
Family	2
Family (with children)	2
Flat mates	2

Data Analysis

Given the qualitative nature of the study, the data from both the interviews as well as the diaries was analysed thematically, which can be described as a method for identifying themes and patterns of collective meaning from across a data set (Braun & Clarke, 2012). A deductive approach was used to analyse the data to ensure the codes (Braun & Clarke, 2006), and themes were derived from the concepts of videoconferencing, technostress, and socio-relational stress. I was also aware of my own self-reflexivity when coding the data, which has the potential to influence my collection and analysis (Pezalla et al., 2012). This was realized as I was also in a WFH environment during the onset of the pandemic in early 2020, where my videoconference use had increased considerably, in addition to my classes currently, which were also conducted via videoconferencing. These helped my analyses in terms of increasing the transparency, legitimacy, and validity of my findings (Pezalla et al., 2012).

The coding process was completed by one coder, and in two stages—primary-cycle coding, i.e., categorizing through assigned words and phrases from the data collected, and the secondary-cycle coding, i.e., analysing and interpreting primary-cycle codes into concepts addressing the research questions (Tracy, 2013). From these two approaches, the codes were created in a more iterative manner (Tracy, 2013), so as to giving it more scope for refinement. Concepts and patterns were thus generated from the codes, providing a narrative to the content.

CHAPTER V

Results – Stressors

This study aims to explore videoconferencing among remote working employees in terms of the stressors observed, the strains experienced, and their coping mechanisms, in addition to the differences in these experiences among frontline employees and mid-level employees. These experiences were looked at through two aspects of videoconferencing – the technology of videoconferencing, which involved factors such as the time and duration of the videoconferences, technical and connectivity problems, as well as videoconference settings and application differences, and the socio-relational context of videoconferencing, which involved factors such as employees' interpersonal relationships with their family, roommates and colleagues. For this, technostress (Brod, 1984) was used as a framework for the interview questions and analysis. A closer look was also taken at the definition and understanding of videoconferencing among remote working employees in a post-pandemic environment.

The understanding of the term videoconferencing has changed in the months following the pandemic. While initial studies have defined videoconferencing in terms of its ability to produce a face-to-face like feature through voice, pictures, audio, and data (Lowden & Hostetter, 2012), as well as its high media richness due to its real-time video and audio transmission (Denstadli et al., 2012), the videoconferencing of today is somewhat different. Due to the constant connectivity over videoconferencing apps such as *Zoom*, *Microsoft Teams* and *Google Meet*, etc., most participants were given the leeway of switching on their video cameras depending on the nature of their calls and their personal preferences. While some participants consciously chose to have their video cameras on, others preferred to only have their cameras on as and when requested. This was also something similarly found in the use of their audio. Most participants chose to mute themselves and only used their mics when they wanted to speak in the call. This already shows a shift from the mandatory presence of

video and audio in videoconferencing before, to a choice employees had freedom of making post the pandemic-induced WFH. However, videoconferencing continued to ensure a two-way or multi-way interaction among its users (Wainfan & Davis, 2004), and was used as the key mode of communication in organizations.

Undoubtedly, the interviews and diary studies showed that participants experienced both technostress (especially from techno-overload, techno-invasion, and techno-complexity), as well as socio-relational stress from their interaction and association with their workplace and interpersonal relationships. However, the overall narrative that emerged from both the interviews and diary studies was that the socio-relational stress experienced by the participants from WFH videoconferencing was more pronounced than the technostress. This can be elaborated into the stress derived from the changed relationship dynamics risen from miscommunication and misconceptions from virtual interaction as well as the WFH transition such as sharing one's workplace, lack of private life, juggling work and home relationships, conflicted priorities, and invasion of space (Travers et al., 2020). Through their experiences, it was seen that the participants were used to the constant involvement in and an overdependence on ICTs in their lives. Additionally, as the interviews and diary studies were held in early 2022, almost two years into the pandemic, the participants experienced lesser stress when it came to the technological aspects of WFH videoconferencing, simply because they had experienced it before, accomplished and adapted themselves with the apps, which led to their consequent strains being lesser when compared to the ever-changing relationship dynamics. These differences are further detailed through the stressors found and the strains experienced among the participants.

Socio-relational and technological implications of videoconferencing

RQ1 asked: What stressors do employees perceive from their videoconferencing experiences? The characteristics of videoconferencing, such as the lack of non-verbal cues

and delay of signals (Wegge et al., 2007), as well as lowered mutual trust and loyalty (Kydd & Ferry, 1994) played a considerable role in generating stress among employees. However, the stressors the participants incurred from both the technology of videoconferencing (techno-stressors) and the socio-relational implications of videoconferencing revolved around their interpersonal relationships (socio-stressors).

Techno-stressors

Techno-stressors experienced by the participants were often in conjunction with their changed relationship dynamics during virtual meetings, which can be divided into the stressors from manoeuvring group meetings involving multiple stakeholders, experiencing social anxiety in a virtual setting, as well as battling scheduling conflicts for their videoconferences. At the same time, the stressors experienced by the participants were reminiscent of the three factors of techno-overload, techno-invasion, and techno-complexity.

In terms of techno-overload, participants experienced a surge in their videoconferencing calls, which not only included back-to-back meetings, but also using the technology tool for all kinds of personal and work-related communication. MM5, an associate director at a private data analytics company, recounted:

> "So, so it was not just videoconferencing with my, with-with colleagues about work, but I think and I'm sure it's true for most people that-that videoconferencing with my parents or even my friends back home has been, has increased tenfold, like… Like nowadays my-my parents don't normally, I mean, they never audio-call me. The default is a videocall. Like, and this is again like all thanks to the pandemic [Laughs]."

In terms of techno-invasion, participants expressed their stress of the trickling down of videoconferencing into their private time. MM10, a regional business partner manager at

an educational firm, recounted his experience of taking virtual meetings at the dinner table, during mealtime with his family.

> "Okay, so, I would say, um, you know sometimes where you are, um, you have to, you have to do virtual meetings, um, through lunch hours or uh, during dinner time so, um, when you still need to have dinner with your family or this appointment with your family, then you would bring your work to the dinner or to the lunch and then you kind of work then have, then have your meals concurrently."

In terms of techno-complexity, while most employees did not encounter any stress specifically from the complexity of the videoconferencing apps, a few did experience the stress from consciously learning the features of the videoconferencing apps. FE11, a 39-year old information consultant at a private firm, shared about her challenges of using *Microsoft Teams*, which is different in terms of its usability and interface when compared to apps like *Zoom* and *Google Meet*.

> "I get worried, there was a time that I was really worried about using Teams. As I have never used it, you don't have enough count, so I just do know how to tinkle with Teams, I don't like, I don't like when I'm going all in, I don't know how to manage the, um, system like how you can learn your background, how you can show just one screen, how you can… Like in Zoom, I'm very comfortable Zoom, with all the tools there I know how to use but the other system like Teams, Google, uh, what do you call it…"

However, over a year into the pandemic, participants shared that the stressors were not just restricted to the issues with the WiFi or environmental factors such as noises in the neighbourhood or constructions around, which were easily overcome. The stressors that arose from the employees' videoconferencing were more aligned to manoeuvring their

relationships in a virtual space, thereby providing an insight into the socio-relational stress they experienced from videoconferencing.

The more, the (un)merrier. A key stressor experienced by the participants was manoeuvring group meetings and calls which involved multiple stakeholders and members. Participants experienced stress from the stressors in two extremities, too many people talking in the videoconferences, as well as a lack of participation altogether, or no one talking or responding in videoconferences.

Participants recounted having a "deafening silence" when putting forth a question or waiting for feedback in group calls, which resulted in the stress of not being able to get the message across as well as communicating with a sense of loneliness. MM6, an assistant manager in education at a government-driven firm, shared:

> "So sometimes, um, you know, when its face to face, I found it very easy to just walk in front and just talk to a crowd because, you know, I'm used to that. I'm trained in public speaking. But when it, when it became virtual conference, it was intimidating because the silence was deafening… And I can't tell, there's zero feedback and that was something I wasn't used to it. So I think in the initial parts it was quite crippling and I think a lot of my colleagues have pointed that out as well, we didn't, we felt very alone. And sometimes the loneliness seems a bit anxiety inducing."

FE16, a newly joined digital marketer at an agency, shared how the barrier of being "behind a screen" often withheld employees from speaking in calls:

> "So for example like it's open to the floor and people ask questions like, people don't feel, 'cause you're behind a screen right, so you don't feel like this pressure to say anything because they're like, protected by a screen right, but as compared to in real life, if we talk in a meeting or anything and you get asked a question you feel this pressure like, oh, okay I have to answer, you know. So, a lot of times when it's open

> to the floor, people… Like the room is quiet. Like no one answers, so that-that happens a lot and it gets really awkward…"

However, while in some cases not receiving responses is a stressor, other participants have experienced too many or overlapping responses, in addition to collective background noises, which has not only resulted in a sensory overload for them, but also resulted in losing of important information in the process. FE9, an operations executive at a private firm, shared:

> "'Cause, uh, especially where there's too many, uh, participants, you know, in Google video meeting itself. And everyone wants to chip in, uh, there's a lot of background noise, lags. … So there's a lot of things, also going on in anything lah, where I feel that, uh, no one is taking control of you. So it's a bit hard for me to, kind of grasp what the CEO is saying, or whatever the HR is saying. Yeah, so yeah."

On asking FE9 if there was anything he'd like to change about his current videoconferencing practices, he wished for a "mute for everyone" button.

> "Maybe… A mute button for me to press mute and everyone else is muted? So when they want to talk, they can just like, you know, have a button… I mean, I think Skype do have, a reset button, something like that, you know your thought… Yeah, but I feel that, you know, if you are going to every profile to press mute, uh, when they are talking on the phone, it makes me… Yeah, just one thing that feels better. The master controller will get a mute system where you just mute everyone else and now we're just listening to the person who's presenting and talking. Yeah."

Ironically, this feature is available for the owners of the meetings on platforms such as Google Meet, which FE9 used and preferred to use. This sheds light of the extent of the knowledge employees have of the videoconferencing apps they have been using, and possible features they are unaware of.

Social anxiety and speaking up. Another stressor experienced by the participants was something more inherent in nature. Despite being behind the screen, participants still faced the problem of social anxiety or speaking or presenting in large group meetings. FE1, a finance consultant in an insurance agency, shared her stress of making a presentation during group meetings. This brings forward an interesting perspective of encountering stress despite not being physically present in front of a larger group:

> "Depends what kind of videoconferencing, so if it was just normal videoconferencing with my team where we're, we're literally just working together and stuff, uh, that doesn't drain me, I think what drains me a lot, is when we have large videoconferencing, where I need to do a legitimate presentation to many people. If it's that kind of videoconferencing, then yes, I will be a lot more stressed before the video conference, in the sense that I'm like, okay, um, you know, make sure everything's quiet like please don't make any noise before my thing. I'll be on guard and tell my partner like, okay, can you not do a certain thing at this time to this time, you know, don't-don't disturb me, uh, blah blah blah blah blah, like, I'm a lot more like on guard before that conference. And during the conference, uh, you know I'd do my thing. And after it, I do realize that I get very drained from that and I just need to like, relax [Laughs], and celebrate, um, after, uh, the huge kind of presentation has been done."

