5-2022

Telecommuting Antecedents and Outcomes Within a Turbulent Global Context : The Incremental Explanatory Utility of Technostress and Role Strain

Renata Garcia Prieto Palacios Roji

Telecommuting Antecedents and Outcomes Within a Turbulent Global Context: **The incremental explanatory utility of technostress and role strain**

A DISSERTATION

Submitted to the Faculty of

Montclair State University in partial fulfillment

of the requirements

for the degree of Doctor of Philosophy

by

Renata Garcia Prieto Palacios Roji

Montclair State University

Montclair, NJ

May 2022

Dissertation Chair: Dr. John Kulas

MONTCLAIR STATE UNIVERSITY

THE GRADUATE SCHOOL

DISSERTATION APPROVAL

We hereby approve the Dissertation

Telecommuting Antecedents and Outcomes Within a Turbulent Global Context:

The incremental explanatory utility of technostress and role strain

of

Renata Garcia Prieto Palacios Roji

Candidate for the Degree:

Doctor of Philosophy

Graduate Program:

Industrial and Organizational Psychology

Certified by:

Dr. Scott Herness
Vice Provost for Research and
Dean of the Graduate School

5/16/22

Date:

Dissertation Committee:

Dr. John Kulas
Dissertation Chair

Dr. Lauren E. McEntire

Dr. Michael Bixter

Dr. Daniel Simonet

Author Note

Correspondence concerning this article should be addressed to Renata Garcia Prieto Palacios Roji, 1 Normal Ave. Dickson Hall #226, Montclair, NJ. E-mail: garciaprier1@montclair.edu

Abstract

Due to a confluence of pre-existing trends, legislative action, and global health considerations, the nature of work arrangements is transitioning toward greater worker accommodation in the form of telecommuting. The current study focused on explaining telecommuter outcomes (job satisfaction, intent to quit, and general well-being) via retention of a general input-process-output (IPO) model. Within this framework the effects of role strain were explored as potential mediators of the relationships between telecommuting attitudes, networks of support, workload, and telecommuter outcomes. As an additional novel contribution, the presence and prevalence of technostressors was further specified as a potential moderator of these associations. A total of 709 participants took part in this study and completed an online survey assessing each of the variables of interest. The associations tested via correlational analysis and path modeling. The outcome variables were somewhat explained by the experience of role strain. However, technostress was not influential on the strength of the relationships between the antecedents and role strain. Instead, technostress was found to directly impact role strain, leading to the conclusion that there is a need for further exploration of this construct and its role in the telecommuting experience.

Keywords: Attitudes towards telecommuting, well-being, technostress, role strain

Acknowledgments

This manuscript is written evidence of years of dedication to my goals. As an immigrant in this country this personal achievement is filled with both emotion and gratitude to all the people that have made it possible for me to be here today. My family has played a critical role in supporting me throughout this process. They are my most precious support group and are deserving of my full appreciation for reminding me everyday of what is possible and for having faith in those times when I needed it the most. Especially my husband who has always encouraged and challenged me to remain ambitious and true to my passion of learning.

I would like to give a special thanks to my advisor Dr. John Kulas for his support, guidance, and friendship throughout the last four years. I would also like to thank Dr. Daniel Simonet, Dr. Jennifer Bragger, and Dr. Alicia Stachowski for their support and unwavering trust in my abilities even when I doubted them myself. To my dissertation committee and the Montclair State University faculty and staff, I will always be thankful for your guidance, patience, and support.

Dedication

This dissertation is dedicated to my parents and my husband who have always had faith in me and inspired me to pursue my dreams. This is a reminder that dreams do come true with persistence, sacrifice, and most importantly, the support of the people who love you.

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Non-traditional work schedules in the form of flextime, compressed workweeks, and telecommuting have all received focused periods of research attention in the past two decades (e.g., Baltes et al., 1999; Boell et al., 2016; Kreiner et al., 2009), and the popularity of these forms of flexible work has continued to grow for both practitioners and researchers. This has perhaps been facilitated by the increasing capabilities of workers to access relevant resources, including the people they work with, through different information and communication technologies (ICTs; Allen et al., 2015). Adding to this already accelerating trajectory, the outbreak of the COVID pandemic in 2020 pushed a majority of employers toward the immediate adoption of telecommuting. Roughly one year into the global pandemic workforce response, one estimate claimed that 56% of the U.S workforce was still telecommuting all- or part-time as of February of 2021 (as cited in Saad & Hickman, 2021). Additionally, a June of 2021 poll found that 54% of employees who work remotely at least some of the time stated that they would *like to adopt a hybrid work arrangement*, allowing them to work both at home and in the office in the future (Gallup, 2021). Furthermore, additional independent projections claim that this form of work arrangement will continue to grow into the future (GlobalWorkplaceAnalytics, 2020). Undoubtedly, the abrupt pandemic-initiated transition has challenged the way organizations conduct their business and manage their workers (Russo et al., 2021).

Telecommuting Defined

There are many definitional and terminological differences used to describe the focus of the current project [telework, distributed work, virtual work; Allen et al. (2015)], and these semantic differences contribute to a somewhat disjointed literature across studies and fields. To resolve some of this "jingle" effect (Marsh, 1994), Allen et al. (2015) suggest the adoption of a common definition of telecommuting, as "... a work practice that

involves members of an organization substituting a portion of their typical work hours (ranging from a few hours per week to nearly full-time) to work away from a central workplace—typically principally from home—using technology to interact with others as needed to conduct work tasks" (p. 44). This definition is also retained in the current study along with the descriptive label of "telecommuting".

Origins of Telecommuting

The term *telecommuting* was first introduced in the 1970's by Jack Nilles, an engineer for the National Aeronautics and Space Administration and the director of interdisciplinary research at University of South California (Berthiaume, 2020). He suggested the use of satellite offices located geographically closer to employees' homes as a way to minimize traffic congestion, pollution, and gas emissions. Additionally, he claimed telecommuting could potentially lead to decreased levels of stress for employees, as well as increased productivity (Berthiaume, 2020). This new form of work arrangement was first prominently adopted by the federal government, and, by 1997, an estimated 10,000 federal government employees were working from remote locations (Avery & Zabel, 2001). Telecommuting arrangements also began to be used by private organizations to address issues such as talent sourcing, as a benefit or privilege granted to some individuals depending on their work performance or status (Lapierre & Allen, 2006a), and/or as a resource to help employees balance work and family demands (Avery & Zabel, 2001). Advancements in technology further facilitated the use of telecommuting arrangements, especially in the 1980s with the introduction of personalized computers, and into the 1990s with the advent of laptops, cellphones, and the internet (Allen et al., 2015). Another contributing factor to the expanding use of telecommuting was the increase in knowledge-based jobs within the broader economy, which tend to facilitate remote work arrangements (Kaplan et al., 2018).

Legislatively, there were two acts of Congress that additionally incentivized

organizations in the United States to implement telecommuting arrangements. Major revisions to The Clean Air Act (1970) were implemented in the 1990's, which further drove the pursuit of flexible work arrangements. The Clean Air Act requires states to develop enforceable plans to achieve and maintain air-quality standards. The changes done in the 1990's requested that employers develop employee *commute option programs*, with telecommuting specifically being one possible route toward satisfying this legislative mandate (US EPA, 2015). The second important act of legislation that contributed to the increased adoption of telecommuting was the Americans with Disabilities Act (ADA) in 1990. The ADA required employers to make reasonable accommodations for employees with disabilities, and providing flexible work arrangements has the potential to fulfill those requirements for eligible employees (U.S Equal Employment Opportunity Commission, 2003).

The Telecommuting Literature Today

Contemporarily, the state of research on telecommuting exhibits an advanced level of maturity, with at least six comprehensive literature reviews and meta-analyses having been completed as of January, 2022 (Allen et al., 2015; Bailey & Kurland, 2002; Boell et al., 2013; Charalampous et al., 2019; Gajendran & Harrison, 2007; Golden, 2009). This literature reveals both good and bad outcomes for both employers and employees, which are contradictory at times (Allen et al., 2015; Charalampous et al., 2019; Gajendran & Harrison, 2007). The most commonly noted positive outcomes of telecommuting in the literature include perceptions of job autonomy (Allen et al., 2015; Boell et al., 2013; Gajendran & Harrison, 2007), increased levels of organizational commitment (Allen et al., 2015; Charalampous et al., 2019), greater job satisfaction (Allen et al., 2015; Bailey & Kurland, 2002; Boell et al., 2013; Charalampous et al., 2019; Gajendran & Harrison, 2007), and increased levels of productivity and performance (Allen et al., 2015; Bailey & Kurland, 2002; Boell et al., 2013; Charalampous et al., 2019; Gajendran & Harrison, 2007).

Further benefits of telecommuting include decreases in turnover intent (Allen et al., 2015; Bailey & Kurland, 2002; Gajendran & Harrison, 2007), role stress (Allen et al., 2015; Charalampous et al., 2019; Gajendran & Harrison, 2007; Golden, 2009), and work exhaustion (Allen et al., 2015; Gajendran & Harrison, 2007). Additionally, telecommuting may have a positive impact on physical and subjective well-being by increasing employees' ability to balance work and personal lives (Gajendran & Harrison, 2007).

In contrast, noted negative outcomes consistently associated with telecommuting include social isolation (Allen et al., 2015; Boell et al., 2013; Charalampous et al., 2019; Gajendran & Harrison, 2007), the blurring of boundaries between work and home (Allen et al., 2015; Charalampous et al., 2019; Gajendran & Harrison, 2007), increased stress (Bailey & Kurland, 2002; Boell et al., 2013; Charalampous et al., 2019), emotional exhaustion due to lack of social support (Charalampous et al., 2019), greater work-family conflict (Allen et al., 2015; Gajendran & Harrison, 2007; Golden, 2009), and contradicting some other reports, decreased performance levels (Golden, 2009). One variable that could help explain contradictory findings could be *telecommuting intensity* (aka frequency with which employees engage in telecommuting), with those engaging in it more frequently being more likely to experience negative outcomes (Allen et al., 2015). However, it is also believed that there is a "sweet spot" in telecommuting intensity at a level of approximately 15 hours per week (Allen et al., 2015). So far, telecommuting research has mostly focused on part time telecommuters engaging in this work practice voluntarily. The COVID-19 pandemic created a unique opportunity to improve our understanding of how full-time telecommuting can impact employees' work and personal lives.

Current Study Theoretical Framework

The most common theoretical framework retained as a prescriptive model within the telecommuting literature seems to be work-family conflict (see, for example, Lapierre & Allen, 2006a; Molino et al., 2020), which focuses on how employees manage work and

family demands when the physical boundaries between the two are blurred. The COVID-19 pandemic outbreak marked a pivotal moment for flexible work arrangements and changed the future of work. Given that telecommuting is here to stay, it is important to understand the impact that virtual work characteristics have on employees' work-life management and general well-being - regardless of familial status. Therefore, the theoretical framework adopted to inform construct associations is Role Strain Theory (Goode, 1960).

Goode (1960) provides a broad perspective regarding the management of a variety of life roles. For example, in the work and community domains, fulfilling the roles of employee, manager, council board member, and softball coach may require more time and energy than a person has, resulting in conflict (Creary & Gordon, 2016). This conflict may lead to strain. Conflict resulting from attempting to fulfill multiple roles simultaneously can also result in decreased job satisfaction, lower well-being, and increased turnover intentions (Gajendran et al., 2015). Goode (1960) claims that conflict can be experienced in two forms: 1) inter-role conflict (as in the softball and manager roles listed above), or 2) intra-role conflict (as in a manager who need to be considerate while getting things done). Role strain results from difficulty in meeting role expectations whether those expectations arise from the same or different roles. The specification of intra-role conflict is often absent in presentations of work-family conflict.

From Goode's (1960) sociological viewpoint, role strain is normal and inevitable, and people are motivated to reduce strain. Goode's definition of role strain includes two fundamental features. The first is **role overload**, which refers to barriers within a role that interfere with the completion of demands of another role. This conflict results in a limited amount of personal energy to meet multiple demands for multiple roles (as cited in Edwards et al., 2002). The second feature is **role conflict**, which refers to the impact that pressure from role expectations has on a person's psyche resulting in specific behavioral patterns (Kahn et al., 1964). Furthermore, role strain is dependent on the complexity of each role (for example, whether someone has multiple varied responsibilities) and the many

demands the role has on the individual (having to lead others while performing one's own work tasks). Subsequent to these initial specifications Goode (1973) also considered the possibility of **role contagion** (preoccupation with one role while performing another), although ensuing interest in this concept has waned.

Edwards et al. (2002) note that there are inter-individual differences in how people experience role conflict or overload. While some individuals may have enough energy to fulfill the expectations of multiple roles successfully, others struggle to satisfy the demands of one or more roles. Goode (1960) suggests that there are strategies that individuals can engage in to reduce role strain, including: compartmentalization of role specific activities, delegation of role demands, elimination of roles causing conflict (for example, quitting a job with a work schedule that interferes with a workers ability to attend her daughter's soccer tournament), extending ones social network, creating obstacles to prevent role demand overload, and establishing barriers against intrusion (for example, setting a specific work location within one's home to perform work).

Rationale for current study

Telecommuting arrangements have been tied to several outcomes within both the work and home domains such as job performance, engagement, and work-life balance. However, much less is known about telecommuting and employee *well-being* outcomes. Findings throughout the telecommuting literature on employee well-being have been inconsistent. This may be partly attributed to the different ways in which telecommuters' well-being has been conceptualized and measured, as well as the likelihood that telecommuting likely aids some well-being elements (work stress; e.g., Allen et al., 2015; Charalampous et al., 2018; Gajendran et al., 2007; Golden et al., 2009) but harms others (work-family conflict; e.g., Gajendran et al., 2007; Golden et al., 2009; Allen et al., 2015). Additionally, reviews of telecommuters' well-being have focused primarily on workplace well-being indicators (job satisfaction and employee engagement; e.g., Charalampous et al., 2018) without much

attention being paid to individuals' personal or home related well-being.

Given the above, researchers have called for additional investigations to answer questions about the effects of telecommuting on employees' well-being and to help clarify inconsistent findings (e.g., Allen et al., 2015). Additionally, the few studies that *have* investigated the relationship between telecommuting and employee well-being have focused on part time telecommuters. Much less is known about these relationships when employees are engaging in telecommuting more extensively. Given the likely blurred boundaries between work and home domains resulting from telecommuting mandates in recent years, as well as projections that this form of work will become more and more prevalent into the future, it is important to improve our understanding of how extensive telecommuting may impact employee well-being and other outcomes of relevance to both telecommuters and their employers.

In addition to this inclusion of an under researched outcome, two plausible mechanisms uniquely impacting the relationship between employees' well-being and overall work experience while telecommuting are considered. These mechanisms are technostressors and role strain. Technostress is a growing topic in the telecommuting literature, and it refers to the stress experienced by employees resulting from the use and adaptation to information and communication technologies (Tarafdar et al., 2007). There are few studies focusing specifically on the relationships between telecommuting and technostress (e.g., Suh & Lee, 2017; Tarafdar et al., 2007). However, research findings suggest that technology and job characteristics jointly induce telecommuters' technostress (Suh & Lee, 2017). In turn, technostress can negatively affect work-family role dynamics (Leung & Zhang, 2017). As previously noted, role strain may occur due to conflicting inter-role demands (Goode, 1960). As specifically applied to the circumstance of telecommuting, strain may increase as employees try to either segment or integrate their work and home roles in an attempt to achieve work-life balance (Demerouti et al., 2001).

Figure 1 is a visual representation of the initial variables of interest for the current study. As elaborated upon further below, the final retained variables deviate sightly from this initial specification. The subsequent sections provide more detail on each of these variables' relevance for telecommuting.

Constructs of Interest and their Relevance to Telecommuting

I will now discuss each of the constructs presented in Figure 1 and their relevance to telecommuting. Starting with the right-most components (the ultimate outcomes of interest) which include general well-being, job satisfaction, and intent to quit.

Outcome Variables

There's a wide range of outcomes that have been explored within the telecommuting literature including perceived social support, job satisfaction, organizational commitment, and engagement (Allen et al., 2015; Bentley et al., 2016; Charalampous et al., 2019). However, outcomes negatively associated with telecommuting have also been found such as a decreased sense of belongingness, dissatisfaction, and disengagement (Lapierre & Allen, 2006a; Perry et al., 2018; Vittersø et al., 2003). The direction of the relationship between telecommuting and employee outcomes seem to be dependent not only on individual differences, but also on organizational policies and the resources provided to employees while working away from the office (Allen et al., 2015). The Figure 1 model focuses on one under researched outcome (i.e., general well-being), as well as two outcomes of more traditional interest (i.e., intent to quit and job satisfaction).

General well-being

Throughout various literature bases, well-being has been described differently by different researchers. Diener (1984) claims that it is a positive state of existence in which individuals flourish and live well. Ryff (1989) suggested that it is a state of balance affected by challenging and rewarding life events. Drawing on these two definitions, Deci and Ryan

(2000) state that well-being is a combination of optimal experience and functioning. Moreover, Ramya (2018) argues that given the many facets of peoples everyday lives affected by the construct of well-being, it should be thought of as a holistic construct that permeates multiple life domains (for example, work and home).

Many researchers have found support for a general factor of well-being (e.g., Chen et al., 2013; De Bruin & Du Plessis, 2015; Longo et al., 2017). In these studies, well-being items showed stronger loadings onto a general factor compared to specific factors such as subjective (SWB) or psychological well-being (PWB). Therefore, general well-being may be considered to be a superordinate construct relative to other specifications. Longo et al. (2017) propose that given this evidence, it is necessary to develop a conceptual notion of well-being as a unidimensional hierarchical construct (in this case superordinate to SWB and PWB). Furthermore, they define general well-being (GWB) as a collection of stable subjective feelings and evaluations representing symptoms of good health. As the boundaries of work and life become increasingly blurred through changing work modalities, our understanding of well-being should accommodate considerations inside and outside the traditional boundaries of work. Therefore, the assessment of general well-being should be considered to assess telecommuter's well-being. The testing model (Figure 2) is focused on investigating how some characteristics of telecommuting might be associated with general well-being.

Intent to quit

As employees enter organizations they have expectations about how the organization should operate and how it treats its employees. When these expectations are not met, employees' job satisfaction and commitment levels decrease resulting in an increase in intent to quit (Mueller & Price, 1990). For example, employees might start exploring employment options elsewhere. Porter and Steers (1973) suggest that emphasis should be placed on understating the turnover decision process. Specifically, they argue

that the intent to leave is likely a mediator between attitude-behavior relationships and represents the last step prior to quitting. Mobley (1977) created a model of the linkages between job satisfaction and turnover, in which he outlined the steps taken by an employee prior to quitting. These include: thinking about quitting, intention to search, searching for alternatives, evaluation of alternatives, comparison of alternatives, and intent to quit.

