EXAMINING TECHNOSTRESS, WORK ENGAGEMENT, AND BURNOUT: ROLE OF WORK-FAMILY CONFLICT AND WORK-LIFE BOUNDARY CHARACTERISTICS

By

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Candidate of **Master of philosophy** at the National University of Modern Languages do hereby declare that the thesis **"**EXAMINING TECHNOSTRESS, WORK ENGAGEMENT, AND BURNOUT: ROLE OF WORK-FAMILY CONFLICT AND WORK-LIFE BOUNDARY CHARACTERISTICS" submitted by me in partial fulfillment of MPhil degree, is my original work, and has not been submitted or published earlier. I also solemnly declare that it shall not, in future, be submitted by me for obtaining any other degree from this or any other university or institution.
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DEDICATED

TO

My parents, whose love and teachings continue to light my path even in their absence.

ABSTRACT

Technostress is pervasive and has a significant adverse effect on technology professionals' well-being, which could lead to burnout. As organizations are increasingly adopting advanced technologies, employees are reporting technostress arising from constant connectivity, information overload, and blurred work-life boundaries. Current study was conducted to investigate the impact of technostress on work-family conflict (WFC = Work to Family Conflict and FWC = Family to Work Conflict), work engagement, and burnout among technology professionals in Pakistan. Moreover, moderating role of work-life boundary characteristics (WLB: Work-to-life segmentation/integration LWB: Life-to-work segmentation/integration) in relationship between technostress and work-family conflict was also examined. The study tested the hypotheses using the Technostress Creators Scale, Oldenburg Burnout Inventory, Work Family Conflict Scale, Utrecht Work Engagement Scale, and Work-Life Boundary Enactment Scale. Purposive convenient sampling technique was used to collect the data. A sample of 245 technology professionals (age range 20 to 60 years; Males = 169, Females = 76) employed in three different companies located in Islamabad and Rawalpindi was included. Data was collected on study variables. SPSS was used for descriptive and correlation analyses. For testing hypothesized relationships, PROCESS MACRO (Hayes 2013) was utilized. This aligns with the principles of the Job Demands-Resources (JD-R) theory, which suggests that job demands deplete personal resources and lead to negative outcomes like burnout. In other words, when professionals experience a lot of stress from technology use, they tend to have more conflicts between work and family. This conflict then leads to increased burnout. Additionally, how clearly employees set boundaries between work and personal life can influence the connection between technostress and work-family conflict. The study highlights that job demands, like constant use of technology, can drain personal resources, which supports the main ideas of the JD-R theory. This research is very important for organizations that are dealing with the effects of technostress on their employees' well-being. The insights on managing work-family conflict and establishing work-life boundaries can help organizations support their employees, leading to greater engagement and productivity.

Chapter 1

INTRODUCTION

Technology has been a major driving force behind the new economic revolution (Stadin et al., 2019). While it provides advantages such as easy access to information, better communication within organizations, and faster technologies, it also brings negative effects. The psychological and social demands on workers are increasing, and the opportunities offered by new technologies are turning into pressure due to rising expectations (Califf et al., 2020; Rohwer et al., 2022). Technostress, defined as stressful situations caused by technology, is one of the critical negative impacts of intensive use of smart devices (Weil & Rosen, 1988). It can result in information overload, problems with connectivity, and negative effects on attitudes, thoughts, behavior, or physical changes (Niedhammer et al., 2021).

As organizational information and communication technology (ICT) systems evolve, employees must continuously renew and update their digital skills (Salazar-Concha et al., 2021). The importance of technology, including AI-driven systems, has been enhanced in all organizational domains (Day et al., 2012; Korzynski et al., 2021; Seaward, 2018). This continuous evolution forces organizations, regardless of size and type, to adapt (Boyer-Davis, 2020). It also brings pressure on employees to adapt to changing competence needs (Martínez-Navalón et al., 2023). The recent pandemic situation has further increased this pressure, as employees had to work in a different environment (home office) using unfamiliar systems, often without support (Scaramuzzino & Barfoed, 2021; Schmidt et al., 2021).

The nature of IT has created a challenging and stressful situation, and technostress has become an important area of scientific research (Saim et al., 2021; Whelan et al., 2022). Studies have mainly taken an organizational approach, neglecting the personal side (Bencsik & Juhasz, 2023). Studies suggests that technostress is the cost of using technology, with wide-ranging

effects (La Torre et al., 2018). The compulsion to use smart devices cannot be clearly separated into work and private spheres (Cahapay & Bangoc, 2021; Pflügner, 2022). The constant on-call situation makes it difficult for people to disconnect from these devices, affecting their privacy (Aziz et al., 2021; Körner et al., 2019). This shift in the work-life balance poses a serious risk to individuals' health and social relationships, while also threatening organizational success through workplace performance (Dragano & Lunau, 2020; Wu et al., 2023). Working in the constant presence of ICT tools and technologies can lead to an experience of technostress among users (Ayyagari et al., 2011; Bondanini et al., 2020; Hwang et al., 2018; Stana et al., 2021; Tarafdar et al., 2017). The presence of technostress at work can reduce employees' job satisfaction and engagement (Biela, 2018; Jena, 2015; RaguNathan et al., 2008).

Prior studies have shown that technostress detrimentally impacts employee well-being, frequently resulting in burnout (Brod et al., 2011; Maier et al., 2015; Maslach & Jackson, 1981) and disengagement (Ayyagari et al., 2011; Biela, 2018; Jena, 2015; Nuzulia et al., 2022; RaguNathan et al., 2008). However, the mechanisms to achieve work life balance are not fully explained (Prakash, 2018) and other aspects should be studied to understand how to design work life balance practices. Studies has also indicated that work-related stress associated to technology can have an impact on employees' personal lives, negatively affecting both spheres (Harris et al., 2021). Disregarding such stress can precipitate significant personal and familial issues for employees, like burnout, depression, and divorce, resulting in billions in lost productivity (Butts et al., 2015).

Technostress manifests itself through symptoms such as techno-overload (technology-induced work overload), techno-invasion (blurring boundaries between professional and private life), techno-complexity (challenges in learning new technologies), techno-insecurity (threats to job security), and techno-uncertainty (constant changes and upgrades to systems). Conceptualized as a type of job stressor, research shows that prolonged technostress can have

detrimental effects on various aspects of employee well-being and organizational outcomes. (Ragu-Nathan et al., 2008; Tarafdar et al., 2010). Researchers have found that technostress can have a wide range of negative effects (La Torre et al., 2020). As organizations continue to use more advanced technology, it is important to investigate how this might affect employees and take steps to reduce technostress. While information and communication technology has made it easier to work remotely and stay connected through email, video-conferencing, and electronic scheduling, it has also led to issues such as multitasking, and boundaries to be blurred between office work and personal life. Consequently, workers may sense like they have to be available to work all the time, which can make it hard for them to relax and recover from work demands. This is known as techno-invasion, and it can lead to frustration among workers (Tarafdar et al., 2007).

An expanding body of research has revealed adverse impacts of technostress on various employee outcomes. Studies demonstrate negative relationships between technostress and organizational commitment, job satisfaction, productivity, and retention (Ayyagari et al., 2011; Ragu-Nathan et al., 2008). Particularly relevant to this study are findings linking technostress to reduced work engagement and increased burnout (Fugate et al., 2011; Hung et al., 2011; Khan et al., 2013).

Present research seeks to investigate the association between technostress, work engagement, and burnout. By explaining these relationships, the current research aims to provide guidance to organizations on mitigating the adverse impacts of technology-related stress on employee well-being. This is increasingly important for organizations as employees prioritize work-life balance even over salary (Wedgwood, 2022). The widespread integration of technology in the workplace has led to elevated stress levels among employees, engendering work-life conflict (Li et al., 2021).

Furthermore, the study investigates how individual differences in work-life boundary characteristics moderate technostress's effects on work-family conflict. Boundary theory proposes variations in boundary flexibility and permeability alter individuals' experiences of inter-role conflict from stressors (Ashforth et al., 2000; Kossek et al., 2006). Investigating mediation and moderation will provide a more understanding of how technostress impacts employee personal wellbeing and job performance. Because organizations are still grappling with the impacts of technology on conflict between work and life, with few implementing formal policies to alleviate attachment stress (Leonardi et al., 2010). There is evidence that after-hours use of technology elevates employee stress levels. Ayyagari et al. (2011) described workload and uncertainty in roles stemming from overuse of communication tech as stressors, stating "the continuous connectivity provided by computer technologies increases work speed and productivity. It increases workload by raising expectations." More research is needed on technology characteristics that may increase stress and outcomes like burnout. Some scholars propose that tech-induced stress (e.g. always-on work connectivity) can reduce job satisfaction and emotional energy (Beam et al., 2003; Leonardi et al., 2010)

While prior research has revealed detrimental impacts of technostress on employee performance, there remain critical gaps in understanding the mechanisms underlying these impacts. In particular, the processes linking technostress to both outcomes –personal and professional- need further investigation (Bencsik, & Juhasz, 2023).

Similarly, examining multiple dimensions of work-family conflict – including work interference with family and family interference with work – would provide greater insight into the stress spillover process precipitated by technostress. This is because most of the studies have focused on one direction of work family conflict and in those studies, typically only the work-to-family direction has been considered (Hecht & Allen, 2009; Olson-Buchanan & Boswell, 2006).

Moreover, individual differences in boundary management strategies i.e integration and segmentation likely buffer the impact of technostress on work-family conflict. Boundary theory proposes that preferences for segmenting or integrating work and family roles alter how permeable boundaries impact inter-role conflict (Ashforth et al., 2000). Employees favoring segmentation may enact boundary practices that limit the invasion of work roles during family time, reducing conflict. This study will investigate whether work-life boundary characteristics buffer the effects of technostress on work-family conflict, subsequently influencing burnout and work engagement.

In summary, this research addresses critical gaps in understanding technostress outcomes for employees and organizations. Overall, nuanced understanding of the relationships between technostress, work-family conflict, boundary management, and employee well-being will enable organizations to control the detrimental impacts of technology.

Chapter 2

LITERATURE REVIEW

2.1 Technostress

The widespread advancement of technology has altered how we work, communicate, and live in the quickly developing digital age. Technology has improved our lives in many ways, but it has also created a new type of stress called as technostress. Clinical psychologist Brod (1984) first introduced technology stress as a disease in his book. He used the term "technostress" for the first time. According to him technology stress is resulting from an incapacity to deal healthily along with new computer technology. Brod (1984) described technostress as "the emotional and physical distress people go through as a result of using and abusing technology. It includes a broad spectrum of unfavorable feelings and symptoms that are brought on by the difficulties and demands of embracing and using technology" (p. 16).

Technostress is a complex ever-evolving phenomenon that presents difficulties for people, organizations, and society at large. It is significant to understand the causes and effects of technostress and put good solutions in place as technology develops.

In 2007, Tarfdar et al. expanded on the initial idea of technology stress and examined it empirically. He developed the technology stress scale, which initiated active research in this area. Tarfdar et al.'s (2007) instrument recognized five key techno-stressors also known as domains of technostress:

1. Techno-overload
2. Techno-invasion
3. Techno-complexity
4. Techno-insecurity
5. Techno-uncertainty

Techno-overload arises when the quantity of information enabled by technology is overwhelming, hindering effective information processing and decision making.

Techno-invasion is the blurring of distinctions amongst work and individual's life. This particular term is used to describe how technology intrudes into daily life disrupting work-life balance and interpersonal interactions.

The concept of techno-complexity refers to an individual's lack of self-assurance or confidence when it comes to utilizing new technologies (Compeau & Higgins, 1995; Weil & Rosen, 1999). This dimension is closely tied to the notions of task difficulty, as tasks that are perceived as more complex can lead to greater feelings of insecurity with technology (McGrath, 1976). It is also related to the ideas of computer anxiety, where individuals experience apprehension or fear surrounding the use of computers, and computer self-efficacy, which refers to a person's belief in their ability to effectively use computer systems (Compeau & Higgins, 1995). Both computer anxiety and low computer self-efficacy have been found to negatively impact an individual's willingness to adopt and use new technologies (Weil & Rosen, 1999).

Technology-insecurity can be viewed as a type of career-related stressor. This refers to an individual's fear or concern that they may be replaced in their job or role by others who possess superior technology skills. As the rapid pace of technological change continues, some workers may feel insecure about their ability to keep up with new tools and systems, leading to anxiety about their long-term career prospects (Weil & Rosen, 1999).

Techno-uncertainty is when people experience anxiety or tension as a result of frequent technology changes, software updates, or the fear of technological obsolescence.

Rapid technological improvement might make people feel overwhelmed and unsure of their capacity to keep up (Brod et al., 2011). The COVID-19 pandemic has increased remote work culture which emphasized the significance of research on human-technology interactions

and has accelerated research on this area in organizations. Additionally it has increased awareness of the possible harm that ICTs could do to worker's well-being. A recent study investigated how three technological stressors – techno-overload, complexity and invasion- as well as two psychological reactions (emotional and cognitive distress) impacted work engagement and performance. Results showed techno-overload increased emotional distress, techno-invasion heightened both emotional and cognitive distress, and techno-complexity amplified cognitive distress. Furthermore, cognitive distress negatively affected both work engagement and performance, while emotional distress only reduced performance (Dalmazi et al., 2022).

2.1.1 Types of technostress

Research conducted on technostress found that different ways of human interaction with technology produce 7 types of technostress (Farziani et al., 2018; Weil & Rosen, 1997). These are:

1. Boundary technostress.
2. Communication technostress.
3. Learning technostress.
4. Time technostress.
5. Workplace technostress.
6. Family technostress.
7. Social technostress.

Boundary technostress is the form of technostress that occurs when an individual cannot set clear boundaries when using technology. As a result, the boundaries between self and technology become blurred. This type of technostress can be seen when the person using the technology feels that they have to respond to all messages or do everything given in every situation (Farziani et al., 2018; Weil & Rosen, 1997).

Communication technostress is the type of technostress that occurs using any communication technology (ICT). When individuals want to transmit or send a message or try to contact others, they often try to use appropriate means of communication, and even though there are advanced and fast communication technologies today, their poor anxiety can also be a barrier to communication that causes technostress (Farziani et al., 2018; Weil & Rosen, 1997).

Learning technostress is the type of technostress that individuals experience when interacting with new technology and trying to understand and learn it. There is no doubt that the rapid development of technology makes this type of technostress evident and serious (Farziani et al., 2018; Weil & Rosen, 1997).

Technology is meant to save time and effort but in many cases it wastes time instead of saving time it can result in technostress which is called Time technostress. This can arise when people rely on technology to work in short bursts of time, so they tend to multitask, which leaves them feeling constantly short on time and noisy and become depressed and anxious (Farziani et al., 2018; Weil & Rosen, 1997).

Workplace technostress is a common type of technostress that occurs in the workplace. Many technostress-causing situations arise at work due to the use of technology. Some examples are when technological tools are difficult, when employers expect employees to do more work because they think it will be done faster with the help of technology, when people have to continue working at home, and when co-workers annoy others by claiming more technology-related expertise. All of these cause workplace technostress and create a troubling situation called paradox productivity, when expected productivity declines as opposed to technology (Farziani et al., 2018; Weil & Rosen, 1997).

Family technostress occurs when technology becomes the primary cause of family breakdown. It is evident in many families nowadays that each family member isolates himself from other members and spends hours on his electronic device engaged in his personal

activities. Thus each family member lives in his technological cocoon which damages the family system (Farziani et al., 2018; Weil & Rosen, 1997).

Similarly**,** Social technostress is the form of technostress that arises because of the quick advancement of technology in society. Some people fall into the craze of acquiring every new technology even if they don't need it or can't afford it. Social technostress is also seen in people who are using relatively old technology. Some forms of social technostress are the proliferation of personal information on social media, the replacement of real-world social relationships with virtual relationships (Farziani et al., 2018; Weil & Rosen, 1997).

This research examines the impact of technostress specifically workplace technostress on levels burnout and work engagement among employees, through mediating effect of work family conflict and moderating role of work life boundaries. As technology use is becoming an inevitable part at workplace. The growing reliance on digital tools and platforms in today's technologically advanced workplace has given rise to workplace technostress. According to Trafdar (2019), workplace technostress (i.e unfavorable psychological reactions that people may suffer as a result of their interactions with technology at work) effects on employee well-being and other work-related outcomes as workplace technostress continues to be recognized as a substantial occupational hazard.

2.1.2 Technostress at Workplace

Workplace stress is often linked to poor mental health issues like depression or burnout (Madsen et al., 2017). For a long time, research on work-related stress did not focus much on technology as a source of stress. However, this has changed due to the digital transformation happening across workplaces. Digital technologies are now present in almost every industry and job role, fundamentally impacting how organizations function, how they communicate, their business models, work processes, and employee relationships. With such major changes,

it is very likely that individual workers will face certain consequences or challenges as a result (Dragano & Lunau; 2020).

Technology has changed rapidly since Brod first coined the term technostress in 1984. In today's data-driven world, the application of information and communication technologies is a need. No significant economic and developmental progress is possible without its proper use. Its proper use brings many benefits like better productivity, efficiency, accuracy, space-saving and labor reduction. So, while talking about new information and communication technologies we say that they accelerate organizational growth and social change. But the sectors where technologies are still not commonly used these sectors a find it challenging to strive (Arebey et al., 2011; Suprem et al., 2013). So research has found that technostress is prevalent across various sectors, including education (Rana, 2019), Information technology (Bhatt, 2010), manufacturing (Keerthi, 2011), and many more. Employees in every sector experience technostress. This is because previously people used to work manually at work places e.g. to maintain records in organizations. Employees used to have registers to pen down everything but with the increase in the use of technology, workplaces are changed with new concepts of work. They have introduced computer-based systems. Due to the lack of knowledge, people tend to suffer a lot of difficulties while handling technology which in return lead to technostress. According to Dolot (2018) the majority of people are not members of Generation Z and are not proficient in using digital technology and internet. Generation Z or are the people who are born in the middle of the mid-1990s and early 2010s, they are experienced in the use of digital technology because they have grown up with the constant use of technology. But the generations before them are not good with technology and this contributes significantly to Technostress which rises people's frustration at not being able to complete particular activities (Mark et al., 2016). Clarke and Killen (1996) believe that technostress is caused by the inability

to manage changes in technology. He said that technology is not responsible for technostress, rather technostress is a general response to the effects of technology.