FE9 gave an account of the social anxiety and stress he experienced when speaking in group meetings, which got too overwhelming for him:

> "So there was 25 people, uh, video meeting. Uh, direct superior, with the concierge team, with the, uh, [Inaudible]. So there were twenty of them, and they were trying to present, and [Inaudible]. They asked me this question, that question, this question, and everyone was like, it was so bad, I just told them that, hey guys, just give me a while, uh, I need to come back again, uh, with a proper-proper proposal for you. Because

> there's too many white noise, background. … So that was very stressful for me. Uh, I think, yeah. Mentally I wasn't in the right place after that, uh, after the whole meeting. There was too many things going on."

Depending on their experience, many participants also explicitly grouped this stressor as a personality factor. Participants referred to their personality types of being introverted or extroverted when sharing their stressful experiences of group meetings. They used phrases and expressions like, "a very big introvert," "I'm kind of introvert kind of person" and "personal character" when speaking about their social anxiety and stress during videoconferencing. FE13, a cyber security analyst at a tech firm, recounted his stress, "Uh… I mean, whenever you have to give a presentation is always stressful, but does that count?" On probing further, he said he would rather not present in group meetings at all due to his character:

> "No, it's like there are two groups of people, people who can lead, you know manage a team, and then people who just take instructions and do as told. … Yeah, so I'm more of the latter, where just, you know, tell me what to do, I'll do it. And I'll give it to you and that's it. You know, I don't need to do any presentation, don't need to explain why, you just want it this way, you get it this way."

Extroverted participants also shared accounts of having more subdued team members in group calls, which caused conflicting emotions due to their lack of engagement. FE1 shared:

> "… because I am more of a, like an extroverted person. So for me, I've kind of missed having that human connection when I'm at work. … Um, because I guess that's the nature of consultants, we're a little bit more out there [Laughs], because we have to have social skills, but, uh, with my current job because I-it's more of a, they will set meetings, just to get a task done, there is no small talk involved, it's purely just okay

> when we start a meeting, let's do it, let's get it done, and that's it, let's drop off the call."

Of course, these stressors also arise in face-to-face situations. Individuals' social anxiety and personality type may play a role in any social situation, virtual or otherwise. These stressors, however, are exacerbated by the additional technological factors such as audio/video quality, multiple speakers in a meeting, etc., which may not be experienced in a face-to-face situation. For some, they may also be more challenging to avoid online than in-person, especially when videoconferencing is the default, if not the only, mode of organisational communication at a time when in-person communication is restricted.

The quandary of time 'bracketing'. Considering how videoconferencing has become a battle of scheduling conflicts and managing time slots on one's calendar, participants also shared that a key stressor for them was managing time with their colleagues and clients, which either often run over the bracketed 30 or 60 minute calls, or were cut short and found insufficient for their work. This was seen among participants facing external stakeholders or clients, especially those in sales or consulting organizations. MM1, a senior associate in a consulting firm, detailed:

> "Probably the factors that bring about the most stress would be, I would say, one, the- the stress of back to back meetings, I think, is-is important, because, um, scheduling them is not a problem. I, you know, when I'm talking to clients and figuring out what schedule works, when people start putting in things into your calendar and you realize it's back to back… It's not really a big deal at that time, but where you're actually, let's say, in a meeting, and then you know that, oh, I need to meet someone important right after this, but I'm not done, and there's another- let's say that you know, good insights that I'm getting from this conversation, I have to internally wrestle with am I

> going to have a way to stop this? … So, um, managing those, kind of, like crunch moments be-uh, during these back to back sessions is pretty challenging."

This was also reflected by MM10, another managerial-level employee:

> "Um… No, I wouldn't say of any stress, or any form like that, but, um, I think the only stress I would say is this meeting the, you know, sometimes is, is, is a one-hour schedule virtual meeting means, you have to just do it within a time frame and, and then you have to jump to the next call, so I think the only strategy the timeline."

Participants also incurred this stressor with their internal stakeholders or colleagues, especially those in more execution or project management roles. FE14, a project manager in an IT services company, recounted his experience by adding that he would rather do face-to-face meetings than scheduled virtual calls:

> "Like, if I want to call, if I want information from my like, colleagues or, you know, from my customers, um, back then I could not, I either just drive to the office you know pay them a visit, you know, bring them out of lunch, if, you know, we have an issue or dispute then we can talk it over, um, over meal … Everything is very scheduled now, and sometimes it's a bit difficult when a situation, especially in my line on when the situation arises and you kind of need an answer immediately. Um, yeah that's, that's been one of the big challenges from working from home."

However, MM12, a senior engineer at a manufacturing company, relates this stress to scheduling, rather than videoconferencing in particular, which spotlights the conundrum of whether the stress generated is from the stressor of the excessive number of videoconferencing calls slotted in a limited time of the day, or just a matter of scheduling appropriately.

> "Uh… Well, um, I wouldn't really say that it's because of the online meeting tools, I really think it's just because of the scheduling, that really, it's a bit [Inaudible]. Uh,

> the time. Uh, yeah, but when it happens, it's really frustrating, because you know, just because of those. When that happened, then uh, I will become more stressed and frustrated. I think that I guess it will also, uh, impact on how I um, on how I communicate with people at home. Probably I will, I will sound a bit more anything, but it just kinda create unnecessary tension at home. [Laughs]"

Socio-Relational Stressors

While the above stressors related to factors of videoconferencing such as the number of participants, and time bracketing and scheduling, the pandemic and the resulting WFH also generated stress among the participants purely from a socio-relational perspective. Participants spoke about their changed relationship dynamics with the closest links of their social milieu, and how the impact of videoconferencing has been instrumental in this change.

Invaded private space. Remote working during the pandemic was a challenge for employees. With enforced WFH (Waizenegger et al., 2020), participants worked and took videoconferencing calls in close quarters with the ones they lived with, such as their family or roommates, which resulted in their privacy and workspace being compromised (Marhefka et al., 2020). These stressors, which arose from this enforced WFH and videoconferencing, stemmed from the interruptions made by family members or roommates, or the conflicts that subsequently arose from shared private spaces. For instance, FE14 spoke about the challenges that he faced from sharing his space with his family members:

> "Um… My experience living with them ah, wah… Um, in the beginning was tough. It was very, it was pretty difficult, because you know, I have eight, eight family members, and two dogs in one house. So, uh, wait, did I say 8? No, yeah, 8, no 10, including my 2 helpers. So we have 10 people plus 2 dogs in the house. So, eh, you know you're bound to, um, uh, rub people the wrong way."

Similar experiences shared by the participants showed the importance of having a separate, dedicated space for employees, or an indication of the door being locked, equalling to “do not disturb”. FE10, a UX designer at a design firm, recounted her experience with locking her doors so as to avoid being disturbed:

> “So I think at the start when, um, everything's work from home, I actually put like a-a paper outside my door saying like work nine to five, like, do not, do not, um, come in like knock on the door. Yeah and I make sure I like, I lock my door because like, if not, my parents would just like barge in.”

FE8, an accountant with a start-up detailed her account of sharing a small space with her boyfriend, which resulted in stress from the constant interruptions during her videoconferences:

> “So for a period I was staying with my boyfriend, and we were… His apartment was really small and we were both working from home and it really affected us in the sense where we both felt really stifled because we, two of us sharing like a study table and side by side, and we're like working side by side, he's on calls, I'm on calls it gets a bit annoying to hear him sometimes and I think like vice versa. So I think that honestly strained us both a little bit, and then I asked him because back then I didn't have the choice but he had a choice and I told him to go to office a bit more.”

This experience was drastically different from participants who had a dedicated “room” or “office” in their home without hindrances from family or roommates. MM2, an associate professor at a university in Singapore who lived with his wife, shared his experience of being relatively stress-free:

> “It helps you have a room for yourself and there's no disturbance, no kids, nobody’s walking around. If you close the window… Even for this interview, I just closed the

windows and closed the door, and I don't have any sound. If I open the window I know there is construction going on."

Blurred lines between work and social life. Participants also spoke about how their time at home was often misconstrued as free time by their family or roommates, where work was not assumed to be at the top of their list, and employees could divert their attention freely towards their family or friends. FE11 shared her stress of being unable to spend time with her husband due to an overrun meeting, which resulted in a conflict between them:

> "Yeah, that happened, I mean, sometimes, we would need to go out already like, sometimes he would force me to go, sometimes he would… He would really stop working at the [Inaudible] and try to do that so that we can have work life separation right. But sometimes my case right, like, um, the meeting is overrun, or like, during, after office or during lunch hour right. So I get stressed when he keep on asking me let's go let's go let's go."

This view was echoed by MM11, a digital campaigns manager, who shared challenges of her family misconstruing her WFH as time with more flexibility, which often contributed to stress and burnout:

> "So, uh, there were many times I have to remind her, mom, I have many calls, you can't just barge into my room, and ask me to help you with some household chores. It took a while for her to get used to it, oh, um, uh, sometimes, you, oh, okay yeah, you're here, can you help me with something? [Laughs] When I'm in a call. … They don't really understand like oh, actually, I'm working from home and with more calls right that can really cause burnout. So, um, uh, she don't see why I will be more stretched. In fact, she would think that oh, okay, there's more flexibility, no? You can manage your time better."

Parents, particularly, were seen to have a harder time at home, due to the constant diversion of attention towards their children. MM7, a researcher at a university, shared her challenges with dividing her attention and energy with her daughter after a day of videoconferencing calls:

> "Because in the meetings, they have so many issues to take up, and there are so many people that have their own concerns, and you are at home so no worries about that, so you can just go on go on go on. Yeah. … But sometimes the after the whole day I felt so tired and then, it usually happens with my daughter because of the end of everything she starts okay let's, mummy, go out and play. And then it starts irritating me, uh, I can't go out now. Go with your daddy. Like, no, I want to go with you. So then I started with my daughter. Those things. Sometimes happening."

FE6, a scientist and MM7's husband, adds his experience during his WFH with their daughter:

> "Uh. The first challenge is that let's say I am talking, uh, my, my daughter is also attending a class. So we are both shouting basically. [Laughs] Basically, we are both interfering each other."