Intent to quit poses a serious threat to the effectiveness of organizations, if unchecked and addressed with appropriate measures it may lead to voluntary turnover. Research shows that employees are less likely to leave their organization when there's policies in place to support work-life balance (Kim et al., 2020), such as flexible work arrangements (i.e., telecommuting). Studies examining the relationship between telecommuting and turnover intentions have shown that there is a small but significant negative correlation (Gajendran & Harrison, 2007). Such that having the ability to engage in telecommuting was negatively related to turnover. Researchers have also found that telecommuting intensity moderates the relationship between telecommuting and intent to quit, where those who telecommute to a greater extent report lower intention to leave the organization (Golden et al., 2006). However, telecommuting extensively is not experienced the same by everyone. It may lead to increased perceived isolation which has also been found to moderate the relationship between telecommuting and intent to quit (Golden et al., 2008). One way in which isolation can be addressed is through increased support from the organization. Researchers have found organizational support to be negatively correlated to telecommuters' turnover intent and job search behaviors (Thompson et al., 2004). The tested model for this study (Figure 2) tries to understand how telecommuting characteristics might be associated with intent to quit.

Job satisfaction

One of the most researched work attitudes within the telecommuting literature is job satisfaction (Allen et al., 2015; e.g., Bailey & Kurland, 2002; Boell et al., 2013;

Charalampous et al., 2019; Gajendran & Harrison, 2007). Research has been mostly consistent in showing a positive relationship between telecommuting and job satisfaction (Gajendran & Harrison, 2007), where having the ability to telecommute is associated with greater levels of job satisfaction. Meta-analytic findings suggest that the relationship between telecommuting and job satisfaction is moderated by several variables such as level of discretion and interdependence of work. These findings highlight the relevance of contextual factors for each individual in terms of their attitude towards work while telecommuting. Intensity has also been found to affect this relationship (Golden & Veiga, 2005). There's evidence that the *form* of the relationship between telecommuting and job satisfaction is curvilinear, where satisfaction and the amount of telecommuting are positively related at lower intensities of telecommuting. Other factors relevant within a telecommuting context that have been found to positively relate to job satisfaction include the amount of technical and human resources provided by the organization (e.g., Allen et al., 2015; Jamal et al., 2021). Golden (2009) suggests that job satisfaction increases because telecommuters have more control over work tasks. However, not all evidence points to a universal experience. For some, decreased job satisfaction can stem from the physical separation from others and the difficulty in transcending the distance between the telecommuting location and the work organization (Bailey & Kurland, 2002; Golden, 2009). For the purposes of this study Figure 2 tries to explain telecommuter satisfaction through the lens of several antecedents, one mediator, and one moderator.

Antecedents

I will now talk about the left most exogenous components in Figure 1, which include social support, workload, and attitudes towards telecommuting. These three constructs represent combinations of work characteristics and individual telecommuter predisposition that potentially influence employee outcomes within a telecommuting context.

Social support

A noted problem for telecommuters is the loss of social support due to being physically distant from coworkers and supervisors. Social support has been broadly defined as providing assistance and/or emotional support to others, especially in situations of stress (Matsumoto, 2009). Moreover, employees may either receive social support from within (for example, coworkers and supervisors) or outside (for example, family and friends) the workplace. Both sources of social support can enhance telecommuters' well-being by reducing the negative effects of isolation (e.g., Lapierre & Allen, 2006a; Russo et al., 2021). Moreover, some researchers suggest that while telecommuting, support from *outside* the organization may increase in importance (Lapierre & Allen, 2006a). Whether the source of support comes from inside or outside of the workplace, the support itself can manifest within varied dimensions, including technological, emotional, or informational support (e.g., Anderson et al., 2015; Lapierre & Allen, 2006a).

Social support *at work* can further be classified as being either formal (one-on-one meetings with a supervisor) or informal (watercooler conversations) (Burtha & Connaughton, 2004). Both of these forms of interactions have been found to reinforce employees' sense of connectedness to the organization (Burtha & Connaughton, 2004), as well as enhance well-being (Russo et al., 2021; Warr, 1990). Working away from the office may reasonably be expected to result in less opportunities for employees to have informal interactions, which can in turn decrease their perceptions of social support (Anderson et al., 2015). Decreased levels of perceived social support may result in negative consequences for both telecommuters and their employers. For example, Grant et al. (2013) found that while working from home, telecommuters felt more isolated and reported decreased levels of well-being. However, these negative outcomes can be buffered through adequate amounts of and of support. Sardeshmukh et al. (2012) found that social support from supervisors and colleagues was negatively associated with exhaustion and positively related to work engagement. Additionally, telecommuting intensity has been found to moderate

telecommuters' perceived social support. Specifically, the higher the intensity the lower the level of perceived social support (Sardeshmukh et al., 2012). Golden et al. (2008) found that those who telecommuted more frequently reported the highest levels of perceived isolation and lowest performance. The model for this study (Figure 1) investigates the role of social support in predicting outcomes (including well-being) by differentiating the source of support (supervisor, coworker, or family member). Figure 2 highlights that these separate sources of support were combined into one social support variable within the tested model.

Workload

Workload has been investigated as a virtual work characteristic which can lead to negative consequences such as technology-related stress, behavioral stress (i.e., alcohol and tobacco consumption), and work-family conflict (Molino et al., 2020). Given all the technological means of communication used today it is often difficult for telecommuters to detach from work, resulting in an "always available" mentality that can lead to overwork (e.g., Grant et al., 2019; Molino et al., 2020; Raghuram & Weisenfeld, 2004). Moreover, in an attempt to demonstrate higher levels of efficiency and productivity to counteract the lack of visibility, telecommuters may be more willing to increase their workload (Jamal et al., 2021). An increased workload while telecommuting may result in role conflict by preventing employees from fulfilling their home role responsibilities (Grant et al., 2019). For example, increases in workload can make it harder to segregate boundaries, resulting in a cross-over of behavior pertaining to each domain (e.g., working after work hours; Magnavita et al., 2021). However, research suggests that the negative consequences of increased workload can be ameliorated through the provision of sufficient resources (Jamal et al., 2021). For example, when telecommuters receive resources such as technology related support, it can counteract the impact of workload pressure on general well-being (Jamal et al., 2021). For the purposes of this study Figures 1 and 2 consider workload as a

work characteristic influencing several employee outcomes through one mediated, and one moderated effect.

Attitudes towards telecommuting

Historically, work attitudes have been evaluated as outcomes from the adoption of telecommuting arrangements (for example, organizational commitment, job satisfaction, OCBS, etc.). However, there's far less research on how telecommuting *attitudes* in the form of employee sentiment towards the work arrangement itself can impact employee outcomes. The existing research highlights the need for a positive attitude towards telecommuting from mangers, since the adoption of this work practice requires that they have a specific set of skills when managing workers remotely (Silva, 2019). This was especially relevant prior to the 2019 pandemic, since it was common practice for direct supervisors to decide who could work from home (Silva, 2019). Research shows that managers with prior experience with telecommuting are more open to the idea of adopting this type of work arrangement (Silva, 2019). The COVID pandemic, however, *forced* organizations and managers to adopt telecommuting, creating an unprecedented circumstance. Consistent with previous findings, being able to experience telecommuting first hand has changed many employees' perceptions on the effectiveness of this form of work (Knoesen & Seymour, 2020). There are other contributing factors that influence employee attitudes towards telecommuting. For example, stakeholders' attitude regarding technology use has been found to have a more significant impact on telecommuting success than technology itself (e.g., Peters et al., 2010). Additionally, organizational culture may be a contributing factor to employees' attitudes towards telecommuting. For example, if an organization's culture emphasizes the importance of contextual performance for promotions, employees might be less likely to view telecommuting favorably. Knoesen and Seymour (2020) found that for the successful adoption of telecommuting there has to be a *telecommuting culture* made up of several elements. These elements include management's attitude toward telecommuting, the

existence of processes for managing telecommuters, processes for working remotely, and the provision of resources which facilitate telecommuting. For the current study Figures 1 and Figure 2 consider telecommuting attitudes as an influencing factor impacting several employee outcomes such as general well-being, job satisfaction, and intent to quit.

Mediator

I will now discuss the mediating mechanism in Figure 2 which is role strain.

Role strain

Within a telecommuting framework role strain can result from the attempt to balance work and non-work roles, as well as failing to fulfill role obligations within a single role (Goode, 1960). The act of balancing multiple roles simultaneously can be cognitively and emotionally taxing on telecommuters (Grant et al., 2019). Conflict can arise due to inter-role conflict in which the role pressures from different life domains are incompatible in some respect (Molino et al., 2020). Even though flexible work arrangements were partly intended to help employees better manage work and non-work domains, research findings have only provided inconsistent support for this premise. For example, telecommuting has been shown to increase both work-family conflict and work-life satisfaction (e.g., Henke 2016; Higgins, Duxbury, & Julien, 2014). Moreover, there is contradicting research on the impact of telecommuting on role strain in the form of conflict (e.g., Golden et al., 2006; Golden, 2009). Lapierre and Allen (2006a) found that working from home often times results in conflict between work and home demands. Specifically, employees who telecommute frequently report higher levels of family-to-work conflict (Golden et al., 2006; Morganson et al., 2010). Conversely, some researchers have found that telecommuting can have a positive impact on employee's work-life balance when enough autonomy is granted by the employer (Perry et al., 2018). Therefore, the experience of role strain by telecommuters might be dependent on the demands placed on each individual both at home and at work, and the resources available to satisfy them.

Telecommuters might experience role conflict due to unclear boundaries and spillover between domains (Vittersø et al., 2003). For example, telecommuters might stay connected to work throughout the day to make up for time lost while satisfying family role demands. Being constantly connected to work through information and communication technologies (ICTs) has shown to increase work-family conflict and decrease telecommuter's well-being (Grant et al., 2019; Palumbo, et al., 2020; Molino et al., 2020; Carvalho et al., 2021). Conversely, telecommuters who are able to establish strong boundaries between both roles and avoid boundary violations have been found to experience higher positive affect and greater work-life satisfaction, as well as decreased stress and role conflict (Powers, 2015; Henke, 2016; Jamal et al., 2021). Additionally, Lapierre and Allen (2006a) found that having a supervisor who is supportive of telecommuters satisfying both work and family demands can help prevent conflict between roles. This is especially helpful for women and parents who are more likely to experience strain as a result of more salient home role demands (Shockley et al., 2021). The retained model Figure 2 posits role strain to operate as a mediator, whereby the antecedent-outcome associations are partially *explained by* the intermediary experience of strain. Figure 1 shows that the Figure 2 role strain variable is an aggregate of one work-to-family interference, and one family-to-work interference measure. Initially, job embeddedness was also targeted as a potential mediator, although as discussed below, job embeddedness was dropped from the tested Figure 2.

Moderator

I will discuss the moderating mechanism in Figure 1 which consist of technostressors. These different types of technology-related stressors are hypothesized to affect the strength of the relationship between outcome-antecedent associations in the model.

Technostressors

Technology use is meant to enhance employees' ability to work from home effectively by increasing the flexibility to manage their work and personal lives (Sturgeon,

1996). However, it has been noted in the literature that despite the many benefits of technology use, it also has drawbacks for telecommuters when it outpaces personal skills and intrudes into people's lives (Grant et al., 2019). Researchers have coined the term **technostress** to describe the stress experienced by end users as a result of the use of ICTs (Molino et al., 2020). Technostress can be thought of as an adaptation problem that individuals experience when they are unable to cope with the use of ICTs. Within an organizational context, technostress results from employees' attempts and struggle to adapt to constantly evolving ICTs and the physical, social, and cognitive requirements to use them (Tarafdar et al., 2007).

The technostress model suggests that the use of technology is most detrimental for well-being when it is invasive, complex, and overloads personal resources (Molino et al., 2020). Molino et al.,'s (2020) model is broken down into five types of technostress creators which include techno-overload (situations where ICTs force employees to work faster and longer), techno-invasion (the invasive effect of ICTs in terms of creating situations where users can potentially be reached at any time, they feel the need to be connected, and there is a blurring of boundaries between work and personal time), techno-complexity (complexity associated with ICTs makes users feel inadequate in terms of their skills to use the technology, forcing employees to spend time and effort learning and understanding diverse ICTS), techno-insecurity (associated with situations where employees feel threatened about losing their jobs due to either new technology or more skilled workers), and techno-uncertainty (continuing changes and upgrades in ICTs unsettle and create uncertainty for employees, forcing them to constantly learn how to use new ICTs). The use of ICTs becomes more extensive while working from home, given that employees rely more heavily on them to communicate with others and perform their work. The many ways in which ICTs are used to stay connected to work (such as video conferencing, phone calls, email, chats) make their impact more salient (Molino et al., 2020).

It has been suggested that there's a lack of research on the stress-inducing

components of technology included in the technostress model (Tarafdar et al., 2007). Some of the current research on technostress suggest that telecommuters who work after regular work hours are more likely to experience increased levels of stress and a lack of recovery time due to the constant availability of work through technology (Lundberg & Lindfors, 2002). Similarly, Molino et al. (2020) found that workload is positively related to technology-related stress. In congruence with the technostress model, research has shown that adopting new technologies or changing the extent to which they are used can lead to increased irritability and stress (Mann & Holdsworth, 2003; Grant et al., 2019; Molino et al., 2020). For example, technological difficulties experienced at home may result in a perceived lack of control or access to resources leading to increased feelings of strain (Mann & Holdsworth, 2003). However, research shows that having sufficient technology-related resources can counteract the negative impact of technology use and the resulting workload on general well-being (Jamal et al., 2021). Figure 1 shows that I had originally intended to administer three technostress sub-scales (including techno-uncertainty), however, the techno-uncertainty sub-scale was later dropped. The retained model Figure 2 posits technostressors to operate as a moderator, whereby the strength of the antecedent-outcome associations are *impacted by* the experience of technology-related stress.

Hypotheses

The following hypotheses were developed based on associations presented in the retained Figure 2 model.

Hypothesis 1a: The relationship between attitudes towards telecommuting and general well-being is mediated by role strain.

Hypothesis 1b: The relationship between attitudes towards telecommuting and intent to quit is mediated by role strain.

Hypothesis 1c: The relationship between attitudes towards telecommuting and job satisfaction is mediated by role strain.

Hypothesis 2a: The relationship between social support and general well-being is mediated by and role strain.

Hypothesis 2b: The relationship between social support and intent to quit is mediated by role strain.

Hypothesis 2c: The relationship between social support and job satisfaction is mediated by role strain.

Hypothesis 3a: The relationship between workload and general well-being is mediated by role strain.

Hypothesis 3b: The relationship between workload and intent to quit is mediated by role strain.

Hypothesis 3c: The relationship between workload and job satisfaction is mediated by role strain.

Hypothesis 4: The consideration of technostressors further increases the predictive power of the above associations.

Methods

Procedure

Data was collected using an online survey, which was initially sent to 2246 corporate employees from a Fortune 500 food and beverages organization in Plano Texas. The survey was authored and administered via Qualtrics. Based on the initial frame and an anticipated response rate of 30-40% I anticipated a realized sample of between 500 and 1200.

Employee data was initially obtained from the organization to identify eligible participants. The data consisted of employees' full name, email address, employee ID, function, job level, and work location. Employees with access to the headquarter offices in Texas and with job levels ranging from job levels L1 to LG3 were identified. Individuals who did not have the ability to work from home due to the nature of their work were excluded from the sample. For example, individuals within the sales division with the titles: Sales Associates and Sales District Leaders were identified and excluded from the sample. The identified sampling frame consisted of 2246 total employees with 497 unique job titles.

Participants were offered an incentive that consisted of chance to win one of ten $100 American Express gift cards (the incentive was provided by the organization, see Appendix A). After the initial launch of the survey, participants were given 10 days to submit their responses. Throughout that 10-day window, email reminders were sent out on the 4th, 7th, and 10th day after the initial launch. Reminders were only sent to participants who had not yet taken the survey and who had not indicated that they wanted to opt out. The ten winners of the gift cards were selected using the *sample* function in *R*. The function randomly selects the indicated number of participants (in this instance 10) from the total sample of respondents. Completion of the survey was used to filter the sample of participants eligible for the raffle.

Participants

The desired number of participants was partially informed by a consideration of statistical power. There are two different kinds of power in structural equations modeling (SEM) applications: 1) power to detect misspecification of the structural model, which is done through the evaluation of model fit indices, and 2) power to detect a target effect, which is the probability that the estimated regression coefficients are significantly different

from zero (Wang & Rhemtulla, 2021). For this project, both types of power analyses were applied via two separate online tools were used. The first was developed by Preacher and Coffman (2006), in which the degrees of freedom (21), desired statistical power level (0.8), Null RMSEA (0.05), alternative RMSEA (0.1), and alpha (0.05) were specified. These parameters yielded a minimal sample size of 176.5 to detect an effect. The second was developed by Soper (2018) based on the work of Westland (2010), in which the anticipated effect size (0.3), desired statistical power level (0.8), number of observed variables (8), and probability level (0.05) were specified. These indices yielded a minimum sample size of 177 to detect an effect and a minimum sample size of 700 for the specification of the structural model. The values that were used as input for the power analysis calculations were informed by the literature. For example, Cohen's (1988) effect size benchmarks for statistical power analysis (i.e., 0.1, 0.3, and 0.5) helped determine the minimum absolute anticipated effect size for the structural model.

Measures

The substantive survey is a 86-item battery of 10 pre-existing research scales (see Appendix I), with 15 addended demographic items (described further below). The entire survey took participants an average of 15 minutes to complete. The following paragraphs present the original source and initial psychometric properties, when reported, of each measure in the order of presentation encountered in the introdution. The coefficient α's for each measure based on the current sample are presented as well.

General well-being

The Longo et al. (2017) Scales of General Well-Being (SGWB) is a 65-item assessment that was shortened just one year after its original development report to a 14-item scale with response scales ranging from values of 1 (*no importance whatsoever*) to 7 (*extraordinarily important and valuable*; Longo et al., 2018). Although the authors refer to these 14 items as reflective of 14 different well-being "constructs", they also provide

psychometric support for a single-factor aggregation, with a reported 14-item internal consistency estimate (as represented by McDonald's hierarchical omega [ω_h]) of .86 as well as a correlation of .96 for the single-factor aggregates across the 65- and 14-item measures (Longo et al., 2018).

Longo et al.,'s (2017) original instructions indicate that respondents' rate how important each of the listed items are in their lives[1]. They add that respondents should not focus on whether these are currently present in their life, but rather the importance of having these. These instructions were modified to fit participants current work-life setting. The modified instructions ask participants to indicate how *often* they experience each of the 14 constructs in their life (overall). The modified scale ranges from 1 (*Never*) to 5 (*Always*). The current sample α was 0.93.