Technostress affects both employees and employers, manifesting differently based on individual expectations, demands and the nature of the job. Technostress is a contemporary challenge faced by employees in various sectors which is intensified by severe competition and meeting expectations. As demands increase, individuals in workplaces experience stress while striving to fulfill these rising expectations (Sharma et al., 2014).

Similarly research showed that technostress can be reduced by reducing information overload and increased productivity by putting good time management skills into practice (Eppler & Mengis., 2004). Offering employees training and education on technology news and time management can empower them to better cope with technostress (Zhang et al., 2014), and mindfulness practices have shown promise in reducing the negative effects of technostress by promoting relaxation and focus (Bakker et al., 2018).

2.1.3 Outcomes of Technostress

Research on technostress examines how technology-induced stressors cause psychological and behavioral distress. According to past research conducted by Ragu-Nathan et al. (2008) and Ayyagari et al. (2011) technostress arises from techno-stressors, which are elements, occurrences, and conditions that contribute to or cause technostress. Exposure to these techno-stressors generates strain reactions in individuals, including psychological and behavioral responses (Ayyagari et al., 2011; Tarafdar et al., 2010). For example, techno-stressors can lead to reduced job satisfaction and exhaustion (psychological strain) as well as lower work performance and increased turnover (behavioral strain) (Tarafdar et al., 2010). Recent studies suggest psychological strain e.g. exhaustion can mediate the impact of techno-stressors on behavioral strain e.g. work engagement (Tarafdar et al., 2010). The user's characteristics and work environment also moderate the impacts of techno-stressors.

Knani (2013) stated, technostress is caused by excessive use of ICTs such as laptops, mobile phones, constant text messaging, e-mail and voicemail. It is when there are difficulties in understanding and adjusting to changes in information and communication technologies. ICT use exposes employees to stressors such as burden, interference with complexity role ambiguity, family time, and instability (Tarafdar et al., 2007). Studies are conducted on all of the components of technostress (techno overload, techno insecurity, uncertainty, and techno-complexity and techno invasion) as described by Tarafdar et al. (2007) to measure what are the employees' levels of technostress in an organization. For example, techno overload was found in university employees who had to constantly switching between devices and tasks may experience reduced efficiency as their minds require time to absorb information (Ingusci et al., 2021). Techno-complexity arises when new technologies are too complicated for employees which causes feelings of incompetence and frustration while trying to understand those technologies. This can decrease performance and productivity since frustrated and demoralized employees are less productive (Barber & Santuzzi, 2015).

According to Zang at al. (2014), technological stress can impair cognitive function and lower productivity at work. Reduced productivity may result in an emotional and professional imbalance. According to Tams et al. (2019), prolonged exposure to technological stress has been connected to detrimental effects on health, indulging an elevated risk of anxiety, depression and musculoskeletal diseases. Similarly, Riddle et al. (2012) conducted a laboratory experiment that observed that system malfunctions that are a techno-stressor during human-computer interaction increased the users' cortisol levels. This experiment concluded that short termed techno-stressors also produce psychophysiological responses in consumers that cortisol levels can measure. Furthermore, one of the main causes of family conflict is technostress. Because people may prioritize screen time over in-person contacts, an excessive reliance on technology might impair interpersonal connections (Reinecke et al., 2017).

Techno-invasion which involves technology blurring the line between work and personal life was found to detrimental effects on work-life balance. Studies also suggested that techno-invasion also affects and lower well-being in employees (Mahapatra & Pati, 2018). Finally, Techno-insecurity makes employees afraid of leaving their jobs, distracts them from their duties (Ibrahim & Yusoff, 2015) suggests that, due to insecurity, rather than performing well, employees become preoccupied with job security. Many other studies has demonstrated that those who experience a lot of technological stress are more likely to suffer from psychological problems, including decreased organizational commitment, affected prosperity and success, low self-esteem, unhappy with the IT system, adverse psychological reactions, suffering from burnout. Therefore, techno-stress harms their success and well-being in the work (Afifi et al., 2018; Korzynski, et al., 2021; Tarafdar & Stich, 2021).

2.1.4 Impact of Demographics on Technostress

Research suggests that there are certain demographics that impact the increase or decrease in stress induced by technology. Research has found that age, gender, education etc. influence technostress. Tu et al. (2005) conducted research and found that culture, Individual characteristics, Organizational characteristics and technology-related perceptions can affect the stressor-strain relationship. For example, In China, the five techno-stressors do not equally affect labor performance. Only overload, insecurity, and invasion were effective. The results showed that young employees are more affected. Central organization and innovative environment also contribute to this. Technology dependence and computer self-efficacy also influence it.

Similar results are shown with age, i.e. younger individuals who have been exposed to technology from an early stage may be more comfortable using digital tools and devices. Whereas older people find it difficult to adjust to new technologies or feel overtaken by the quick speed of technological progress, they may experience technostress (Smith, 2020).

Likewise, Technostress might be experienced differently depending on gender roles and societal expectations. Studies have found that men report lower technostress than women, due to differences in confidence in using technology (Jones et al., 2018). In addition to this, higher educated people may be more prone to use of technology for both work and recreation. In order to manage and reduce technological stress, they might also possess great digital literacy abilities. While those with less knowledge may suffer from technostress due to their inability to use and comprehend technology particularly when it is necessary for their job or everyday activities (Davis & Lee, 2019). There are many other factors that also affect the technology-related stress.

2.2 Burnout

Burnout was the term initially used in 1974 by American psychologist Freudenberger. In his influential article, Freudenberger used the word "burnout" to explain the progressive energy depletion, reduced job performance, and decreased commitment. He observed this in his research participants at St. Mark's Free Clinic in New York (Freudenberger, 1974). According to Freudenberger, when burnout first appears we see the employees exerting more effort but achieving less success (Freudenberger, 1977).

Around the same time, in 1981 Christina Maslach conducted pioneering research on burnout while interviewing human service workers in California. Maslach initially wanted to study coping strategies like "dehumanization" that workers used to handle emotional stimulation on the job. However, her interviews uncovered that these workers felt exhausted and developed negative attitudes towards service recipients (Maslach & Schaufeli, 1993). To assess burnout across human service occupations, Maslach Burnout Inventory (MBI) was formed by Maslach and Jackson (1981) which boosted later research. They defined burnout as “depersonalization, reduced personal accomplishment and emotional exhaustion, can arise in people working with people" (Maslach & Jackson, 1984, p. 134). Further studies established

that burnout was not limited to human services, since it stems from chronic work stress. This led to the construction of the MBI General Survey (MBI-GS) for assessing burnout in all professions (Maslach et al., 2012; Schaufeli, 2003). Now burnout has been studied in various professions such as teachers, police, healthcare workers, social workers, athletes etc (Gustafsson et al., 2007; Kim & Stoner, 2008; Ozyurt et al., 2006).

2.2.1 Definition

Maslach et al. (1996), mentioned that exhaustion, inefficacy and cynicism brought on by extended exposure to work related stressors are the hallmarks of job burnout. This three-dimensional conceptualization given below was first proposed by Maslach and Jackson in 1981.

2.2.1.1 Exhaustion

It refers to the sensation of being mentally and emotionally worn out by workload (Maslach & Jackson, 1981)

2.2.1.2 Depersonalization

It involves treating an overly impersonal, detached, or indifferent manner towards those people who are the recipients of one's service or care (Maslach & Jackson, 1981).

2.2.1.3 Inefficacy

Having a lower sense of personal accomplishment and competence at work (Maslach & Jackson, 1981).

The three-factor structure of the Maslach Burnout Inventory (MBI) has been found to be remarkably consistent across various occupations, nationalities, and versions of the instrument (Lee & Ashforth, 1990; Schaufeli et al., 2001; Schutte et al., 2000; Taris et al., 1999). However, some researchers have proposed that a two-factor model, comprising only emotional exhaustion and depersonalization, might be more appropriate (e.g., Kalliath, 2000). This suggestion is partly due to the personal accomplishment burnout factor exhibiting differential

relationships with other organizational outcomes, such as job satisfaction and organizational commitment (Lee & Ashforth, 1996). While emotional exhaustion and depersonalization generally demonstrate consistent associations with other outcomes, personal accomplishment exhibits far less consistent relationships. Cordes and Dougherty (1993) posited that this subscale might be less consistent because personal accomplishment is perhaps more appropriately conceptualized as a personality trait (alike to self-efficacy) rather than a component of burnout.

So, current research emphasizes on the definition of burnout given by Demerouti et al. (2010), who emphasized that burnout has two dimensions:

- **Exhaustion** stems from prolonged exposure to high job demands that create intense strain, draining an individual's cognitive, emotional, and physical resources. It reflects the feeling of being overextended and depleted of energy at work.
- **Disengagement** represents distancing oneself from the work role. It encompasses loss of interest related to one's job. Disengaged employees exhibit detachment from their tasks, goals, and the overall work content.

2.2.2 Causes of Burnout

As the literature suggests, Burnout is a widespread and complex topic that has received a lot of attention till now because of the negative effects it has on both people and businesses (Maslach et al., 2012; Schaufeli, 2003).

Workplace burnout can develop for a variety of reasons. According to Demerouti et al. (2001), Variables associated with the workplace include an excessive workload, a lack of control role ambiguity, and insufficient social support. Technostress is a major cause of burnout in business organizations and in IT-related organizations (Maslach & Jackson, 1981). Role conflict such as work family conflict also been found to increase burnout and harm employee

performance (Sovitriana et al., 2019). Perfectionism and other personality traits are examples of personal attributes that can make someone more susceptible to burnout (Bianchi et al., 2015). In addition, it has become clear that the contact among work and family life and the erasing of distinctions between work and personal life are important causes burnout If the work-life boundary is not defined it will increase in work-family conflict and that will cause more burnout (Greenhaus & Beutell, 1985).

2.2.3 Impact of Burnout at Workplace

Burnout has detrimental impacts on an individual and organizational level. Current research focuses on burnout because it is a significant issue that can have detrimental effects on employees' well-being and organizational productivity. Burnout can lead to various negative consequences including reduced work performance (Maslach & Leiter, 2016). Therefore, understanding the factors such as technostress that contribute to burnout is crucial for developing effective interventions and strategies to prevent and mitigate its occurrence.

Multiple studies have found burnout predicts absenteeism, turnover intentions, poor work attitudes, lower employee engagement and greater turnover rates (Bakker et al., 2003; Borritz et al., 2006; Maslach & Leiter, 2016; Salvagioni et al., 2017). For example, one study showed all three burnout dimensions, especially emotional exhaustion, were associated with teachers' intentions to quit (Jackson et al., 1986). In additional study, emotional exhaustion predicted lower job performance and higher turnover (Wright & Cropanzano, 1998).

In addition to work outcomes, burnout adversely affects physical and mental health, resulting in headaches, fatigue, cardiovascular disease, depression, anxiety, and insomnia (Ahola et al., 2013; Armon et al., 2008; Leiter et al., 2013; Maslach & Leiter, 2016; Peterson et al., 2008; Shirom, 2009). For instance, a longitudinal study showed burnout and insomnia exacerbate each other over time (Armon et al., 2008). Among health workers, those with higher

burnout also had more depression and anxiety symptoms, with depression being more closely tied to emotional exhaustion (Peterson et al., 2008).

Some findings suggest that job resources act as a buffer against burnout. In a study examining employees at education institution, researchers discovered that high job demands and limited job resources significantly contributed to increased burnout levels (Bakker et al., 2005). Specifically, they found that factors such as work overload, emotional demands, physical demands, and work-home interference did not necessarily lead to high burnout if employees experienced autonomy, received feedback, had social support, or maintained high-quality relationships with their supervisors. From a psychological perspective, different processes may have been responsible for these interaction effects. For instance, autonomy could have helped employees cope with job demands by allowing them to decide when to address those demands, while positive relationships with supervisors may have buffered the impact of job demands by providing instrumental assistance and emotional support (Xanthopoulou et al., 2007).

2.2.4 Technostress and Burnout

Technostress can arise due to various stress-inducing factors that overwhelm an individual who lacks proficient utilization of information and communication technologies (ICTs). When a person's capabilities in effectively leveraging these technologies are insufficient, the demands and challenges posed by ICTs can trigger a state of stress, thus leading to the experience of technostress (Ayyagari et al., 2011). Understanding the effects of technostress on employee well-being, especially burnout, is crucial as it continues to become a prevalent occupational danger (Leiter & Maslach, 2009).

In order to provide light on the major findings, this research intends to analyze and synthesize research on the connection between technostress and burnout. The difficulty in using technology i.e techno complexity effectively leads to decreased productivity and frustration

(Brod et al., 2011). The fast growth of information and communication technologies (ICTs) is spreading to all parts of work, in both big and small companies. ICT consulting companies, as new businesses focused on IT services, heavily depend on information technology. Using technology can be a source of stress when employees believe that technology has a negative effect on them. In reality, there is a gap between the demands of information technology and the ability of employees to deal with problems caused by the technology. Constant interaction with computers and technological devices could trigger any form of stress, which is commonly known as technostress. This is a negative impact on attitudes, thoughts, and behaviors that is caused either directly or indirectly by technology (Weil & Rosen, 1997).

Demerouti et al., (2001) proposed a model called the JDR-R model. It recognises that regardless of workplace type, high work pressure and limited resources lead to burnout. By definition, there are three types of burnout: extreme fatigue, apathy, and a sense of failure. In the technostress literature, Srivastava et al. (2015) examined the association between creators of technostress and burnout using Job Demand Resource Model given below.

2.2.4.1 Job Demands-Resources model (JD–R)

The JD–R model, proposed by Demerouti & Bakker (2001) states that some characteristics of a job are considered excessive demanding for an individual, causing overburdening and excessive stress, resulting in suffering and exhaustion. JDR model emphases on how employment resources and job demands interact and how this relationship affects employee motivation or leads to health problems, such as burnout (Demerouti et al., 2001). Job demands include any interpersonal, physical, or organizational requirements placed on an employee's time and attention. According to Lorens et al. (2006), certain psychological or physiological problems results due to job demands. According to Demerouti and Bakker (2011), job demands like intense work pressure, unpredictable work schedules (which impede the balance between work and life), or an unfavorable work environment. High work pressure stresses employees

to work harder to fulfil professional objectives, which has negative effects on mental and physical health, like weariness and irritability. Employees can get out of it by taking breaks, changing jobs, or doing less strenuous work (Schaufeli et al., 2014). But when such recovery is insufficient, they become physically and mentally exhausted and suffers from burnout.

2.2.4.2 Techno-Stressors as Job Demands Leading to Burnout

As discussed, JDR framework states that each profession may have particular components that cause stress, and these fall into two main categories: job resources and job stressors (Demerouti et al., 2001) some examples of work stressors are role conflict, time pressure, planning problems and re-ordering. Work resources include a safe environment, team cohesion, performance feedback and innovative environment etc. (Schaufeli et al., 2014).

Based on the explanations of job demands and burnout, we can view technostress-creators as job demands that can lead to burnout (Srivastava et al., 2015).

Tarfdar et al.'s (2007) recognized five key techno-stressors also known as domains of technostress including: techno-overload, techno-invasion, techno-complexity, techno-insecurity, and techno-uncertainty. And these techno stressors can act as job demands that require extra effort from employees to deal with. If employees don't have suitable coping methods, either for themselves or their situation, these demands can slowly drain their physical and mental energy, leading to burnout (Srivastava et al., 2015).

2.2.4.2.1 Techno-overload

Techno-overload, the first dimension of technostress creators, describes a situation where ICT pressures workers to put in more and faster hours. The Internet, smartphones, and company sources provide employees with unlimited information rapidly, making it difficult for them to use it effectively. It leads to an information overload scenario where it is challenging to find pertinent information and draw reasonable boundaries regarding new information.

Research shows that information overload contributes to stress, extra hours and taking work home (Bawden et al., 2009; Klausegger et al., 2007).

2.2.4.2.2 Techno-invasion

Techno-invasion is the second technostress creator, provides a description of the disruptive impact of ICT, where workers are accessible at all times and have a constant need to stay in touch. The lines amid work and family are blurred as a result of employees working odd hours and feeling less private. Consequently, technological invasion creates conflict between work and family, leading to work burnout (Ahuja et al., 2007; Gaudioso et al., 2017).

2.2.4.2.3 Techno-complexity

Techno-complexity describes the complexity of ICTs in which users experience inadequacy about their computer skills and are forced to invest the duration and intensity of learning and comprehension in understanding ICTs. Today organizations are constantly under pressure to carry out the new technologies for competitive advantage, leading to regular changes in ICTs. It leads to system crashes, data loss and an inadequate technical support for employees (Chandra et al., 2015). The complexity of modern ICTs creates a "skill mismatch" in which workers must spend a lot of time learning new ICTs because existing skills are insufficient (Parson et al., 1991). Research shows that overload and role conflict can cause worker's stress and burnout in employees (Sethi et al., 1999).

2.2.4.2.4 Techno-insecurity

Technological insecurity concerns the fear of losing one's employment because of ICTs or because of people who understand ICTs better. It is about situations where users feel their jobs are at risk, either because of new technologies replacing them or because other people understand the technologies better (Tarafdar et al., 2007).

2.2.4.2.5 Techno-uncertainty

Techno-uncertainty relates to the uncertainty created by the constant change and upgrading of ICTs, which makes employees restless (Tarafdar et al., 2007). The continuous development of ICTs in organizations makes it difficult for employees to establish a strong knowledge base and mould it into meaningful patterns, making their existing knowledge meaningless (Weil et al., 1997). Due to this, the employees learning the new technology also suffer, creating stress and internal conflicts among them (Zorn et al., 2003). Implementing ICTs also requires employees to change their processes, which are not accepted by all. So, they may feel threatened due to the lack of control the technology imposes on their jobs, reducing their job satisfaction and limiting their effectiveness and efficiency (Chandra et al., 2015).

Literature suggests that all the five dimensions of technostress are stressors that employees must work harder to cope with. Without appropriate individual or situational coping mechanisms, these stressors exhaust employees causing exhaustion both mentally and physically leading to burnout. Tarafdar & Ragu-Nathan (2008); Srivastava & Shirish, (2015) found that; all five techno stressors are correlated with burnout.