Interviewing both MM7 and FE6 from their perspectives as parents providing an interesting insight into the difference in their videoconferencing experiences as well as their time and energy managing work and their daughter. Videoconferencing was experienced differently by them, especially in the initial months of the pandemic. Due to the restrictions in travel and a global lockdown, MM7 was restrained in one country, while FE6 and their daughter were in Singapore. For MM7, while videoconferencing was the only way for her to stay in touch with her husband and daughter, she missed meeting them physically and being there during the thick of the pandemic:

> "And for me it was really like I can see her. I can talk to her. But I cannot hug her, when I sometimes, I need that. And you know, during the working, some things, sometimes work conditions doesn't go good. There's rejections come from the things and all those things and that time we feel really down when you want somebody to be with you, but at that time I couldn't have anyone because they were far off, and then they were like Mother's Day and she was sending me cards. … I was like okay, but, you know I was kind of like okay, I'll be good. And we'll meet soon."

FE6, however, faced challenges in WFH videoconferencing for both himself and his daughter, which resulted in a conflict in their space and time and accounted for a lot of his stress:

> "So, this we can hardly do anything, but okay so, the only solution we found that we said okay now, I told my daughter that you are going too loud. Sometimes she said, daddy, you're going too loud. … So I sometimes I'm in a meeting but I have to stop and then go to her and then open her stuffs like the Zoom or… And then she started and then become, I started-start again. Yeah, so that kind of disruption was there, that kind of disruption is that but I think is for everybody, somehow."

Sometimes, the interruptions are quite welcome as human factors. MM11 recounts her experiences of laughing and dismissing otherwise stressful interruptions during videoconference meetings, as it was a common and relatable experience among most WFH employees:

> "So, we all just, yeah, laugh it off. The doorbell will ring, or, um, uh, one of their pets will start meowing, or barking in the, in the background, so it's quite funny, but, um, uh, I think because everyone is already so tired, sometimes the calls can get so intense, um, uh, situations like that actually, um, uh, got everyone laughing instead,

> and we remember, hey, we're all in this together and it makes the whole situation a bit more bearable."

High misconception and miscommunication. While home and family lives are one aspect of the socio-relational sphere, participants' relationships in the workplace have also been impacted. Due to the depleting attention span and the preference to switch off the video camera, there has been a fall in the media richness of videoconferencing, making employees vulnerable to instances of stressors like misconception and miscommunication. FE12, an operations executive at a private firm, shared her encounters with miscommunication with her colleagues during videoconference calls:

> "Yeah, for sure, there's-there's quite a few where I've tried explaining things and scenarios to a colleague, but they couldn't really understand and like started being frustrated, and started, like, assuming that I was guiding them wrongly? … But, it's like, coming back to the same person who didn't really understand me and I don't understand that person, my patience wouldn't be on the same level as like another co-worker who asked me another question, you know, because like, oh, here we go again, like he-she doesn't really understand what I say and why is she asking me things, when she don't understand what I'm trying to say, you know, and accuse me of like saying this, which is wrong and stuff."

Surprisingly, despite their awareness of the miscommunication they were experiencing due to the already diminishing media richness in videoconferencing, participants' meetings were often held without the video camera on, which resulted in stress. FE4, a backend developer at an e-commerce organization, gave an account of this event:

> "I guess, the fact that, uh, one thing I would say is that most, most calls, uh, as I said, are like, without video. So when you're, when you're talking about something or when, as I mentioned, disagree with like a developer, you want to, you want to do it,

> respectfully, and be like oh, I respectfully think that this is a better solution. But sometimes when you're going in a flow you don't understand if-if what you, what you said came off in a respectful sense. … So those are, those sort of problems really do happen. And I think they can be solved if you have your camera on. Uh, but it's not mandatory to have camera on and I-I-I don't think people will."

This is somehow paradoxical in nature, as when later asked whether participants preferred to keep their video cameras on or off, they still preferred it to be off, even at the cost of their communication and incurred stress. FE1 shared:

> "Um, because you're working from home, obviously you don't see them. And in this company, current company, they don't have a policy to force your videos to be on. And most people would, everyone actually, doesn't want to turn their video on. And I'm kind of like, I really want to see your faces, you know, but. [Laughs]"

These results indicate that employees preferred to keep the video camera off, despite it having an adverse effect on their communication or social interaction. Additionally, a recurrent theme noted from the interviews was a sense that employees who preferred face-to-face communication over videoconferencing wanted to continue WFH as a preference for the future, which, again, was paradoxical in nature.

Furthermore, language barriers have generated stress among many participants due to the nature of their work, which extends beyond the boundaries of Singapore, and requires them to interact with employees whose native language is not English. FE4 further reported, "Uh, sometimes misconceptions also happen because of language barriers, sometimes people, sometimes who are like, uh, who speak only Mandarin and are not that great in English, uh, maybe won't be able to understand what you're saying."

In summary, this chapter focused on the various stressors employees perceived from videoconferencing while WFH. The next chapter focuses on the resulting strains from the

stressors, along with the coping measures employees had taken to counter the stress. Additionally, it will also address the differences of experiencing stress among different hierarchies in organizations.

CHAPTER VI

Results – Strain and Coping

Strains experienced from videoconferencing

RQ2 asked: What kinds of strain do employees experience from videoconferencing-related stress? Similar to the perceived stressors, employees' experiences with strain can also be classified into those related to techno-stressors and socio-relational stressors. A majority of the participants expressed strains such as feeling overwhelmed, being nervous, and having anxiety, which manifested physiologically in them. Some employees felt a spell of adrenaline, "I think it's just, um, I have a feeling it's a combination of nervousness and adrenaline," while some expressed feelings of nausea, such as the comment from FE7:

> "Uh, normally I just, I would just feel, uh, a little bit… Un, nauseous. Or I'll just feel sleepy. Yeah, and I know, I-I, I kind of lose focus. So I won't be… I'm like, in a meeting but I'm not really discerning, can, like, how else can I say… Just when I won't, uh, yeah."

While the strains observed were commonly psychological, behavioural, or physiological in nature, interpersonal strain (Layne et al., 2004) was also experienced as an addition to the strains from the technostress of videoconferencing. This strain manifesting among employees' interpersonal relationships can be further elaborated as stated below.

Losing focus and thought process. In these cases, participants reported losing their thought process from the stress, or "zoning out", as FE10 recounted, "Ah, okay. What kind of symptoms shows… I think I just get very zoned out. Like very drained. Like my, like there's nothing in my brain." This strain was also experienced by FE3, a sales development representative at a tech firm:

> "Um, so, what I know is when I feel really stressed is, I tend… I know that I experience levels of anxiety and start to panic. Uh, so, but I wouldn't say it's a to like a

> very bad form where I actually get anxiety attack and so and so. It's just the feeling, the sense of feeling where you're nervous, you know you feel, you know, like, feel… Like you're feeling a bit, anxiety, you're feeling panicky you know you're not sure whether you know you whether you have time to do this, whether you're doing it properly, then you kind of like overthink, oh what- what happens if I don't do this, you know, what's the repercussions you know what's the consequences. So those are like the general sense of feeling like you just tend to feel really tense at the time and you're, you're panicking to a point where, uh, your thoughts are very disorganized?"

In some cases, the interviewees were immediately aware that they were experiencing the strains, which prevented them from a proliferation of the strains experienced, such as the comment from MM12:

> "Um, I will notice that I can't really concentrate on what is being discussed during the meeting. Uh, like, my mind starts wandering off. … Um, also, uh, I just have that urge to start walking around, I just can't spend being, uh, uh, being sitting on my seat, uh, so I just have that feeling to just get up and start walking around."

This view was echoed by FE8, who felt strains such as "heart racing, a little bit of stress or feeling a bit overwhelmed" which were clear indications for her stress, "I think that's when it's quite clear that I need a break and I need like a breather from it."

A more nuanced insight into the strains experienced by the participants was through the diary studies, where their candid experiences were captured immediately after the videoconferences. Interestingly, a finding that arose from the diaries of most participants was the timing of the videoconferences in relation to the strains experienced by them. Videoconferences scheduled after free time, that is, right after lunch time or after a weekend, resulted in considerable strain in employees in the form of fatigue and feeling drained. MM8, a business development team lead at a MarTech (Marketing Technology) organization, noted,

“It was initially scheduled at 1pm, but moved to 1.15pm (so had more time for lunch) but don't like when the main PIC puts the meeting right after lunch and always overruns.” Short but candid entries on the strains were observed, such as, “Tired after food coma!”, “Yes, this meeting was right after lunch” and one from FE16, a digital marketer, “Yes, because they were a bit late during the day. My mind was kind of shutting down.” However, a minority of the diary study participants did not experience strains on attending videoconferences after their free time, such as the entry from FE17, an intern working in an educational institute, “On a scale of 0 to 10, I would say feeling tired was a 2. As this was after the weekend relaxation, I had got enough rest to go on.”

Lessening social interaction after videoconferences. Excessive videoconferencing over a specific time frame often led the participants to lessen their social interactions after the calls, as a majority of them felt overwhelmed from a “sensory overload,” resulting in them being unable to hold conversations with others in their socio-relational circle. For example, MM5 noted:

> “Yeah, so my, my thing to do is like, if I've had too many calls in a day like I just switch off earlier, I probably like just go to bed earlier, or I even just like lie down with all the lights closed and, uh, just-just zone out for a while, because it's just overwhelming like that sensory stimulus is, is, is kind of, uh, overwhelming. … On days when I had spent a long time on office video calls, it has really rubbed off on, uh, say my conversations with my parents where I just, like, picked up the phone and been like, cannot talk.”

This was especially observed in the diaries, where the employees, on the same day as the videoconferences, did not want to talk to their loved ones and wanted to be alone. On asking for an entry on their interactions with their friends or family those specific days, FE8 observed, “I was tired by the end of the day and didn't reply friends till much later in the

night.", while FE2 wrote, "Very limited due to the hectic schedule at work", and "Limited to a few texts due to workload." Such entries came from diary participants who encountered an average of around four video calls in a day. This was different from participants who didn't attend, or attended only one call that day. MM7, in an entry on a day where she didn't have any videoconference call, noted that she had a lot of free time to engage with her family, "It was great. Had a quick video call with my parents back home as they were busy going to a party. Here in Singapore, we went out to celebrate Women's Day and had dinner in Jurong East."

Dreading more videoconferences. Due to the high number of videoconferences packed in one day, employees seemed to experience strains such as a sense of dread and anxiety at the mere thought of joining more videoconference meetings. MM11 recounted:

> "Okay. Uh… Every time I see a message that comes in oh, can we have a call? Um, uh, there will be this, very strong sense of dread, oh, you know, another call again already? And, um, uh, in fact, um, uh, sometimes, um, when you have calls scheduled as well as you have so many emails coming in, it gets to a point of time where I feel so overwhelmed, that my mind would actually go blank. Okay, and I am not sure how to proceed with work."