Intent to quit

Four intent-to-quit items were developed by Kelloway et al. (1999), who assessed turnover intentions at two time points and reported both time 1 ($\alpha=.92$) and time 2 ($\alpha=.93$) internal consistency estimates. The current sample α was 0.92.

Job satisfaction

The 3-item job satisfaction scale of the Michigan Organizational Assessment Questionnaire (Cammann et al., 1983) has been recently vetted via meta-analysis as possessing acceptable levels of reliability (internal consistency = .84, test-retest = .50) and construct validity (multiple correlates within satisfaction's nomological network; Bowling & Hammond, 2008). The current sample α was 0.86.

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[1] Longo et al. (2018) says: Each item was rated on a 5-point response format, where 1 = not at all true, 2 = a bit true, 3 = somewhat true, 4 = mostly true, and 5 = very true.

Social support

Deeter-Schmelz and Ramsey (1997) developed a measure to assess job-related support based on an earlier job embeddedness measure created by House and Wells (1978). Deeter-Schmelz and Ramsey (1997) eighteen-item scale asks for perceptions of job-related support provided by: 1) family ($\alpha = .90$), 2) immediate supervisor ($\alpha = .95$), 3) coworkers ($\alpha = .91$), and 4) top management ($\alpha = .94$). For the current study, the family and coworker sources of support were administered (a sample item is, "Concerning work-related problems, how much does your family. . . *Listen* to your work-related problems?"). In the original scale, Deeter-Schmelz and Ramsey (1997) use a five-point Likert scale but do not specify the intermediary points in the response scale between "Not at all" and "A lot". Therefore, the intermediary points were added to include "A little bit", "A moderate amount", and "Quite a bit". Current study α's were 0.94 for the coworkers support scale (k = 6) and 0.93 for the family support scale (k = 6).

Supervisor support

Rhoades et al. (2001) adapted items from a broader investigation (Eisenberger et al., 1986) and created a 4-item scale (an example item is, "My supervisor strongly considers my goals and values"). Rhoades et al.,'s (2001) factor-analytic focus did not report reliability estimates, but did report standardized factor loadings for each item, ranging from .80 to .86. For this study, participants were instructed to think about their *direct supervisor* while responding to the items. The α for the Supervisor Support scale in this study was 0.90.

Workload

The 5-item Quantitative Workload Inventory (QWI) was developed to assess, "the amount of work and work pace" (p. 356; Spector & Jex, 1998) and has a response scale ranging from 1 (*less than once per month or never*) to 5 (*several times per day*). Spector and Jex (1998)'s meta-analytic estimate of coefficient alpha ($n = 3,728$) was .82. For this

study, participants were instructed to consider their current work arrangement and circumstances while responding to the items. The α for the workload scale in this study was 0.89.

Attitudes towards telecommuting

Clark et al. (2012) created their own scale of telecommuting attitudes in a study focused on predicting these attitudes with personality information[2]. Their 60-item measure was fit to a four-factor structure consisting of scales labeled: 1) work preference, 2) flexibility, 3) challenges, and 4) benefits. Clark et al. (2012) didn't report individual scale alphas, but instead indicated that these estimates ranged from .85 to .89 in Study 1 and .81 to .85 in Study 2, where they made further scale refinements. For the current project, only the work preference scale was administered (k = 8), which contains items such as, "I prefer the traditional workplace over telecommuting". The source article did not specify the response scale used to respond to the items, therefore, I administered a five-point Likert scale ranging from "Strongly disagree" to "Strongly agree". Additionally, participants were instructed to respond to the items based on their preferences for work. For the current study, the α was 0.89 for the telecommuting attitudes scale.

Role strain

Kelloway et al. (1999) developed a 22-item measure of work and family conflict across four different sub-scales with internal consistency estimates extracted from two different time points (strain-based work → family interference, α's = .75/.76; time-based work → family interference, α's = .83; strain-based family → work interference, α's = .85/.84; and time-based family → work interference, α's = .75/.76). The two strain-based scales (k = 6 each) were retained for the current project. Although these scales reference the specific domains of

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[2] Agreement with the statements in the *Attitudes Towards Telecommuting* scale reflect a preference for the traditional office setting (on-site). Therefore, the higher the score on this scale, the stronger the preference for working on-site compared to telecommuting.

"work" and "family", these are retained as role strain indices, as the work and family domains are frequently noted as being salient for the majority of adults (Greenhaus & Beutell, 1985). An example strain item is, "Things going on in my family life make it hard for me to concentrate at work". Additionally, the instructions in the original scale by Kelloway et al. (1999) were adapted to prompt participants to think about being "at home" as their personal time, and being "at work" as the hours they spend working regardless of their physical location. The new instructions read as follows: *For the following set of items being "at home" refers to your personal time, while being "at work" refers to your work hours (regardless of whether your work location is at home or the office).* In the original scale, Kelloway et al. (1999) does not specify the intermediary points in the response scale between "Never" and "Always". Therefore, a frequency five-point Likert scale was adopted which included "Never", "Rarely", "Sometimes", "Often", and "Always". Current study α's were 0.82 for the work to family conflict scale and 0.88 for the family to work conflict scale.

Technostress

Tarafdar et al. (2007) developed a measure with reported subscale alphas for overload (α = .89, k = 5), invasion (α = .81, k = 4), complexity (α = .84, k = 5), insecurity (α = .84, k = 5), and uncertainty (α = .82, k = 4). For the purposes of this study two out of the five sub-scales were retained: techno-invasion and techno-complexity. The techno-overload sub-scale items were deemed too contaminated with strain elements, while the techno-insecurity items had some redundancy with the job embeddedness construct. Additionally, there was very little variability in responses expected from the techno-uncertainty sub-scale. The instructions in the original scale by Tarafdar et al. (2007) were changed to reflect the types of technology used at the organization. The new instructions read as follows: *For the following items, the term "technology" refers to the day-to-day information and communication technologies you use in your job, such as e-mail, texts, phone calls, video calls (Zoom), collaboration tools (Teams), systems*

and applications, etc. Current study α's were 0.86 for the techno-invasion scale and 0.82 for the techno-complexity scale.

Demographic variables

Demographic information was collected regarding: 1) Having a designated work location at home, 2) Household status (i.e., marital status, parental status, caregiving status), 3) Current telecommuting intensity, 4) Desired telecommuting intensity, and 5) Physical distance from office. The demographic information was to be used both as possible covariates (within structural parameter estimation) as well as potential descriptive variables of interest to stakeholder representatives within the organization.

Job embeddedness. The Holtom and O'Neill (2004) job embeddedness scale was developed with the goal of gaining insights regarding retention/turnover within the health care industry. This scale was effective at predicting voluntary turnover (nurses) one-year post administration. As originally specified, this measure assesses dimensions of fit, link, and sacrifice at both community and organization levels. For the purposes of the current study, only two of the 6 original measure scales were retained: Organizational Fit (k = 2) and Organizational Links (k = 7). Although Holtom and O'Neill (2004) report several substantive associations at the scale level, they only report an overall internal consistency estimate (across their full measure; α = .87, k = 40). Current study α's were 0.89 for the "link" scale and 0.28 for the "fit" scale. The two items included for the fit scale were also used to determine tenure and the number of coworker's employees interact with on a regular basis. Coefficient α is not an appropriate index given the format of these two items, but I report it because it is customary. The organization was interested in collecting data about job embeddedness in relation to telecommuting, which is why this construct was retained as a demographic for the purposes of this study. I originally considered including job embeddedness as a mediating mechanism (see Figure 1), but excluded it from the final structural specification (see Figure 2). Given that the two items

retained for the "fit" scale had different response scales, scale scores (z-scores) for each were calculated prior to scale-level aggregation.

Data Analyses

This study used R (Version 4.1.3; R Core Team, 2020) and the R-packages *broom* (Version 0.7.12; Robinson et al., 2022), *car* (Fox et al., 2022; Version 3.0.12; Fox & Weisberg, 2019; Yentes & Wilhelm, 2021), *carData* (Version 3.0.5; Fox et al., 2022), *careless* (Version 1.2.1; Yentes & Wilhelm, 2021), *dbplyr* (Version 2.1.1; Wickham, Girlich, et al., 2021), *descr* (Version 1.1.5; Dirk Enzmann et al., 2021), *dplyr* (Version 1.0.8; Wickham, François, et al., 2021), *forcats* (Version 0.5.1; Wickham, 2021a), *ggplot2* (Version 3.3.5; Wickham, 2016), *googlesheets* (Bryan & Zhao, 2018), *installr* (Galili, 2021), *koRpus* (Michalke, 2020a, 2021), *koRpus.lang.en* (Michalke, 2020a), *lavaan* (Version 0.6.11; Rosseel, 2012), *magick* (Version 2.7.3; Ooms, 2021), *MVN* (Korkmaz et al., 2014), *papaja* (Version 0.1.0.9999; Aust & Barth, 2020), *psych* (Version 2.2.3; Revelle, 2021), *purrr* (Version 0.3.4; Henry & Wickham, 2020), *readr* (Version 2.1.2; Wickham et al., 2022), *semPlot* (Version 1.1.5; Epskamp, 2019), *semTools* (Version 0.5.5; Jorgensen et al., 2021), *stringr* (Version 1.4.0; Wickham, 2019), *sylly* (Michalke, 2020b), *tibble* (Version 3.1.6; Müller & Wickham, 2021), *tidyr* (Version 1.2.0; Wickham, 2021b), *tidyverse* (Version 1.3.1; Wickham et al., 2019), and *tinylabels* (Version 0.2.3; Barth, 2021) for all analyses. Associations among variables (see Figure 2) were tested via correlation analysis as well as structural equations modeling.

Analytical Strategy

Common method variance

Because this is a single sample cross-sectional survey design, the procedure should acknowledge the possibility of spurious associations. Procedurally, Podsakoff et al. (2012) list six procedural design options to limit the impact of common method variance, including seeking different rater sources, revising item content, or eliminating common

scale properties (such as response options). The only recommended *procedural* consideration that was followed in this study was the attention given to response scale properties - specifically measures were administered in an ordering that avoided similar response scales across different construct measures as much as possible. Because the procedural element is weak, a statistical strategy was also adopted.

To address common method variance from an analytic perspective a single technique was used and tested through two analytical approaches. These analytical approaches included Harman's, but tested through both EFA and CFA for comparison. The Harman's one factor test is used to assess how much variability is accounted for by a single factor. Although popular, the Harman's one-factor test has been previously found to only be sensitive to very extreme cases of common method variance (see, for example, Aguirre-Urreta & Hu, 2019; Fuller et al., 2016). Therefore, in addition to the EFA, fit indices for two CFA's were also used to compare the variability in factor loadings between a single factor CFA and a 10 factor CFA, which included all sub-scales in the final survey.

Insufficient effort responding (IER)

In addition to common method variance, the data was screened for insufficient effort responding (IER) by assessing systematic patterns of erratic responding. This was done using the *careless* package in *R*. The Individual Response Variability (IRV) index was used to assess intra-individual response variability, which is the standard deviation of responses across a set of consecutive item responses for each individual (Dunn et al., 2016). IRV was chosen since it can be calculated across a set of items representing different constructs and is ideal for assessments made up of up to 150 items. According to Dunn et al., (2016) the logic underlying the index is that in responding to items representing different constructs across which participants should have different standing, participants who are responding attentively would respond to the items according to their standing on the construct. Therefore, if participants are responding to the items with insufficient attention, they may

respond similarly to items representing constructs for which they have different standing, resulting in a small standard deviation of their responses. This approach was somewhat limited in this instance since slightly different response scales were used to measure most constructs.

Data cleaning and assumptions testing

The data was tested for mutlivariate normality and multicollinearity. Multivariate normality was tested using the *MVN* package in *R,* which tests for kurtosis and skewness along with their statistical significance (Mardia, 1974). Mardia's measures were selected since they are most often included in software packages. Additionally, pair-wise deletion was applied for missing values.

Primary Analyses

To better understand the relationships between the observed variables, descriptive statistics were assessed through frequency distributions and correlation analysis. Sub-scales for each construct were used for the correlation analysis. Once the relationship between variables was understood, path analysis was used to assess the direct, indirect, and correlated effects among the observed variables in the model (scale scores were used in the path analysis; see Figure 2). The model includes both mediation and moderation effects. Following suggestions in the literature (e.g., Edwards & Lambert, 2007), mediation is expressed using regression equations, while moderation is incorporated by supplementing these equations with the moderator variable as well as the product of the independent variables and moderator variable. The specification of the model was based on results of prior research in the telecommuting literature. A full information maximum likelihood (FIML) estimator command was used to estimate a likelihood function for each individual based on the variables that are present so that all the available data are used.

Results

Data Cleaning

Out of the 2246 employees who received the survey, 784 appear to have responded. During the data collection period there were approximately 250 employees who were out of the office for personal reasons (for example, on vacation, sick, etc.). Furthermore, data was screened for missing values using the *apply* function in *Rstudio*. A "Missing" variable was created to determine the number of missing responses per participant. Participants who were missing more than 15 responses were excluded from the sample. Out of the Qualtrics dataset of 784 respondents 78 cases were removed, many of whom appeared to have accessed the link but decided not to participate. Resulting in a sample of 709. The response rate for the survey was 0.32. Additionally, results from the IRV index to assess insufficient effort responding (IER) showed that IRV index values ranged from 1.172 to 3.564 which were considered acceptable. Therefore, no respondents were removed from the sample due to IER. The final analytic sample consisted of 709 respondents. Additionally, there were 12 employees who declined to participate by opting out of the study. Since the survey was not timed, to account for potential outliers the average response time in minutes was estimated using an 80% winsorized mean ($M = 15.78$) and standard deviation ($SD = 9.24$).

The results from the approaches to address common method variance showed that the proportion of (co)variance explained via a single principal axis factor analysis (e.g., Harman's test) was 0.19. Extending this exploration, I also subjected the data to two confirmatory factor analyses, with the 14-factor (the subcategories of each variable individually included) substantive model ($\chi^2 = 8{,}001.25$, df $= 3068$, p $= 0$, CFI $= 0.87$) exhibiting better fit than the imposed single factor model ($\chi^2 = 31{,}193.75$, df $= 3159$, p $= 0$, CFI $= 0.29$; $\Delta\chi^2 = 23{,}192.49$, Δdf $= 91$). The CFI difference inclusion was a recommendation by Cheung and Rensvold (2002), although their presentation was focused on explorations of measurement invariance.

Assumptions Testing

Multicollinearity was estimated by obtaining variance inflation factors (VIF). This was done through regression analysis and the *vif* function from the *car* package in *R*. A randomly selected outcome variable (general well-being) for the regression equation was used to estimate VIF scores for all independent variables. The VIF scores ranged from VIF = 1.048 to VIF = 1.487 across independent variables. Since all VIF scores were below 5, they were deemed acceptable. Additionally, bivariate correlations among independent variables (i.e., attitudes towards telecommuting, workload, coworker support, supervisor support, and family support) were mostly non-concerning with a few exceptions (see Table 1). Coworker support was weakly related to attitudes towards telecommuting (r = -.13, p < .001) and Workload (r = -.13, p < .001). There were also weak but significant associations between workload and supervisor support (r = -.15, p < .001), coworker support (r = -.13, p < .001), and family support (r = -.08, p < .05). While all subcategories of social support were significantly related to one another, only the association between coworker support and supervisor support (r = .40, p < .001) attained moderate magnitude, and these variables were to be combined within the path analysis anyways. Therefore, multicollinearity among predictors was not deemed to be a significant concern.

Multivariate normality was estimated using Mardia's test. Results showed that the assumption was violated due to statistically significant kurtosis at the item level (χ^2 = 1621.09, p < .01). According to the test, the data had a leptokurtic distribution compared to a normal distribution. A second multivariate normality test was conducted on the scale scores for each subscale to assess whether this assumption was still violated at the scale level. The second test shows that the assumption of multivariate normality was violated for both skewness (χ^2 = 1989.55, p < .01) and kurtosis (χ^2 = 23.43, p < .001). Multivariate non-normality was expected given the sample size. Therefore, in conjunction with Mardia's test, the path model was tested twice using different estimators (e.g., Cain et al., 2016). Once using the standard maximum likelihood estimator (ML) and again using a maximum

likelihood estimation method with robust standard errors and a scaled test statistic (MLR). The results from the model using the more robust estimation method yielded very similar results to the model with FIML estimation. Therefore, it was assumed that the multivariate non-normality identified is not severe enough to impact the results.

Descriptive Data

Demographic variables

Descriptive data for the characteristics of workers included in the sample are summarized in tables 2 through 6. Overall, 74.36% of the sample reported telecommuting five or more days per week. While 21.18% of the sample reported telecommuting four days or less per week (see Table 2). These numbers differed from the desired telecommuting intensity, which showed that 56.38% of the sample wanted to telecommute five or more days per week. While 18.11% would prefer to telecommute four times per week, and 13.65%would like to telecommute three days per week. Only 7.40% of respondents expressed the desire to telecommute 1 to 2 days per week (see Table 3). Somewhat surprisingly, 89.41% of participants reported having a designated work location while telecommuting (see Table 4).

Participants were asked to report their commuting time to the office (when not working remotely), for which 30.10% reported their commuting time as 30 minutes or less, while 37.63% reported their commuting time as 30 minutes to an hour. Furthermore, 14.41% of participants reported *not* having access to an office (see Table 5). Participants were also asked to report their tenure with the organization. 7.47%of employees had been with the company less than 12 months, 21.43% reported being with the company 1 - 5 years, 19.88% reported 6 - 10 years, 26.23% reported 11 - 20 years, and 24.82% reported being with the company over 20 years. Lastly, when asked about their household status the most common frequency of household status was married/with partner and with children (36.99%), followed by those who reported being married/with partner and having no children (30.10%). For the rest of the sample 5.74% reported being single with children, 20.15%

were single with no children, 0.38% reported having a dependent with a disability, and 1.40% preferred not to respond (see Table 6).

Correlations among focal study variables

Pearson correlation coefficients were calculated to better understand the associations between the constructs in the model. A full correlation matrix of scale level correlations is presented in Table 1. The correlation analysis showed that most relationships between constructs were statistically significant ($p < .01$), however, those relationships mostly ranged from weak to moderate. The weak correlations might indicate that even though the particular exposure of the predictor variables is affecting the outcome variables, there may be other determinants impacting these outcomes which are not explored here. Particularly relevant correlations are further discussed below.