2.2.5 Demographics Influencing Technostress and Burnout

In research examining technostress and job burnout, factors including age, gender, social support, work place environment, and employment frequently act as modifiers (Rothmann & Joubert, 2007). Researchers have discovered that each can have an impact on how technostress manifests itself, with younger workers being more susceptible to it and older workers possibly being more resilient. Additionally, variations have been noted with women and men. There are other studies as well that showed same results about age with old generations being more prone to burnout than younger generations (Smith, 2021; Tarafdar et al., 2019). Connection between organizational stress and burnout is also impacted by gender, workplace environment and social support etc. (Broeck, 2017: Srivastava et al., 2015: Soares et al., 2007)

2.2.5.1 Nature of job

The nature of the job also matters because some industries may be more exposed to technostress than others. The ICT-related companies have more use of technology as compared to any other organizational sectors. They are constantly dealing with cutting edge technology and facing high expectation for productivity and innovations. The rapid pace of technological change in these companies can lead to technostress and burnout as employees strive to keep up (Maslach & Jackson, 1981). Another study examined the connection between organizational stress and burnout among managers. The results showed that age was affected but not gender. A study by Soares et al. (2007) examined social, economic, and health-related factors of burnout among female workers. More burnout and depression were found in women.

2.2.5.2 Role of social support

An individual's capacity to manage technostress and burnout can be significantly impacted by social support, especially by friends. Friends can offer emotional support, guidance in handling problems and protection from the bad consequences of technology related stress (Srivastava et al., 2015)

2.2.5.3 Workplace Environment

It has been discovered that various kinds of work place environments has a potential to decrease the levels of job burnout. According to Broeck (2017), organizational coping includes enhancing job design, offering training in stress management, cultivating a supportive work environment, and promoting work-life balance can reduce burnout. Similarly, Individual coping mechanisms include work life management, relaxation techniques, and seeking out social support (Bianch et al., 2015) which can impact levels of burnout. Furthermore, mindfulness-based interventions are becoming more well-known as powerful methods for lowering burnout (Hulsheger et al., 2013)

2.3 Work Engagement:

The notion of work engagement has been researched in greater detail in the literature and it is frequently conceived of in terms of the framework created by Schaufeli and Bakker (2002). It refers to the positive, contented, and enthusiastic mental state that workers encounter when they are wholly absorbed in their tasks (Schaufeli et al., 2002). Three fundamental aspects of work engagement are identified by this framework:

1. Vigor
2. Dedication
3. Absorption

2.3.1 Vigor

The term "vigor" describes the drive, passion, and fortitude that a person exhibits while working. Employees who are engaged are often vibrant and eager to put effort into their work.

2.3.2 Dedication

An awareness of importance, enthusiasm, and pride in one's work are traits of "dedication." Employees who are emotionally invested in their jobs and their employers are more likely to go above and beyond the call of duty.

2.3.3 Absorption

The level of an employee's immersion in their work is referred to as "absorption." Employees who are actively involved in their work become so observed in it that they lose track of time and are less susceptible to interruptions from other sources.

Since the beginning of 20th century, the academic study of human strengths and excellence, known as positive psychology, has received increasing attention (Seligman & Csikszentmihalyi, 2000). This recent trend toward a focus on excellence is also seen in organizational psychology, as illustrated by Luthans (2002) current application of "the positive power and psychological capabilities of human resources to improve performance in today's business space, the study of which can be measured, developed and operated effectively." (p.

698). Work engagement is considered the constructive opposite of burnout. Engaged employees feel energetically involved in and efficacious about their work, unlike those suffering from burnout (Schaufeli et al., 2002).

Interestingly, a study on work engagement has been above all stimulated by studies on burnout (Bakker et al., 2008). Unlike individuals experiencing burnout, engaged employees show that they are efficiently connected to their work, and they see it as challenging as opposed to demanding and stressful. Maslach and Leiter (1997), assert that engagement is described by efficacy, involvement and energy which are the straight opposites of dimensions of burnout. In the context of burnout, efficacy transforms into ineffectiveness, energy changes into exhaustion, and involvement into cynicism. Consequently, an opposite form of scores on the three burnout dimensions used to assess engagement.

Work Engagement is a multifaceted concept that has drawn a great deal of interest in organizational psychology and Management Research is work engagement. Workers who are engaged are frequently more productive, content, and dedicated to their organizations which can enhance overall Performance (Schaufeli et al., 2002). Work engagement is associated with employee well-being and essential for several reasons (Sonnentag, 2003). For instance, it has been shown to promote positive work emotions (Rothbard, 2001) and to be a significant predictor of employee well-being (Adil & Kamal, 2016).

2.3.4 Impact of Technostress on Employee Work Engagement

Recent research have observed at the association between technostress and employee engagement at work. Kot et al. (2022) conducted a survey of ICT-using employees to study the link between factors that promote and inhibit technostress and factors that affect job satisfaction and engagement. He found that technostress inhibitors and creators influence on job satisfaction and employee work engagement. Indicating that technological stress has a detrimental impact on work engagement and job satisfaction i.e. when an individual is facing

stress at working environment there is a higher risk that the productivity of that individual will be affected. To increase the performance and work engagement of people it is necessary that they do not face any kind of stress (Maricutoiu et al., 2016).

Research conducted by Tarafdar et al. (2019) showed that techno stressors related to technology use i.e. Information overload, technophobia, and job interactions, when increase rapidly they can cause technostress which is inversely proportional to work engagement. Similar results were shown in another research that technostress can negatively impact employee well-being by increasing anxiety and detracting from job satisfaction and engagement (Ayyagari et al., 2011).

A recent study investigated how various techno-stressors and the resulting psychological distress impacted work engagement. The results showed that crucially, cognitive distress negatively affected work engagement, indicating that techno-stressors that contribute to cognitive distress can undermine employee engagement with their work. Furthermore, emotional distress, which can arise from techno-overload and techno-invasion reduce overall performance (Dalmazi et al., 2022). This study highlights how technostress can adversely impact work engagement through mediating role of work family conflict.

To improve the work engagement we need to deal with stressors and create a work-life boundary. To lessen technological stress and job burnout, a variety of techniques are used. Research suggests managers can improve work engagement by promoting work-life balance, providing ICT support, encouraging positive technology use, and delineating work and family time (Harunavamwe & Kanengoni, 2023). Managers should recognize the harmful effects of techno-stress and work-family conflict on engagement. Enhancing personal and job resources is essential to help employees cope with added pressures and reduce techno-stress. Organizational support alone seems insufficient to address these challenges because lack of work-life balance negatively affects health and wellbeing (Fron et al., 1997; Martins et al.,

1999; Sparks et al., 1997; Thomas & Ganster, 1995). For instance, one study found weekend work intrusions into personal life were associated with stress and exhaustion, and employees felt work was harming their personal lives (Hyman et al., 2003). Thus, studying work-life conflict and how balance between these two domains can prevent burnout and excessive stress is critical.

2.4 Work Family Conflict

The term ‘Work-family conflict’ describes the tension that exists between a person's obligations to their family and their place of employment (Greenhaus & Beutell, 1985). Research on family and work conflicts are a growing area of interest to researchers, organizations, and clinicians. Historically it was defined as a conflict that arises when pressures from an individual's job and familial responsibilities clash or negatively affect one another (Greenhaus & Beutell, 1985). Subsequent research has found that it has different aspects with different causes and consequences (Byrne et al., 2005; Fron et al., 1992). These are family affecting work and work effecting family. Its high levels cause harm to employees, families and organizations (Byrne et al., 2005; Eby et al., 2002). This emphasizes organizational policy and the identification of elements to reduce it (Ripner et al., 2013).

Traditionally, research has focused on the unidirectional magnitude of work-family conflict, primarily examining issues arising when work interferes with family (Greenhaus & Beutell, 1985). However, scholars have acknowledged that work-family conflict is bidirectional, looking at both work interference with family and vice versa (Carlson et al., 2000). For a thorough understanding of family and work balance, it is necessary to consider both directions of work-family conflict (work to family and family to work) (Frone et al., 1992).

2.4.1 The Bidirectional Nature of Work-Family Conflict

Research differentiates between work-family conflict (WFC) and family-work conflict (FWC) (Bagger & Li, 2012; Frone et al., 1992, 1997). WFC stems from work duties restricting

one's capacity to meet family responsibilities, while FWC arises when family obligations limit one's ability to fulfill work demands (Bagger & Li, 2012). Modern perspectives argue that comprehensive evaluation of the interplay between the work and family spheres requires analyzing both directions of influence: work interference with family (WIF) as well as family interference with work (FIW) (Frone et al., 1992; Greenhaus & Beutell, 1985). Adopting bidirectional models allows more complete investigation of this complex dynamics.

2.4.2 Outcomes of Work Family Conflict (WFC & FWC)

As discussed earlier, two primary forms of work-family conflict: when work responsibilities interfere with family duties, and when family obligations hinder work tasks (Kossek & Ozeki, 1998). Both types of conflict between the domains of work and family lead to negative consequences for employees, including increased stress, absenteeism, health problems, lower job satisfaction, and turnover intentions (Burke & Greenglass, 1999; Frone, 2000; Martins et al., 2002; Netemeyer et al., 1996). These repercussions often generate hardships such as financial costs, inefficient time management, and unmet organizational goals for companies (Kossek & Lautsch, 2012).

An increasing amount of studies has demonstrated that work and family conflict has significant implications for individuals' wellbeing and work attitudes and performance. Studies have linked elevated levels of both family interference with work (FIW) and work interference with family (WIF) to outcomes including heightened psychological distress, reduced organizational commitment, decreased job satisfaction, increased desire to quit one’s position, and lower life satisfaction (Driscoll et al., 1992; Frone et al., 1992).

Similarly, researches also worked on different forms of Work Family Conflict and find that conflict between family and work includes three components: strain-based, time-based and behaviour-based conflict (Kosek & Lee, 2017). When expectations, norms and behaviours from one role (family or work) conflict with those from another, this is referred to as

behavioural conflict (Loscalzo et al., 2019). Time-based conflict restricts the ability to fulfil the demands of the other role by relating to the quantity of time required for one of the two roles (family-work and work-family). Finally, conflict based on strain occurs when someone is stressed and tired, experiencing tension, unease, and discontent, negatively affecting their performance in another domain (Kosek & Lee, 2017).

According to Maier (2021), techno-stressors can hinder or facilitate work-family balance. He explained that techno stressors (specifically challenge techno stressors) provide growth opportunities, motivating competence building and accomplishment feelings. Challenge techno-stressors may lessen conflict, while hindering techno stressors worsen it. Similar results were shown in another study showing hindrance techno stressors increase work family conflict because computers increased efficiency pressures and requires accomplishing more in less time (Srivastava et al., 2015). Overcoming challenges allows personal development and performance improvement via time management and IT skills can facilitate balance (Zhao et al., 2020).

There are different studies that has worked on complex phenomenon of work family conflict the result of these studies suggest that difficult technologies can reduce mental resources due to human cognitive limits as complex systems require time to master and consume personal time. As IT proficiency increases, workers could feel intimidated to their jobs and try keeping up during off-hours. Thus, demanding techno-stressors can create work-family time conflicts (Arcy et al., 2014; Ayyagari et al., 2011; Zhao et al., 2020).

Techno-stressors also hinder recovery from work fatigue, elevating stress at home (Larose et al., 2014). Constant connectivity raises ambiguity between roles, interfering with personal goals and boosting stress and conflict. The ongoing need to handle challenging IT causes fatigue, stress, and struggles balancing home duties (Tarafdar et al., 2007). Therefore, hindering techno-stressors exacerbate conflict between work and family.

2.4.3 Work Family Conflict (WFC & FWC) and its Relationship with Burnout

Prior studies have shown that work-family conflict has many detrimental effects on employees' wellbeing. Similarly, it also has a positive relationship with burnout. As discussed, both family and work are crucial in adult life, but the expectations of these roles often conflict. Examining both instances where work interferes with family (WIF) and family interferes with work (FIW) is important when studying work-family conflict (Yavas et al., 2008). Regarding the link between burnout and work-family conflict, many past studies found WIF and FIW positively related to the burnout components of emotional exhaustion and cynicism, respectively (Wang et al., 2012). Yavas et al. (2008) found WIF and FIW may lead to emotional exhaustion. Similarly, Fuss et al. (2008) showed high work to family conflict (WIF) is strongly associated with increased personal burnout.

Conflict between a person's personal life and professional life can make them more stressed. An essential element of job burnout is emotional exhaustion which can be brought on by conflict between the demand of work and personal life (Derks et al., 2014; Tarafdar et al., 2010). For example, an employee who constantly feels torn of between work and family life may become emotionally drained. Some evidence points to WFC having a stronger correlation to burnout and tension compared to FWC (Driscoll et al., 1992; Maslach & Jackson, 1981). Overall, the body of research generally points to detrimental impacts of both WFC and FWC on important work and personal outcomes. Increase in work family conflict causes emotional exhaustion and reduced satisfaction (Karatepe et al., 2006), aligning with earlier findings (Babin & Boles, 1996; Boles et al., 1997; Bolino & Turnley, 2005; Netemeyer et al., 1996). WFC and emotional exhaustion are key factors impacting frontline employee outcomes (Babin & Boles, 1996; Bolino & Turnley, 2005).

2.4.4 Work-Family Conflict (WFC & FWC) and its Relationship with Work Engagement

Work-family Conflict can operate as a mediator in the relationship between technological stress and lower work engagement. Technology's persistent demands blur the lines between work and personal life, raising stress levels that have a detrimental impact on job burnout and workplace engagement. Employees find it difficult to focus, feel less engaged to their work and less committed to the tasks assigned. Literature suggests that WFC may result in a decline in work engagement and job satisfaction (Conte et al., 2019). Study has reflected workers who indicated elevated levels of tele pressure (urge to reply to work-related messages) show decreased levels of engagement at work when they utilized their smartphones more frequently during work hours. Moreover, work interfering with personal life when there is extensive smartphone usage in post-work negatively affects employees' ability to psychologically disconnect from work and effect their performance at work (Van et al., 2018).

2.4.5 Mediating Role of Work Family Conflict

The mediating role of work-family conflict is critical to understanding the relationships between technostress, burnout, and work engagement. Work-family conflict occurs when demands from work and family roles are incompatible and interfere with one another (Greenhaus & Beutell, 1985). Several studies reveal that technostress can increase work-family conflict, which then negatively impacts employee well-being. For Example, Harunavamwe et al. (2022) found that technostress through work–family conflict and perceived organizational support influences subjective workplace wellbeing and work engagement. Similarly, Derks et al. (2014) found the impact of work-related smartphone use on employees' ability to recover from work-related efforts daily. The results showed that for non-smartphone users, work-home interference (WHI) was positively related to engaging in recovery activities like psychological detachment, relaxation, mastery, and control. However, smartphone users facing high WHI

failed to engage in these recovery activities, implying that being constantly connected to work through smartphones hinders the recovery process. The constant connectivity enabled by ICTs can make it difficult for employees to detach from work roles during personal time, creating stress and work-life imbalance.

This highlights how the blurring of boundaries from ubiquitous technology use can spill over to generate strain in family life. Moreover, technostress from techno-overload and techno-invasion appears to increase work-family conflict, which then reduces work engagement. For instance, Tarafdar et al. (2010) found technostress indirectly diminished engagement through elevated work-family conflict.

Overall, substantial research identifies work-family conflict as an explanatory mechanism linking technostress to detrimental employee outcomes. The findings highlight the need for organizational interventions to help employees manage technostress and establish boundaries that prevent negative spillover from work and family roles. Limiting technology's invasion into personal life and enabling employees to detach from work should limit work-family conflict and its associated burnout and disengagement.

2.4.6.1 Technostress and Work-family Conflict

Researchers have increasingly examined how work-family conflict may act as an explanatory mechanism linking technostress to adverse outcomes. There are a number of studies showing increase in technology use cause conflict between work and personal life (Farziani et al., 2018; Weil & Rosen, 1997). Derks et al. (2014) revealed positive relationships between technologies induced stress and work-family conflict.

Work-family conflict can occur when personal and professional demands are incompatible (Greenhaus & Beutell, 1985). By adding pressure, work-family conflict can worsen the harmful effects of technostress. Research suggests techno-stressed workers may struggle to balance job and family duties (Derks et al., 2014). Work-family conflict, alone and with technostress, can

adversely impact workplace thriving. Techno-invasion, involving technology blurring work-life boundaries, is linked to work-family conflict and stress (Kelleher, 2016). When information and communication technology deeply permeates family spheres (more techno-invasion), individuals have less time and energy for family, causing stress, constant failure feelings, and impaired thriving (Salo et al., 2019).

2.4.6.2 Technostress, Work-family Conflict, and Burnout

A study conducted by Riglea (2021) suggested that techno-overload was a mediating factor in psychological wellbeing and work-family conflict, thus psychological well-being of employees are significantly impacted who are exposed to stress resulting from information and communication technology overload. Similarly, literature suggests that technostress can make it difficult for workers to maintain separation between their personal and professional lives (Barber & Santuzzi, 2015). Work life conflict can come from technology's demand for constant connectivity and connectedness in personal time. For example, a person might feel pressured to check work emails while having dinner with their family, which would interfere with their personal time hence giving rise to burnout (Barber & Santuzzi, 2015). Other research are done on different dimensions of technostress and showed that technostress impacts work family balance and ultimately leads to burnout. For example; Techno invasions i.e. constant contact through Emails and cell phones can make it challenging to discern between one's personal and professional life, which can cause stress and burnout (Barber & Santuzzi, 2015). Similarly, Mark (2016) found that when office hours are over, people tend to spend time with family and friends, and often have plans of their own but the increase in technology has blurred the boundaries. The workers keep replying to emails and messages from their offices even being with family and friends which makes them not mentally available for personal time. This eventually cause work-life imbalance and will lead to burnout.

2.4.6.3 Technostress, Work-family Conflict, and Work Engagement

The connection between Technological stress and work engagement is examined with a particular emphasis on how technological stress affects work engagement. Research suggested that employees with high level work-family conflict show lesser levels of work engagement and vice versa (Curcuruto et al., 2023).