From a socio-relational perspective, the repercussions from videoconferencing on employees' social spectrum was evident. In essence, participants expressed having a harder time experiencing strains from the stress from their interpersonal relationships, and these strains manifested in them, again, through two extremities of having outbursts of anger towards their family, friends and colleagues, and not choosing to have any interaction with them at all.

Dissociation and demotivation. Participants observed feeling strains such as detachment and demotivation towards maintaining relationships at home and work, due to the

stress and fatigue experienced with the excess of videoconferencing while WFH. FE3 shared his encounter:

> "I actually broke down twice because of the amount of like stress level and more of like pressure that I was getting from my higher management, you know, on- and on top that, trying to hit my KPIs as well. So, how that translated to my mental well-being is that, um, like, like, I didn't feel like doing anything. Like, uh, I just, I just didn't feel like going out as much, you know, I wasn't eating as well and when… I wasn't sleeping as well as well because whenever I go to sleep you know I'm always thinking about all the, while, work the next day."

Furthermore, participants expressed shying away from maintaining relationships with their friends and colleagues, and rather preferred to dissociate themselves from the constant connectivity and interaction. MM1 expressed his challenges with maintaining relationships at work stemmed from the stress:

> "Uh, I would say it was a bit harder to maintain, I would say, friendly, uh-uh, like a super friendly environment, because like we have to make a lot of extra effort just to get to know people at the bar, um, or to kind of like have fun activities, whereas before, uh, if we were let's say on site, it would be easy to kind of grab dinner together because we're all already kind of there and we're all going back to the same hotel it's… Um, so that-that's a huge part of what's missing anything throughout the organization now to people have raised that as a big downside."

It was also observed that participants preferred to have conversations initiated with them rather than them being the first to initiate conversations. FE12 shared her encounter with the strain of dissociating herself, where she expressed to be spoken to first.

> "Um… Maybe in terms of like having this relationship to go better, to be better is maybe like the bosses, or maybe the co-workers can like, you know, initiate a

> conversation with me first instead of me, like, starting a conversation first. So, like, we all know it takes two hands to clap, it doesn't really need one person only."

Outbursts of anger and annoyance on loved ones. A common strain observed amongst interviewees from the videoconferencing-related socio-relational stress was their outbursts of anger and annoyance on their loved ones. These emotional problems can be termed as manifestations of psychological strains in addition to being interpersonal in nature (Layne et al., 2004). For example, FE7 shared:

> "Um. Of course, I-I feel quite, uh, like annoyed lah, or irritated, because I'm in a meeting but then they don't understand, so they just knock at my door, or they just barge right in. So, yeah, so, usually now, nowadays I just lock my door when I'm having a meeting, so they don't come, come in. And they know I'm in a meeting. Yeah."

MM3 experienced a proliferation of stress at both work and home, which resulted in emotional strains of anger and annoyance at his family:

> "Usually is, I'd just be very cross. Yeah, cross. Um. So it's… It sounds really weird. Uh, I'll get irritated. [Laughs] Yeah. Yeah, really irritated, and escalates into just, uh, I… Uh, not now, I'm in a meeting. Yeah. Don't disturb me know, I-I'm having a meeting. Yeah."

This strain was also manifested in his relationship with his colleagues and direct reports at work, even when they were not intentional:

> "And sometimes it's hard to be a… Sometimes it's hard… I would say because… Much as I want to be very coaching and very congenial, sometimes I do-I do get irritated and get cross and I… Yeah, especially when I see something on, why are you doing this? Then, then [inaudible]. Was it… What was this? Yeah, so, these kind of things do happen. Uh."

While the participants recounted their strains and stress responses during the interviews, they were not elaborated or detailed in the diary entries. This could be because diary entries from the participants were often short and candid, and the symptoms were not explained in longer sentences. Participants expressed their symptoms through entries like, “Felt like I needed a break,” to, “It was really good, no ill-fated or heated or out of temper discussions with friends and family.”

Mounting a performance to hide the strains. An interesting finding was that as the participants experienced stress from videoconferencing, they often had to hide the strains due to the back-to-back meetings scheduled, to ensure decorum in the calls. This can be seen as employees having to “mount a performance” so as to not show their strains in front of others and ensure their presence in front of their colleagues and managers. When asked whether the strains manifest during the videoconferences, FE4 recounted:

> “Not really because like you can’t, I mean it's a business call so you can’t, you can’t, uh, show your symptoms out so… Ideally I guess, I guess you once-once… Say-say for example it’s our team debating against someone else's team, we would during call, text each other, saying that oh, this is, like we would rant with each other, saying that oh my god, why don't they understand. Uh, but other than that, like that's, I don't know if that counts as a symptom that ranting, but that kind of helps us, like, understand each other saying that, oh, I know you're feeling this way I'm also feeling this way let's just sit through this patiently so that they understand.”

On asking MM6 the same question, especially taking into account the amount of calls taken by him which sometimes also get argumentative in nature, he shared his experience of not being able to step away to deal with the strains experienced at that moment:

> “Um. Because most of our interviews and most of our meetings, you know, I'll be plugged in on a headphone like right now right? So I can't really afford to walk off,

> I'm literally stuck to my seat. … So it becomes a point where like, I need to be present, mentally, because the correction notice, or you know my boss was talking, I can't just walk off. [Laughs] So, so it becomes very intense basically where I'm just waiting for the barrage to be done."

Interestingly, the strains experienced by the participants were often short-term, and while they did impact employees in terms of their interpersonal relationships, there were no long-term impacts, or strains that were more behavioral in nature, such as adverse work performance and indulging in smoking or drinking (Cope, 2003).

Coping from Technology and Social Interaction

RQ3 asked: What coping mechanisms do employees adapt in response to the strains they experience? In terms of general coping activities, most participants chose to indulge in exercising and focusing on their physical fitness, as MM4's comment, "Oh yeah I make a point to do like, uh, exercise. Uh, don't neglect the, uh, the food I eat. You know, I still take care of, um, my mental health and physical well-being. I think that's important," as well as FE12's comment, "Uh, uh, either like go and exercise, maybe during the weekend, but it's kind of a build-up so I would really need to shut it all, shut out all the frustrations out, or just talk to a friend?".

Participants also indulged in self-care such as eating or drinking, streaming shows online or watching Netflix, and shopping, "some wine in the evening really kind of winds me down," "I just sit and watch like some show, uh, I'm watching How I Met Your Mother right now," and, "or sometimes start looking at the online shopping."

However, the participants were seen to have adapted coping measures from the very factors that caused stress and strain from videoconferencing, thereby providing an interesting insight into coping in a post COVID-19 work environment. While the key stressors from videoconferencing resulted in disrupted interpersonal relationships and overload from

technology, the participants continued to focus on social interaction and use of technology to cope with the stress.

Social interaction as the ultimate coping mechanism. Paradoxically, employees consciously preferred to maintain their social ties and interact with their family and friends as a way of coping from the stress and strain of videoconferencing. Social interaction, in this instance, ranged from just spending quality time with their family and friends at the end of the day, to making conscious plans of being together with their loved ones.

In terms of the former, FE3 shared her method of coping through 'ranting' about her stress to her boyfriend. She commented:

> "So, um, I guess what happened, what I tend to do is whenever I feel irritated or, uh, I didn't have a good meeting so, what what what me and my partner, typically do is we just rant to each other like oh this meeting is like so bad, you know, people are this, people are that. So it kind of gets it off our chests. Uh, so of course, there are times where, you know, when- when you don't rant it out you just kind of have like an irritated, like kind of mood, by ugh, I'm annoyed and stuff, I'm annoyed at everything. But, uh, but, I would say, most of the times I would just rant it out, because uh, like uh, I found a way that is, a better way for me to cope."

In terms of the latter, MM8 shared her method of coping by planning activities for herself and her team together as a group:

> "Uh, we still meet up outside of work. And when we go to the office, we were, like, we go in together, we do activities outside of work together also, so I think the relationship is okay there, not much of an issue."

The diary entries provided an interesting insight on the participants' coping through social interaction. The days when the participants were particularly overwhelmed or stressed with the videoconference calls, they preferred to talk, or go out with their friends or family.

An entry by FE2 on her stress said, “Slightly- due to amount of work, network issue at home that impacted the video conferences” followed with the entry of her way to de-stress, which said, “Snacked and spoke to family.” Similarly, entries were found which measured the magnitude of their stress with the way of de-stressing or coping, as shown in Table 3.

Table 3

Stress and Coping Diary Entries

Diary Entry on Stress	Diary Entry on Coping
Yes stressed, because i have a lot to do that will definitely spill over the weekend	going out to have dinner with 2 friends :)
There were more meeting today which took our time away from the actual work. So stressed increased because of that	There was the after-work party which helped everyone to destress
Highly stressed- due to the fact that the calls took up most of the workday leaving very less time for the work to be done	Took a walk, had multiple cups of coffee and spoke to a colleague over the break
Highly stressed due to back to back calls and amount of work in between	Drank tea, called a friend
Moderately- due to the issues faced in a project	Spoke to family, cooked a meal

Employees’ coping measure of spending more time with their family and friends, however, conflicts their strains of dissociating from interacting and maintaining relationships due to the stress of videoconferencing. This could be explained by two factors. First, the immediate stress response to videoconferencing and its concurrent overload was to cut off the overload of communication through dissociating from interacting with their socio-relational circle. However, given the need to cope with the stress, and being unable to do so completely by themselves, employees chose to seek social support (Layne et al., 2004) through their friends and family. Second, the pandemic itself and the WFH deprived employees of social

interaction (Liu et al., 2021), and here, it could be seen as a way of instilling this lack of interaction as a coping mechanism.

Coping from technology with technology. The participants overall demonstrated their use of non-work-related use of technology and videoconferencing as an attempt to cope with organizational videoconferencing, thereby giving an insight into how the sharp increase in the use of technology incorporates into the participants' everyday lives. Prevalent among the responses from the participants was the use of gaming as a coping mechanism. MM1 shared his experiences with video gaming with his wife as a collective coping mechanism:

> "Uh, usually, uh, my wife would… my wife and I will play some video games together, or, uh, sometimes we play it together, sometimes we play them separately depends on whether what each of us are doing within that day. Um… [pauses] Yeah, I would say probably video games being like taking up most of that time."