Dependent variable associations.   Participants on average reported high levels of general well-being (on a scale of 1-5 with a midpoint of 3, $M = 3.9$, $SD = .54$) and job satisfaction (on a scale of 1-7 with a midpoint of 4, $M = 5.1$, $SD = .96$). Intent to quit was low, with most participants noting that they aren't currently thinking about leaving the organization or looking for a new job (on a scale of 1-5 with a midpoint of 3, $M = 2.1$, $SD = 1$). The correlation analysis showed significant relationships among dependent variables. Job satisfaction was positively related to general well-being ($r = .48$, $p < .001$), while a weak but significant relationship emerged between general well-being and turnover intent ($r = -.29$, $p < .001$). Moreover, the relationship between job satisfaction and turnover intent ($r = -.70$, $p < .001$) was the strongest relationship identified across all study variables and it is consistent with findings throughout the literature (Mobley, 1977; e.g., Mueller & Price, 1990; Thompson et al., 2004).

Indirect Relationship Associations.   Correlation analysis showed that attitude towards telecommuting was significantly related to both subcategories of role strain (work-to-family interference, $r = .18$, $p < .001$; family-to-work outerference, $r = .25$, $p <$

.001). Furthermore, workload was significantly but deferentially related to role strain subcategories (work-to-family interference, r = .50, p < .001; family-to-work interference, r = .12, p < .001). The difference[3] between these two correlations was significant ($z' = 8.07$, p < .05).

Each of the sub-scales used to assess social support was correlated to the mediating variable individually. Results showed negative relationships between coworker support and role strain sub-scales (work-to-family interference, r = -.27, p < .001; family-to-work interference, r = -.18, p < .001). Supervisor support on the other hand, was only significantly related to work-to-family interference (r = -.25, p < .001). Signaling that employees who perceive higher levels of supervisor support tend to report less invasion of work into their personal lives. The relationships between supervisor support and role strain subcategories is aligned with prior research exploring these relationships (e,g., Allen et al., 2015). Lastly, family support was weakly related to work-to-family interference (r = .10, p <.05).

The relationship between the mediating and moderating variables in the model showed that role strain and technostress subcategories were statistically significant. Techno-invasion was more strongly related to work-to-family interference (r = .55, p < .001) compared to family-to-work interference (r = .23, p < .001). The difference between the two correlations was significant ($z' = 7.24$, p < .05). On the other hand, techno-complexity was more strongly related to family-to-work interference (r = .24, p < .001) as opposed to work-to-family interference (r = .20, p < .001). However, the difference between these correlations was not statistically significant ($z' = 0.79$, p > .05).

Regarding the dependent variables in the model, general well-being was significantly related to role strain (work-family interference, r = -.43, p < .001; family-to-work interference, r = -.36, p < .001). As expected, there was a significant relationship between job

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[3] This and all subsequent correlational differences were subjected to a Fishers z transformation prior to calculating the significance of the difference between the correlation coefficients and is reported as z'.

satisfaction and the amount of work-to-family interference experienced (r = -.44, p < .001). While significant, the relationship between family-to-work interference and job satisfaction (r = -.19, p < .001) was weaker. The difference between these correlations was statistically significant (z' = 5.28, p < .05). Furthermore, both categories of role strain were significantly related to turnover. With work-to-family interference (r = .39, p < .001) being more strongly related to turnover compared to family-to-work interference (r = .15, p < .001; z' = 4.92, p < .05). The directionality of these relationships makes sense, since the the interference of work with employees' personal lives is more likely to influence an employees' decision to leave, compared to how much their personal life interferes with work.

  Moderator associations. Associations between the independent and dependent variables in the model and the moderating variable were also estimated and are presented below. The correlation analysis showed that within the measure of technostress, techno-invasion and techno-complexity were weakly but significantly associated with each other (r = .22, p < .001). This association was expected given that both measures are targeting specific characteristics of the same construct. Moreover, both techno-invasion (r = .18, p <.001) and techno-complexity (r = .22, p < .001) were significantly related to attitudes towards telecommuting. The relationship between workload and technostress differed between techno-invasion (r = .43, p < .001) and techno-complexity (r = .09, p < .05) both in terms of strength and significance (z' = 6.98, p < .05).

  Each of the sub-scales used to assess social support (i.e., family, supervisor, and coworker) were significantly related to the moderating variable. Results showed negative relationships between coworker support and techno-invasion (r = -.23, p < .001) as well as techno-complexity (r = -.10, p < .01). Supervisor support on the other hand, was only significantly related to techno-invasion (r = -.19, p < .001). The relationship between supervisor support and techno-invasion is in line with previous findings regarding the importance of supervisor support for telecommuters (e.g., Allen et al., 2015; Bentley et al., 2016; Lapierre & Allen, 2006a). Lastly, family support was weakly related to

techno-complexity (r = -.08, p < .05) and was not significantly related to techno-invasion.

Regarding the dependent variables in the model, general well-being was significantly related to technostress (techno-invasion, r = -.28, p < .001; techno-complexity, r = -.26, p < .001). There was a weak correlation between the complexity of technology and the level of job satisfaction (r = -.13, p < .001), while the relationship between techno-invasion and job satisfaction was slightly stronger (r = -.29, p < .001). The difference between the two correlations was significant (z' = 3.17, p < .05). Turnover intent was significantly related to techno-invasion (r = .30, p < .001), however, it was not significantly related to techno-complexity (r = .06, p > .05). These relationships hint at the possibility that the invasiveness of technology, compared to its complexity, is a more significant factor when thinking about leaving the organization. Overall, it seems like techno-invasion had a stronger effect on the outcome variables compared to techno-complexity.

Additional explanatory variables. There were noteworthy relationships between some of the demographic items and the variables of interest. For example, the *links* component of job embeddedness was significantly related to the outcome variables. Specifically, there were moderate correlations between job embeddedness (links) and general well-being (r = .44, p < 001) and intent to quit (r = -.58, p < .001), and a strong correlation with job satisfaction (r = .68, p < .001). Regarding antecedent variables, there were moderate correlations between job embeddedness (links) and coworker support (r = .36, p < .001), as well as supervisor support (r = .45, p < .001). The associations between these variables reflect the impact of being connected to others in the organization for telecommuters.

The majority of participants reported telecommuting full time (five or more days per week; 77.29%) and having a desire to telecommute full time in the future (58.67%). The relationship between desired telecommuting intensity and the outcome variables in the model (in addition to attitudes toward telecommuting) were assessed via inferential analysis and visualized via bar graphs. Results showed that desired intensity was significant for attitudes

towards telecommuting ($F(5,700) = 71.69$, p $= .001$, $\eta^2 = .34$). Participants participants who had a preference for higher intensity telecommuting reported more positive attitudes toward telecommuting (see Figure 3). Telecommuting intensity did not have a significant effect on GWB, job satisfaction, intent to quit, or role strain.

One-way ANOVAs were also conducted to evaluate changes in some of the variables of interest in the model depending on the type of household status and commute time. The household status scale had six potential response options. However, due to the small n for the categories of "Have a dependent with a disability" and "Prefer not to respond", these responses were excluded from this analysis. Results showed that the effect of household status was very small but significant for role strain ($F(3,681) = 5.342$, p $= .001$, $\eta^2 = .03$). In contrast, household status did not have a significant effect on any other outcome variables or attitudes towards telecommuting. To find out which household status groups were statistically different, a Tukey's HSD post-hoc test was performed. Tukey's HSD post-hoc test showed that participants who reported being married/with partner with children experienced significantly higher role strain than both those who reported being single with children ($\Delta M = 0.25$, p $< .05$) as well as those who reported being married/with partner without children ($\Delta M = -.14$, p $< .05$).

Regarding commute time, results showed that the effect of commute time was small but significant for attitudes towards telecommuting ($F(3,704) = 14.13$, p $< .001$, $\eta^2 = .06$), role strain ($F(3,704) = 3.625$, p $= .012$, $\eta^2 = .02$), and general well-being ($F(3,704) = 2.73$, p $= .028$, $\eta^2 = .02$). Once again, Tukey's HSD post-hoc tests were performed to find out which groups within the commute time variable significantly differed. Results showed that participants who reported their commute time to be 30 minutes to 1 hour expressed significantly more favorable attitudes towards telecommuting compared to those who commute 30 minutes or less ($\Delta M = -.36$, p $< .001$). Following this trend, those who reported their commute time to exceed 1 hour expressed significantly more favorable attitudes towards telecommuting compared to those who commute 30 minutes or less ($\Delta M = -.59$, p $< .001$). Furthermore, participants who reported their commute

time to be over 1 hour experienced significantly lower levels of role strain compared to those who commute 30 minutes or less (ΔM = -.17, p < .05). Those who commute over 1 hour experienced significantly lower levels of role strain compared to those who commute 30 minutes to 1 hour (ΔM = -.17, p < .05). Finally, participants who reported commuting over 1 hour reported significantly higher levels of general well-being compared to those who commute 30 minutes to 1 hour (ΔM = .18, p < .05).

Path Analysis

The aim of the model in Figure 2 was to assess the mediating effect of role strain between personal and work characteristics within a telecommuting context (i.e., attitudes towards telecommuting, social support, and workload), and employees' personal (i.e., general well-being) and work related (i.e., job satisfaction and intent to quit) outcomes. Additionally, the model was intended to test the role of technostress as a moderating factor between personal and work characteristics and role strain. To examine the overall fit of the hypothesized model (see Figure 4), it was tested via *Rstudio* version 4.1.3 using the *lavaan* package. Full information likelihood (FIML) estimation was used to get parameter estimates in the presence of missing data. Regarding the parameter specification in the model, all covariance terms between antecedents were freed, including those between the interaction terms and the moderator. Moreover, the direct effect of technostress on role strain was freed, while all other parameters between technostress and outcome variables were constrained. Lastly, the covariance terms between GWB and job satisfaction and intent to quit were constrained, while the covariance term between job satisfaction and intent to quit was freed. See Figure 4 for estimated parameters as well as their coefficients. Associations in the model accounted for 32.8% of the variance in role strain, 29.2% for general well-being, 26% for job satisfaction, and 18.2% for intent to quit. Moreover, fit statistics for the model suggested good fit (χ^2 = 124.74, df = 14, p < 0, CFI = 0.93,

RMSEA = 0.11 (90% CI:0.09 - 0.12)). The statistical significance of the chi-square value was assumed to be due to the large sample size for this study, in addition to the degrees of freedom (df = 12). The direct and indirect effects for structural elements in the model are presented in Table 7.

A residual correlation matrix was used to further assess how well the model estimated the relationships between the measured variables. The model showed small residual correlations which ranged from r = -.001 to r = 0.059. Indicating that the model was not able to fully fit some of the specified effects. The largest residual correlations in the model were between the three outcome variables and technostress, as well as the three interaction terms created to estimate the moderation effects (ranged from r = .000 to r = .059). Additionally, the standardized root mean square residual (SRMR = 0.04) showed that the model fit was good (below 0.05; Kline, 2011; Hu & Bentler, 1999; Lacobussi, 2010).

I will now discuss each of the effects identified in the path analysis between the constructs presented in Figure 4. Starting with the direct effects, followed by the mediated, and moderated effects in the model. All path coefficients reported are standardized and each value should be interpreted as a change in the standardized variable units for all measures.

Direct effects

Most direct effects between the predictors and right-most outcome variables were statistically significant (p < .05). Specifically, results showed that one standard deviation increase in attitudes towards telecommuting was associated with a 0.18 standard deviation decrease in general well-being (p < .001). Furthermore, a one standard deviation increase in attitudes towards telecommuting was associated with a 0.07 decrease in intent to quit (p < .05), and a 0.08 increase in job satisfaction (p < .05). Regarding overall social support, a one standard deviation increase in social support was associated with a 0.23 standard deviation increase in general well-being (p < .001), a 0.23 standard deviation decrease in

intent to quit (p < .001), and a 0.31 standard deviation increase in job satisfaction. Lastly, a one standard deviation increase in workload was associated with a 0.08 increase in general well-being (p < .05), and a 0.11 standard deviation increase in intent to quit (p < .01). The relationship between workload and job satisfaction was not statistically significant (p > .05), however, the association between the two was negative.

All of the direct effects between the predictors and the mediating variable (i.e., role strain) were statistically significant (p < .05). Specifically, results showed that a one standard deviation increase in attitudes towards telecommuting was associated with a 0.15 standard deviation increase in role strain (p < .001). A one standard deviation increase in social support was associated with a 0.08 standard deviation decrease in role strain (p < .05). Furthermore, a one standard deviation increase in workload was associated with a 0.24 standard deviation increase in role strain (p < .001). The direct relationship between technostress and role strain was also estimated, with results showing that a one standard deviation increase in technostress was associated with 0.35 standard deviation increase in Role strain (p < .001). Moreover, all the direct effects between the mediating variable and the right-most outcome variables were also statistically significant (p < .001). Results showed that a one standard deviation increase in role strain was associated with a 0.40 standard deviation decrease in general well-being (p < .001), a 0.27 standard deviation increase in intent to quit (p < .001), and a 0.33 standard deviation decrease in job satisfaction (p < .001). The association between role strain and general well-being was the largest path coefficient among the direct effects in the model.

Mediated effects

Bias-corrected bootstrap confidence interval values were used to test the significance for the indirect effects. All indirect effects in the model were statistically significant (p < .05), meaning that the relationships between predictor and outcome variables are partially mediated. Specifically, role strain mediated the the effects between attitudes towards

telecommuting and general well-being (β = -0.035, p < .001, 95% CI[-0.054,-0.019]), intent to quit (β = 0.045, p < .001, 95% CI[0.024,0.072]), and job satisfaction (β = -0.051, p < .001, 95% CI[-0.084,-0.030]). Moreover, role strain mediated the effects between social support and general well-being (β = 0.023, p < .05, 95% CI[0.005,0.043]), intent to quit (β = -0.029, p < .05, 95% CI[-0.057,-0.007]), and job satisfaction (β = 0.034, p < .05, 95%CI[0.007,0.064]). Lastly, role strain mediated the effects between workload and general well-being (β = -0.052, p < .001, 95% CI[-0.070,-0.037]), intent to quit (β = 0.067, p < .001, 95% CI[0.042,0.097]), and job satisfaction (β = -0.078, p < .001, 95% CI[-0.110,-0.053]). These results support Hypotheses 1a through Hypothesis 3c.

Moderated effects

To estimate moderation effects within the model, interaction terms were created between the left-most predictor variables in the model (see Figure 2) and the moderating variable (i.e., technostress). The effect between these interaction terms and role strain was estimated to determine whether there was a moderation effect. Additionally, all variables included in the interaction terms were mean centered prior to path analysis. When all three moderation effects were included in the model, none of the moderation effects were statistically significant (see Table 7). To further investigate the possibility of moderation, the model was tested incorporating one technostressor effect at a time.

Results from the models testing each interaction term at a time can be seen in Table 8. The first model tested the moderation effect of technostress on the direct effect between attitudes towards telecommuting and role strain. The effect between the interaction term and role strain was not statistically significant (β = -0.035, p = .21, 95%CI[-0.09,0.02]), meaning that moderation was not present. The second model tested the moderation effect of technostress on the direct effect between social support and role strain. The effect between the interaction term and role strain was not statistically significant (β = 0.01, p = .67, 95% CI[-0.05,0.08]), therefore there was no moderation effect. Lastly, the third model tested the moderation of

technostress on the direct effect between workload and role strain. The effect between the

interaction term and role strain was not statistically significant either (β = -0.04, p = .15, 95%

CI[-0.08,0.01]), therefore, there was no moderation effect present. As a final check on

technostress' impact, incremental variance attributed to the moderator either included or excluded

from the model was further investigated in supplementary analyses which can be found in

Appendix B. There was no support for Hypothesis 4 since none of the hypothesized moderation

effects were significant in the observed data.

Additional analyses were performed to better understand how each component of

technostress affected other variables in the model. Given that the technostress variable was a

scale score made up of the techno-invasion and techno-complexity sub-scales, the model was

tested again including each of these sub-scales individually as moderators. The results from

these additionally analyses can be found in Appendix C.

Meaningful differences among coefficients

To determine whether the standardized path coefficients in the model were of different

relative magnitudes, additional defined parameters were created in the model. These included

the difference between the two direct effects to be compared. Bias-corrected bootstrap

confidence intervals were calculated to determine whether there were significant differences

among these parameters. If the confidence interval did not include a value of zero, then it was

concluded that the standardized path coefficients were significantly different from one another.

The differences between the direct effects between the antecedent variables and the mediator

were estimated, as well as the differences between the direct effects between role strain and

the outcome variables. These are presented below.

Regarding the effects between the antecedents and role strain, results from the path

analysis indicated that the largest amount of variance in role strain could be attributed to

technostress (β = 0.35). The bootstrap confidence intervals of the contrast terms showed

that the effect of technostress on role strain was statistically significantly different at $\alpha = .05$[4] from the effects of *attitudes toward telecommuting*, *social support*, and *workload* on role strain. Moreover, the second largest amount of variance in role strain came from workload ($\beta = 0.24$). This direct effect was also statistically significantly different from the direct effect of social support. However, it was not statistically significantly different from the effect of attitudes toward telecommuting on role strain.

Regarding the direct effects between role strain and the outcome variables, results from the path analysis indicated that role strain had the strongest impact on GWB ($\beta = -0.42$) compared to job satisfaction ($\beta = -0.18$) and intent to quit ($\beta = 0.28$). The bootstrap confidence intervals showed that the effect of role strain on GWB was statistically significantly different from its impact on job satisfaction and intent to quit.

Discussion

The goal of this study was to gain a better understanding of how characteristics from both work and home domains impact role management and subsequent outcomes in a sample of high intensity telecommuters. The results provided support for some commonly found associations in the literature (for example, the relationships between job satisfaction and role strain). The R^2's also show that GWB may be an important variable to include in future studies. Moreover, new insights were gained regarding associations that have not been thoroughly explored including the relationship between technostress and role strain. Results from this study also point to work characteristics that perhaps employers should keep a closer eye on.

Goode (1974) suggests that the salience of work and home demands vary among individuals and that role strain emerges partly due to the incongruence between life domains. The salience of work and personal demands may be exacerbated when employees are working from home, increasing the potential for role strain due to inter-role conflict.

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[4] 95% confidence intervals are reported for all bias-corrected bootstrap confidence interval differences.

Results from this study show that individuals who have a preference for working on-site experienced higher levels of role strain, which may be due to the salience of their home demands impacting their work or vice versa. Additionally, findings support prior research showing a negative relationship between the experience of role train and GWB (e.g., Allen et al., 2013; Raghuram & Wiesenfeld, 2004). GWB was not differentially impacted by work to family and family to work interference. However, there were other variables that had different associations with the two types of interference. Overall, work to family interference was more strongly associated to other variables in the model, such as job satisfaction and intent to quit. These associations make sense given that they are specifically related to work (like most other variable sin the model). Future research should perhaps explore employee characteristics related specifically to their personal lives (such as how active employees are in their communities) to determine how these are perceived within a telecommuting context and whether they affect the experience of role strain and GWB outcomes.