Numerous studies have examined the link between technostress, work engagement and work-family conflict. For example, Barber and Santuzzi (2015) found that the constant connectivity enabled by ICTs can interfere with employees' personal time and create work-family conflict, which reduces engagement. Specifically, the pressure to respond to work emails or messages during family time can cause stress and a sense of failure to balance work and life. Similarly, Mark (2016) showed that the ubiquity of technology has blurred boundaries, as workers keep replying to work emails and messages even when with family and friends. This techno-invasion prevents employees from being mentally present during personal time, creates work-life imbalance, and ultimately leads to lowered work engagement.

A recent study by Harunavamwe and Kanengoni (2023) examined the effects of technological stress, work-family conflict, and employees' perceptions of administrative support on their level of engagement in hybrid and virtual work environments. Data revealed negative effects of work family conflict on work engagement, despite the presence of support. The findings suggested that employee engagement can be enhanced by prioritizing the development of supportive work-life balance policies, ensuring adequate technological support, promoting positive attitudes and behaviors towards technology usage, and clearly delineating boundaries between professional and personal domains.

Together, these studies reveal how the permeability of work-life boundaries due to pervasive technology takes a toll on employees' psychological availability and energy for work. Establishing tech-free times and spaces within the home environment could help workers

disengage from work during personal time, limiting negative spillover that undermines work engagement.

2.4.7 Impact of Demographics on Work-family Conflict

Work-family conflict is an evolving area with varied conceptualizations. In recent years, work-life conflict has occurred as an important research domain for social scientists and communication scholars (Janssen et al., 2004; Kirby et al., 2012; Kossek & Lautsch, 2012; Shumate & Fulk, 2004). Prior research found many demographics that affect the amount of work family conflict in employees. For instance;

2.4.7.1 Working Hours

Number of hours that are worked per week correlates more highly with WFC than FWC (Gutek et al., 1991). This suggests that longer work hours meddle more with family life than family responsibilities meddle with work.

2.4.7.2 Gender

Studies suggest that work family conflict is impacted by different factors including gender, working hours, having children and age (Emslie et al., 2004; Kossek, 2016; Triplett et al., 1999; Winslow, 2005). Organizational studies have revealed Work-life balance issues are different for both men and women. Women have to bear the burden of dual responsibility. But the views of men and women are now becoming more similar (Beckett's, 1982). Different results in studies of men and women on work-life balance are observed. For example; some research has found that both males and females experience similar levels of conflict (Emslie et al., 2004; Hughes & Galinsky, 1994; Swanson et al., 1998; Winslow, 2005). While others found different results in different countries (Chandula et al., 2004).

Women have lower-level jobs and work short hours. Comparing men and women has yielded mixed results. According to some, women feel more conflicted. According to others, both have equal conflict (Emslie et al., 2004; Swanson et al., 1998; Triplett et al., 1999;

Winslow, 2005). Qualitative research is necessary to understand this (Chandula et al., 2004). Few qualitative studies have attempted to examine the intersection of professional and private life from the perspective of men and women. Beckett's (1982) study on parenting negotiation was unusual in that it sampled couples from an Eastern culture. Their findings highlighted the importance of gender. Unemployed mothers found housework and childcare difficult. While the father used to go to work every day and separate himself emotionally and physically from the troubles at home. Parents used handling methods to ensure an equitable distribution. However some studies found differences in experiences of WFC versus FWC between genders; males reported higher levels of WFC associated with heavier workloads while females reported higher FWC resulting from parental responsibilities (Aryee et al., 1999).

2.4.7.3 Parental Responsibilities

Additionally, having more children at home requiring care tends to increase both WFC and FWC as meeting both work and parental demands becomes more difficult (Netemeyer et al., 1996). Parents, especially those with young children, report more work-life conflict in both domains (Nomaguchi et al., 2009). Clinicians now target this conflict as a health outcome among parents (Harting et al., 2010). Parents seem especially susceptible to work-life conflict. More research is needed on how communication technologies and unclear organizational expectations contribute to work-life conflict and associated stress (Netemeyer et al., 1996). Research indicates a growing number of employees globally are experiencing heightened levels of work-life stress and need better strategies to balance their personal and professional responsibilities (Kossek, 2016). For example, 75% of working parents report not having enough time for their children or spouse. Additionally, younger generations are more impacted by work-life conflict and value separating work and non-work in order to enjoy life outside the office.

2.4.7.4 Social Support

Exploration by Aryee et al. (1999) indicated social support may moderates the relationships between conflicts at work though more research is needed. Ultimately, existing evidence points to correlates and potential influencing factors such as number of hours worked and parental demands that may impact work-family conflict, with noticeable differences between WFC and FWC as well as across gender.

Similarly, unclear organizational norms about communicating for work during personal time can prompt role overload and heightened work family conflict (Shumate & Fulk, 2004; Stephens et al., 2012). After-hours and work technology use affects work family conflict and burnout (Kossek et al., 2010).

2.5 Work-Life Boundary Characteristics

Boundaries refer to the limits that characterize entities as distinct from each other, encompassing physical, cognitive, temporal, emotional, and relational aspects (Ashforth et al., 2000, p. 474). This concept was initially proposed by Lewin (1951) and further covered by Kanter's (1977) in his work identification of the 'myth of separate worlds.' In simple words Work-life boundaries means individuals' ability to create and uphold distinct boundaries between work and personal life (Ashforth et al., 2000; Clark, 2000). This involves establishing boundaries for work activities occurring outside regular hours and managing time and energy to fulfill both work and personal duties.

2.5.1 Characteristics of Work-Life Boundaries

Work-life boundaries characteristics have two key attributes, flexibility and permeability, which determine their degree of integration.

2.5.1.1 Permeable Boundaries

Permeable boundaries allow one to be physically present in one place yet psychologically or behaviorally engaged in the other's duties (Olson-Buchanan & Boswell, 2006).

Permeability discusses degree to which aspects of one domain (work or family) can influence the other (Clark, 2000). High permeability indicates that a person is psychologically or behaviorally engaged with the other domain while physically present in one domain (Ashforth et al., 2000). For instance, an employee exhibits high family permeability if they frequently take work calls or think about work while at home. Matthews et al. (2010) now define permeability as domain transition. High family permeability signifies a tendency to frequently shift psychologically or behaviorally from home responsibilities to work matters, reallocating time and energy from family to work in the process (Clark, 2000). Consequently, compared to low permeability, high family permeability requires greater autonomy or latitude in allocating resources within the family domain.

2.5.1.2 Flexible Boundaries

Flexible boundaries refers to the ability to which individuals perceive they can move easily between work and life domains (Kossek et al., 2006).

The ability to adapt and change in response to different demands is a key characteristic of flexibility (Clark, 2000). An employee who can easily modify their work schedule to accommodate family obligations demonstrates flexibility towards family. A significant body of research has consistently shown a negative link between flexible work arrangements and both directions of work-family conflict (Lu et al., 2009). However, there has been limited examination of how flexibility in family roles impacts work-family conflict. Barnes-Farrell and Matthews (2010) provided initial evidence for their measure of boundary flexibility, reporting

a negative relationship between flexibility in family and both work interference with family (WIF) and family interference with work (FIW).

2.5.2 Boundary Management Strategies

Researchers studying work-life balance have explored how people manage the boundaries between their professional and personal lives. The idea of boundary management strategies was initially introduced by Nippert-Eng in 1996. It describes the methods, principles, and practices individuals employ to organize and separate the demands and expectations associated with their roles in different spheres, such as home and work. According to the early proponents of this concept, these strategies can range from segmentation, where an individual prefers to keep work and family domains entirely separate, to integration, where an individual perceives no distinctions between work and family in terms of thought, time, or space. Their findings indicate that the strategies individuals employ to manage these boundaries can be placed on a spectrum ranging from complete segmentation to full integration. The segmentation-integration continuum captures the degree of separation between domains of work and non-work (Ashforth et al., 2000; Clark, 2000).

2.5.2.1 Segmentation

Work-life segmentation entails upholding a firm an unambiguous division in the work and personal life (Ashforth et al., 2000). In the segmented approach, people try to keep their personal and professional lives distinct with little overlap. This method emphasizes the importance of setting boundaries to stop demands and stress from the workplace from interfering with personal life. People who keep their work and personal lives completely separate fall in this domain. They build strict boundaries and don't let anything from one area cross over into the other. For example, they avoid checking work emails or taking work calls when at home.

2.5.2.2 Integration

Work-life integration involves blending work and home life to create more flexible, intermingled boundaries between the two realms (Kreiner et al., 2009). People who blend their work and personal lives together fall in this boundary management style. They have flexible boundaries that allow things from one area to mix into the other. These people might take personal calls or have family visit them at their workplace. Or they might continue working on job tasks after leaving the office. This strategy highlights the interdependence of work and life, enabling people to fit in family commitments and extracurricular during the workday.

Nippert-Eng (1996) observed that individuals can be categorized into two groups based on their approach to managing work and personal life domains: "segmenters" who prefer to maintain clear boundaries and keep these domains separate, and "integrators" who tend to blur the lines and merge aspects of both domains.

According to Ashforth, (2000), the primary objective behind choosing integration or segmentation strategies is to minimize the difficulty of enacting both home and work roles. However, both segmentation and integration have costs and benefits that might inform why people desire greater integration or segmentation (Rothbard, et al., 2005).

Employees might desire greater integration because blurring role boundaries allow them to accommodate multiple identities and constituencies in the work place, thus helping to resolve some of the tension arising from holding multiple roles. Moreover, greater integration provides flexibility and enables employees to cope with the multiple demands in their lives by allowing them to deal with problems in either domain. Finally, integration reduces the effort needed to transition back and forth between roles. The primary costs associated with integration are role blurring, transaction costs, and process losses associated with switching roles (Ashforth et al., 2000).

Alternatively, employees might desire greater segmentation because it allows them to preserve and develop their non-work lives more fully. Greater segmentation may buffer employees from the spillover of negative emotions and experience of one domain to the other (Edwards & Rothbard, 2000). Moreover, greater segmentation reduces role blurring, allowing people to focus more exclusively on the salient role (Ashforth et al., 2000). Finally, employees may want to separate home and work to cope with differing expectations or norms for behavior in the two domains (Hewlin, 2003).

Study conducted by Kossek, (2016) shows that one of the key challenges faced by many professionals today revolves around the skillful handling of their work-life balance. The impact of these boundaries extends to their work engagement and overall well-being, influencing not only themselves but also their families/partners and other organizations members. To promote a healthy and productive work environment, organizations could help employees recognize the significance of managing work-life boundaries and allowing employees to define their own control over these boundaries. This approach can help prevent burnout, and ensures that individuals can construct a meaningful life beyond their professional commitments.

In the same research, Kossek (2016) described that managing the balance between work and non-work interruptions involves categorizing your approach into two main types: integration and segmentation. Each of these types varies in the perceived control over spanning boundaries between tasks and non-work. Integrators typically show a high frequency of work-to-non-work and/or non-work-to-work interruption behaviors. For instance, if someone regularly checks their personal or work emails or text while at work or being home, even when it's not necessary to, then he is likely an integrator.

2.5.3 Boundary Management Perspectives

Some boundary management researchers (e.g., Kossek et al, 2005) have also stressed the importance of various aspects of boundaries that are being integrated or separated, including

spatial, cognitive, behavioral, and temporal aspects. For example, an individual who works from home but does not attend to any non-work responsibilities during work hours reflects physical or spatial integration but behavioral and cognitive segmentation (Olson-Buchanan & Boswell, 2006).

Allen et al. (2014) proposed a boundary management framework that builds on the segmentation-integration continuum, distinguishing between boundary preferences and boundary enactment. Boundary preference refers to an individual's desired degree of segmentation or integration between work and non-work domains (Ammons, 2013). Boundary enactment, on the other hand, refers to a person's actual practiced degree of segmentation or integration in managing the demands of their work and non-work roles (Allen et al., 2014).

2.5.4 The Dimensional Nature of Boundary Management Strategies

Researchers have recently challenged the notion that boundary management is a monolithic construct, as initially proposed, where integration/segmentation was viewed as a single continuum (Bulger et al., 2007; Olson et al., 2006). Recent findings indicate a new dimension of the construct: directionality. In other words, the concept of directionality calls for considering work-to-non-work and non-work-to-work integration/segmentation separately. This also implies that there can be several configurations. For example, an individual may allow work to flow into the home domain but not the other way round. Alternatively, an individual may segment the work domain from home but allow home to flow into work or allow some flow between the two. Very little research has been done on the directionality component of boundary management, thus making it a potential area for further exploration (Chakrabarti, 2011).

Because work-life boundaries are bidirectional/ two faced (Bulger et al., 2007), work-life boundaries could be discussed in terms of both flexibility and permeability. In more precise words a person may perceive work boundaries as inflexible and impermeable and refuse to

interfere with the performance of work-related tasks, or be unable to alter the time and location of work-related activities, but at the same time, he may be able and ready to bend life boundaries and step out of the life sphere for work-related matters. Importantly, due to the temporal, spatial, and mental overlap of work and family roles, flexible work systems often blur boundaries (Lewis & Cooper, 1999) and increase permeability (Velcour & Hunter, 2005).

This research focus on how people manage the boundaries between work and personal life. It will focus on the overall degree of work life boundary enactment in terms of the degree of segmentation or integration. Current research specifically examines the overall patterns of keeping work and personal life segmented versus integrated that individuals put into practice. Nippert-Eng (1996) observed that individuals can be categorized into two groups based on their approach to managing work and personal life domains: "segmenters" who prefer to maintain clear boundaries and keep these domains separate, and "integrators" who tend to blur the lines and merge aspects of both domains. This is based on Allen et al. (2014) conceptual framework of boundary enactment. Boundary enactment reflects the extent of integration or segmentation that individuals create in their lives to reconcile the demands of their work and non-work roles, taking into account their personal preferences and environmental factors (Allen et al., 2014). Furthermore, the authors suggest that work-to-life boundary enactment may differ from life-to-work boundary enactment in terms of the degree of segmentation or integration.

Surprisingly, there has not been much research done yet to explore how boundaries affect and what happens to employees as a result (Qiu, 2015). This construct is gaining popularity due to its practical implications, it is still evolving, and numerous areas remain unexplored, necessitating further empirical investigation and validation (Chakrabarti, 2011). This research aims to explain boundaries and examine how boundary characteristics impacts on work-family conflict, burnout, and work engagement. Examining boundary characteristics will provide an understanding of when technostress impacts employee’s well-being and performance.

2.5.5 Border Theory and Boundary Theory

Boundary theory (Ashforth et al., 2000) and Border theory (Clark, 2000) offer useful frameworks for examining how people manage their personal and professional life domains. Though differing slightly, both theories propose that people actively balance work and family through setting and upholding boundaries that range from highly segmented to highly integrated. Boundary strength manifests primarily in two characteristics: flexibility and permeability. Nonetheless, studies on personal boundary management has centered predominantly on individual inclinations towards integration versus segmentation of work and family domains (Kossek & Lautsch, 2005).

Boundary theories have provided a framework for researching how individuals combine work and personal life, either separately or jointly. Research identifies two key types of boundaries between work and life domains: "Segmenters" prefer separation while "Integrators" blend domains (Nippert-Eng, 1996). Whereas, two characteristics determine integration: flexibility and permeability (Ashforth et al., 2000).

Both boundary theory (Ashforth et al., 2000) and border theory (Clark, 2000) posit that individuals are motivated to achieve balance between their work and non-work lives by constructing and maintaining boundaries around these domains. Theoretically, this balance can be attained through strategies of segmentation or integration (Ashforth et al., 2000; Clark, 2000).

Consistent with this theoretical stance, empirical research indicates that both segmentation and integration strategies are associated with a mix of positive and negative outcomes (Allen et al., 2014). Generally, greater integration relates to increased work-family conflict (Greenhaus, 2010). Research by Barber and Jenkins (2014) revealed that when employees used information and communication technologies (ICTs) for work purposes during their personal time, causing work to cross the boundary into their home life, it indirectly undermined their

sleep quality. This negative effect occurred by preventing psychological detachment from work. However, the study found this detrimental impact of ICT-enabled work intrusion only manifested for those individuals who failed to establish firm boundaries restricting ICT use during non-work hours.

2.5.6 Moderating Role of Work Life Boundary Characteristics

This study aims to investigate how different boundary management strategies moderates in the relationship between organizational and individual outcomes like technostress and work-family conflict. These relationships have not been extensively explored in prior boundary management research (Chakrabarti, 2011). Secondly, the study seeks to examine the bidirectional nature of boundary management strategies, looking at work-to-life and life-to-work boundary management separately. This bidirectional approach departs from the typical non-directional perspective taken in much of the existing literature. By considering this directionality aspect, the study intends to provide a more nuanced understanding of how boundary management strategies influence important work and personal outcomes.

The literature review on boundary management and its outcomes suggests a few key points. First, work-family conflict has been the most commonly studied outcome of boundary management strategies (Kossek et al., 2006; Poppleton et al., 2008). Second, only a few studies have explicitly addressed the issue of directionality of work-family conflict concerning boundary management (e.g., Hecht & Allen, 2009; Olson-Buchanan & Boswell, 2006), and in those studies, typically only the work-to-family direction has been considered, often without clear explanations for this approach. One potential reason for focusing on the work-to-family direction could be that work-to-family relationships have generally been found to be stronger than family-to-work relationships (Leiter & Durup, 1996). Consequently, by exploring the moderating role of work-life boundary characteristics in the bidirectional aspect the present study can fill a gap in the literature. The literature in the following paragraphs covers relatively

recent studies that have looked at relationships between work-life boundary management and its outcomes.

Study conducted by Curcuruto et al. (2023) found that technostress had a negative impact on work-life balance satisfaction. The findings suggested that increased technology usage in the context of prolonged remote work arrangements leads to a state of dissatisfaction with work-life balance. This dissatisfaction is likely caused by the perception of interference between the occupational experience and the employees' personal life domain. Aligning with this study, previous studies (Ragu-Nathan et al., 1996) found technostress decreases job satisfaction. One potential explanation for this effect is that the availability of technology at home creates a "work-home" conflict, with remote work arrangements blurring the boundaries between work and home life (Schieman & Glavin, 2008). The existing literature on technostress also suggests that information and communication technologies (ICTs) can be viewed as "invasive" and lead people to feel pressure to work longer hours (Tarafdar et al., 2007) and be constantly available negatively impacting employee satisfaction.