On asking whether he felt an overload of technology attributed to the consistent screen time, he added:

> "Uh, well, my wife reads more than I do. So sometimes she gets away by reading books, but then… It's still a screen though… it's, it's an e-reader. … I think as a person like even growing up I did spend a lot of time unwinding on video games, it's something that I feel like if I don't have any form of that I think will be much more stressful for me. [laughs]"

Additionally, playing videogames that were more violent in nature also helped in destressing for participants such as FE14:

> "Other than that, other ways that I, um, alleviate my stress will be, uh, I enjoy playing online games, so, um, I'll just call up my friends and you know, ask them to play a round of Dota, or do whatever? Play violent games, like, some, you know those RPG

> games, where you just go around killing monsters, hang and slash, like it was more of a character and just, like mindless fighting. [Laughs]"

MM6 recounted his use of gaming along with non-work-related videoconferencing with his friends as his way to destress, "And sometimes even have things like that, back then Animal Crossing was still very fashionable and in, right. … So, we would connect on Teams, audio only, and have conversation on Teams, while we were playing Animal Crossing."

Together, these results provide an important insight into the increasing use of technology and screen time, which seems likely to persist in the future.

Coping is more employee-centric rather than organization-centric. Another objective of this study was to explore the impact of coping measures taken not only by individuals specifically, but also organizations as a whole, and measure the difference in their effectiveness. In the initial stages of the pandemic, organizations focused their communication on social distancing and isolation policies (Macnamara, 2021). With over a year into the pandemic, the interviews sought to understand the organizations' focus on wellbeing and coping from stress from an employee perspective. A common view among interviewees was that personalized or one-to-one support helped them to cope better than the wellbeing efforts taken by the organization which focused on all employees collectively. The participants accepted and appreciated the support from their managers and team members as a way of coping from stress, while disregarding the one-for-all support offered by the organizations. MM5 shared her perspective:

> "For me it has been, like, you know, conversation and communication has increased a lot, and I do think that even the organization as a whole, they've tried to be supportive, they have tried to be supportive, but I don't see the point of that, and my immediate team in general have- they, of course been we've, I think we've all been very

> accepting of, uh, each other's, uh, limitations or if you know if you have something else to do."

Participants, collectively, found that one-to-one measures and more "human" support from their colleagues and managers helped them cope from the stress more effectively than the "textbook" measures taken by organizations. MM5 further added:

> "Um, and they also give us subscriptions to, you know, some apps which as I've never used, because I mean, even these trainings I don't really believe, uh, in a discussion about mental has been very conducive to [Laughs] most people's mental health. So, I, uh, uh, I would say like these are very textbook things that-that the bank kind of tried, but, uh, anyway at the end of the day, it boils down to the people that you immediately work with, and how understanding, or how accommodating they are."

Similarly, participants expressed that they relied on their family and colleagues and preferred to cope by themselves, rather than partake in the organizations' initiatives, as FE9 commented:

> "Yeah, honestly, it's like, it's that if, you know, I can't really handle it anymore, and this is when I will talk to my dad… [Pause] My boss, my CEO. Yeah. And from that they would, maybe take over my project. You know, advise me that I need to get a… But usually, uh, stress-wise I'll just cope it by myself. Yeah."

Additionally, factors such as authenticity and relatability played a role in organizations' wellness initiatives, which participants seemed to question. MM3 points out the issues with the wellness events held by his organization on Zoom:

> "Everyone is big on mental wellness! Sorry, I sounded really sarcastic right? [Laughs] Everyone's big on, oh, let's have mental wellness! … Uh, so they try to have, oh let's play games on Zoom! Yeah. Or welfare event. Then, uh, then, I think… I just came from this… Welfare event. So, it's like, oh, talk to your bosses. Then I'm like, I don't

> really care. [Laughs] Sorry. I don't care how you how you met your spouses, in light of the fact that it's going to be Valentine's Day and-and this was the topic of… How did you meet your spouse. … I don't really… I don't really care. Oh-oh, okay, you have a favorite book, okay I don't really care. [Laughs]"

Furthermore, participants didn't partake in such organizational wellness initiatives simply because of their increased workload. FE19, a process engineer at a biopharmaceutical company summed it up by, "Yeah, rather do something else." Similarly, FE12 commented, "Actually, yes, they do encourage, um, um, attending like some like mental health workshop, or like work-life balance workshop as well. … Uh, not really because like there's so much work to do. [Laughs]"

Strain and Coping Experiences do not Differ with Hierarchy

RQ4 asked: How do employees from different organizational hierarchies experience stress, strain, and coping? Studies on technostress from ICTs have often shown similar consequences for different levels or hierarchies of employees, as all employees were considered an entitative group instead of individual employees (Lickel et al., 2000; Blanchard, 2021). However, reminiscent to the study by Barley et al., 2011, the interviews depicted additional stressors incurred by managers, while employees experienced stressors which employees of all hierarchies experienced. Nevertheless, the strains encountered, and the coping practices remained the same among differed between managerial and frontline employees.

Ensuring greater presence. The additional stressor managerial-level employees encountered was ensuring more presence in videoconferencing calls. For this, participants recounted having their video cameras and audio on during videoconferences, while more frontline employees had the leeway to keep their video cameras and audio off. These usually came as directives from the upper management or practices they undertook themselves to

ensure effective communication. MM6 gave his perspective on unwritten etiquettes formed in his organization in terms of videoconferencing:

> "So it took a while, it was almost like building up a new, um, social etiquette and language. So in the beginning was almost, it was a cowboy town, we did whatever you want to do you know it was like, we have no idea what is the right thing to do but now we kind of do have this decorum which is, um, you can keep your camera off, unless you are talking to everyone. … And usually if the person whose camera is on, I mean, the person who's talking is, has a camera on and you want to talk to that person you will turn your camera on and respond in a reciprocal way."

Managers also shared that keeping their video cameras on was more like a responsibility to them, as leaders and team leads, as MM8 commented:

> "And uh, my, my video was on and audio was on. As a team lead, I cannot have that, I cannot be, you know, use that privilege to like hide behind a screen and like mute myself anymore, I need to speak up when I need to. So, it's, uh, if we have any team meeting is always turned on, and, um, I'm not muted."

With the video cameras on, managers took measures to ensure they looked professional, especially when videoconferencing with external clients. These measures involved adapting official background filters and wear formal clothing. MM1 shared his experience of preparing for such virtual meetings:

> "Uh, whereas with external calls with clients, uh, almost always, 99% of the time, video camera is on, uh, I put on my shirt usually, and then I have, uh, a virtual background with the company logo. So, it's like, uh, you really have to like prepare for it, and you know that's essentially like the main way they see us, so, we put in a bit of extra effort to make sure that we look good on video camera."

Managing teamwork and camaraderie. Another stressor experienced by managers was to take the extra step of ensuring camaraderie and teamwork persists, due to the lack of physical interaction and barriers present during videoconferencing. MM8 added:

> "But if they, if that week seems to be very busy or short week, I normally ask them like hey do you need time with me? If you don't need then let's cancel the meeting but if you need, just feel free to put time on my calendar anytime. But, uh, for now, you know, stepping into this new role, I want to at least set that expectation with them so that they understand that there is someone that, uh, is there for them and not just like let them roam around and just do whatever they want."

This gesture was also acknowledged by frontline employees, as they were aware of the additional responsibilities managers undertook in terms of keeping in touch with their teams. FE15, a wireless research engineer at an automobile organization, shared:

> "Yeah it was good, you know, whenever you need something, you call them, you text them. So it's difficult for the manager, but for me it was for my advantage. I had an issue, I drop a message at 7:30, once he's online he'll give me a call and settle the things as early as we can. If it is physical then, uh, we need to find a slot to meet him, appointment… Yeah, here I can see the calendar, when he's free."

Thus, a summary of the stressors, strains, and coping measures, as shared by the interviewees, is presented in Table 4.

Table 4

Summary of Experienced Stressors, Strains, and Coping Measures

Techno-Stressors	Socio-Relational Stressors	Strains	Coping Measures

Lack of participation in meetings and calls	Invaded private space	"Zoning out," fatigue, anxiety, dread	Exercise and physical fitness
Too many/overlapping responses in meetings and calls	Blurred lines between work and home	Sensory overload, need for social isolation	Watching shows, online shopping
Managing time with colleagues and clients	Videoconferencing as parents	Annoyance at loved ones	Using technology in terms of eBooks, gaming
Having meetings without the video camera on	High misconception and miscommunication	Mounting a 'performance' to hide the strains	Social interaction

CHAPTER VII

Discussion

The COVID-19 pandemic has undoubtedly been an unprecedented time for individuals around the world, especially working individuals who have seen changes within both their organizations as well as their personal lives. This one-of-a-kind global event not only provided an insight into employees' working conditions and habits, but also their changing relationship dynamics. The notion of remote working in today's world is remarkably different from before. New ICTs, especially new videoconferencing tools such as *Zoom, Microsoft Teams, Google Meet, Skype,* etc., have evolved connectivity and virtual interaction to an unparalleled degree, such that employees prefer to continue to work remotely and use these tools as a standard in their work. Such an overdependence and overuse of these tools have made a substantial impact on their socio-relational milieu, and this impact has often been stressful for them.

This study shed light on understanding employees' experience of stress as they turned to videoconferencing during pandemic-caused remote working, thus providing value to the subjective knowledge measured here. It explored this stress experienced from both the technology as well as the communication of videoconferencing, in terms of the characteristics or "stressors" of videoconferencing, the "strains" incurred by the employees, and the "coping" mechanisms they adapted to counter the stress. Guided by the framework of technostress (Brod, 1984), this study explored videoconferencing-induced stress in terms of its overload, invasion, complexity, insecurity, and uncertainty. From the results, while participants did not experience instances of insecurity and uncertainty, a considerable understanding of the other factors was noted. Additionally, this study also expanded upon the construct of socio-relational stress, which can be described as the stress involving not only individuals' self-perception, but also from the members of their closest social group, like

their family, friends, roommates, as well as their colleagues and managers. This study amalgamated videoconferencing, a technology tool used by individuals with their communication with their interpersonal relationships, as well as placed these constructs into the broader literature of stress, strain, and coping. This thus presented technology and social relationships, which have had equal influence on employees in the current environment, in conjunction with one another.

These results were achieved through the 30 interviews and 7 diary studies by employees working across different industries in Singapore and were divided based on their hierarchical structure within their organization, i.e., frontline employees as well as mid-level employees. Through their interviews, employee experiences were seen to be quite often distinctive and paradoxical. Employees felt the depleting communication effectiveness over videoconferencing, yet preferred to keep their video cameras off, which further impacted the media richness of videoconferencing. Employees who preferred to have face-to-face communication over videoconferencing also preferred to WFH in the future. Additionally, employees, whose strains were evident in terms of dissociating themselves from social interaction due to the overload from videoconferencing, preferred to have more social interaction as a way of coping from that stress. These paradoxes can thus depict the unprecedented effect of the pandemic and the subsequent drastic increase in videoconferencing (Vargo et al., 2021), which did not give employees and organizations time to adapt. The pandemic has been a growing predicament, with changes related to WFH arrangements seen every day. Singapore, especially, has seen repeated switches between WFH and working in the office over 2020 and 2021. Furthermore, the findings from the interviews can also show the conflict between employees' need for more physical and social interaction and their preference of working from the comfort of their homes.