What the Demographic Variables Tell Us

The demographic variables in this study included questions related to the current telecommuting practices at the organization This information was of interest to the organization given their plan to progressively bring back employees on-site to adopt a hybrid model of work. Regarding these variables, current telecommuting intensity did not vary greatly which was expected due to the lingering pandemic. Most participants reported telecommuting full time at the time of data collection and this trend was paralleled when asked about how often they would *like* to telecommute into the future. These results are consistent with the percentage of employees who would like to telecommute in the future in national polls (54%; Gallup, 2021). However, about 20% of participants expressed the desire to decrease telecommuting intensity to two to three times per week as opposed to full time. This downward trend is good for the organization given their plan to increase the

frequency of on-site work in the near future.

Participants in this study were asked whether they had a designated work location while telecommuting, which over 90% of the sample reported having. Prior research has found that having a dedicated space to conduct work at home can help telecommuters establish boundaries between their work and personal lives (Ashforth et al., 2000; Carvalho et al., 2021; Fonner & Stache, 2012). These physical boundaries can prevent role strain and improve job satisfaction (Charalampous et al., 2019; Grant et al., 2019). Given prior research and the outcomes of this study, having a designated work location away from the office may be contributing to employees' overall levels of GWB, job satisfaction, and intent to quit, which were all distributed toward more desirable levels (for example, the sample was, on average, "satisfied").

Participants in this study were asked to report on average how long it took them to travel to the office when not working from home. In line with previous findings, participants who reported longer commute times also expressed more positive attitudes towards telecommuting. However, longer commute times were also associated with less role strain and higher levels of general well-being, which are not aligned with previous research findings. A potential explanation for this may be that employees who live further away from the office have likely engaged in telecommuting for a longer period of time (prior to the COVID-19 pandemic) compared to employees who live closer to the corporate headquarters. Therefore, they may have more experience telecommuting and dealing with the management of work and home roles within the boundaries of their homes.

Household status has also been previously found to impact the amount of role strain experienced by telecommuters (Capitano & Greenhaus, 2018; Shockley et al., 2021; e.g., Tarafdar et al., 2007). Research shows that employees who have dependents (such as children under the age of 18) tend to experience higher levels of role strain in the form of family to work interference (Delanoeije et al., 2019). The household status question originally had six

response options which were collapsed into four categories due to the small number of respondents who reported having a dependent with a disability or preferred not to respond. Consistent with previous findings, the amount of role strain experienced differed depending on household status. Those who reported having dependents under the age of 18 also reported higher levels of role strain. Collectively these findings may help the organization establish policies that help employees cope with home demands while telecommuting. For example, having more flexibility in managing their work hours rather than having a rigid schedule (e.g., Shockley et al., 2021).

Noteworthy Associations Among Variables

Role strain has been frequently studied given the increased likelihood of experiencing interference between home and work domains when telecommuting (Allen et al., 2015; Gajendran & Harrison, 2007; Golden et al., 2006; Grant et al., 2019; Kim et al., 2020). Furthermore, role strain was significantly related to almost all variables in the current model. The type of strain (work-to-family versus family-to-work) differed in average magnitude, with work-to-family interference being greater ($t(706) = 30.52$, $p = .001$, Cohen's $d = 1.15$). The two types of interference also tended to exhibited different relationships with other study variables. Specifically, work-to-family interference appeared to be the more important variable. For example, work-to-family interference was more strongly related to job satisfaction and intent to quit compared to family-to-work interference. These results are consistent with previous research studying these variables (Allen et al., 2015; Gajendran & Harrison, 2007; e.g., Lapierre & Allen, 2006b; William Lee et al., 2014). There have also been claims that the two types of strain differentially affect well-being (Golden et al., 2006). However, results showed that both work-to-family and family-to-work interference were negatively related to general well-being. Given that all participants in this study were telecommuting at a high intensity, it makes sense that there was no differential impact on general well-being. Future studies should consider the impact that different types of role strain have on employee outcomes

when there's more variance in telecommuting intensity.

I would like to note that there are work characteristics that do not change while working remotely, however, an individuals' ability to *manage* them might. One example of this is workload. Participants who reported having a heavy workload also reported higher levels of role strain, which is to be expected. Prior research has shown that telecommuters struggle to disconnect from work since it is constantly and easily accessible (e.g., Raghurnam & Weisenfeld, 2004; Grant et al., 2019). Additionally, there's a lack of cues to indicate a switch from one's work role to home role (for example, having to pack up and commute home; Fonner and Stache, 2012) when both are occurring in one location. The results also showed a positive association between workload and technostress, supporting previous findings about the impact of technology while working from home and the negative effect it can have on employee outcomes (Molino et al., 2020; Tarafdar et al., 2017).

Working remotely can make it difficult for employees to strengthen and expand their organizational network. This may be especially true for high intensity telecommuters, who might experience a decreased sense of social support while working away from the office (Sardeshmukh et al., 2012). The current results generally support prior findings on the differential impact of support from different sources (e.g., Lapierre & Allen, 2006; Russo et al., 2021). Telecommuters might experience less interference from work when supervisors and coworkers are mindful of their personal time. For example, not scheduling meetings after workhours, being flexible with personal emergencies, or providing support when the workload is too heavy. Moreover, social support from coworkers may serve as an outlet through which telecommuters can deal with personal issues and prevent spillover into work. Social support from coworkers and supervisors was also positively related to general well-being and job satisfaction, and negatively related to intent to quit. These associations have also been noted within the literature (for example, Charalampous et al., 2018; Bentley et al., 2016; Lapierre & Allen, 2006). Although past research has shown that family support can result in decreased

role strain for telecommuters (Lapierre & Allen, 2006; Mann et al., 2000), the results from this study did not support these associations, instead showing only a weak relationship between family support and work-to-life interference. Moreover, the relationship between family support and family-to-work interference was very small and non-significant. The family support measure focuses on how family members support work related tasks and challenges. It does not account for support within the home domain (helping with home related tasks) which has been shown to greatly impact work-life management (e.g., Lapierre & Allen, 2006; Shockley et al., 2021). Throughout the literature there has been less support for the impact of family support on work-to-family interference compared to how influential supervisor and coworker support appear to be. The cumulative results from this study seem to agree.

In this study, positive attitudes towards working on-site were related to higher levels of technostress. It's certainly plausible that employees who experience more technostress might prefer to work on-site where they have access to the resources they need to perform their work (such as an IT department). Additionally, perceived social support from supervisors and coworkers was negatively related to the amount of technostress experienced, further highlighting the benefit of support from other members of the organization while working away from the office. These findings are also consistent with prior research suggesting that having a supportive supervisor may decrease how much work interferes with telecommuters' personal time (Lapierre & Allen, 2006; Molino et al., 2020). Moreover, the effects of technostress seem to vary depending on the source of technostress. For example, techno-invasion was associated with lower levels of general-well-being, job satisfaction and increased intent to quit, whereas techno-complexity was only associated with decreased general well-being and job satisfaction. These associations highlight the need to further investigate what components of technology are most influential in the experience of telecommuting and what strategically targeted resources the organization can provide to ameliorate their negative effects.

Path Analysis Insights

Several associations between variables in the model (see Figure 4) mirror those previously reported in the literature, regardless of telecommuting status. However, these associations are now investigated in a different context, one which we are more likely to experience with increasing frequency in the future.

After the outbreak of the COVID-19 pandemic organizations found themselves increasingly concerned about employee well-being (for example, the Future Workplace 2021 HR Sentiment Survey found that 68% of senior HR leaders rated employee well-being as a top priority; Forbes, 2021). Results showed that out of all the outcome variables, GWB was the best predicted. Specifically, role strain accounted for the largest amount of variance in GWB followed by social support. These findings are consistent with prior research, which shows that the experience of role strain negatively impacts general well-being (e.g., Allen et al., 2015; Grant et al., 2013; Lapierre & Allen, 2006; Grant et al., 2019). Additionally, social support from coworkers and supervisors has been found to enhance telecommuters' well-being (Bentley et al., 2016; Lapierre & Allen, 2006). Therefore, organizations might want to invest in tools to enable the provision of social support to those telecommuting more extensively. Prior studies exploring these relationships have used samples of part-time telecommuters engaging in this form of work voluntarily. The results from this study show that these relationships are still present in a sample of high intensity telecommuters, who may not be engaging in telecommuting (at such a high intensity) voluntarily. Furthermore, an interesting association between attitudes toward telecommuting and GWB emerged. Showing that employees who have more positive attitudes toward working on-site also reported lower levels of GWB. This effect may compel organizations and researchers to pay attention to employees' atitudes toward telecommuting moving forward. The relationship between attitudes toward telecommuting and GWB was also partially mediated by role strain. Therefore, it might be worth investigating whether there are other relevant explanatory mechanisms not specified in the current study.

As hypothesized, role strain partially mediated the relationships between all predictor and outcome variables, indicating that role strain plays a role in how employees experience telecommuting. Even though the direct effects between the antecedent and outcome variables were all significant, role strain explained the largest amount of variance in the outcome variables. Having the ability to balance work and home domains has been consistently found to be an influential factor on whether employees choose to engage in this form of work if given the choice (Allen et al., 2015; Fonner & Stache, 2012; Lapierre & Allen, 2006a). Moreover, not having the choice to engage in telecommuting at an intensity that is conducive to work-life balance could have negative outcomes for employers and employees alike.

The construct of *technostress* has attracted some attention from researchers in the past couple of years after the wide adoption of telecommuting around the globe. However, there is still a lot to learn about technostress and the different technostress creators (for example, invasion and complexity) that lead to it. The hypothesized moderation of technostress was not present in the model. Even though technostress did not impact the strength of the relationship between the predictor variables and role strain, it *did* have a significant direct effect on role strain. Based on these findings, technostress should possibly be considered an antecedent to role strain rather than an explanatory mechanism. In fact, when specified through this direct lens, technostress accounted for the largest amount of variance in role strain among all antecedents. As mentioned above, the two sources of technostress included (invasion and complexity) also exhibited different associations with other variables in the model: Techno-invasion was generally more strongly related to all other variables. The two sources of technostress were combined into one scale when testing the path model, which may have masked unique associations between the two technostress sources and other variables.

These findings show that even though technology can facilitate working away from the office, it can also infiltrate employees' personal time potentially leading to role strain.

Given the impact that role strain has on telecommuter outcomes, employers should determine how to help telecommuters prevent role strain. Goode (1974) argues that role strain is inevitable and people are constantly trying to reduce it, however, it might be more difficult to do so when there's a lack of resources. It has been previously suggested that employees need additional resources when telecommuting to manage the extensive use of ICTs (e.g., Jamal et al., 2021; Molino et al., 2020). An example of this previously noted in the literature has been the use of formal telecommuting policies, which enable employees to disconnect from work at a certain time (Magnavita, et al., 2021; Lapierre & Allen, 2006; Perry, et al., 2018; Kim, et al., 2017; Higgins, et al., 2014). However, it is still unclear what type of resources would be most beneficial for the prevention of technostress. The current study points to invasion alleviating interventions. For example, providing providing resources that help people detach from the technologies that keep them linked to work while working remotely are needed. This study did not consider the resources the organization provided employees to help them manage the use of ICTs. Future research should consider technology-related resources and their impact on the experience of role strain.

Telecommuting has been historically studied as a demographic variable, with participants reporting their ability to telecommute and the intensity in which they do so. Therefore, there is limited research on employee sentiment toward the practice of telecommuting. This study adopted *attitudes toward telecommuting* as an antecedent to understand how attitudes predict employee outcomes. Findings showed some interesting associations. For example, employees who expressed a more favorable attitude toward working on-site also reported experiencing lower levels of general well-being at the moment. This may be due to their inability to work from their preferred location due to safety concerns or issues with role management. Whichever the reason, results from this study show that employees' attitudes toward telecommuting are an important factor to consider while developing flexible work policies.

The way in which well-being has been historically studied might not be suitable for

the new world of work we are in. It is important to expand our understanding of workers'

well-being into broader conceptualizations, especially as the pervasiveness of telecommuting

practices prevails. The large effects uncovered with a general well-being specification found

here speaks to this. Employers should be concerned about indicators of well-being both inside

and outside of work, given how employees' different life roles now intersect during work

hours. Answering the call from several researchers for the adoption of a holistic construct for

well-being (e.g., Seligman et al., 2011; Longo et al., 2017; Ramya, 2018), this study adopted a

general well-being framework. Obviously strain is an important antecedent. However, more

research is needed to understand *what* employers can do to optimize the telecommuting

experience and what resources telecommuters need to improve their general well-being.

Limitations

The contributions of this research may be limited given that the exploration of these

construct associations is taking place during unique circumstances. Given that a path analysis

was used, as opposed to a full structural equations model, the number of degrees of freedom

is very small. This indicates that the specified model is close to being

just-identified, therefore, the good fit of the model in this study should be interpreted with

caution. Furthermore, concessions were made due to the organizations' concerns regarding the

length of the survey. For example, an additional scale measuring intra-role conflict to assess

role strain in a manner more consistent with Goode (1960) was considered but not retained.

Furthermore, the organization was concerned about the wording of some of the instructions

and items in the included scales, therefore, slight modifications were made to published

versions of some scales. The magnitudes of the estimated reliability coefficients did provide

some comfort that these modifications did not adversely affect at least the reliabilities of these

scale scores.

The sample for this study came from a single organization, therefore, these results

may not generalize to other organizations with different telecommuting policies or organizational cultures. Given frequent changes in health and safety protocols within the sampled organization, employees' attitudes toward telecommuting might also reflect employee sentiment towards the changes they have experienced in recent years or even months. For example, prior to the adoption of telecommuting at the onset of the pandemic, the organization had adopted a method of office management called "hoteling" in which workers dynamically schedule their use of office work spaces such as desks, cubicles, conference rooms, etc. The results from the attitudes toward telecommuting scale may have been influenced by this change. Given that employees no longer had a designated work location on-site, they might be more comfortable setting up a space to work from home instead carrying all their personal belongings with them when commuting. Additionally, when reserving a work space on site employees might not get the chance to work close to their teams or peers, making commuting to the office a less appealing option compared to working from home.

A few weeks prior to the launch of the survey a communication was sent out internally to all employees regarding another shift in how often they were expected to be on-site (2 to 3 days per week) starting the following week. This is a potential limitation since it may have impacted participants' responses about how they feel about working from home versus the office. Lastly, it should be noted that this study implemented a cross-sectional design. In the future longitudinal studies are needed to test causal relationships among these variables across time. This literature has consistently shown the importance of telecommuting *intensity* (e.g., Vitterso et al., 2003; Allen et al., 2013; Bentley et al., 2016; Henke et al., 2016). However, existing research on variable time telecommuting is limited. As we move forward in this world of work where telecommuting is the new norm, it's increasingly important to understand the impact this form of work has on employee outcomes.

Directions for Future Research

Flexible work policies have been found to be a mutually beneficial way of enhancing employees' well-being, increase job satisfaction, and improve retention rates (Allen et al., 2015). However, past research has also linked telecommuting to unfavorable outcomes such as work-family conflict and a decreased sense of social support (Golden et al., 2006; Golden & Gajendran, 2019; Higgins et al., 2014).

This study serves as a contribution to the existing literature by establishing relationships among variables of noted interest (such as job satisfaction and intent to quit) and providing information that also might be of interest specifically within a telecommuting context. For example, the findings from this study highlight the importance of assessing telecommuters' GWB, which was the best predicted by the outcome variables. GWB is not only important for employees but their employers as well, as it is evident from the correlation analysis that GWB is also associated with work outcomes (i.e., higher job satisfaction and lower intent to quit). Understanding employees' telecommuting experience based on the current work context may help organizations develop resources that employees need to successfully work from home. For example, as more hybrid work arrangements are adopted, it will be important to understand how to provide all employees with the adequate amount of social support needed. Perhaps supervisors will need to check in with their subordinates more often, hold casual virtual meetings to catch up, or adopt technologies that enable informal communications on a daily basis. Based on the current framework, the findings, and limitations of this study, further research is needed to determine what resources can be provided to employees to prevent technostress, enable social support, and prevent the interference of work into employees personal lives.

This study and recent research has found that technostress is an influential factor in the experience of role strain. However, more research is needed to understand how the use of technology leads to stress and how it interferes with work and life domains. The technostress

creators proposed by Tarafdar et al., (2007) should be further explored in a variety of intensity telecommuting contexts and among different groups. Different technostress creators might impact employees differently depending on telecommuting intensity, age, gender, etc. By improving our understanding of how technostress leads to the experience of role strain we will be able to determine what resources are needed to prevent it. For example, providing training on how to utilize different technologies used by the organization could reduce techno-complexity. Moreover, the exploration of attitudes toward telecommuting should continue to be explored as telecommuting practices continue to evolve. One way in which this could be done would be through the development of a new scale, since the number of scales to measure attitudes toward telecommuting is limited. Researchers and practitioners alike would benefit from the development of a more exhaustive scale measuring attitudes toward telecommuting in the world of work we find ourselves in today.

Most telecommuting research focuses on the interaction between work and life domains which Goode would characterize as inter-role conflict. However, Goode (1974) also proposed that employees can experience intra-role conflict when there's conflicting demands within a role (for example, having to complete your work and manage others). This study did not explore the experience of intra-role conflict for telecommuters. More research is needed to understand how demands within an individuals' work or home role contribute to role strain and impact GWB within a telecommuting context. Given that work-to-family interference seemed to have stronger associations to other variables in the model, perhaps further exploration into the intra-role demands of work would be beneficial. Moreover, role strain is dependent on the complexity of each role (Goode, 1974), which is perhaps why employees with children and spouses or partners reported the highest levels of role strain. The complexity of individuals' roles was not further explored in this study, but given that it may contribute to both inter- and intra-role conflict, it is an area in need of further exploration.

The current study did not account for demographic information about participants age, gender, racial or ethnic identity. Prior research has found meaningful gender differences in the experience of telecommuting (e.g., Shockley et al., 2021). Consequently, a next logical step for research in this field and given the current study is to further examine these demographics. Some of the associations noted with the current demographics suggest there may be some meaningful information there. Furthermore, telecommuting at different intensities within a hybrid workforce may lead to different employee outcomes. Studying telecommuting within a hybrid workforce might be more conducive to actionable data and lead to a better understanding of the mechanisms underlying these research findings. However, the insights gained regarding the relationships among the variables of interest here will help build a foundation for future research on telecommuting.

References

Aguirre-Urreta, M. I., & Hu, J. (2019). Detecting common method bias: Performance of the harman's single-factor test. *ACM SIGMIS Database: The DATABASE for Advances in Information Systems, 50* (2), 45–70.

Allen, T. D., Golden, T. D., & Shockley, K. M. (2015). How effective is telecommuting? Assessing the status of our scientific findings. *Psychological Science in the Public Interest, 16* (2), 40–68.