Bencsik & Tímea (2023) found that three main factors affect both work-life balance and how well a company performs. These are: having less free time because of too much technology and interruptions from it (techno-invasion) and a feeling of techno-uncertainty i.e. feeling uncertain about technology because of not knowing how to use it well, which can make people feel threatened.

Similarly, Li et al. (2013) observed that innkeepers who embraced high levels of work-life integration tended to experience reduced levels of work-life balance. Permeable boundaries, where work and family roles are interdependent, can increase conflict and stress (Kossek et al., 2006). Conversely, workers with more distinct work-family role boundaries may experience less conflict and stress (Kreiner et al., 2006)

Study conducted by Kossek, et al. (2006) suggested that using integration as a way to manage boundaries might lead to more conflicts between work and family, as well as feelings of depression. He explained that this could happen because blending work and personal life can be mentally challenging and cause frustration and negative emotions. The study concluded that choosing an integration strategy leads in switching between work and family roles that can lead to inefficiencies and distractions.

Communication technologies increasingly integrate work and life, making work-life balance difficult for many employees (Kossek & Lautsch, 2012). Whereas technologies allow managers to assign after-hours work, they can also decrease satisfaction when employees are asked to engage in tasks during personal time (Gajendran & Harrison, 2007). One study found a connection between fatigue and poor work-life balance and work-to-life integration (Wepfer et al., 2018). Results showed high work life integration was associated increased exhaustion, and poorer work-life balance.

In the past, researchers have looked at how using technology at work can cause stress and make it hard to separate work and home life (Butts et al., 2015). Some studies have focused on short-term stressful events caused by technology problems, like when a system stops working (Weinert et al., 2020). For example, interruptions caused by technology can make it harder for employees to do their work and can lead to mistakes (Chen & Karahanna, 2018; Galluch et al., 2015). Other researchers have looked at how smaller, daily stressful events caused by technology can spill over into an employee's personal life (Benlian, 2020). It's important to note that ongoing, long-term stress caused by technology (like feeling overwhelmed or constantly interrupted) can also cause problems with work-life balance (Harris et al., 2021). Experts say that chronic stress caused by technology is more closely linked to work-family conflict because it requires a long-term change (Galluch et al., 2015).

2.5.7 Moderating Role of Work-to-life Boundary Characteristics

As discussed earlier, the nature of work-life boundaries is bidirectional (Ashforth et al., 2000). Numerous studies have highlighted the bidirectional nature of the work-nonwork boundary (Ashforth et al., 2000; Bulger et al., 2007; Olson-Buchanan & Boswell, 2006). According to the bidirectional approach, the degree to which work and nonwork intertwine depends on whether one is considering spillage from work into nonwork or vice versa. For example, some individuals manage to separate their lives from work but allow work to influence their nonwork, while others exhibit the opposite pattern.

Olson-Buchanan and Boswell (2006) found that higher work-to-non-work permeability was related to higher work-life conflict. This study did not measure non-work-to-work conflict, it provides the evidence that simultaneously attending to both work and non-work domains can lead to blurred boundaries and increased role conflict.

A study by Hecht (2009) suggested that having stronger boundary strength at home was associated with lower levels of work-to-family conflict. Specifically, individuals who maintained a clearer separation between work and family roles at home (i.e. work-to-family segmentation) experienced less interference from work into their family lives (i.e., lower work-to-family conflict). Similarly, those who had stronger boundaries around their work roles experienced less interference from family into their work lives (i.e., lower family-to-work conflict). In other words, greater segmentation of work and non-work spheres corresponded to reduced work-life conflict, whether originating from the work domain or the non-work domain.

2.5.8 Moderating Role of Life-to-work Boundary Characteristics

Research findings suggest a possible curvilinear relationship pertaining to family-to-work conflict, with high levels of home-to-work segmentation or integration associated with low levels of work-family conflict. Further research should test this relationship before these findings can be generalized (Chakrabarti, 2011). Keeping in mind this point, there are several

aspects of work-life boundary characteristics that needs to be highlighted. First, by examining the work-to-life and life-to-work directions separately, greater clarity could be achieved regarding the relationship between boundary management strategies. Second, the lack of a significant correlation between the use of work-to-home segmentation and home-to-work segmentation strategies indicated that an individual who separates work from home does not necessarily separate home from work. Finally, as discussed earlier, work-family conflict has been the most commonly studied outcome of boundary management strategies. This highlights the importance of studying their relationships with other outcome variables separately instead of treating boundary management as a single construct.

The study conducted by Chakrabarti (2011) suggested that higher utilization of work-to-home and home-to-work segmentation strategies was associated with lower levels of work-to-family and family-to-work conflict, respectively. In other words, integrating the work domain with the family domain or vice versa led to higher levels of work-to-family and family-to-work conflict. Similar results was found in other studies as well which suggested work-family integration has a positive relationships with work-family conflict (Hecht & Allen, 2009; Kossek et al., 2006; Olson-Buchanan & Boswell, 2006; Poppleton et al., 2008).

Study conducted by Hecht (2009) found that boundary strength at work (the extent to which nonwork roles permeate the time and space of the work environment) was only correlated with family-work conflict. This means that when the personal life boundary integrates with work it can lead to work interfering with family but not family interfering with work. When personal matters come up in the workplace, it is possible that people temporarily shift their focus away from their work to deal with the issue. This redirection could be due to the simplicity of the matter, allowing for quick resolution (e.g., scheduling a dentist appointment). This could elucidate why people may not perceive incorporating nonwork into work as causing increased conflict with their families, even though it does result in greater conflict with their work.

Similar results were shown in additional study showed by Bulger et al. (2007). He discovered a link between boundary strength and the balance of one's personal and professional lives, and he proposed that an individual's experiences of this balance are influenced by the way they handle their boundaries. For examples people who have permeable, flexible (integrated) boundaries seemed to have positive relationship with inter role conflicts such family stress

The use of work-life boundary characteristics as a moderator in this study is theoretically grounded in boundary theory. As technology blurs the lines between work and personal life, individuals develop different preferences for managing these boundaries (Ashforth et al., 2000). Some employees prefer strict segmentation, while others favor integration between work and personal domains (Nippert-Eng, 1996). These boundary management preferences likely influence how technostress affects employee outcomes. For instance, employees who prefer integration may experience stronger negative effects of technostress on burnout because they are more likely to engage with work-related technology during personal time (Barber & Santuzzi, 2015). Following the Job Demands-Resources theory (Bakker & Demerouti, 2017), boundary management preferences can act as a personal resource that either amplifies or buffers the relationship between technostress and employee outcomes such as work engagement and burnout.

2.6 Theoretical Underpinning

2.6.1 Job Demands-Resources (JD–R) Model

The job demand-resource (JD-R) model is one of the leading models for understanding job stress. The model was first created to explain the causes of burnout and has been revised multiple times. The Job Demands-Resources (JDR) model focuses on how job demands and resources impact employees' well-being, motivation, and performance. According to this model, job demands (e.g., workload, emotional strain) can lead to stress and burnout, while job resources (e.g., social support, autonomy, feedback) can enhance motivation and reduce

negative health outcomes (Bakker et al., 2003; Demerouti et al., 2001; Schaufeli & Taris, 2014).

Job demands are the physical, emotional, or mental parts of a job that need a lot of effort. If job demands are greater than the resources available, they can lead to stress and other negative effects. In this context, technostress can be considered a job demand which is caused by the psychological and emotional pressure of using technology. When workers experience high levels of technostress (which is a job demand), they are at a higher risk of burnout because they might feel overwhelmed and tired, unable to handle the challenges that come with using technology.

Similarly, Employees with high work-life integration or segmentation (clear separation of work and personal life) can better manage technostress and reduce burnout. The JDR model suggests that job resources (e.g. boundary characteristics in current study) help mitigate the adverse effects of job demands.

2.7 Rationale

The use of advanced information and communication technologies (ICT) is recognized as significant for organizational success. However, the growing reliance on ICT has led to the phenomenon of technostress. Technostress creates an inability to disconnect from ICT and creating an "always-on" culture that compromises privacy and personal well-being (Cahapay & Bangoc, 2021; Körner et al., 2019). This reliance negatively affects organizational productivity and employees who experience high technostress struggle to meet organizational goals. (Omolara, 2008).

Work family conflict is one of the key way, through which technostress occurs. For instance, involvement of technology in personal life during off work time can lead to work-family conflict. Such conflicts are caused by the actions including keeping an eye on emails (Barber & Santuzzi, 2015). This lack of separation between professional and personal spheres

increases stress and causes burnout which results in affecting personal relationships (Barber & Santuzzi, 2015; Dragano & Lunau, 2020).

The existing body of literature primarily focuses on organizational outcomes of technostress and neglects its impact on personal lives (Bencsik & Juhasz, 2023). Current study filled this existing knowledge gap.

Similarly, there is a lack of research addressing technostress, particularly in Asian and developing countries. Research further highlights the need to explore technostress in diverse occupational settings as well as there is a limited research done on different occupations and organizational settings (Saleem & Malik, 2023; Kaveri & Mohan, 2020).

This study addresses the literature gaps in understanding technostress and its implications for employees and organizations. It develops a comprehensive conceptual model that shows impacts of technostress on both personal and organizational outcomes. Employing Job Demands-Resources (JD-R) theory, the study explores the work demands causing burnout (Bakker & Demerouti, 2017; Demerouti et al., 2001).

This study focuses on the employees from IT departments of ICT industry, where rapid technological changes cause technostress to professionals (Kaveri & Mohan, 2020). The sectors chosen were, IT, telecommunications, and media because they involve the use of technology to manage and share information (Laanti et al., 2009; Khawaja 2017).

By examining how work-life boundaries can moderate the relationship between technostress, burnout, and work engagement, the findings will offer practical strategies to help employees navigate the challenges of an "always-connected" work culture. This study addresses the growing need for research that not only investigates technostress from an organizational perspective but also incorporates its impact on employees' personal lives, thereby bridging a significant gap in the existing literature.

3.1 Conceptual Model

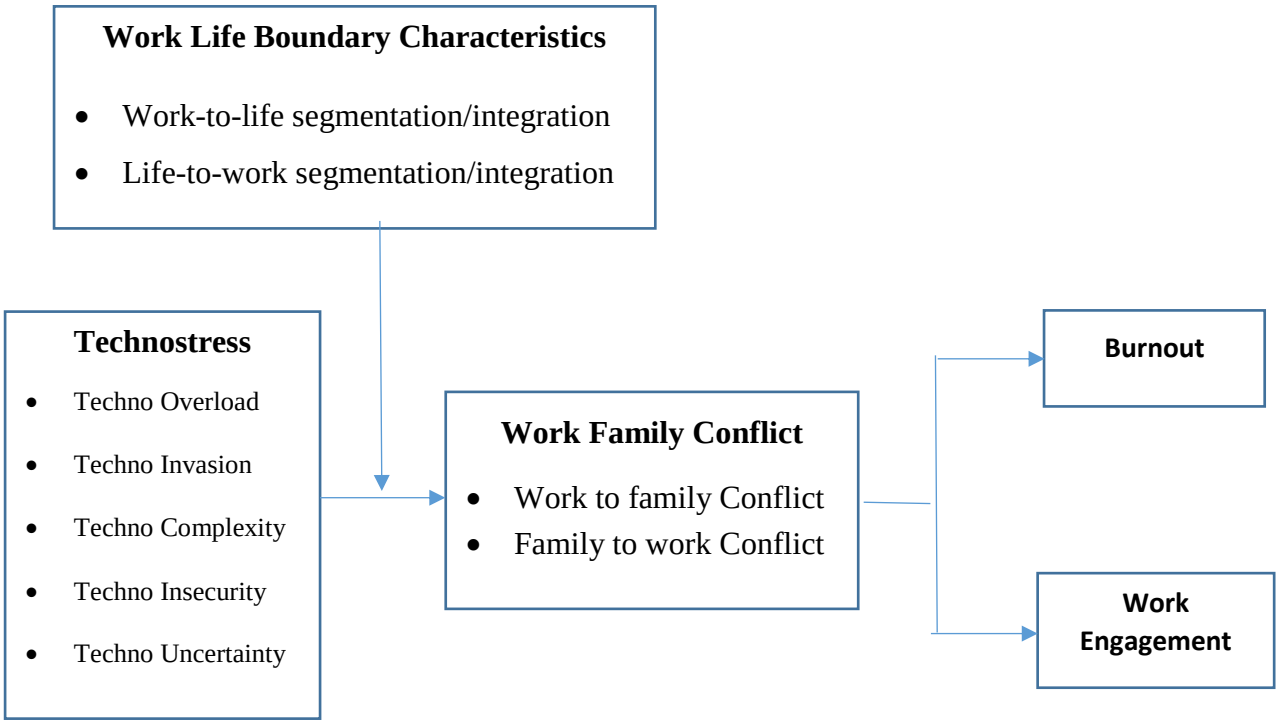


Figure 1 *Conceptual Model Showing the indirect Impact of Technostress on burnout and Work Engagement through Work Family Conflict and moderating role of Work life Boundary Characteristics in the relationship between Technostress and Work Family Conflict.*

Chapter 3

METHODOLOGY

3.2 Objectives

1. To examine the relationship between Technostress and Burnout among ICT professionals.
2. To examine the relationship between each dimension of technostress (Techno Overload, Techno Invasion, Techno Complexity, Techno Insecurity, and Techno Uncertainty) and Burnout among ICT professionals.
3. To examine the relationship between Technostress and Work Engagement among ICT professionals.
4. To examine the relationship between each dimension of technostress (Techno Overload, Techno Invasion, Techno Complexity, Techno Insecurity, and Techno Uncertainty) and Work Engagement among ICT professionals.
5. To find out mediating role of Work Family Conflict between Technostress and Burnout among ICT professionals.
6. To find out mediating role of Work Family Conflict between each dimension of technostress (Techno Overload, Techno Invasion, Techno Complexity, Techno Insecurity, and Techno Uncertainty) and burnout.
7. To find out mediating role of Work Family Conflict between Technostress and Work Engagement among ICT professionals.
8. To find out mediating role of Work Family Conflict between each dimension of technostress (Techno Overload, Techno Invasion, Techno Complexity, Techno Insecurity, and Techno Uncertainty) and work engagement.
9. To study the moderating role of Work Life Boundary Characteristics in the relationship between Technostress and Work Family Conflict among ICT professionals.

10. To study the moderating role of Work Life Boundary Characteristics in the relationship between each dimension of technostress (Techno Overload, Techno Invasion, Techno Complexity, Techno Insecurity, and Techno Uncertainty) and Work-family Conflict.

3.3 Hypotheses

1. Technostress predicts burnout among ICT professionals (such that higher levels of technostress predicts higher levels of burnout).

1a. Techno Overload predicts higher levels of burnout.

1b. Techno Invasion predicts higher levels of burnout.

1c. Techno Complexity predicts higher levels of burnout.

1d. Techno Insecurity predicts higher levels of burnout.

1e. Techno Uncertainty predicts higher levels of burnout.

2. Technostress predicts work engagement among ICT professionals (such that higher levels of technostress predicts lower levels of work engagement).

2a. Techno Overload predicts lower levels of work engagement.

2b. Techno Invasion predicts lower levels of work engagement.

2c. Techno Complexity predicts lower levels of work engagement.

2d. Techno Insecurity predicts lower levels of work engagement.

2e. Techno Uncertainty predicts lower levels of work engagement.

3. Work-family conflict mediates the relationship between technostress and burnout among ICT professionals (such that technostress predicts burnout through work family conflict).

3a. Work to family conflict mediates the relationship between technostress and burnout.

3a. Work to family conflict mediates the relationship between Techno Overload and burnout.

3a Work to family conflict mediates the relationship between Techno Invasion and burnout.

3a Work to family conflict mediates the relationship between Techno Complexity and burnout.

3a Work to family conflict mediates the relationship between Techno Insecurity and burnout.

3a Work to family conflict mediates the relationship between Techno Uncertainty and burnout.

3b. Family to work conflict mediates the relationship between technostress and burnout.

3b. Family to Work conflict mediates the relationship between Techno Overload and burnout.

3b. Family to Work mediates the relationship between Techno Invasion and burnout.

3b. Family to Work mediates the relationship between Techno Complexity and burnout.

3b. Family to Work mediates the relationship between Techno Insecurity and burnout.

3b. Family to Work mediates the relationship between Techno Uncertainty and burnout.

4. Work-family conflict mediates the relationship between technostress and work engagement among ICT professionals (such that technostress predicts lower levels of work engagement through elevated work-family conflict).

4a. Work to family conflict mediates the relationship between technostress and work engagement.

4a Work to family conflict mediates the relationship between Techno Overload and work engagement.

4a. Work to family conflict mediates the relationship between Techno Invasion and work engagement.

4a. Work to family conflict mediates the relationship between Techno Complexity and work engagement.

4a: Work to family conflict mediates the relationship between Techno Insecurity and work engagement.

4a. Work to family conflict mediates the relationship between Techno Uncertainty and work engagement

4b. Family to work conflict mediates the relationship between technostress and work engagement.

4b Family to work conflict mediates the relationship between Techno Overload and work engagement.

4b Family to work conflict mediates the relationship between Techno Invasion and work engagement.

4b Family to work conflict mediates the relationship between Techno Complexity and work engagement.

4b Family to work conflict mediates the relationship between Techno Insecurity and work engagement.

4b Family to work conflict mediates the relationship between Techno Uncertainty and work engagement

5. Work-life boundary characteristics moderate the relationship between technostress and work-family conflict among ICT professionals (such that low work life integration and more work-life segmentation will buffer technostress and work-family conflict relationship).

5a. Work-to-life segmentation/integration moderate the relationship between technostress and work-to-family conflict.

5a. Work-to-life segmentation/integration moderates the relationship between Techno Overload and work-to-family conflict.

5a Work-to-life segmentation/integration moderates the relationship between Techno Invasion and work-to-family conflict.

5a. Work-to-life segmentation/integration moderates the relationship between Techno Complexity and work-to-family conflict.

5a. Work-to-life segmentation/integration moderates the relationship between Techno Insecurity and work-to-family conflict.

5a. Work-to-life segmentation/integration moderates the relationship between Techno Uncertainty and work-to-family conflict.

5b. Life-to-work segmentation/integration moderate the relationship between technostress and work-to-family conflict.

5b. Life-to work segmentation/integration moderates the relationship between Techno Overload and work-to-family conflict.