Of course, there are a number of caveats which may have led to such distinctions. Due to the pandemic, employees had no choice but to videoconference, which discards the aspect of choice for them. Employees had to adapt to various components of videoconferencing which came in as an addition to WFH. Factors such as internet speed, environmental noises and disturbances, new and uncommon ways of social interaction, and staying with family and roommates for extended amounts of time have created a sense of disarray among employees. Through their hesitations and pauses which can be noted and returned to only through orthographic transcribing, these emotions on confusion were analysed. Despite being over two years into the pandemic, employees' relationships with their family, roommates, and colleagues are yet to be stabilized. Either way, the interviews gave an insight into the stressors, strains, and coping mechanisms of employees from videoconferencing when WFH.

Overall, the results from both the interviews and diaries shed light into the post-COVID-19 videoconferencing among employees. They provided evidence of technostress among employees, which is prevalent among studies done on working individuals since the pandemic (Blanchard, 2021; Vuillème, 2020). However, two new perspectives can be found through this study. First, while there have been studies on technostress among remote working employees since the pandemic, they have been based on a more quantitative structure, such as through surveys (Salazar-Concha et al., 2021). This study adopted a qualitative style, such as interviews and diaries, to explore technostress and socio-relational stress, including identifying the stressors, strains, and coping measures. The interviews provided a narrative of these elements and compared the impact of socio-relational stress, which was found to be higher than the technostress experienced. Additionally, the diary entries by the employees provided a more real-time and candid response from the individuals, while also corroborating the relationship between stress, strain, and coping found in the works of Lazarus & Folkman (1987) and Decker & Borgen (1993). Employees' diary entries

such as using social interaction as a coping mechanism as a result of more videoconferences and strain from technostress shed a new light into the nature of remote working employees.

Second, this study also sought to understand whether the levels of technostress and socio-relational stress varied among employees across different levels or hierarchies in the organizations. Often, studies on technostress in an organizational environment grouped employees as a collective entity (Lickel et al., 2000; Blanchard, 2021). Additionally, the impact of technostress or even socio-relational stress across the different levels of hierarchy in organizations have seldom been delved into. This study provided qualitative accounts of managers facing more stressors and holding more responsibilities as against frontline employees, such as ensuring more presence through switching on the video cameras and audio options, as well as managing teamwork and maintaining camaraderie.

This study delved into the concepts of videoconferencing, technostress, and socio-relational stress among employees in a post-pandemic remote working environment, which has undergone a sea of change. Through the interviews and diaries, news perspectives were found, pertaining to each concept and construct. As such, the contribution of this study is to (1) relook into the construct of videoconferencing in today's world, (2) relook into the framework of technostress, from a socio-relational angle, as well as (3) explore socio-relational stress further, which has become the most evident form of stress among remote working individuals.

A Relook at Videoconferencing

Videoconferencing, over the years, has been one of the prevalent modes of organizational communication, bringing all employees, stakeholders, and organizers under one platform (Creighton & Adams, 1998; Sonnenwald et al., 2003). With new technologies and futuristic upgrades, videoconferencing has evolved from a sound-proof room for international meetings in offices to small applications one can access from their laptops and

phones with equal–if not more–ease. As mentioned before, videoconferencing of today is not restricted to the former rules and regulations of having the video camera on, the audio on, and looking and presenting with a formality which complement the brand of the organization. From the interviews, it was seen that employees were given leeway of keeping their video camera off, and they were often seen to be muted in calls, thus showing how videoconferencing, once a tool with specific usage and etiquette, turned into a more free-flowing and adaptable technology tool. While these new features and the leeway to personalize or even customize in terms of the background filters, avatars, and chatrooms, they have also created a confusion among employees in terms of its usage, as well as the etiquette involved for effective meetings. Participants expressed being confused with keeping their cameras on or off, speaking out of turn or not speaking at all, and even falling prey to miscommunication and often instances of arguments in calls.

Additionally, from a socio-relational perspective, there was a sense of confusion among employees in terms of interacting with their family or roommates while on calls, experiencing interruptions over others "barging in," and blurring of their work and home lives due to the trickling of videoconferences into their free time or family time. These insights can help pave a way to constructing norms and regulations regarding videoconferencing among remote working employees.

A workplace guide to videoconferencing. With a sharp increase in videoconferencing post the COVID-19 pandemic, investments towards purchasing more videoconferencing apps and upgrading existing tools had become a priority for organizations across the globe (Stone, 2020; Pandey & Pal, 2020). As such, employees were shown to spend more time on videoconferencing, which created a need for adhering to some established norms or guidelines for them to follow. However, the results identified that norms

regarding videoconferencing in the workplace have been vague. This arises from two factors, which were seen through the interviews.

First, employees, especially new joiners, were seen to have problems with regards to adjusting with videoconferencing at work, due to not being able to identify their company or team culture. Employees, especially those who have joined from different industries altogether, had to seek clarifications from their Human Resources (HR) teams on videoconferencing norms and guidelines, which were not established or explicitly shared. This shift in learning about the ways of videoconferencing at work added to the stress of the new job and concurrent workload employees experienced. Interviewees chose to accept the status quo, despite their stress. Additionally, the results suggested that personality played a factor in the video camera choices among employees. One of the strains for employees was the anxiety and panic generated from speaking in calls or presenting. Interviewees highlighted being put on the spot or being bombarded with questions, which resulted in significant stress on them.

Second, the results also indicated the conundrum of not receiving any response in the calls, or receiving too many comments in the larger group meetings. Interviewees often incurred the stress of not being able to effectively get the message across due to the lack of feedback, or receiving too much input and background noise, often hindering the quality and effectiveness of the communication. This relates to the lack of awareness, or rather, a lack of clarity on the "when and where" to respond or comment in calls.

Together, there is a lack of a common understanding, or explicitly stated norms or etiquette of videoconferencing among employees, generating further questions on who should be accountable to create such norms, including the organization or the team leaders. Interviewees' comments imply a want for clarity, to understand the etiquette to speak, listen, present themselves, or comment in these videoconferences. With years into the pandemic,

interviewees have adopted makeshift norms for themselves during videoconferencing, but have nevertheless still experienced stress, which persists when they change jobs. Considering how videoconferencing is set to continue to be the most important mode of communication in the future, given the hybrid work setups adapted by companies worldwide, a guide to videoconferencing and norms regarding both the technical aspects such as video camera and audio options, as well as the etiquette-related aspects such as speaking or responding during presentations or identifying instances of speaking out of turn or not speaking at all.

Understandably, the interviewees have also expressed instances of their videoconferences extending to their free time, which further indicates a lack of a guideline on when to draw the line between videoconferencing and spending their free time.

A conversation on videoconferencing boundaries. From a socio-relational perspective, the results have indicated a lack of agreement among the interviewees and their family or roommates regarding the interruptions they experience during videoconferencing. The interviewees often experienced people "barging in" or assuming their time at home as free time for household chores, which have also led to cases of burnout, due to the doubling of work for the interviewees, both in terms of office and household work. While in some cases, the results reported that such interruptions were welcome as a break from the stressful video calls, other results have shown a decrease in the relationships among the interviewees' socio-relational sphere.

Interviewees shared their experiences of outbursts of anger or annoyance at such interruptions as strains from the socio-relational stress. However, only few interviewees expressed how early and authentic communication with their family members stopped or limited these interruptions over the course of the pandemic. Unfortunately, this was not the case with most other interviewees, showing a lack of a conversation on the boundaries needed to be established in terms of videoconferencing. This also was seen among employees

who were parents or lived with children in their homes. As such, the interviewees expressed their dissatisfaction of WFH due to the constant interruptions.

The results thus indicated that interviewees having a healthy conversation with their family and roommates regarding their videoconferencing boundaries experienced lesser stress when compared to those who didn't.

A Relook at Technostress

Technostress (Brod, 1984; Zito et al., 2021) was adapted as the theoretical framework for this study, as various studies on technology-related stressors from ICTs and their impact on employees, especially since the pandemic, have been conducted, showing clear evidence of stressors such as information overload, complexity of technology, multitasking, etc. on remote working employees or individuals in general. While technostress incorporates these factors and more, Ragu-Nathan et al. (2008) divided the concept of technostress into techno-overload, techno-invasion, techno-complexity, techno-insecurity, and techno-uncertainty. These factors thus establish the various stressors generated by the overuse or overdependence of technology.

However, the results of the study did not indicate the stressors of techno-insecurity and techno-uncertainty, thus suggesting that the techno-stressors experienced did not apply to the interviewees' concerns with their job profile or their job longevity. This result could be due to the nature of videoconferencing in a remote working environment, which was purely for the purpose of facilitating work, as against threatening employees' work and job prospects. These factors can be said to have an adverse impact on employees whose work can be automated by technology, which does not include all industries and sectors. Nevertheless, techno-insecurity and techno-uncertainty are not only conceptualized in relation to automation but also competitiveness, which can be described as being replaced by employees with more knowledge and skill in ICTs, and in this context, videoconferencing tools.

The stressors most commonly included instances of overload, which not only included the overload of technical components, but the overload of communication or information, and the need to maintain social interaction and relationships, giving these stressors a socio-relational narrative. Similarly, techno-invasion was commonly experienced by the interviewees, with respect to disruptions in their work-life balance, as the results indicated them using videoconferencing during their mealtime or being unable to spend time or head out with family or friends. However, such stressors had a compounding effect, which were more socio-relational in nature. In this study, techno-invasion was not only reflected in terms of disrupted work-life balance, but it also involved layers of miscommunication, and changes in relationship dynamics, thus providing a magnified perspective on this factor, as discussed below.

Furthermore, techno-complexity, which refers to a gap in knowledge when adapting to advanced ICTs (Ragu-Nathan et al., 2008), was seldom experienced by the interviewees, as most interviewees were already aware of and used to multiple videoconferencing tools such as Zoom, Microsoft Teams, etc. This made them adapt to new apps, which are similar in terms of their user interface and collaboration tools involved. This further leads to the question of whether techno-complexity, in addition to techno-insecurity and techno-uncertainty, are applicable or relevant in today's working scenario. The results indicated that the interviewees were more than used to the existing apps, using more than one for their work as well as for their personal use. The overdependence of videoconferencing acts as an opposing factor, which makes the complexity of videoconferencing redundant in most cases.