Anderson, A. J., Kaplan, S. A., & Vega, R. P. (2015). The impact of telework on emotional experience: When, and for whom, does telework improve daily affective well-being? *European Journal of Work and Organizational Psychology, 24* (6), 882–897.

Ashforth, B. E., Kreiner, G. E., & Fugate, M. (2000). All in a day's work: Boundaries and micro role transitions. *Academy of Management Review, 25* (3), 472–491.

Aust, F., & Barth, M. (2020). *papaja: Create APA manuscripts with R Markdown.* https://github.com/crsh/papaja

Avery, C., & Zabel, D. (2001). *The flexible workplace: A sourcebook of information and research.* Greenwood Publishing Group.

Bailey, D. E., & Kurland, N. B. (2002). A review of telework research: Findings, new directions, and lessons for the study of modern work. *Journal of Organizational Behavior: The International Journal of Industrial, Occupational and Organizational Psychology and Behavior, 23* (4), 383–400.

Baltes, B. B., Briggs, T. E., Huff, J. W., Wright, J. A., & Neuman, G. A. (1999). Flexible and compressed workweek schedules: A meta-analysis of their effects on

work-related criteria. *Journal of Applied Psychology, 84* (4), 496–513.

Barth, M. (2021). *tinylabels: Lightweight variable labels.*

https://cran.r-project.org/package=tinylabels

Bentley, T. A., Teo, S. T., McLeod, L., Tan, F., Bosua, R., & Gloet, M. (2016). The

role of organisational support in teleworker wellbeing: A socio-technical systems

approach. *Applied Ergonomics, 52*, 207–215.

Boell, S. K., Campbell, J., Cecez-Kecmanovic, D., & Cheng, J. E. (2013). *The*

transformative nature of telework: A review of the literature.

Boell, S. K., Cecez-Kecmanovic, D., & Campbell, J. (2016). Telework paradoxes

and practices: The importance of the nature of work. *New Technology, Work and*

Employment, 31 (2), 114–131.

Bryan, J., & Zhao, J. (2018). *Googlesheets: Manage google spreadsheets from r.*

https://CRAN.R-project.org/package=googlesheets

Burtha, M., & Connaughton, S. L. (2004). Learning the secrets of long-distance

leadership. *Knowledge Management Review, 7*, 24–27.

Cammann, C., Fichman, M., Jenkins, G. D., & Klesh, J. (1983). Michigan

organizational assessment questionnaire. In S. E. Seashore, E. E. Lawler III, P. H.

Mirvis, & C. Cammann (Eds.), *Assessing organizational change: A guide to*

methods, measures, and practices (pp. 71–138). Wiley.

Capitano, J., & Greenhaus, J. H. (2018). When work enters the home: Antecedents

of role boundary permeability behavior. *Journal of Vocational Behavior, 109*,

87–100.

Carvalho, V. S., Santos, A., Ribeiro, M. T., & Chambel, M. J. (2021). Please, do

not interrupt me: Work–family balance and segmentation behavior as mediators of

boundary violations and teleworkers' burnout and flourishing. *Sustainability, 13*

(13), 7339.

Charalampous, M., Grant, C. A., Tramontano, C., & Michailidis, E. (2019).

Systematically reviewing remote e-workers' well-being at work: A multidimensional approach. *European Journal of Work and Organizational Psychology, 28* (1), 51–73.

Chen, F. F., Jing, Y., Hayes, A., & Lee, J. M. (2013). Two concepts or two approaches? A bifactor analysis of psychological and subjective well-being. *Journal of Happiness Studies, 14* (3), 1033–1068.

Cheung, G. W., & Rensvold, R. B. (2002). Evaluating goodness-of-fit indexes for testing measurement invariance. *Structural Equation Modeling, 9* (2), 233–255. Clark, L. A., Karau, S. J., & Michalisin, M. D. (2012). Telecommuting attitudes and the 'big five'personality dimensions. *Journal of Management Policy and Practice, 13* (3), 31–46.

De Bruin, G. P., & Du Plessis, G. A. (2015). Bifactor analysis of the mental health continuum—short form (MHC—SF). *Psychological Reports, 116* (2), 438–446. Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11* (4), 227–268.

Deeter-Schmelz, D. R., & Ramsey, R. P. (1997). Considering sources and types of social support: A psychometric evaluation of the house and wells (1978) instrument. *The Journal of Personal Selling and Sales Management, 17* (1), 49–61.

Delanoeije, J., Verbruggen, M., & Germeys, L. (2019). Boundary role transitions: A day-to-day approach to explain the effects of home-based telework on work-to-home conflict and home-to-work conflict. *Human Relations, 72* (12), 1843–1868.

Demerouti, E., Bakker, A. B., De Jonge, J., Janssen, P. P., & Schaufeli, W. B. (2001). Burnout and engagement at work as a function of demands and control. *Scandinavian Journal of Work, Environment & Health, 27* (4), 279–286.

Diener, E. (1984). Subjective well-being. *Psychological Bulletin, 95*(3), 542–575.

Dirk Enzmann, J. Aquino. I. R. source code and/or documentation written by, Schwartz, M., Jain, N., & Kraft, S. (2021). *Descr: Descriptive statistics*. https://CRAN.R-project.org/package=descr

Edwards, A. B., Zarit, S. H., Stephens, M. A. P., & Townsend, A. (2002). Employed family caregivers of cognitively impaired elderly: An examination of role strain and depressive symptoms. *Aging & Mental Health, 6*(1), 55–61.

Eisenberger, R., Huntington, R., Hutchison, S., & Sowa, D. (1986). Perceived organizational support. *Journal of Applied Psychology, 71*(3), 500–507.

Epskamp, S. (2019). *semPlot: Path diagrams and visual analysis of various SEM packages' output*. https://CRAN.R-project.org/package=semPlot

Fonner, K. L., & Stache, L. C. (2012). All in a day's work, at home: Teleworkers' management of micro role transitions and the work–home boundary. *New Technology, Work and Employment, 27*(3), 242–257.

Fox, J., & Weisberg, S. (2019). *An R companion to applied regression* (Third). Sage. https://socialsciences.mcmaster.ca/jfox/Books/Companion/

Fox, J., Weisberg, S., & Price, B. (2022). *carData: Companion to applied regression data sets*. https://CRAN.R-project.org/package=carData

Fuller, C. M., Simmering, M. J., Atinc, G., Atinc, Y., & Babin, B. J. (2016). Common methods variance detection in business research. *Journal of Business Research, 69*(8), 3192–3198.

Gajendran, R. S., & Harrison, D. A. (2007). The good, the bad, and the unknown about telecommuting: Meta-analysis of psychological mediators and individual consequences. *Journal of Applied Psychology, 92*(6), 1524.

Gajendran, R. S., Harrison, D. A., & Delaney-Klinger, K. (2015). Are telecommuters remotely good citizens? Unpacking telecommuting's effects on performance via i-deals and job resources. *Personnel Psychology, 68*(2), 353–393.

Galili, T. (2021). *Installr: Using r to install stuff on windows OS (such as: R, 'rtools', 'RStudio', 'git', and more!).* https://CRAN.R-project.org/package=installr

Gallup. (2021, October 13). *Remote work persisting and trending permanent. Gallup.com.* https://news.gallup.com/poll/355907/remote-work-persisting-trending-permanent.aspx

GlobalWorkplaceAnalytics. (2020). Latest work-at-home/telecommuting/mobile work/remote work statistics. In *Global Workplace Analytics.* Global Workplace Analytics. https://globalworkplaceanalytics.com/telecommuting-statistics Golden, T. D. (2009). Applying technology to work: Toward a better understanding of telework. *Organization Management Journal, 6*(4), 241–250.

Golden, T. D., & Gajendran, R. S. (2019). Unpacking the role of a telecommuter's job in their performance: Examining job complexity, problem solving, interdependence, and social support. *Journal of Business and Psychology, 34*(1), 55–69.

Golden, T. D., & Veiga, J. F. (2005). The impact of extent of telecommuting on job satisfaction: Resolving inconsistent findings. *Journal of Management, 31*(2), 301–318.

Golden, T. D., Veiga, J. F., & Dino, R. N. (2008). The impact of professional isolation on teleworker job performance and turnover intentions: Does time spent teleworking, interacting face-to-face, or having access to communication-enhancing technology matter? *Journal of Applied Psychology, 93*(6), 1412–1421.

Golden, T. D., Veiga, J. F., & Simsek, Z. (2006). Telecommuting's differential impact on work-family conflict: Is there no place like home? *Journal of Applied Psychology, 91*(6), 1340.

Goode, W. J. (1960). A theory of role strain. *American Sociological Review,*

483–496.

Goode, W. J. (1973). *Explorations in social theory*. New York: Oxford University Press.

Grant, C. A., Wallace, L. M., & Spurgeon, P. C. (2013). An exploration of the psychological factors affecting remote e-worker's job effectiveness, well-being and work-life balance. *Employee Relations*.

Grant, C. A., Wallace, L. M., Spurgeon, P. C., Tramontano, C., & Charalampous, M. (2019). Construction and initial validation of the e-work life scale to measure remote e-working. *Employee Relations, 41*(1), 16–33.

Greenhaus, J. H., & Beutell, N. J. (1985). Sources of conflict between work and family roles. *Academy of Management Review, 10*(1), 76–88.

Henry, L., & Wickham, H. (2020). *Purrr: Functional programming tools*. https://CRAN.R-project.org/package=purrr

Higgins, C., Duxbury, L., & Julien, M. (2014). The relationship between work arrangements and work-family conflict. *Work, 48*(1), 69–81.

Holtom, B. C., & O'Neill, B. S. (2004). Job embeddedness: A theoretical foundation for developing a comprehensive nurse retention plan. *JONA: The Journal of Nursing Administration, 34*(5), 216–227.

House, J. S., & Wells, J. A. (1978). Occupational stress, social support, and health. *Reducing Occupational Stress: Proceedings of a Conference*, 78–140.

Jamal, M. T., Anwar, I., Khan, N. A., & Saleem, I. (2021). Work during COVID-19: Assessing the influence of job demands and resources on practical and psychological outcomes for employees. *Asia-Pacific Journal of Business Administration, 13*(3), 293–319.

Jorgensen, T. D., Pornprasertmanit, S., Schoemann, A. M., & Rosseel, Y. (2021). *semTools: Useful tools for structural equation modeling*. https://CRAN.R-project.org/package=semTools

Kahn, R. L., Wolfe, D. M., Quinn, R. P., Snoek, J. D., & Rosenthal, R. A. (1964). *Organizational stress: Studies in role conflict and ambiguity.* John Wiley. Kaplan, S., Engelsted, L., Lei, X., & Lockwood, K. (2018). Unpackaging manager mistrust in allowing telework: Comparing and integrating theoretical perspectives. *Journal of Business and Psychology, 33*(3), 365–382.

Kelloway, E. K., Gottlieb, B. H., & Barham, L. (1999). The source, nature, and direction of work and family conflict: A longitudinal investigation. *Journal of Occupational Health Psychology, 4*(4), 337–346.

Kim, J., Henly, J. R., Golden, L. M., & Lambert, S. J. (2020). Workplace flexibility and worker well-being by gender. *Journal of Marriage and Family, 82*(3), 892–910.

Knoesen, H., & Seymour, L. F. (2020). Examining the effect of experience on managers' attitudes towards telework during COVID. *Workshop on e-Business,* 32–47.

Korkmaz, S., Goksuluk, D., & Zararsiz, G. (2014). MVN: An r package for assessing multivariate normality. *The R Journal, 6*(2), 151–162. https://journal.r-project.org/archive/2014-2/korkmaz-goksuluk-zararsiz.pdf Kreiner, G. E., Hollensbe, E. C., & Sheep, M. L. (2009). Balancing borders and bridges: Negotiating the work-home interface via boundary work tactics. *Academy of Management Journal, 52*(4), 704–730.

Lapierre, L. M., & Allen, T. D. (2006a). Work-supportive family, family-supportive supervision, use of organizational benefits, and problem-focused coping: Implications for work-family conflict and employee well-being. *Journal of Occupational Health Psychology, 11*(2), 169–181.

Lapierre, L. M., & Allen, T. D. (2006b). Work-supportive family, family-supportive supervision, use of organizational benefits, and problem-focused coping: Implications for work-family conflict and employee well-being. *Journal of*

Occupational Health Psychology, 11 (2), 169.

Leung, L., & Zhang, R. (2017). Mapping ICT use at home and telecommuting practices: A perspective from work/family border theory. *Telematics and Informatics, 34* (1), 385–396.

Longo, Y., Coyne, I., & Joseph, S. (2017). The scales of general well-being (SGWB). *Personality and Individual Differences, 109*, 148–159.

Longo, Y., Coyne, I., & Joseph, S. (2018). Development of the short version of the scales of general well-being: The 14-item SGWB. *Personality and Individual Differences, 124*, 31–34.

Lundberg, U., & Lindfors, P. (2002). Psychophysiological reactions to telework in female and male white-collar workers. *Journal of Occupational Health Psychology, 7* (4), 354.

Mann, S., & Holdsworth, L. (2003). The psychological impact of teleworking: Stress, emotions and health. *New Technology, Work and Employment, 18* (3), 196–211.

Marsh, H. W. (1994). Sport motivation orientations: Beware of jingle-jangle fallacies. *Journal of Sport and Exercise Psychology, 16* (4), 365–380.

Matsumoto, D. E. (2009). *The cambridge dictionary of psychology.* Cambridge University Press.

Meister, J. (2021). The Future Of Work Is Employee Well-Being. Forbes. Retrieved May 2, 2022, from https://www.forbes.com/sites/jeannemeister/2021/08/04/

Michalke, M. (2020a). *koRpus.lang.en: Language support for 'koRpus' package: english.* https://reaktanz.de/?c=hacking&s=koRpus

Michalke, M. (2020b). *Sylly: Hyphenation and syllable counting for text analysis.* https://reaktanz.de/?c=hacking&s=sylly

Michalke, M. (2021). *koRpus: Text analysis with emphasis on POS tagging, readability, and lexical diversity.* https://reaktanz.de/?c=hacking&s=koRpus Mitchell, T. R., & Lee, T. W. (2001). 5. The unfolding model of voluntary turnover and job embeddedness: Foundations for a comprehensive theory of attachment. *Research in Organizational Behavior, 23*, 189–246.

Mobley, W. H. (1977). Intermediate linkages in the relationship between job satisfaction and employee turnover. *Journal of Applied Psychology, 62*(2), 237–240.

Molino, M., Ingusci, E., Signore, F., Manuti, A., Giancaspro, M. L., Russo, V., Zito, M., & Cortese, C. G. (2020). Wellbeing costs of technology use during covid-19 remote working: An investigation using the italian translation of the technostress creators scale. *Sustainability, 12*(15), 5911–5931.

Mueller, C. W., & Price, J. L. (1990). Economic, psychological, and sociological determinants of voluntary turnover. *Journal of Behavioral Economics, 19*(3), 321–335.

Müller, K., & Wickham, H. (2021). *Tibble: Simple data frames.* https://CRAN.R-project.org/package=tibble

Ooms, J. (2021). *Magick: Advanced graphics and image-processing in r.* https://CRAN.R-project.org/package=magick

Perry, S. J., Rubino, C., & Hunter, E. M. (2018). Stress in remote work: Two studies testing the demand-control-person model. *European Journal of Work and Organizational Psychology, 27*(5), 577–593.

Peters, P., Den Dulk, L., & Ruijter, J. de. (2010). May i work from home? Views of the employment relationship reflected in line managers' telework attitudes in six financial-sector organizations. *Equality, Diversity and Inclusion: An International Journal, 29*(5), 517–531.

Podsakoff, P. M., MacKenzie, S. B., & Podsakoff, N. P. (2012). Sources of method bias in social science research and recommendations on how to control it. *Annual Review of Psychology, 63*, 539–569.

Porter, L. W., & Steers, R. M. (1973). Organizational, work, and personal factors in employee turnover and absenteeism. *Psychological Bulletin, 80*(2), 151–176.

R Core Team. (2020). *R: A language and environment for statistical computing.* R

Foundation for Statistical Computing. https://www.R-project.org/

Revelle, W. (2021). *Psych: Procedures for psychological, psychometric, and personality research*. Northwestern University.

https://CRAN.R-project.org/package=psych

Rhoades, L., Eisenberger, R., & Armeli, S. (2001). Affective commitment to the organization: The contribution of perceived organizational support. *Journal of Applied Psychology, 86*(5), 825–836.

Robinson, D., Hayes, A., & Couch, S. (2022). *Broom: Convert statistical objects into tidy tibbles*.

Rosseel, Y. (2012). lavaan: An R package for structural equation modeling. *Journal of Statistical Software, 48*(2), 1–36. https://www.jstatsoft.org/v48/i02/

Russo, D., Hanel, P. H., Altnickel, S., & Berkel, N. van. (2021). Predictors of well-being and productivity among software professionals during the COVID-19 pandemic–a longitudinal study. *Empirical Software Engineering, 26*(4), 1–63. Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology, 57*(6), 1069–1081.

Saad, L., & Hickman, A. (2021). Majority of US workers continue to punch in virtually. In *Gallup.com*. Gallup. https:

//news.gallup.com/poll/329501/majority-workers-continue-punch-virtually.aspx

Sardeshmukh, S. R., Sharma, D., & Golden, T. D. (2012). Impact of telework on exhaustion and job engagement: A job demands and job resources model. *New Technology, Work and Employment, 27*(3), 193–207.

Shockley, K. M., Clark, M. A., Dodd, H., & King, E. B. (2021). Work-family strategies during COVID-19: Examining gender dynamics among dual-earner couples with young children. *Journal of Applied Psychology, 106*(1), 15.

Spector, P. E., & Jex, S. M. (1998). Development of four self-report measures of job

stressors and strain: Interpersonal conflict at work scale, organizational constraints scale, quantitative workload inventory, and physical symptoms inventory. *Journal of Occupational Health Psychology, 3*(4), 356–367.

Sturgeon, A. (1996). Telework: Threats, risks and solutions. In *Information Management & Computer Security*. MCB UP Ltd.

Suh, A., & Lee, J. (2017). Understanding teleworkers' technostress and its influence on job satisfaction. *Internet Research*.

Tarafdar, M., Tu, Q., Ragu-Nathan, B. S., & Ragu-Nathan, T. (2007). The impact of technostress on role stress and productivity. *Journal of Management Information Systems, 24*(1), 301–328.

Thompson, C. A., Jahn, E. W., Kopelman, R. E., & Prottas, D. J. (2004). Perceived organizational family support: A longitudinal and multilevel analysis. *Journal of Managerial Issues*, 545–565.