5b. Life-to work segmentation/integration moderates the relationship between Techno Invasion and work-to-family conflict.

5b. Life-to work segmentation/integration moderates the relationship between Techno Complexity and work-to-family conflict.

5b. Life-to work segmentation/integration moderates the relationship between Techno Insecurity and work-to-family conflict.

5b. Life-to work segmentation/integration moderates the relationship between Techno Uncertainty and work-to-family conflict.

6. Work-life boundary characteristics moderate the relationship between technostress and work-family conflict among ICT professionals (such that low work life integration and

more work-life segmentation will buffer technostress and work-family conflict relationship).

6a. Work-to-life segmentation/integration moderate the relationship between technostress and family-to-work conflict.

6a. Work-to-life segmentation/integration moderates the relationship between Techno Overload and family-to-work conflict.

6a Work-to-life segmentation/integration moderates the relationship between Techno Invasion and family-to-work conflict.

6a. Work-to-life segmentation/integration moderates the relationship between Techno Complexity and family-to-work conflict.

6a. Work-to-life segmentation/integration moderates the relationship between Techno Insecurity and family-to-work conflict.

6a. Work-to-life segmentation/integration moderates the relationship between Techno Uncertainty and family-to-work conflict.

6b. Life-to-work segmentation/integration moderate the relationship between technostress and family-to-work conflict.

6b. Life-to work segmentation/integration moderates the relationship between Techno Overload and family-to-work conflict.

6b. Life-to work segmentation/integration moderates the relationship between Techno Invasion and family-to-work conflict.

6b. Life-to work segmentation/integration moderates the relationship between Techno Complexity and family-to-work conflict.

6b. Life-to work segmentation/integration moderates the relationship between Techno Insecurity and family-to-work conflict.

6b. Life-to work segmentation/integration moderates the relationship between Techno Uncertainty and family-to-work conflict.

3.4 Conceptual Definition of Variables

3.4.1 Technostress

According to Tarafdar and Ragu-Nathan (2007), technostress is an inability to adjust to changes brought on by new technology. It has been determined that there are five main aspects of **technostress**. Techno-overload occurs when users of technology feel compelled to perform increasingly rapid tasks due to the technology. The techno-invasion includes the idea that users can be reached at any time, due to which the boundaries between personal and professional life get blur. Techno-complexity occurs when users feel that their knowledge is insufficient to handle complex technologies, it takes time and struggle to learn features. Techno insecurity is sated as a fear of being replaced by highly skilled technical or human resources Techno-uncertainty reflects the concern and anxiety that technology is constantly changing and improving.

3.4.2 Work Family Conflict

A conflict that arises when pressures from an individual's job and familial responsibilities clash or negatively affect one another (Greenhaus & Beutell, 1985). Research differentiates between work to family conflict (WFC) and family to work conflict (FWC) (Bagger & Li, 2012; Frone et al., 1992, 1997). WFC stems from work duties restricting one's capacity to meet family responsibilities, while FWC arises when family obligations limit one's ability to fulfill work demands (Bagger & Li, 2012).

3.4.3 Burnout

Burn-out is a syndrome resulting from chronic workplace stress that has not been successfully managed (Demerouti et al., 2010). Burnout has two dimensions: Exhaustion, refers to the sensation of being mentally and emotionally worn out by workload. Disengagement from work which is the distance from ones' job in general job objectives and work content. In other words, burnout involves feeling drained, ineffective, and detached from one's professional role.

3.4.4 Work Engagement

According to Schaufeli and Bakker, (2010) work engagement involves feeling energized, committed, and immersed in one's work tasks and responsibilities. Work Engagement represents a positive psychological state characterized by three components: vigor, which refers to having high energy, resilience, and persistence at work; dedication, which refers to having a sense of purpose, enthusiasm, pride, and challenge in one's work; and absorption, which refers to being fully concentrated and engrossed in one's duties. High level of work engagement indicates energy and strong involvement in one's professional role.

3.4.4 Work-life Boundary Characteristics

Work-life boundaries means individuals' ability to create and uphold distinct boundaries between work and personal life (Ashforth et al., 2000; Clark, 2000). It focus on the overall degree of work life boundary enactment in terms of the degree of segmentation or integration. This involves establishing boundaries for work activities occurring outside regular hours and managing time and energy to fulfill both work and personal duties (Allen et al., 2014).

3.5 Instruments

3.5.1 Technostress Creators Scale

Technostress was measured by using Technostress Creators Scale (TCS). A 23-item self-report questionnaire developed by Tarafdar et al. (2007). The scale assesses five dimensions of technostress techno-overload, techno-insecurity, techno-invasion, techno-complexity and techno-uncertainty (Tarafdar et al., 2007). A sample item is "I am forced by this technology to work much faster." Responses are assessed on a 5-point Likert scale from 1 (Strongly Disagree) to 5 (Strongly Agree), with greater mean scores indicating greater technostress. Specifically, the reliability coefficients for the technostress dimensions are; Techno-overload (.79), Techno-invasion (.68), Techno-complexity (.71), Techno-insecurity (.66), and Techno-uncertainty (.77). In previous research, Cronbach's alpha for each subscale exceeded 0.80 (Tarafdar et al., 2007), surpassing the recommended minimum alpha of 0.7 for acceptable reliability. In the current study, the overall alpha reliability was 0.87.

3.5.2 Oldenburg Burnout Inventory

Burnout was assessed using a 16-item self-report measure adapted from the Oldenburg Burnout Inventory (OLBI; Demerouti et al., 2010). The scale consists of two sub dimensions - exhaustion and disengagement. Items were rated on a 4-point scale from 1 (Strongly Agree) to 4 (Strongly Disagree). Sample item was “After my work, I usually feel worn out and weary". Item 2, 3, 4, 6, 8, 9, 11 and 12 are reverse-coded. Higher mean scores reflect greater burnout. Past research found Cronbach's alpha values ranging from .74-.87 for the OLBI (Demerouti et al., 2005). In this study, the OLBI had reliability 0.64.

3.5.3 Utrecht Work Engagement Scale

The 17-item Utrecht Work Engagement Scale (UWES; Schaufeli et al., 2002) was used to measure work engagement across three subscales - vigor, dedication, and absorption. Items were rated on a 7-point frequency scale from 0 (Never) to 6 (Always). A sample item is "I am

enthusiastic about my job". Item 1, 4, 8, 12, 15, 17 measures vigor. Item 2, 5, 7, 10, 13 measures dedication, and Item 3, 6, 9, 11, 14, 16 measures absorption. Higher mean scores indicate greater work engagement. Prior studies have shown the UWES has good internal consistency, with alpha values .80 to .90 for the subscales (Bakker et al., 2010). In the present study, reliability for the overall scale was $\alpha = .91$.

3.5.4 Work Family Conflict Scale

In this study, Work Family Conflict Scale (WFCS) was used. It is a 18-item scale which was developed by Carlson et al. (2000) and is used to assess work-family conflict. It contains subscales for work interference with family (items 1-9) and family interference with work (10-18 items). Responses range from 1 (Strongly Disagree) to 5 (Strongly Agree) on a 5-point Likert scale. A sample item is "Tension and anxiety from my job often weakens my ability to be a good family member". Higher scores on each subscale reflect greater perceived conflict. Past research found Cronbach's alpha values above .70 for the subscales (Carlson et al., 2000). In this study, reliability was $\alpha = .84$ (WFC) and $\alpha = .86$ (FWC).

3.5.5 Work-Life Boundary Enactment Scale

Work Life Boundary characteristics were measured using the scale Work-Life Boundary Enactment Scale developed by Wepfer et al (2018). It focus on the overall degree of work life boundaries in terms of the degree of segmentation or integration. Items present integration and segmentation endpoints of a continuum, with responses from 1 (Strong Segmentation) to 7 (Strong Integration). Higher scores reflect greater integration of work and life roles. The scale showed acceptable reliability in previous research ($\alpha = .71$; Martineau et al., 2022) and ($\alpha = .81$) in current research.

3.5 Research Design

The research design employed in this study is a cross-sectional survey design, which allows for the collection of data at a single point in time to assess the relationships among various psychological constructs within a defined population. Mediation and moderation analyses, are used to investigate the relationships among technostress, work engagement, burnout, work-family conflict, and work-life boundary characteristics. The study employs a quantitative approach, involving data collection through self-report questionnaires to a sample of employees from technology professionals in Pakistan. Same approach has been followed in studies of a similar nature (Redelinghuys et al., 2019). Purposive convenient sampling technique was used because it allows researcher to select people who have specific traits or knowledge that are important for the study and who are easy to reach or access. (Etikan et al., 2016). Current study chose this method because participants who have minimum one year of experience and were working only in IT departments of Telecommunication, Media and IT companies were chosen.

Correlational analyses was conducted to examine the associations among the variables, followed by mediation analyses using PROCESS MACRO (Hayes, 2013) to test the mediating role of work-family conflict. Additionally, moderation analyses employed to investigate the moderating effect of work-life boundary characteristics on the relationship between technostress and work-family conflict. The study's design combines correlational, mediation, and moderation analyses to provide a comprehensive understanding of the interplay among these variables within the context of work-life balance and employee well-being.

3.6 Sample

In the present study, a purposive convenient sample of (N = 245) employees from the IT departments of three sectors (Telecommunications, Media, and IT companies) was recruited. Purposive convenient sampling is a non-probability sampling technique that allows

researcher to select people who have specific traits or knowledge that are important for the study and who are easy to reach or access. (Etikan et al., 2016). Current study chose this method because participants who have minimum one year of experience and were working only in IT departments of Telecommunication, Media and IT companies were chosen.

The sample comprised 38.8% from the IT sector (n= 95), 68% from the Broadcasting sector (n=68), and 33.5% from the Telecommunication sector (n=82). The inclusion criteria for participants were: currently employed, employees with minimum one year of experience and employees only from IT department

The participants were predominantly males (N = 169) and females (N=79) these participants (69% males and 31% females) were on average age of 25 years (47.8%). Regarding marital status, 32% were married, 62% were single, 0.4% were divorced, and 1.2% were widowed. The majority (68%) held master's degrees, while 26% had completed MS/M.Phil degrees and 5.3% had other credentials. Over half (56.3%) were from joint families, compared to 43.7% from nuclear families. Most participants (62%) had 1-5 years of job experience, 18% had 6-10 years, 11-15 years has 11%, and people with over 15 years of experience had 8.6%. A substantial portion of the sample (62%, n=152) had 1-5 years of work experience in the organization they were currently employed, while 18% (n=44) had 6-10 years of experience, 11% (n=27) had 11-15 years of experience, and 8.6% (n=21) had 15 years or more of experience. Regarding work hours, 54.7% of the participants worked 8 hours per day, and 45.3% worked more than 8 hours daily.

Table 1 *Demographic Characteristics of the Study Sample (N=245).*

	n	*%*
Gender		
Male	169	69.0%
Female	76	31.0%
Age		
20-25	117	47.8%
26-35	81	33.1%
36-45	35	14.3%
46 or above	12	4.9%
Sector of Employment		
IT	95	38.8%
Telecommunication	82	33.5%
Media	68	27.8%
Marital Status		
Married	89	36.3%
Divorced	1	0.4%
Widow	3	1.2%
Single	125	62.0%
Family System		
Nuclear	107	43.7%
Joint	138	56.3%
Qualification		
Masters	159	64.9%
MS/MPhil	60	24.5%
MS/MPhil in Progress	14	5.7%
Any Other Qualification	12	4.9%
Job Experience		
1 Year	1	0.4%
1-5	152	62.0%
6-10	44	18.0%
11-15	27	11.0%
15 Years and Above	21	8.6%
Working Hours		
8	134	54.7%
More than 8	111	45.3%
Part Time Job		
Yes	39	15.9%
No	206	84.1%
Type of organization		
Private	190	77.6%
Government	55	22.4%

3.6 Procedure

The data collection setting comprised the IT departments of telecommunications, media, and IT companies located in the Rawalpindi/Islamabad region. These industries were specifically targeted because they fall under the umbrella of the Information and Communication Technology (ICT) industry, which encompasses computing, telecommunications, and broadcasting services (Laanti et al., 2009). This focus was essential as these fields are rapidly evolving and are particularly relevant to issues such as technostress and work engagement. Using purposive convenient sampling, the inclusion criteria for the participants was; who were currently employed. A total of 300 questionnaires were initially distributed with a response rate that yielded 270 completed forms, of which 245 met the inclusion criteria after excluding incomplete responses.

The data collection process involved distributing survey questionnaires following the approval of organizational administrators, establishing rapport with participants, and ensuring they were fully informed about the study's purpose, confidentiality of responses, and their right to withdraw. Participants completed a demographic sheet along with a questionnaire that included scales for measuring various constructs, all done anonymously within a 20 to 30 minute timeframe. Ethical considerations regarding anonymity, privacy, confidentiality, and informed consent were strictly adhered to throughout the research process. Data was analyzed using SPSS and process Macro.

Chapter 4

RESULTS

The descriptive statistics and alpha reliability values were calculated to examine the properties of the scales used in the current research. Correlational analyses using Pearson coefficients were conducted to examine the relationships between Technostress, dimensions of technostress, Work family conflict, Work life Boundaries, Burnout, and Work Engagement. Moderation and mediation analyses were also performed using Hayes' Process macro for SPSS to test whether Work Family Conflict mediates the relationship between Technostress, Burnout, and Work Engagement, and whether Work Life Boundaries moderates the relationship between Technostress and Work Family Conflict. The outputs from these analytic procedures were interpreted to draw meaningful conclusions related to the study hypotheses. All statistical testing was executed using IBM SPSS Statistics version 21.

Table 2 *Psychometric Properties and Descriptive Statistics of the Study Measures (N=245).*

Scales	No of items	α	*M*	*SD*	Range		Skewness	Kurtosis
					Potential	Actual		
WE	17	.91	64.75	18.50	0 - 102	10 – 102	-.48	.065
Vigor	6	.72	22.4	6.5	0 - 36	3 – 36	.15	.31
Dedication	6	.71	.41	6.4	0 – 36	1 – 30	.15	.31
Absorption	6	.77	.44	6.9	0 – 36	3 - 36	.15	.31
WFC	9	.84	28.60	6.94	9 – 45	9 – 45	-.26	.18
FWC	9	.86	25.14	7.28	9 – 45	9 – 45	.14	-.15
WLB	8	.72	30.27	9.57	8 – 56	8 – 56	.02	-.26
LWB	8	.78	27.88	9.55	8 – 56	8 – 56	.14	-.09
TS	23	.87	69.83	13.58	23 - 115	23 – 104	-.45	.78
TO	6	.79	19.25	4.67	6 – 30	6 – 30	-.33	.23
Tinv	3	.68	8.90	2.80	3 – 15	3 – 15	-.08	-.23
Tcomp	5	.71	14.43	4.07	5 – 25	5 – 25	-.09	-.16
Tinsec	5	.66	13.80	3.90	5 – 25	5 – 24	.01	-.40
TUncer	4	.77	13.45	3.47	4 – 20	4 – 20	-.23	-.08
Burnout	16	.64	37.16	4.76	16 – 64	24 - 52	-.15	-.33
Disengagement	8	.61	16.05	2.5	8 – 32	9 – 27	.13	1.2
Exhaustion	8	.62	22.44	6.9	8 – 32	8 – 26	-.2	.33

Note**; WE:** Work Engagement, **WFC:** Work to Family Conflict, **FWC:** Family to Work Conflict, **WLB:** Work-to-life segmentation/integration **LWB**: Life-to-work segmentation/integration, **TS**: Technostress, **To**=Techno Overload, **Tinvas**= Techno invasion, **Tcomp =** Techno complexity, **Tinsec** = Techno insecurity, **T**= Techno uncertainty, **B:** Burnout.

Table 2 presents the psychometric properties of the study measures, including the number of items, Cronbach's alpha (α) for internal consistency, means (M), standard deviations (SD), potential and actual range of scores, skewness, and kurtosis values. Work Engagement (WE) scale consisted of 17 items and demonstrated excellent internal consistency (α = .91). Work-

to-Family Conflict (WFC) and Family-to-Work Conflict (FWC) both scales had 9 items each and displayed good internal consistency (α = .84 and .86, respectively). The mean scores were (*M*= 28.60, *SD* = 6.94) for WFC and (*M*= 25.14, *SD* = 7.28) for FWC. Work-to-Life Segmentation/Integration (WLB) and Life-to-Work Segmentation/Integration (LWB) scales had 8 items each, with moderate internal consistency (α = .72 and .78, respectively). The mean scores were (*M*= 30.27, *SD* = 9.57) for WLB and *(M*= 27.88, *SD* = 9.55) for LWB. Technostress (TS) scale consisted of 23 items and demonstrated good internal consistency (*α* = .87). The mean score was (*M*= 69.83, *SD* = 13.58). Among the technostress dimensions, Techno Overload had the highest mean score (M = 19.25, SD = 4.67), followed by Techno Complexity (M = 14.43, SD = 4.07), Techno Insecurity (M = 13.80, SD = 3.90), Techno Uncertainty (M = 13.45, SD = 3.47), and Techno Invasion (M = 8.90, SD = 2.80).

Burnout (B) scale had 16 items and displayed internal consistency (*α* = .64; *M*=37.16, *SD* = 4.76). The mean scores suggest that participants experienced relatively high levels of work engagement (M = 64.75, SD = 18.50) and technostress (M = 69.83, SD = 13.58), moderate levels of work-to-family conflict (M = 28.60, SD = 6.94), family-to-work conflict (M = 25.14, SD = 7.28), work-to-life segmentation/integration (M = 30.27, SD = 9.57), life-to-work segmentation/integration (M = 27.88, SD = 9.55), and burnout (M = 37.16, SD = 4.76).

Overall, the psychometric properties of the study measures appear to be adequate, with most scales demonstrating good internal consistency. The skewness and kurtosis values suggest that the data generally followed a normal distribution (Brown, 2006).