As such, technostress becomes a framework that is ever evolving, and with the pandemic, there arises a need to relook at its factors or stressors and discuss its relevance.

An expansion of techno-overload. Techno-overload has been described as the high-speed usage of technology over an extended period of time, or an overload due to a change of

work habits or work speed as a result of using new technology (Ragu-Nathan et al., 2008; Tu et al., 2005). Evidently, the interviewees all indicated an overload of the use of videoconferencing throughout their remote working during the pandemic. However, this overload was not necessarily attributed to the high speed of usage or change in work habits or speed from videoconferencing per se; they were the effects of the pandemic, which acted as a catalyst towards such stressors. Many interviewees expressed that they were used to videoconferencing, it was the sudden transition to remote working that created the techno-overload. Additionally, while techno-overload refers to the overload of the technical aspects of technology tools, the "communication overload" was something that techno-overload, as a theoretical term, can be expanded to incorporate in future studies. The results indicated many instances of communication overload, including the constant and overused access to videoconferencing anytime during the day, the chats interviewees received asking for calls, as well as the exchange of information and communication overload (Maier et al., 2014) from larger meetings or group videoconferences. Such stressors from videoconferencing resulted in a "sensory overload" for the interviewees. Additionally, techno-overload can be conceptualized through the comparison of the overload from technology and offline load, which, in this case, was not achievable. The pandemic expunged the aspect of working offline, and employees had no option but to work online and thus develop an overdependence on technology. This, again, can be considered in communication technology-related research in future, as employees have adapted to the overload of technology during the pandemic.

Expansion of techno-invasion. Techno-invasion was described as the connectivity overload or invasion which muddles work-life balance (Tarafdar et al., 2007). This results in less time being spent with family or for oneself, as the same time is directed towards learning or adapting to the new technology (Tu et al., 2005). Indeed, the results explicitly indicated that videoconferencing when working from home resulted in techno-invasion. However, there

was more to the invasion of spending time with family or oneself. First, the results indicated an invasion of the interviewees' private space, which stemmed from using videoconferencing in a shared space, thus creating stress in them. Second, the invasion also created a compounding effect on the interviewees' socio-relational sphere. For example, being unable to spend time with their family due to the excessive videoconferencing was a stressor for individuals, which in turn, compounded into another stressor of creating rifts in the relationship dynamics between employees and their families, which then further led to stress and a compounded strain. As some interview questions were more specific to the employees' interpersonal relationships, the results indicated that techno-invasion further proliferated into different stressors. Thus, various environmental factors and compounded factors indicate techno-invasion among remote working employees.

Relooking techno-insecurity and techno-uncertainty. Earlier studies suggested the impact of ICTs on employees' turnover intentions, productivity, organizational commitment, and job satisfaction, in addition to depleting manager-employee relationships and impacting bottom-line employees (Ayyagari et al., 2011). They also included impact on job autonomy, IT pace and task independence (Suh & Lee, 2017). However, these factors are construed in an organizational context, where the benefits are inclined towards job satisfaction, employee turnover intention, and organizational commitment (Marchiori et al., 2019), rather than individual wellbeing and improvement of their psychological and behavioral states (Christian et al., 2020). The interviews and diary studies were employee-centric, rather than organization-centric. This provided an insight into the needs of employees in a post-pandemic WFH environment, where the stress experienced through videoconferencing were more individualistic and socio-relational, rather than having an organizational perspective in term of organizational commitment and job autonomy. Employees prioritized their individual wellbeing as well as their interpersonal relationships, and expressed their stress, strains, and

coping under these themes. This further has implications on how organizational commitment and job retention play a role in current circumstances, and especially with the stress incurred from videoconferencing. This raises the question on whether organization-centric factors play a role in technostress from an employee-centric perspective.

In summary, technostress has been a framework for many decades, and is constantly evolving as with the constant evolution of technology. With newer, faster, and more futuristic ICTs being introduced into the lives of individuals every day, new factors of technostress are bound to emerge.

A New Look into Socio-Relational Stress

This study proposes a new look into socio-relational stress, which can be described as stress not only in relation to an individual's identity (Burke, 1991) and peer relations (Sontag et al., 2008) individually, but grouping them into an individual's closest links in his/her social milieu. Individuals' social system is more macro in nature (Wheaton, 1999), and thus harder to quantify. Social stress (Aneshensel, 1992) provides an insight into the stress individuals perceive in terms of their social strata, which are culminated over individuals' life events. Socio-relational stress, therefore, looks into the closest layer of an individual's social relationship. The pandemic, and the resulting social limitations made it easy to identify an individual's closest links in terms of their work and homes. The results suggested that employees' closest links included their family and close friends, roommates (if any), and their colleagues and managers at work. The stress generated from these estranged relationships due to the overuse of ICTs and excessive videoconferencing usage provided a holistic approach to an individual's stress with respect to his/her social milieu. While the technology of videoconferencing resulted in techno-invasion, the communication of videoconferencing led to stress in the interviewees' relationships at home, including family, romantic partners, and roommates, as well as their closest links at work, including their team

members and managers or supervisors. These links incorporate and amalgamate individual studies on work-home conflict and invasion of privacy (Ayyagari, 2011; Suh & Lee, 2017) as well as their interactions with their team members (Blanchard, 2021).

Beyond work-home conflict. Various studies have delved into work-home conflict (and home-work conflict), which refer to the disruption of the relationship in individuals' work and home lives (Ayyagari, 2011; Suh & Lee, 2017). However, work-home conflict is often time-based and strain-based, which precludes an individual to meet the demands at both work and home. Socio-relational stress goes beyond the conflict by identifying the stressors of the strained relationships at work or home, which go beyond the concerns of time or attention. The results indicated stressors such as miscommunication, misconceptions, invading of private space and being unable to distinguish work and home lives during the pandemic. The interviewees expressed their challenges that not only put them in the quandary of choosing work or home, but experiencing stress both from their family as well as videoconferencing, such as working together in close quarters, or solving connection issues on Zoom for both themselves and their children. This provides a broader perspective on the stressors and subsequent strains from an individual's socio-relational perspective.

Establishing the "first layer" of interpersonal relationships. The pandemic-induced remote working environment narrowed employees' closest links to their family and/or the ones they live with, their romantic partners or friends, as well as their closest team members and managers at work, thereby establishing the "first layer" of their interpersonal relationships. The stress produced from these estranged relationships due to videoconferencing provides as insight into how similar or different individuals' interactions with their closest links and other interpersonal relationships are. This lays the groundwork for future research into socio-relational stress, which not only stems from their overuse of technology, but also any external source that threatens the equilibrium of these relations.

Coping and Technostress

Another dilemma that was observed was the use of technology as a coping mechanism from the stress of the overuse of technology itself. While different perspectives were shared by the employees, it can be amiss to consider the potential proliferation of technostress. Participants shared their experiences of using videoconferencing after work to stay connected with their friends and family. This may imply an addition to their technostress, as well as their socio-relational stress due to the continuation and overuse of the tool. Clearly, other forms of technology tools were also used as a coping mechanism, such as online or PC games and e-books. These, too, have technostress-inducing features, which could arise in the form of extended screen time and extended hours of use. Interestingly, the responses from the diaries pertaining to the participants' coping measures did not include use of such technology tools, albeit with the exception of watching or streaming shows or movies online. This could further imply that coping measures in the form of reading or playing games may pertain to only a specific demographic. The majority of entries on coping from the participants in the diary studies pertained to them choosing social interaction.

Limitations and Future Research

This study explored the implications of videoconferencing among remote working employees in a post-pandemic environment through the frameworks of technostress and socio-relational stress. While the results shed light into the stressors, strains, and coping measures interviewees adapted to counter the stress of videoconferencing, some factors serve as potential challenges and limitations to this study.

First, the methodology intended for this study was qualitative in nature, which involved interviewing participants as well as constructing a virtual "diary" the participants filled over the duration of a week. As the interviews were semi-structured and open-ended (Adams, 2015), due to the nature of self-report results, responses may reflect a social

desirability bias (Podsakoff & Organ, 1986), where interviewees might downplay or exaggerate their experiences with videoconferencing-related stress to be perceived in a positive light. Moreover, videoconferencing in itself could be a limitation, as participants may not have disclosed all their experiences which might be personal to them due to the virtual barrier, in addition to potentially missing out on some contexts and meaning due to the lack of non-verbal cues. Participants who experienced more technostress may have also chosen to not participate in this study, thus attributing to a possible selection bias. While the diary entries by the participants provided a more genuine and candid response (Bolger et al., 2003), the responses were often short and curt, which may not reflect the entirety of the participants' experiences. However, there was no option to have face-to-face interviews due to the strict restrictions in Singapore during the time of data-collection. Future studies can perhaps explore face-to-face interviews while adhering to government guidelines in their respective geographies.

Second, as the study was conducted during the pandemic and in a virtual, WFH environment, the employees may have construed their stressors, strains, and coping measures as a result of the pandemic overall, and not particularly from videoconferencing during the pandemic. Various measures were taken to ensure that the responses are specifically related to videoconferencing; the employees were given a complete explanation on the study as well as the interview questions and diary prompts were specifically related to videoconferencing. However, there might still be an overlap in their experiences from videoconferencing and from the pandemic. As this study seeks to understand employees' experiences from this unprecedented time with regards to their use of videoconferencing and the stress they experience, future studies can provide a more distinctive division in employees' experiences to further pinpoint the causes of the stress.

Additionally, considering the ever-changing nature of the pandemic, and the rules revolving WFH and work in office, this study may not be applicable towards those industries which do not have a scope for a WFH setup. While this study incorporated interviews of employees from various sectors such as banking, finance, education, and more, industries incorporating essential workers such as transport, medicine, and economists may not have experienced the transition to WFH. While they may not be specifically organizational in nature, even few roles within organizations, such as Real Estate and workplace health teams may not have the same remote working experience as the interviewees.

Furthermore, the impact of the pandemic differed with different countries. While Singapore ensured strict measures regarding WFH, places like USA, India, and South Korea may have different WFH measures and guidelines to abide by. This also factors in the videoconferencing usage at home as well as at work.

The ever-changing working environment from the pandemic also puts forth the questions of WFH in the future or a permanent shift back to working from office. While many studies and statistics have indicated that WFH will be the default or a highly preferred working style of the future (Lund et al., 2021), the intensity of the work depending on each sector, and each region, may vary. This, in turn, may also shape different stress experiences among employees.

Finally, while the research was conducted with the utmost impartiality and neutrality, being conducted by a single researcher, the study may have been prone to self-reflexivity and researcher bias (Lune & Berg, 2017). Without diverse perspectives and critiques, there could have been an increase in empathy for the participants.