US EPA, O. (2015, May 29). *1990 clean air act amendment summary. US EPA* [Other Policies and Guidance]. https://www.epa.gov/clean-air-act-overview/1990-clean-air-act-amendment-summary

Vittersø, J., Akselsen, S., Evjemo, B., Julsrud, T. E., Yttri, B., & Bergvik, S. (2003). Impacts of home-based telework on quality of life for employees and their partners. Quantitative and qualitative results from a european survey. *Journal of Happiness Studies, 4*(2), 201–233.

Wang, Y. A., & Rhemtulla, M. (2021). Power analysis for parameter estimation in structural equation modeling: A discussion and tutorial. *Advances in Methods and Practices in Psychological Science, 4*(1), 1–17.

Warr, P. B. (1990). Decision latitude, job demands, and employee well-being. *Work & Stress, 4*(4), 285–294.

Wickham, H. (2016). *ggplot2: Elegant graphics for data analysis*. Springer-Verlag New York. https://ggplot2.tidyverse.org

Wickham, H. (2019). *Stringr: Simple, consistent wrappers for common string operations*. https://CRAN.R-project.org/package=stringr

Wickham, H. (2021a). *Forcats: Tools for working with categorical variables (factors)*. https://CRAN.R-project.org/package=forcats

Wickham, H. (2021b). *Tidyr: Tidy messy data*. https://CRAN.R-project.org/package=tidyr

Wickham, H., Averick, M., Bryan, J., Chang, W., McGowan, L. D., François, R., Grolemund, G., Hayes, A., Henry, L., Hester, J., Kuhn, M., Pedersen, T. L., Miller, E., Bache, S. M., Müller, K., Ooms, J., Robinson, D., Seidel, D. P., Spinu, V., . . . Yutani, H. (2019). Welcome to the tidyverse. *Journal of Open Source Software, 4*(43), 1686. https://doi.org/10.21105/joss.01686

Wickham, H., François, R., Henry, L., & Müller, K. (2021). *Dplyr: A grammar of data manipulation*. https://CRAN.R-project.org/package=dplyr

Wickham, H., Girlich, M., & Ruiz, E. (2021). *Dbplyr: A 'dplyr' back end for databases*. https://CRAN.R-project.org/package=dbplyr

Wickham, H., Hester, J., & Bryan, J. (2022). *Readr: Read rectangular text data*. https://CRAN.R-project.org/package=readr

William Lee, T., Burch, T. C., & Mitchell, T. R. (2014). The story of why we stay: A review of job embeddedness. *Annu. Rev. Organ. Psychol. Organ. Behav., 1*(1), 199–216.

Yentes, R. D., & Wilhelm, F. (2021). *Careless: Procedures for computing indices of careless responding*.

Table 1

Scale intercorrelations (study variables).

	1	2	3	4	5	6	7	8	9	10	11	12	13	M	SD
1. GWB	-													3.90	0.54
2. JobSat	.48***	-												5.10	0.96
3. Turnover	-.29***	-.70***	-											2.14	1.00
4. Telecom	-.28***	-.02	.01	-										2.33	0.88
5. Workload	-.12**	-.23***	.24***	.06	-									3.42	0.98
6. CoworkerSupp	.40***	.33***	-.24***	-.13***	-.13***	-								3.48	0.92
7. Supsup	.19***	.45***	-.41***	.04	-.15***	.40***	-							6.04	1.14
8. Famsup	.06	-.03	.08*	.01	.08*	.16***	.10*	-						2.88	1.03
9. Technoinvasion	-.28***	-.29***	.30***	.18***	.43***	-.23***	-.19***	.06	-					2.69	1.02
10. Technocomplex	-.26***	-.13***	.06	.22***	.09*	-.10**	-.07	-.08*	.22***	-				1.91	0.71
11. WFRoleStrain	-.43***	-.44***	.39***	.18***	.50***	-.27***	-.25***	.10*	.55***	.20***	-			2.73	0.67
12. FWRoleStrain	-.36***	-.19***	.15***	.25***	.12***	-.18***	-.04	.03	.23***	.24***	.36***	-		1.93	0.57
13. JELinks	.44***	.68***	-.58***	-.03	-.11**	.36***	.45***	.05	-.22***	-.23***	-.27***	-.20***	-	4.05	0.65
14. JEFit	.03	.06	-.09*	-.05	.20***	-.03	.07*	-.18***	.12***	.14***	.09*	-.07	.05	0.02	0.80

Note. GWB = General well-being, Telecom = Attitudes towards telecommuting, Jobsat = Job satisfaction, Turnover = Intent to quit, Supsup = Supervisor Support, Famsup = Family support, WFRoleStrain = Work-Family interference resulting in role strain, FWRoleStrain = Family-work interference resulting in role strain, JELinks = Links dimension of job embeddedness, JEFit = Fit dimension of job embeddedness. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table 2

Current Telecommuting Intensity

	Frequency	Percent
None	8.00	1.13
One day per week	9.00	1.27
Two days per week	24.00	3.39
Three days per week	52.00	7.33
Four days per week	67.00	9.45
Five or more days per week	548.00	77.29
Prefer not to respond	1.00	0.14
Total	709.00	100.00

Table 3

Desired Telecommuting Intensity

	Frequency	Percent
None	5.00	0.71
One day per week	17.00	2.40
Two days per week	40.00	5.64
Three days per week	99.00	13.96
Four days per week	129.00	18.19
Five or more days per week	416.00	58.67
Prefer not to respond	3.00	0.42
Total	709.00	100.00

Table 4

Designated Work Location While Telecommuting

	Frequency	Percent
No	51.00	7.19
Yes	657.00	92.67
Prefer not to respond	1.00	0.14
Total	709.00	100.00

Table 5

Employee Commuting Time

	Frequency	Percent	Valid Percent
30 minutes or less	226.00	31.88	31.92
30 minutes to 1 hour	274.00	38.65	38.70
Over 1 hour	103.00	14.53	14.55
I do not have access to an office 105.00		14.81	14.83
NA's	1.00	0.14	NA
Total	709.00	100.00	100.00

Table 6

Employee Household Status

	Frequency	Percent	Valid Percent
Single - with children	41.00	5.78	5.90
Single - no children	148.00	20.87	21.29
Married/with partner - with children	272.00	38.36	39.14
Married/with partner - no children	224.00	31.59	32.23
Have a dependent with a disability	3.00	0.42	0.43
Prefer not to respond	7.00	0.99	1.01
NA's	14.00	1.97	NA
Total	709.00	100.00	100.00

Table 7

Path Analysis Results

Path			Standardized Estimate	Unstandardized Estimate	Standard Error	p-value
RoleStrain	~	Attitude	0.15	0.08	0.02	0.00
RoleStrain	~	SocialSup	-0.08	-0.05	0.02	0.02
RoleStrain	~	Workload	0.24	0.12	0.02	0.00
RoleStrain	~	Attitude X Techno	-0.03	-0.03	0.03	0.34
RoleStrain	~	SocialSup X Techno	0.01	0.01	0.03	0.82
RoleStrain	~	Workload X Techno	-0.04	-0.03	0.03	0.27
RoleStrain	~	Technostress	0.35	0.26	0.03	0.00
GWB	~	RoleStrain	-0.40	-0.42	0.04	0.00
GWB	~	Attitude	-0.18	-0.11	0.02	0.00
GWB	~	SocialSup	0.23	0.17	0.03	0.00
GWB	~	Workload	0.08	0.04	0.02	0.02
IntQuit	~	RoleStrain	0.27	0.53	0.08	0.00
IntQuit	~	Attitude	-0.07	-0.08	0.04	0.03
IntQuit	~	SocialSup	-0.23	-0.32	0.05	0.00
IntQuit	~	Workload	0.11	0.12	0.04	0.01
JobSat	~	RoleStrain	-0.33	-0.63	0.07	0.00

Table 7 continued

Path			Standardized Estimate	Unstandardized Estimate	Standard Error	p-value
JobSat	~	Attitude	0.08	0.09	0.04	0.02
JobSat	~	SocialSup	0.31	0.42	0.05	0.00
JobSat	~	Workload	-0.06	-0.06	0.04	0.10

Note. GWB = General well-being, Jobsat = Job satisfaction, IntQuit = Intent to quit, Supsup = Supervisor Support, Famsup = Family support, RoleStrain = aggregate score of work-family and family-work interference, Attitude = attitudes towards telecommuting (mean centered), SocialSup = Social support aggregate score (mean centered), Workload = workload (mean centered), Attitude X Techno = Attitudes towards telecommuting x technostress, SocialSup X Techno = Social support x technostress, Workload X Techno = Workload x technostress.

Table 8

Testing Individual Moderation Effects

Moderation	Path		Estimate	Standard Error	p-value	CI Lower	CI Upper
	RoleStrain	SocialSup2	-0.06	0.02	0.01	-0.10	-0.01
	RoleStrain	Workload2	0.13	0.02	0.00	0.09	0.16
*	RoleStrain	Telecom2	0.09	0.02	0.00	0.05	0.12
	RoleStrain	Technostress2	0.26	0.03	0.00	0.21	0.31
Mod Effect	RoleStrain	Interaction1	-0.03	0.03	0.21	-0.09	0.02
	RoleStrain	Telecom2	0.08	0.02	0.00	0.05	0.12
	RoleStrain	Workload2	0.13	0.02	0.00	0.09	0.16
*	RoleStrain	SocialSup2	-0.06	0.02	0.01	-0.10	-0.01
	RoleStrain	Technostress2	0.26	0.03	0.00	0.21	0.32
Mod Effect	RoleStrain	Interaction2	0.01	0.03	0.67	-0.05	0.08
	RoleStrain	Telecom2	0.08	0.02	0.00	0.05	0.12
*	RoleStrain	SocialSup2	-0.05	0.02	0.02	-0.10	-0.01
	RoleStrain	Workload2	0.13	0.02	0.00	0.09	0.16
	RoleStrain	Technostress2	0.27	0.03	0.00	0.22	0.32
Mod Effect	RoleStrain	Interaction3	-0.04	0.02	0.15	-0.08	0.01

Table 8 continued

Moderation Path	Estimate	Standard Error	p-value	CI Lower	CI Upper

Note. SocialSup = Social support (mean centered), Telecom2 = attitudes towards telecommuting (mean centered), Workload2 = workload (mean centered), Interaction1 = Attitudes towards telecommuting x technostress, Interaction2 = Social support x technostress, Interaction3 = Workload x technostress., The asterisk (*) indicates the independent variable included in the interaction effect, * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$
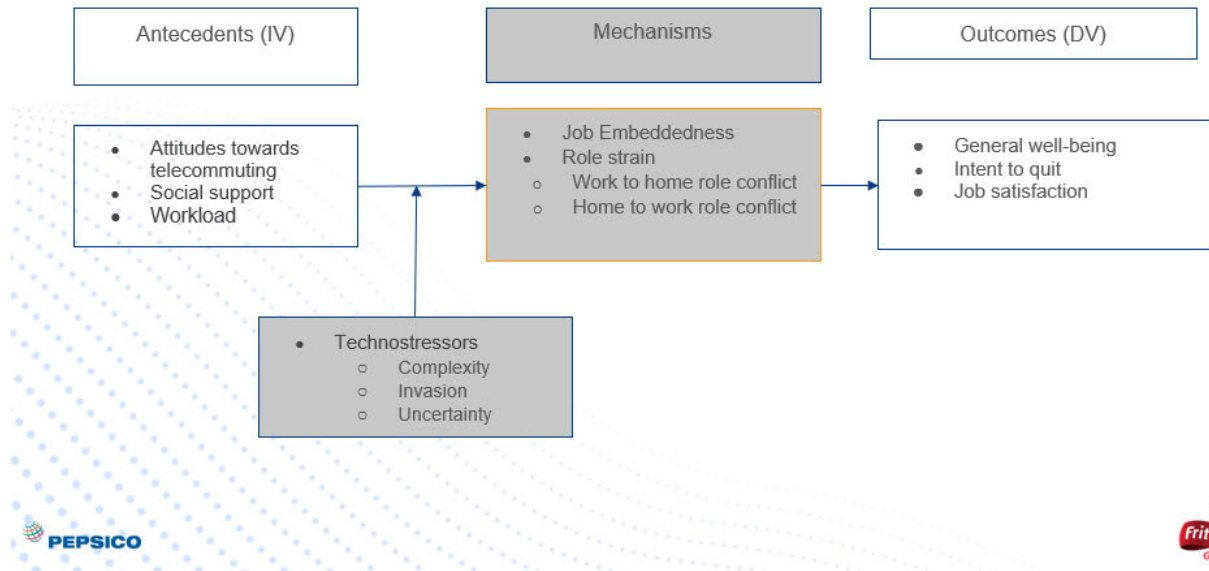
Figure 1

Proposed Associations between study constructs, primarily informed by role strain theory (Goode, 1960).
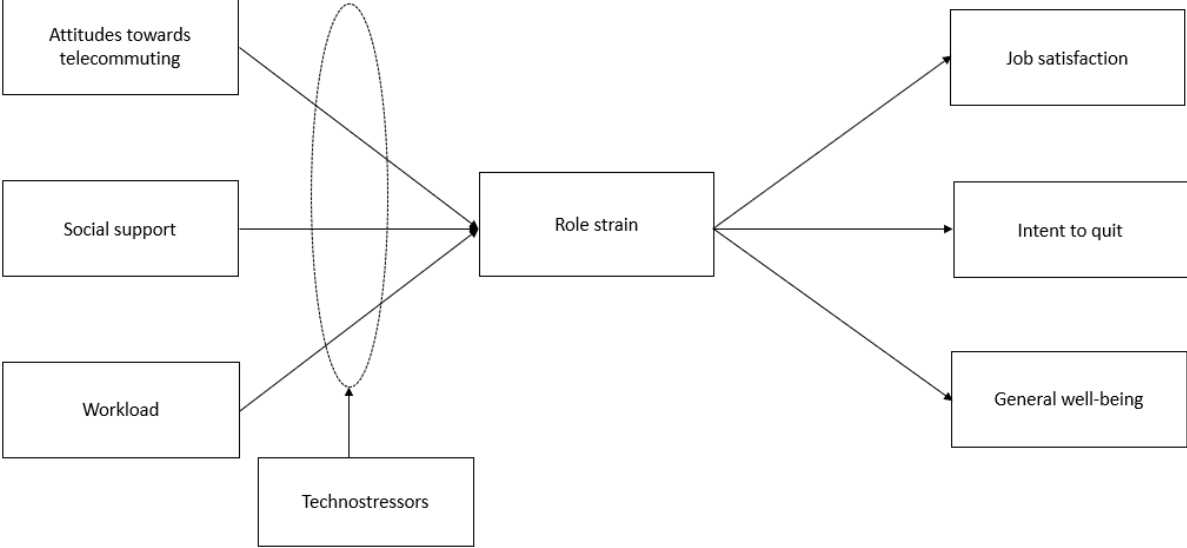
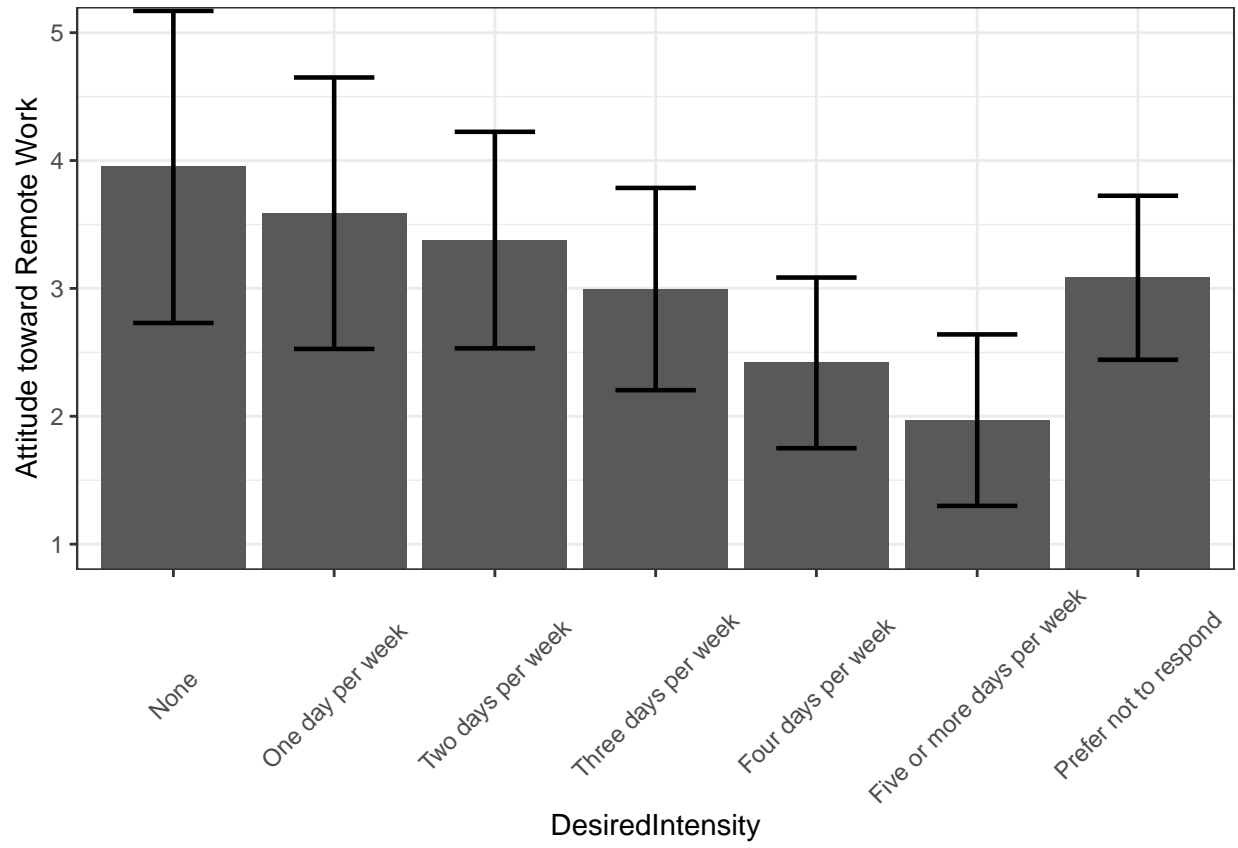**Figure 2**

SEM Structural Model Specifications

Figure 3

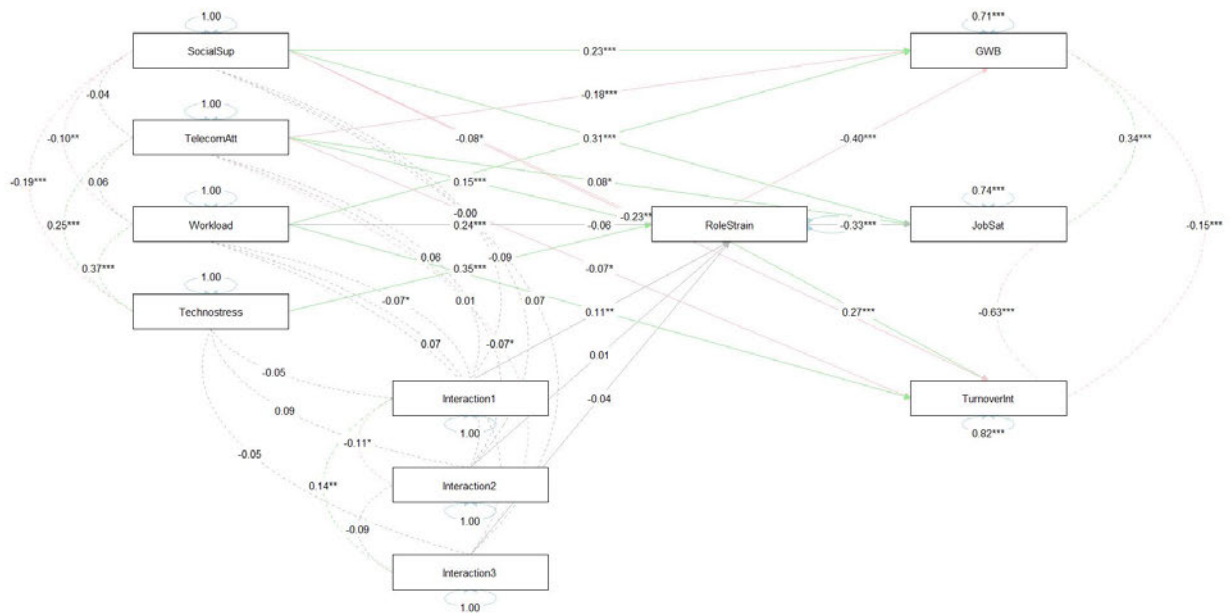*Attitudes Towards Telecommuting and Desired Intensity*

Figure 4

Path Model Associations

Appendix A

Internal Commuincations

MONTCLAIR STATE UNIVERSITY

Dear ▬ Employee,

We have the opportunity to participate in a research study hosted by researchers at Montclair State University to gather insight into employee sentiment towards working remotely and how it affects work and well-being. These are topics that ▬ is interested in and we will benefit from the insights gained from the research.