Table 3 *Correlations Analysis among Study Variables (N=245)*

Variable	TS	TO	Tinv	Tcomp	Tinsec	Tuncer	WE	vigor	dedi	absor	B	exau	dis	WLB	LWB	WFC	FWC
TS	1	.753**	.720**	.806**	.771**	.509**	-.017	-.048	-.020	.019	.309**	.264**	.165**	.210**	.112	.420**	.396**
TO		1	.543**	.468**	.386**	.181**	.127*	.085	.157*	.112	.296**	.321**	.152*	.194**	.038	.371**	.290**
TInv			1	.513**	.437**	.188**	.009	-.043	-.005	.069	.199**	.178**	.101	.136*	.031	.341**	.250**
Tcomp				1	.626**	.233**	-.121	-.114	-.144*	-.082	.324**	.285**	.225**	.140*	.088	.363**	.332**
Tinsec					1	.288**	-.130*	-.127*	-.160*	-.079	.210**	.173**	.137*	.143*	.232**	.259**	.413**
Tuncer						1	.044	.008	.063	.052	.034	-.072	-.056	.127*	-.003	.152*	.103
WE							1	.917**	.926**	.938**	-.378**	-.261**	-.333**	.120	-.215**	.057	.037
vigor								1	.766**	.786**	-.332**	-.253**	-.263**	.115	-.170**	.038	.037
dedi									1	.814**	-.346**	-.225**	-.321**	.094	-.220**	.084	.001
absor										1	-.372**	-.246**	-.339**	.123	-.207**	.039	.064
B											1	.738**	.698**	.112	.168**	.362**	.244**
exau												1	.574**	.168**	.160*	.306**	.226**
dis													1	-.002	.124	.162*	.094
WtLB														1	.447**	.206**	.154*
LWB															1	.126*	.153*
WFC																1	.570**
FWC																	1

Note. **TS**: Technostress, **To**=Techno Overload, **Tinvas**= Techno invasion, **Tcomp =** Techno complexity, **Tinsec** = Techno insecurity, **Tuncer**= Techno uncertainty, **WE:** Work Engagement, **B:** Burnout. **WLB:** Work-to-life segmentation/integration **LWB**: Life-to-work segmentation/integration, **WFC:** Work to Family Conflict, **FWC:** Family to Work Conflict,

Table 3 indicates correlation between study variables. Technostress was significantly positively correlated with burnout (r = .31**, p < 0.01), indicating a moderate positive correlation. This suggests that higher levels of technostress predict higher levels of burnout. Regarding technostress dimensions, techno Overload, techno invasion, techno complexity, and techno insecurity is positively correlated with burnout. Work-to-family conflict (WFC) was significantly positively correlated with burnout (r = .36**, p < 0.01), indicating a moderate positive correlation, and family-to-work conflict (FWC) was also significantly positively correlated with burnout (r = .24**, p < 0.01), indicating a weak positive correlation.

On the other hand, the correlation between technostress and work engagement (WE) was not significant (r = -.01, p > .05). Regarding technostress dimensions, only techno overload showed a weak positive correlation (r = .127, p < .05), while techno insecurity showed a weak negative correlation (r = -.130, p < .05) with work engagement. However, neither WFC nor FWC were significantly correlated with work engagement (r = .05, p > .05; r = .037, p > .05, respectively).

Technostress was significantly positively correlated with work-to-family conflict (r = .420, p < .01), indicating a moderate positive correlation. This suggests that higher levels of technostress predict higher levels of work-to-family conflict. Technostress was also significantly positively correlated with family-to-work conflict (r = .396, p < .01),

All technostress dimensions (techno overload, techno invasion, techno complexity, techno insecurity, and techno uncertainty) were positively correlated with work-to-family conflict. For family-to-work conflict all technostress dimensions except techno uncertainty were positively correlated.

Work-to-life segmentation/integration (WLB) was significantly positively correlated with technostress (r = .21**, p < 0.01), indicating a moderate positive correlation. All technostress dimensions showed weak positive correlations with work-to-life segmentation/integration.

Table 4 *Regression Coefficients of Technostress predicting Burnout (N= 245)*

	Burnout				*95% CI*	
Predictors	B	SE	*t*	*p*	*LL*	*UL*
Constant	29.60	1.52	19.46	.00	26.60	32.59
Overall Technostress	0.10	.02	5.06	.00	0.06	0.15
TO	.21	.08	2.72	.00	.06	.36
Tinv	-.06	.13	-.43	.66	-.32	.20
Tcomp	.30	.09	3.10	.00	.11	.49
Tinsec	.00	.09	.00	.99	-.19	.19
TUncer	-.08	.09	-.90	.36	-.24	.09
R^2 = .095						
ΔR^2 = .092						

*p < .05, **p < .01, ***p < .001

Note: To=Techno Overload, **Tinvas**= Techno invasion, **Tcomp =** Techno complexity, **Tinsec** = Techno insecurity, **Tuncer**= Techno uncertainty.

Table shows the impact of technostress on burnout. The R^2 value of 0.095 reveals that the predictor explained 9.5% of the variance in the outcome variable with F (1, 243) = 25.622, p< .001). The findings reveals that technostress positively predicts burnout (B= 0.309, p < .001). While overall technostress predicts burnout, when examining individual components, only techno overload and techno complexity significantly contribute to burnout. Techno

invasion, techno insecurity, and techno uncertainty do not show significant relationships with burnout.

Table 5a *Regression Coefficients of Technostress predicting Burnout (Exhaustion) (N= 245)*

	Exhaustion				*95% CI*	
Predictors	B	SE	*t*	*p*	*LL*	*UL*
Constant	13.12	1.02	12.93	.001	11.12	15.12
Overall Technostress	.06	.01	4.27	.001	.03	.09
TO	.18	.05	3.76	.001	.09	.279
Tinv	-.06	.08	-.72	.473	-.23	.11
Tcomp	.17	.06	2.71	.007	.05	.29
Tinsec	-.00	.06	-.04	.97	-.13	.12
TUncer	-.15	.06	-2.61	.01	-.26	-.036
R^2 =	.14					
ΔR^2 =	.39					

*p < .05, **p < .01, ***p < .001 ***Note: To**=Techno Overload, **Tinvas**= Techno invasion, **Tcomp** = Techno complexity, **Tinsec** = Techno insecurity, **Tuncer**= Techno uncertainty.*

Table shows regression analysis in the relationship between technostress and burnout (measured as exhaustion). The model assessed the impact of overall technostress and its dimensions (Techno Overload, Techno Invasion, Techno Complexity, Techno Insecurity, and Techno Uncertainty) on exhaustion. The regression analysis revealed that overall technostress, techno overload, and techno complexity were significant positive predictors of exhaustion,

indicating that higher levels of these factors are associated with increased burnout. The model explained 14% of the variance in exhaustion, highlighting the role of specific technostress dimensions in contributing to burnout.

Table 6a *Regression Coefficients of Technostress predicting Burnout (Disengagement) (N= 245)*

	Dusengagement				*95% CI*	
Predictors	B	SE	*t*	*p*	*LL*	*UL*
Constant	14.52	.88	16.42	.001	12.78	16.26
Overall Technostress	.03	.01	2.62	.009	.008	.055
TO	.05	.04	1.13	.262	-.04	.13
Tinv	-.04	.07	-.59	-.56	-.19	.10
Tcomp	.14	.06	2.59	.01	.04	.25
Tinsec	.12	.05	.22	.83	-.09	.12
TUncer	-.09	.05	-1.85	.07	-,19	.01
R^2 =	.07					
ΔR^2 =	.26					

*p < .05, **p < .01, ***p < .001

Note: To=Techno Overload, Tinvas= Techno invasion, Tcomp = Techno complexity, Tinsec = Techno insecurity, Tuncer= Techno uncertainty.

Table 6a shows regression analysis in the relationship between technostress and burnout (measured as disengagement). The model assessed the impact of overall technostress and its dimensions (Techno Overload, Techno Invasion, Techno Complexity, Techno Insecurity, and Techno Uncertainty) on disengagement. The regression analysis revealed that overall technostress and techno complexity were significant positive predictors of disengagement, indicating that higher levels of these factors are associated with increased burnout. The model explained 7% of the variance in disengagement, highlighting the contribution of specific technostress dimensions to burnout.

Table 7 *Regression Coefficients of Technostress predicting Work Engagement (N= 245)*

	Work Engagement				*95% CI*	
Predictors	B	SE	*t*	*p*	*LL*	*UL*
Constant	66.34	6.21	10.6	.00	54.10	78.58
Overall Technostress	-0.02	0.08	-0.2	.79	-0.19	0.14
TO	.951	.30	3.11	.00	.34	1.55
Tinv	.092	.52	.17	.86	-.94	1.13
Tcomp	-.76	.39	-1.93	.05	-1.53	.015
Tinsec	-.70	.39	-1.78	.07	-1.47	.072
TUncer	.42	.34	1.22	.22	-.26	1.11
$R^2 = .07$						
$\Delta R^2 = .05$						

*$p < .05$, **$p < .01$, ***$p < .001$

Note: To=Techno Overload, **Tinvas**= Techno invasion, **Tcomp =** Techno complexity, **Tinsec** = Techno insecurity, **Technoun**= Techno uncertainty.

Table shows the impact of technostress on work engagement. The findings reveals that technostress did not significantly predict work engagement ($p > .05$). When examining individual components, only techno overload significantly contributes to work engagement ($B = 0.24$, $p = .002$, 95% CI [0.34, 1.55]). Techno complexity shows a marginal negative relationship ($B = -0.17$, $p = .055$, 95% CI [-1.534, 0.015]). While techno insecurity, Techno invasion and techno uncertainty do not show significant relationship with work engagement.

Table 8a *Regression Coefficients of Technostress predicting Work Engagement (Vigor) (N= 245)*

	Vigor				*95% CI*	
Predictors	B	SE	*t*	*p*	*LL*	*UL*
Constant	22.43	2.28	9.822	.001	17.93	26.93
Overall Technostress	-.02	.03	-.75	.45	-.08	.04
TO	.29	.11	2.64	.01	.073	.504
Tinv	-.11	.19	-.05	.55	-.49	.26
Tcomp	-.19	.14	-1.34	.18	-.47	.09
Tinsec	-.21	.14	-1.48	.14	-.49	.07
TUncer	.08	.13	.65	.52	-.17	.33
R^2 =	.05					
ΔR^2 =	.22					

*$p < .05$, **$p < .01$, ***$p < .001$

Note: To=Techno Overload, **Tinvas**= Techno invasion, **Tcomp =** Techno complexity, **Tinsec** = Techno insecurity, **Technoun**= Techno uncertainty.

Table 8a shows the regression analysis of the relationship between technostress and work engagement (measured as vigor). The model assessed the impact of overall technostress and its dimensions (Techno Overload, Techno Invasion, Techno Complexity, Techno

Insecurity, and Techno Uncertainty) on vigor. The analysis revealed that techno overload was the only significant predictor of vigor. Other predictors, including overall technostress, techno invasion, complexity, insecurity, and uncertainty, were not significant. The model explained 5% of the variance in vigor, highlighting a limited role of technostress dimensions in predicting this aspect of work engagement.

Table 9b *Regression Coefficients of Technostress predicting Work Engagement (Dedication) (N= 245)*

	Dedication				*95% CI*	
Predictors	B	SE	*t*	*p*	*LL*	*UL*
Constant	17.85	2.19	8.18	.001	13.54	22.15
Overall Technostress	-.01	.03	-.31	.76	-.07	.05
TO	.42	.11	4.03	.001	.22	.63
Tinv	-.03	.18	-.16	.88	-.39	.33
Tcomp	-.30	.14	-2.24	.03	-.57	-.04
Tinsec	-.31	.13	-2.28	.02	-.57	-.04
TUncer	.20	.12	1.68	.09	-.04	.44
R^2 =	.11					
ΔR^2 =	.33					

*$p < .05$, **$p < .01$, ***$p < .001$

Note: To=Techno Overload, **Tinvas**= Techno invasion, **Tcomp =** Techno complexity, **Tinsec** = Techno insecurity, **Technoun**= Techno uncertainty.

Table 9b shows the regression analysis of the relationship between technostress and work engagement (measured as dedication). The model assessed the impact of overall technostress and its dimensions (Techno Overload, Techno Invasion, Techno Complexity, Techno Insecurity, and Techno Uncertainty) on dedication. The analysis revealed that techno overload was a significant positive predictor of dedication. Other predictors, including overall technostress, techno invasion, and techno uncertainty, were not significant. The model explained 11% of the variance in dedication, highlighting the importance of specific technostress dimensions in influencing this aspect of work engagement.

Table 10c *Regression Coefficients of Technostress predicting Work Engagement (Absorption) (N= 245)*

	Absorption				*95% CI*	
Predictors	B	SE	*t*	*p*	*LL*	*UL*
Constant	20.23	2.42	8.38	.001	15.46	24.99
Overall Technostress	.01	.03	.30	.77	-.06	.07
TO	.24	.12	2.07	.04	.01	.47
Tinv	.23	.20	1.17	.25	-.16	.63
Tcomp	-.27	.15	-1.80	.07	-.56	.03
Tinsec	-.19	.15	-1.25	.21	-.48	.11
TUncer	.14	.13	1.09	.28	-.12	.41
R^2 =	.05					
ΔR^2 =	.22					

*p < .05, **p < .01, ***p < .001

Note: To*=Techno Overload,* ***Tinvas****= Techno invasion,* ***Tcomp =*** *Techno complexity,* ***Tinsec*** *= Techno insecurity,* ***Technoun****= Techno uncertainty.*

Table 10c shows the regression analysis of the relationship between technostress and work engagement (measured as absorption). The model assessed the impact of overall technostress and its dimensions (Techno Overload, Techno Invasion, Techno Complexity, Techno Insecurity, and Techno Uncertainty) on absorption. The analysis revealed that techno overload was a significant positive predictor of absorption. Other predictors, including overall technostress, techno invasion, complexity, insecurity, and uncertainty, were not significant. The model explained 5% of the variance in absorption, highlighting the limited role of specific technostress dimensions in influencing this aspect of work engagement.

Table 11 *Regression Coefficients of Technostress predicting Work Family Conflict (N= 245)*

	Work Family Conflict				*95% CI*	
Predictors	B	SE	*t*	*p*	*LL*	*UL*
Constant	23.95	3.7	6.36	.00	16.54	31.35
Overall Technostress	.43	.05	8.07	.00	.32	0.53
TO	.51	.19	2.72	.00	.14	.89
Tinv	.31	.32	.95	.33	-.33	.96
Tcomp	.46	.24	1.90	.05	-.01	.95
Tinsec	.58	.24	2.37	.01	.09	1.06
TUncer	.03	.21	.14	.88	-.39	.45
R^2= .21						
ΔR^2 = .21						

*p < .05, **p < .01, ***p < .001

Note: To*=Techno Overload,* ***Tinvas****= Techno invasion,* ***Tcomp =*** *Techno complexity,* ***Tinsec*** *= Techno insecurity,* ***Technoun****= Techno uncertainty.*

Table shows the impact of technostress on work-family conflict. The R^2 value of 0.21 indicates that the predictor (technostress) explained 21.1% of the variance in the outcome variable (work-to-family conflict). The findings reveals that technostress significantly predicts work-family conflict. When examining individual components, techno overload and techno insecurity significantly contribute to work-family conflict. Techno complexity shows a marginal positive relationship, while techno invasion and techno uncertainty do not show significant relationships with work-family conflict.

Table 12 *Mediation Analysis of Work Family Conflict as a Mediator between Technostress and Burnout (N=245).*

				95% CI			
		B	*SE*	*LL*	*UL*	*t*	*p*
Indirect effect	TS→WFC→B	.04	.01	.01	.06		
Total effect	TS→B	.10	.02	.06	.15	5.06	.00
Direct effect	TS→B	.06	.02	.02	.11	2.93	.00

Note: TS=Technostress, WFC= Work Family Conflict, B= Burnout

Table displays the mediating role of work-family conflict in the relationship between technostress and burnout. TS→WFC→B represents the indirect effect of technostress (TS) on burnout (B) through the mediator work-family conflict (WFC). A confidence interval that does not contain zero (B=.042, CI [019, .069]), indicate a significant positive indirect effect of technostress through work-family conflict. Similarly, TS→B represents the direct effect of technostress (TS) on burnout (B). A confidence interval that does not contain zero indicate a significant direct effect (B=.67, *CI [.022, .11]*). Similarly, TS→B: represents the total effect of technostress (TS) on burnout (B), including both the direct and indirect effects. A confidence interval that does not contain zero indicate a significant total effect. These results demonstrate

that work-family conflict considerably mediates the relationship between technostress and burnout.

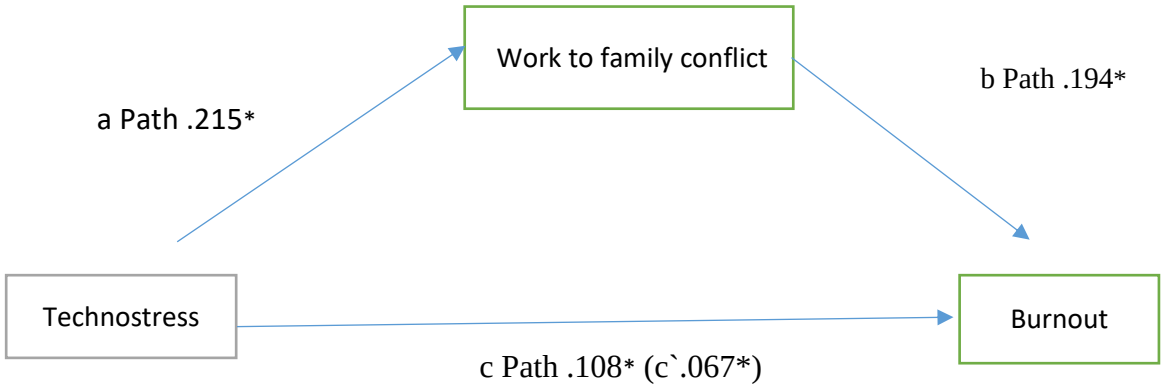


Table 13 *Mediation Analysis of Work Family Conflict as a Mediator between Technostress and Burnout (Exhaustion) (N=245).*

				95% CI			
	Exhaustion	*B*	*SE*	*LL*	*UL*	*t*	*p*
Indirect effect	TS→WFC→E	.02	.00	.00	.04		
Total effect	TS→E	.06	.01	.03	.08	4.2	.00
Direct effect	TS→E	.03	.02	.00	.06	2.4	.01

Note: TS=Technostress, WFC= Work Family Conflict, E= Exhaustion

The table displays the mediating role of work-family conflict (WFC) in the relationship between technostress (TS) and burnout (exhaustion). TS→WFC→E represents the indirect effect of technostress (TS) on exhaustion (E) through the mediator work-family conflict (WFC). A confidence interval that does not contain zero (B = .02, CI [0.00, .04]) indicates a significant positive indirect effect of technostress on exhaustion through work-family conflict.