However, this study provides a broad scope for future research. While this study was qualitative in nature, a more quantitative approach which provides a perspective of a larger population through surveys can add new insights to the study. Additionally, experimental

research, especially towards the use of videoconferencing and observing immediate stress responses through physiological, psycho-physiological and psychosomatic methods like EKG, blood pressure, etc. (Richard & Krieshok, 1989) can generate a more circumstantial insight into the strains experienced by employees. Another scope for future research is the inclusion of employee perspectives from levels in organizations, including senior management or leadership-level and CEO/COO-level.

Conclusion

While videoconferencing has been the most significant communication tool in a post-pandemic remote working environment, it has had its share of advantages and disadvantages. The unprecedented nature of the pandemic, which has lasted over two years now, along with the lack of physical and social interaction among employees, has created a one-of-a-kind shift in employees' working habits, stress levels, and interpersonal relationships. Videoconferencing, per se, has become the new norm of communication, yet norms around its usage and the etiquette required for effective communication is still not explicitly stated. To ensure effective communication among employees in videoconferences, and reduce the stress generated, it is imperative for employees as well as organizations to take measures to thrive in the "new normal." Additionally, effectively maneuvering employees' socio-relational sphere, which has proven to be generating considerable stress among them, can be a route to be pursued.

The future of work is precarious. With the easing restrictions and the normalizing of the COVID-19 disease, organizations are trying to recalibrate their working structures. While some companies are adopting a hybrid work format, some companies, at the same time, are pushing employees to work from office. Employees who have been working from home and have made environmental, psychological, as well as financial adjustments to continue their work from home may be forced to take a course with regards to their future style of working.

This would, in turn, affect their videoconferencing habits, as well as impact the investments made by organizations towards videoconferencing. How would the future of work affect employees who work in sales jobs, as against employees who work in more backend jobs? Though rather unsystematic, the option of videoconferencing has been adapted by employees across hierarchies, industries, and locations. Employees are also aware of the overwhelming impact of videoconferencing and ICTs in general, and the fact that they may have to live with the overdependence of technology forever, despite the stress generated. The future of work, as uncertain as it may sounds, will provide newer perspectives on videoconferencing, technostress, and socio-relational stress from an employee perspective, and it will be a matter of time till we see the ripple effects and newer innovations to make the lives of employees simpler. A new chapter just over the horizon.

CHAPTER VIII

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Appendix A

Institutional Review Board Approval

NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE

RESTRICTED

IRB-2021-845

7 February 2022

Assoc Prof Edson C Tandoc Jr.
Wee Kim Wee School of Communication and Information

Dear Assoc Prof Edson C Tandoc Jr.,

NTU INSTITUTIONAL REVIEW BOARD (NTU-IRB) APPROVAL

Project Title: TACKLING TECHNOLOGY AND SOCIAL TIES: THE STRESSFUL IMPLICATIONS OF ORGANIZATIONAL VIDEOCONFERENCING ON EMPLOYEES DURING COVID-19

We are pleased to inform you that the NTU-IRB has approved the application as titled above under **Expedited** review.

The documents reviewed were:
a) NTU IRB application form dated 17 January 2022
b) Participant Information Sheet and Consent Form_Shruti.docx
c) Interview Guide_ShrutiMalviya.docx

The approval period is from **7 February 2022** to **30 September 2022**. The NTU-IRB reference number for this study is **IRB-2021-845**. Please use this reference number for all future correspondence.

The following protocol and compliances are to be observed upon NTU IRB approval:

1. Any research involving subjects less than 21 years old would require IRB approved written Parental Consent and consent from the participant before any research protocols can be administered unless waiver of consent is given by the IRB.

2. Only the approved Participants Information Sheet and Consent Form should be used. It must be signed by each subject prior to initiation of any protocol procedures. In addition, each subject should be given a copy of the signed consent form.

3. Consent forms are important confidential documents therefore they should be stored in the strictest arrangement. Loss of consent form could result in disciplinary action. Please refer to NTU's Data Governance Policy for handling and storage requirements.

4. No deviation from, or changes of, the approved protocol, the consent form, or advertisement should be initiated without prior written NTU IRB approval of an appropriate amendment. Modifications to an approved protocol require an amendment application.

NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE

5. The Principal Investigator should report promptly to NTU IRB regarding:
    a. Any incidents arising from the study (e.g. unanticipated problems, protocol deviations, adverse events, data loss, etc.).
    b. Changes increasing the risk to the subjects and/or affecting significantly the conduct of the study.
    c. New information that may adversely affect the safety and welfare of the subjects.
    d. Completion of the study.

6. Continuing Review / Project Closure forms should be submitted to NTU IRB for the following:
    a. Continuing Review: Status of the study should be reported to the NTU IRB at least annually using the Continuing Review form.
    b. Study completion or termination: Project Closure form is to be submitted within 4 to 6 weeks of study completion or termination.

7. All Principal Investigators should comply with existing legislation that would have an impact on the domain of their research.

Yours sincerely
Dr Lim Jui
Chair, NTU Institutional Review Board
encl.

(This is an electronically generated document. No signature is required)

Appendix B

Interview Guide

NOTE TO INTERVIEWER: Please remember to record the interview. An audio recording will do. If you are using Zoom, you should be able to record the entire interview in which there will be an option to only keep the audio recording segment.

Consent

We will give you a $10 incentive for your time via PayNow. Please do also send me your signed consent form when you are ready. For the record, I would also like to ask for your consent verbally. Do you consent to participate in this interview? Please say yes if you agree. Thank you. Again, this interview will be audio-recorded for transcribing purposes. The interview is confidential, and we won't name you in any of your reports.

Introduction

Hi _____, once again, thank you so much for agreeing to participate in this research. The purpose of this interview today is to explore videoconferencing use among remote working employees during the pandemic, and how it has impacted employees in terms of fatigue and stress, which is the topic of my Master's thesis.

Before we begin, I would just like to clarify that there are no right or wrong answers for this, so please feel free to share your honest thoughts and opinions.

This interview will be audio-recorded, but your response will not be identified with you in either the transcript or the final paper. Also, your participation today is voluntary, and you can opt-out at any time. Additionally, if you wish to expunge any of the comments that you made today, please let me know.

If you do not have any questions, we will begin the interview now.

Demographics/background

- Could you state for me your name, your age, your designation, and how long you have been working in your organization?
- How long have you been at your current position?

COVID-19 and WFH

- For how long have you been working from home?
- How has the pandemic impacted your work? *(probe for changes in work routine, environmental changes, free time, breaks)*
    - What challenges do you encounter when you WFH?
- How would you describe a typical day of your work now? How does it compare to before the pandemic?
- How often have you been using technology since transitioning to WFH?
    - What kind of apps have you been using, and for what purpose?
- How would you describe your work-life balance during the pandemic?
- How do you feel about the default WFH option?
    - How would you feel about heading back to work once it is over?

Videoconferencing Use

- How often do you videoconference during your work? *(probe for daily hours spent, time of the day with most videoconferences, purpose)*
- Can you describe your most recent videoconference meeting?
    - What settings do you use? *(probe for use of mute, webcam, etc.)*
    - What did you talk about in this meeting?

    - How many participants were there?
    - Did you use any backgrounds or filters?
    - Did you use any collaboration tools such as reactions, raising hand, pen or markers?
    - Did you use the chat option in the videoconference?
- Which videoconferencing apps do you frequently use, and for what purpose?
    - How would you compare these videoconferencing apps?
- Are you given a choice for using particular videoconferencing apps at your work?
    - Is it different from the apps you use personally?
    - What made you decide to choose _____ over other videoconferencing apps?
    - Zoom is the most used videoconferencing app at the moment. Why do you / your work choose _____ app over zoom *(if applicable)*?
- What advantages do you find in videoconferencing?
- What disadvantages do you find in videoconferencing?
- Would you rather prefer alternative options to videoconferencing, such as emails, and phone calls? If so, why?

Videoconferencing Fatigue

- How would you compare videoconference meetings to face to face meetings?
- How do you feel after your videoconference meetings? *(probe for any anxiety-like behavior, fatigue)*
    - Do you have any physical symptoms during or after videoconferencing? Like back aches, sore eyes, etc.
    - How are your energy levels after a videoconference?

Technostress and Strain

- How would you describe your stress level when WFH?
    - How much of it is because of videoconferencing? *(compare and contrast)*
        - What is it about videoconferencing that stresses you out? *(if stress is more from videoconferencing)*
        - How do you find face to face communication more stressful? Why? *(if stress is less from videoconferencing)*
- How has your work life been impacted from technology and videoconferencing?
- How has your personal life been impacted from technology and videoconferencing?

Socio-relational Stress and Strain

- Do your live alone or with your family or friends?
- How is your experience living with them since the pandemic *(if applicable)*?
- Do you feel your private space is invaded when you are in a video conference?
- How is your overall relationship with your spouse / family since WFH?
    - How do they feel about your working from home?
    - How do they feel when you are videoconferencing?
    - How has your behavior towards them changed?
- How is your relationship with your colleagues, managers, and stakeholders since WFH?

Coping

- How do you usually manage your stress?
- Are there times when you feel frustrated over videoconferencing? Why?
    - What do you do to unwind / manage your stress *(if applicable)*?

- What do you like to do after you finish your work?
    - How does this compare to your activities when working at your office?
- How does your family help you in managing your stress?
- How does your organization help you in managing your stress?

Conclusion

Is there anything I should have asked but I did not?

We have come to the end of the interview. Before we end, do you have any questions or anything you want to add on? [wait]. Great. If you have any further questions or comments at any point in time, please feel free to contact me. Thank you again for your time.

Diary Guide (to be created as an online form)

Please complete the form in two parts: PART A: after at least *one videoconference meeting each day*, PART B: at least *once per day*, and provide sufficient details about the activities stated below. (You may write additional information under the 'Any other comments?' section, if necessary.)

PART A

Date:

Videoconference time started:

Videoconference time stopped:

Purpose of the videoconference meeting:

Number of participants in the videoconference meeting:

1. How do you feel after the videoconference? Please describe how you felt.

_____

_____

_____

_____

_____

2. Did you feel stressed after the videoconference? Please describe how you felt.

_____

_____

_____

_____

_____

3. Did you feel tired after the videoconference? Please describe how you felt.

_____

_____

_____

_____

_____

4. Any other comments?

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

PART B

Date:

1. How was your day?

_____

_____

2. How many videoconferences did you attend today?

_____

_____

3. How stressed did you feel today? Why?

_____

_____

_____

_____

_____

4. What did you do today to de-stress? Please describe.

_____

_____

_____

_____

_____

5. How was your interaction with your family and close friends today? Please describe.

_____

_____

_____

_____

_____

6. How was your interaction with your colleagues today? Please describe.

_____

_____

_____

_____

_____

7. Any other comments?

_____

_____

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