The entire survey consists of 90 items and takes most people between 10 and 15 minutes to complete. All responses are confidential and your participation is fully voluntary. ▬ is offering an incentive for employees who participate in this external research. If you choose to participate, you'll be entered into a raffle for one of ten $100 AMEX gift cards as a token of appreciation (subject to ▬ employee gift and tax policy).

All data will be reported in aggregate form and your individual responses will never be identifiable. If you would like a summarized report of the research findings or if you have a question, please contact Renata Garcia Prieto M.A at garciaprier1@montclair.edu or Dr. John Kulas at kulasj@montclair.edu. These results will be provided to you at the completion of the project upon request.

If you plan to participate, please complete by March 16, 2022. Click this LINK

Sincerely,

▬ Learning & Development
▬

Click here to opt-out LINK

Appendix B

Supplementary analyses

Incremental Variance of Technostress

As stated in the results, the incremental variance attributed to the moderation effect in the model was non-significant when all interaction terms were included as direct paths to the mediator in the model. However, there seemed to be an increase in the coefficient of determination (R-squared) for general well-being and role strain when the interactions were included. To further investigate this change, the model was tested without the inclusion of the interaction terms or technostress. Results showed a slight decrease in R-squared values for all outcome variables. Subsequently, the model was tested again with the inclusion of technostress as an antecedent, leading to a slight R-squared increase for all outcome variables. Lastly, the model was tested once again with all interaction terms and technostress as an antecedent, which yielded an increase in R-squared for role strain only. Even though the moderation effects didn't have much of an impact on the total amount of variance for each outcome variable in the model, the interaction terms were retained.

R-Square when interaction terms and technostress are removed:

R-Square:

	Estimate
RoleStrain	0.324
GWB	0.291
Turnover	0.181
JobSat	0.259

R-Square without interaction terms but with technostress as an antecedent:

	Estimate
RoleStrain	0.325
GWB	0.292

	Estimate
Turnover	0.182
JobSat	0.260

R-Square with all interaction terms and technostress (all covariances):

	Estimate
RoleStrain	0.328
GWB	0.292
Turnover	0.182
JobSat	0.260

Appendix C

Technostress Creators as Individual Moderators

To determine whether there were differences in the moderation effects depending on the type of technostress creator, techno-invasion and techno-complexity were tested as individual moderators. There were some slight changes in the fit indices from the original model. Fit statistics for the model testing techno-invasion suggested a good fit($\chi^2 =$ 127.53, df = 14, p < 0, CFI = 0.93, RMSEA = 0.11 (90% CI:0.09 - 0.12)) . Similarly, the fit indices for the model testing techno-complexity also suggested a good fit($\chi^2 =$ 113.49, df = 14, p < 0, CFI = 0.93, RMSEA = 0.10 (90% CI:0.08 - 0.12)). Moreover, results form each path analysis showed there are differences in terms of the effect that each type of techno-stress creator has on the outcome variables.

Techno-invasion as a Moderator

Results showed that a one standard deviation increase in techno-invasion was associated with a 0.34 standard deviation increase in role strain. Techno-invasion was responsible for the largest amount of predicted variance in role strain ($\beta = .34$) compared to workload, social support, and attitudes toward telecommuting. Additionally, all interaction terms in the model were non-significant. Meaning that there was no moderation effect of techno-invasion on the relationship between antecedent variables and role strain. The amount of variance accounted for by the model decreased slightly for role strain ($R^2 =$ .315). Whereas the amount of variance accounted for by the model did not change for the other outcome variables.

Techno-complexity as a Moderator

Results showed that a one standard deviation increase in techno-complexity was associated with a 0.18 standard deviation increase in role strain. When used as a moderator alone, techno-complexity was not responsible for the largest amount of variance in role strain ($\beta = .18$). The largest amount of variance in role strain is attributed to workload in

this model ($\beta = .36$). Moreover, there was support for the moderation of techno-complexity between workload and role strain ($\beta = -.07$, p $= 0.05$). The amount of variance accounted for by the model decreased for role strain ($R^2 = .262$). Whereas the amount of variance accounted for by the model did not change for the other outcome variables.

Conclusions

There were some differences found depending on the type of technostress creator used as a moderator. These differences include the changes in the total amount of variance accounted for role strain by the model, and whether moderation was present. Despite the marginal moderation effect of techno-complexity, the technostress creators do not seem to affect the strength of the relationships between the antecedent variables and role strain. Moreover, when technostress is used as a scale score including both techno-invasion and techno-complexity, the model appears to account for the largest amount of variance in role strain ($R^2 = 0.328$).

Appendix D

IRB Project Approval

Renata Garcia Prieto Palacios Roji, M.A.
Dr. John Kulas
Montclair State University
Department of Psychology
1 Normal Ave.
Montclair, NJ 07043

Re: IRB Number: IRB-FY21-22-2489
Project Title: SS The incremental explanatory utility of technostress and role strain - Dissertation

Dear Researchers:

After a review to federal regulations, 45CFR46, category:

- Category 3.(i)(A). Research involving benign behavioral interventions in conjunction with the collection of information from an adult subject through verbal or written responses (including data entry) or audiovisual recording if the subject prospectively agrees to the intervention and information collection.
  The information obtained is recorded by the investigator in such a manner that the identity of the human subjects cannot readily be ascertained, directly or through identifiers linked to the subjects.

Montclair State University's Institutional Review Board (IRB) approved this protocol on February 1, 2022. Your exempt study will require an Administrative Check In, (ACD) every two years, updating our office with the status of your research project. Your check in date is February 1, 2024. We will send you a reminder prior to that date. Please note if your study has gone 90 days past the ACD, with no response from the research team it will be administratively closed.

This study has been approved under the conditions set forth by current state regulations due to COVID-19 and Montclair State University guidance.

All active study documents, such as consent forms, surveys, case histories, etc. , should be generated from the approved Cayuse IRB submission.

When making changes to your research team, you will no longer be required to submit a Modification, unless you are changing the PI. As Principal Investigator, you are required to make sure all of your Research Team members have appropriate Human Subjects Protections training, prior to working on the study. For more clarification on appropriate training contact the IRB office.

If you are changing your study protocol, study sites or data collection instruments, you will need to submit a Modification.

When you complete your research project you must submit a Project Closure through the Cayuse IRB electronic system.

If you have any questions regarding the IRB requirements, please contact me at 973-655-2097, cayuseIRB@montclair.edu, or the Institutional Review Board.

Sincerely yours,

Dana Levitt
IRB Chair

Appendix E

Job Embeddedness

Job embeddedness was removed form the model and will only be analyzed as a covariate due to interest of organizational reps.

Job Embeddedness Literature

Job embeddedness has been described as the extent of an employee's feelings of "stuckness" within an organization. These feelings originate from contextual forces which are considered critical aspects of job embeddedness and include links, fit, and sacrifice (Lee et al., 2014). Links involve the extent to which people feel connected to others and activities within the organization, fit involves the extent to which jobs and communities "fit" with the other aspects of the individual's life, and sacrifice addresses the ease with which links can be broken [what they would give up if they left the organization; e.g., Mitchell and Lee (2001)]. Research shows that job embeddedness has a mitigating effect on the impact of negative shocks (i.e., events) on employee outcomes such as organizational citizenship behaviors and performance (William Lee et al., 2014). The experience of job embeddedness makes employees less likely to leave the organization when experiencing internal and external negative events (William Lee et al., 2014).

Most of the research on job embeddedness has been done from a workplace context, with little research focusing on telecommuting. However, given the fast adoption of telecommuting practices after the COVID-19 pandemic (a negative shock), it is important to understand the effects of job embeddedness on employee outcomes when said employees are working from home. Within a telecommuting context, the three key aspects of job embeddedness (i.e., fit, links, and sacrifice) might be more difficult to develop or identify. For example, the physical distance between employees and coworkers can make it harder to develop meaningful relationships and establish trust (i.e., links). Research has found that having a culture of trust is crucial for telecommuting arrangements to succeed in an

organization (e.g., Grant et al., 2019). Building a culture of trust at a distance has proved to be a challenge for telecommuters (Kowalski et al., 2005), which can jeopardize their ability to determine fit within the organization. Other factors related to fit that might be impacted by telecommuting include on-site benefits and team building activities. The physical distance from the organization can make it difficult for telecommuters to feel like they are sacrificing something by leaving. Potentially increasing intent to quit and eventually voluntary turnover (William Lee et al., 2014). Conversely, there have been positive outcomes stemming from the shock of the pandemic and the adoption of telecommuting. People who were not happy in their jobs made career changes which led to improved fit through better work-life balance and job satisfaction (Akkermans et al., 2020). While those who feel like they are sacrificing too much by leaving, may opt to stay in their jobs and develop new skills given the adoption new forms of technology (Akkermans et al., 2020). The retained model Figure 1 posits job embeddedness to operate as a mediator, whereby the antecedent-outcome associations are partially *explained by* the intermediary experience of job embeddedness.

Appendix F

Global Circumstances and Project Concessions

There are two major procedural decisions that were impacted by the dynamic pandemic. Both of these procedural features were implemented because of the emergence of the omicron COVID variant. Practically, this emergence created a delay in the company's desire to shift the remote workforce toward a more traditional (e.g., "in-office") arrangement. Therefore, an initial desire to compare construct associations across individuals experiencing different intensities of telecommuting became obviated - essentially "everyone" would be characterized as high-intensity telecommuters during the data collection window, effectively transforming the telecommuting *variable* into a work context *constant.* My procedural reaction to this was to focus on "attitudes toward telecommuting" rather than telecommuting intensity as a primary antecedent variable. Secondly, the omicron variant is projected to exhibit an extremely pervasive but also temporally rapid course of impact. This projection led to the decision to abandon the third common method variance inclusion of collecting IV and DV information at different points in time. This was abandoned because of the possibility that omicron may sweep so quickly, that introducing a time frame between IV and DV data collection periods may result in different work arrangement statuses at the time of IV and DV pollings (e.g., remote when responding to the IV survey but "back in the office" while responding to the DV survey).

Appendix G

Internal Timeline (MSU Milestone Dates)

April

Sun	Mon	Tues	Wed	Thur	Fri	Sat
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21 Defend dissertation	22	23
24	25	26	27	28	29	30

May

Sun	Mon	Tues	Wed	Thur	Fri	Sat
1	2	3	4	5	6 ertation/nDeadline	7
8	9	10	11	12 Semester Ends	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

Appendix H

Defense Feedback Integration

The three main adjustments suggested by the committee included the contrasting of significant paths in the model, re-running the path analysis with the technostress subcategories independently used as moderators, and adding the results that stand out the most in the discussion.

1. Contrasting the significant direct paths in the model To do this the re were additional defined parameters which consisted of the difference between the paths being compared. Then, bias-corrected bootstrapping 95% confidence intervals were calculated for the standardized coefficients. To determine whether the standardized path coefficients were statistically significantly different the the CIs were evaluated to determine whether zero was included. Results are now reported in the results section and the code can be found in the "Post_Defense_Stuff" script file.

2. Re-running the model with technostress split into the two subcategories included (techno-invasion and techno-complexity). To do this, the scale score for each type of technostress creator replaced the technostress score in the model and new interaction terms were created. This was done twice, once for techno-invasion and once for techno-complexity. The output of the two models was assessed. The results are included as additional analyses in the Appendix section.

3. The most important findings throughout the project were highlighted in the discussion section.

Appendix I

Items and Scales

Table I1

Survey measures and items.

Scale.Name	Items
Remote Work Attitudes	1. I think I would be most productive in a traditional office setting
	2. I like working in a well-structured office environment
	3. I work best in a standard office environment in which all resources are readily available to me
	4. In general, I prefer the social interaction found at the conventional workplace
	5. I enjoy working in an environment where clear direction is provided about what to do and when
	6. I would prefer to come into the office, get my work done, and go home
	7. A standard office setting provides the most efficient workplace
	8. I work better in the presence of others than on my own

Table I1 continued

Scale.Name	Items
Quantitative Workload Questionnaire (QWI)	1. How often does your job require you to work very fast?
	2. How often does your job require you to work very hard?
	3. How often does your job leave you with little time to get things done?
	4. How often is there a great deal to be done?
	5. How often do you have to do more work than you can do well?
Social Support (Coworkers)	Concerning work-related problems, how much do your coworkers...
	1. *Listen* to your work-related problems?
	2. *Show concern* towards your job-related problems?

Table I1 continued

Scale.Name	Items
	3. Give you *aid* in dealing with your work-related problems?
	4. Give you *tangible assistance* to deal with your work related stress?
	5. Give you sound *advice* about problems encountered on the job?
	6. Give you useful *suggestions* in order to get through difficult times?
Social Support (Family)	Concerning work-related problems, how much does your family...
	1. *Listen* to your work-related problems?
	2. *Show concern* towards your job-related problems?
	3. Give you *aid* in dealing with your work-related problems?
	4. Give you *tangible assistance* to deal with your work related stress?

Table I1 continued

Scale.Name	Items
	5. Give you sound *advice* about problems encountered on the job?
	6. Give you useful *suggestions* in order to get through difficult times?
Supervisor Support	1. My supervisor cares about my opinions
	2. My work supervisor really cares about my well-being
	3. My supervisor strongly considers my goals and values
	4. My supervisor shows very little concern for me
Techno-invasion	1. I spend less time with my family due to this technology
	2. I have to be in touch with my work even during my vacation due to this technology
	3. I have to sacrifice my vacation and weekend time to keep current on new technologies
	4. I feel my personal life is being invaded by this technology

Table I1 continued

Scale.Name	Items
Techno-complexity	1. I do not know enough about this technology to handle my job satisfactorily
	2. I need a long time to understand and use new technologies
	3. I do not find enought time to study and upgrade my technology skills
	4. I find new recruits to this organization know more about computer technology than I do
	5. I often find it too complex for me to understand and use new technologies
Techno-uncertainty	1. There are always new developments in the technologies we use in our organization.
	2. There are constant changes in computer software in our organization
	3. There are constant changes in computer hardware in our organization.

Table I1 continued

Scale.Name	Items
	4. There are frequent upgrades in computer networks in our organization
Scales of General Well-being (SGWB)	1. Feeling happy and cheerful
	2. Feeling energetic/full of energy
	3. Feeling calm/relaxed
	4. Being optimistic and hopeful
	5. Feeling completely involved and engaged in what you do
	6. Being in touch with how you feel
	7. Accepting youself the way you are
	8. Liking yourself at lot
	9. Feeling highly effective at what you do
	10. Feeling you're consistently improving, developing, and advancing

Table I1 continued

Scale.Name	Items
	11. Having purpose and a mission in life
	12. Feeling that what you do is important and worthwhile
	13. Feeling that what you do is consistent with how you see yourself
	14. Feeling close and connected with the people around you
MOAQ	
Job Satis-faction	1. In general, I don't like my job
	2. All in all, I am satisfied with my job
	3. In general, I like working here
Turnover Intentions	1. I am thinking about leaving this organization
	2. I am planning to look for a new job
	3. I intend to ask people about new job opporunities
	4. I don't plan to be in this organization much longer

Table I1 continued

Scale.Name	Items
Work-interference with family (strain-based)	1. After work, I have little energy left for the things I need to do at home (strain-based)
	2. After work, I just need to be left alone for a while (strain-based)
	3. I do not listen to what people at home are syaing because I am thinking about work (strain-based)
	4. I think about work when I'm at home (strain-based)
	5. My job puts me in a bad mood at home (strain-based)
	6. The demands of my job make it hard for me to enjoy the time I spend with my family. (strain-based)

Table I1 continued

Scale.Name	Items
Family Interference with Work (strain-based)	1. When I am at work, I am distracted by family demands
	2. Things going on in my family life make it hard for me to concentrate at work
	3. Events at home make me tense and irritable on the job
	4. Because of the demands I face at home, I am tired at work
	5. I spend time at work thinking about the things that I have to get done at home
	6. My family life puts me into a bad mood at work
Embeddedness (Fit:Org)	1. I like the members of my work group
	2. My coworkers are similar to me
	3. My job utilizes my skills and talents well

Table I1 continued

Scale.Name	Items
	4. I feel like I am a good match for this company
	5. I fit with the company's culture
	6. I like the authority and responsibility I have at this company
	7. My values are compatible with the organization's values
	8. I can reach my professional goals working for this organization
	9. I feel good about my professional growth and development
Embeddedness (Links:Org)	1. How long have you been in your present position?
	2. How long have you worked for this company?
	3. How long have you worked in this industry?
	4. How many coworkers do you interact with regularly?
	5. How many coworkers are highly dependent on you?
	6. How many work teams are you on?
	7. How many work committees are you on?

Note. Response scales currently unclear on a subset of measures (1/10/2021).