Similarly, TS→E represents the direct effect of technostress (TS) on exhaustion (E). A confidence interval that does not contain zero (B = .03, CI [0.00, .06]) indicates a significant direct effect. Finally, TS→E represents the total effect of technostress (TS) on exhaustion (E), which includes both the direct and indirect effects. A confidence interval that does not contain zero (B = .06, CI [0.03, .08]) indicates a significant total effect.

These results demonstrate that work-family conflict significantly mediates the relationship between technostress and exhaustion, highlighting the role of work-family conflict in explaining how technostress contributes to burnout.

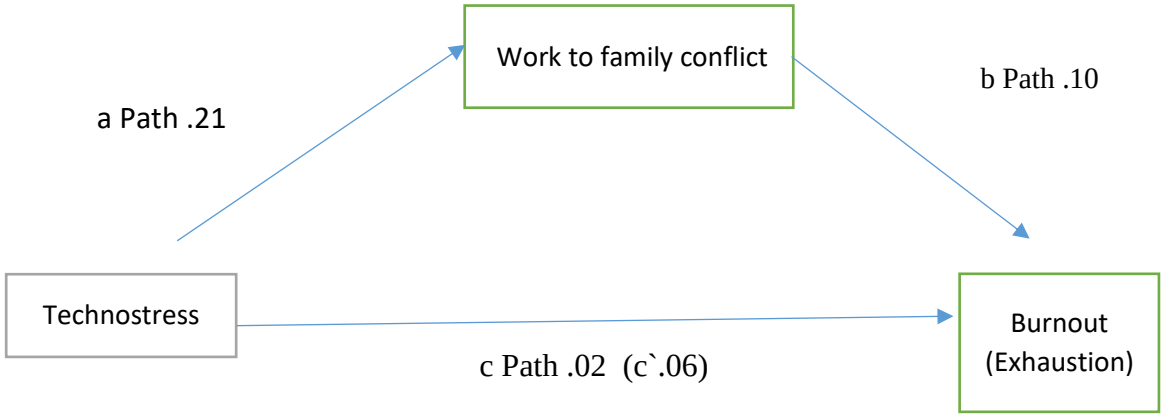


Table 14 *Mediation Analysis of Work Family Conflict as a Mediator between Technostress and Burnout (Disengagement) (N=245).*

			95% CI			
Disengagement	*B*	*SE*	*LL*	*UL*	*t*	*p*
Indirect effect	.01	.00	-.00	.022		
Total effect	.03	.01	.00	.05	2.6	.00
Direct effect	.22	.01	-.00	.05	1.7	.09

Note: TS=Technostress, WFC= Work Family Conflict, E= Exhaustion

The table displays the mediating role of work-family conflict (WFC) in the relationship between technostress (TS) and burnout (disengagement). The indirect effect (TS→WFC→Disengagement) represents the effect of technostress (TS) on disengagement through the mediator work-family conflict (WFC). A confidence interval that contains zero (B = .01, CI [-.00, .022]) indicates that the indirect effect is not statistically significant.

The direct effect (TS→Disengagement) represents the direct relationship between technostress (TS) and disengagement. A confidence interval that contains zero (B = .02, CI [-.00, .05]) indicates that the direct effect is not statistically significant.

Finally, the total effect (TS→Disengagement) represents the overall relationship between technostress (TS) and disengagement, combining both the direct and indirect effects. A confidence interval that does not contain zero (B = .03, CI [0.00, .05]) indicates a significant total effect of technostress on disengagement.

These results suggest that while the total effect of technostress on disengagement is significant, work-family conflict does not significantly mediate this relationship, and the direct effect of technostress on disengagement is not statistically significant.

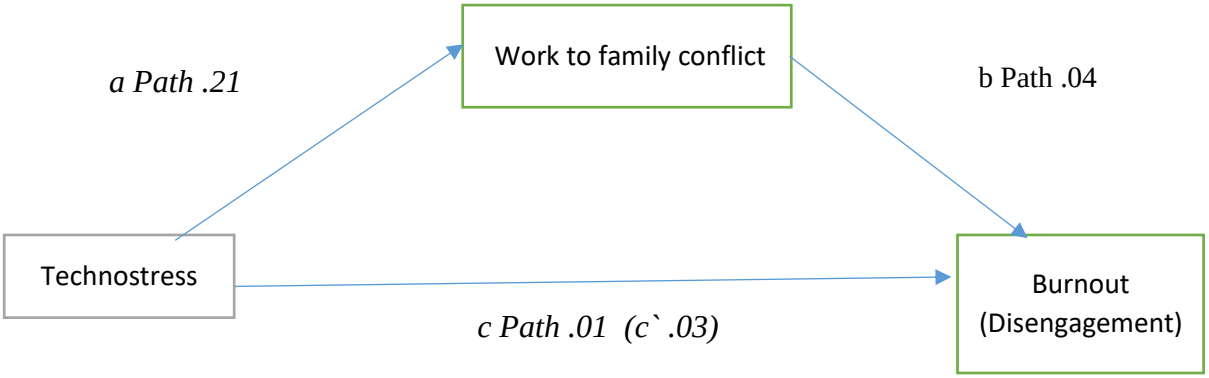
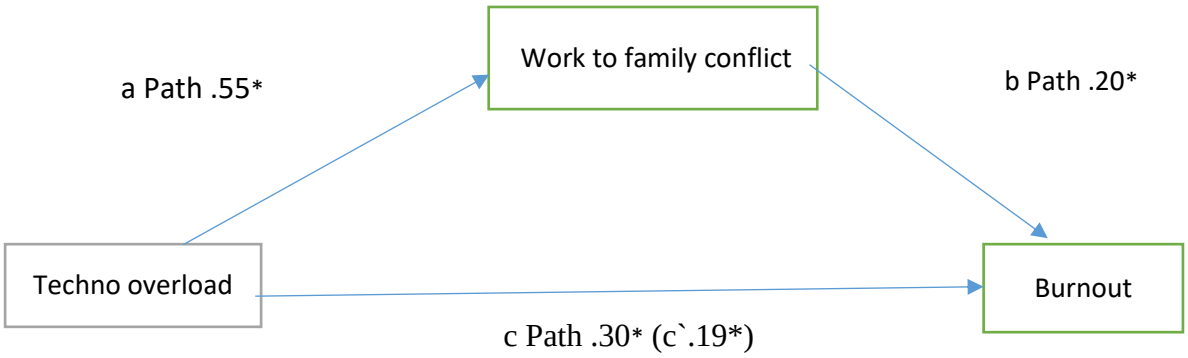

Work to family conflict
a Path .21
b Path .04
Technostress
Burnout
(Disengagement)
c Path .01 (c` .03)

Table 15 *Mediation Analysis of Work Family Conflict as a Mediator between Technostress Components and Burnout (N=245).*

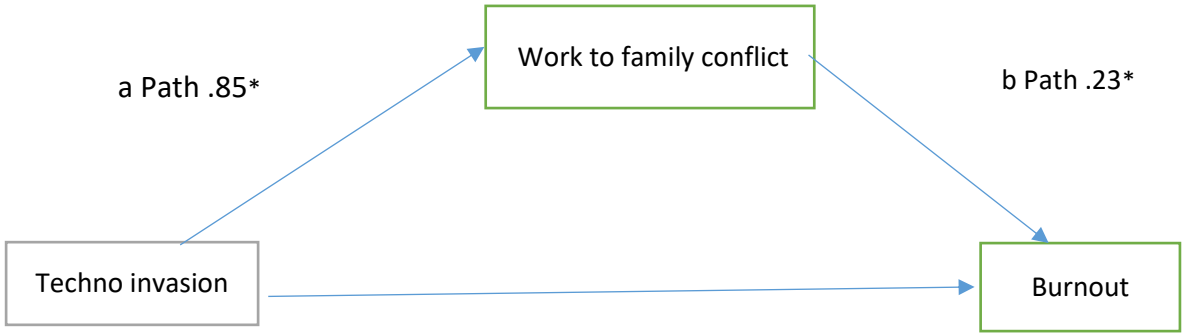
Technostress → Work to Family Conflict → Burnout								
					95% CI			
		Description	B	SE	LL	UL	*t*	*p*
Techno overload	Indirect Effect	TO→WFC→B	.11	.03	.05	.18		
	Total Effect	TO→B	.30	.06	.17	.42	4.8	.00
	Direct Effect	TO→B	.19	.06	.06	.31	2.9	.00
Techno invasion	Indirect Effect	Tinvas→WFC→B	.19	.06	.08	.32		
	Total Effect	Tinvas→B	.34	.10	.13	.54	3.16	.00
	Direct Effect	Tinvas→B	.14	.10	.06	.35	1.3	.17
Techno complexity	Indirect Effect	Tcomp→WFC→B	.12	.04	.05	.20		
	Total Effect	Tcomp→B	.37	.07	.24	.51	5.3	.00
	Direct Effect	Tcomp→B	.25	.07	.11	.40	3.5	.00
Techno insecurity	Indirect effect	Tinsec→WFC→B	.10	.04	.03	.18		
	Total Effect	Tinsec →B	.15	.07	.00	.29	2.02	.04
	Direct Effect	Tinsec →B	.25	.07	.10	.40	3.34	.00
Techno uncertainty	Indirect Effect	Tuncer→WFC→B	.07	.04	.00	.16		
	Total Effect	Tuncer→ B	.25	.08	-.12	.22	.52	.59
	Direct Effect	Tuncer→ B	-.03	.08	-.35	.72	-.19	.13

Note. **WFC:** Work to Family Conflict,, **B:** Burnout, To=Techno Overload, Tinvas= Techno invasion, Tcomp = Techno complexity, Tinsec = Techno insecurity, Tuncer= Techno uncertainty.

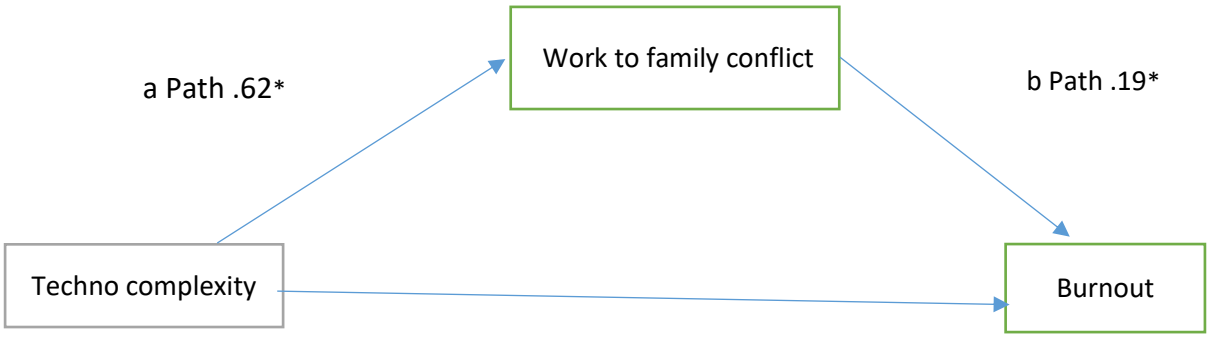
Table presents the mediation analysis of Work to Family Conflict (WFC) as a mediator between the five components of technostress and burnout. Following are the results. Techno-overload: The indirect effect of techno-overload on burnout through WFC is significant (B = 0.11, 95% CI [0.05, 0.18]). The direct effect remains significant (B = 0.19, t = 2.9, p < .001). This suggests that WFC mediates the relationship between techno-overload and burnout. Techno-invasion: WFC significantly mediates the relationship between techno-invasion and burnout (B = 0.19, 95% CI [0.08, 0.32]). The direct effect is non-significant (B = 0.14, t = 1.3, p = .17). This implies that the effect of techno-invasion on burnout is primarily through its impact on work-family conflict. Techno-complexity: The indirect effect through WFC is significant (B = 0.12, 95% CI [0.05, 0.20]). The direct is also significant (B = 0.25, t = 3.5, p < .001), indicating mediation. This suggests that WFC mediates the relationship between techno-complexity and burnout. Techno-insecurity: WFC significantly mediates the relationship between techno-insecurity and burnout (B = 0.10, 95% CI [0.03, 0.18]). The direct effect is also significant (B = 0.25, t = 3.34, p < .001), suggesting mediation. Techno-uncertainty: The indirect effect through WFC is significant (B = 0.07, 95% CI [0.00, 0.16]). However, neither the total effect (B = 0.25, t = 0.52, p = .59) nor the direct effect (B = -0.03, t = -0.19, p = .13) is significant. This suggests that while techno-uncertainty may have a small indirect effect on burnout through WFC, it does not have a significant overall relationship with burnout. In summary, work to family conflict mediates the relationships between four components of technostress and burnout. For techno-uncertainty, there's an indirect effect, but no significant total or direct effect on burnout. These findings highlight the important role of work-family conflict in the relationship between various aspects of technostress and burnout



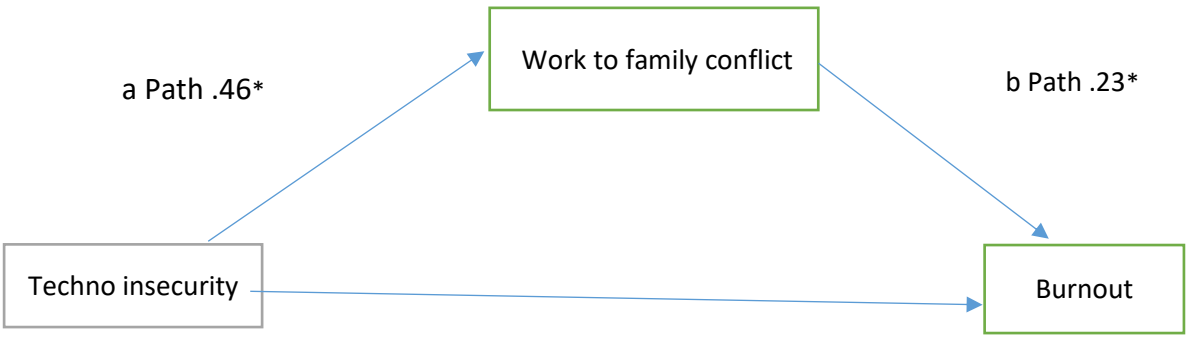
c Path .30* (c`.19*)



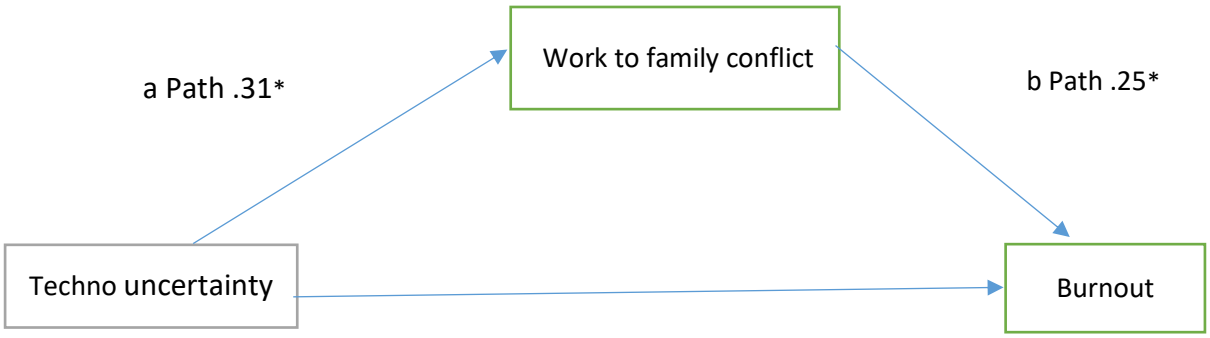
c Path .34* (c`.14)



c Path .37* (c`.25*)



c Path .15* (c`.25*)


Work to family conflict
a Path .31*
b Path .25*
Techno uncertainty
Burnout

c Path .25 (c`-.03)

Table 16 *Technostress Mediation Analysis of Work Family Conflict as a Mediator between Technostress Components and Burnout (Exhaustion) (N=245).*

Technostress → Work to Family Conflict → Exhaustion								
					95% CI			
		Description	B	SE	LL	UL	*t*	*p*
Techno overload	Indirect Effect	TO→WFC→ E	.05	.02	.01	.09		
	Total Effect	TO→ E	.21	.04	.12	.29	5.2	.00
	Direct Effect	TO→ E	.15	.04	.07	.24	3.7	.00
Techno invasion	Indirect Effect	Tinvas→WFC→E	.10	.04	.03	.19		
	Total Effect	Tinvas→ E	.19	.06	.05	.33	2.8	.00
	Direct Effect	Tinvas→ E	.09	.07	-.04	.23	1.2	1.96
Techno complexity	Indirect Effect	Tcomp→WFC→E	.06	.25	.01	.11		
	Total Effect	Tcomp→E	.21	.04	.12	.30	4.6	.00
	Direct Effect	Tcomp→E	.15	.04	.05	.24	3.1	.00
Techno insecurity	Indirect effect	Tinsec→WFC→E	.05	.02	.01	.10		
	Total Effect	Tinsec →E	.13	.05	.03	.23	2.7	.00
	Direct Effect	Tinsec →E	.07	.04	-.02	.17	1.5	.11
Techno uncertainty	Indirect Effect	Tuncer→WFC→E	.04	.02	.00	.09		
	Total Effect	Tuncer→ E	-.06	.05	-1.7	.04	-1.12	.26
	Direct Effect	Tuncer→ E	-1.0	.05	-.21	-.00	-1.98	.05

Note. **WFC:** Work to Family Conflict,, **E:** Exhaustion, To=Techno Overload, Tinvas= Techno invasion, Tcomp = Techno complexity, Tinsec = Techno insecurity, Tuncer= Techno uncertainty.

Table examines the mediating role of work-to-family conflict (WFC) in the relationship between different technostress components and exhaustion.

Techno Overload: The indirect effect (B = .05, CI [.01, .09]) is significant, indicating that WFC partially mediates the relationship between techno overload and exhaustion. The direct effect remains significant (B = .15, CI [.07, .24]).

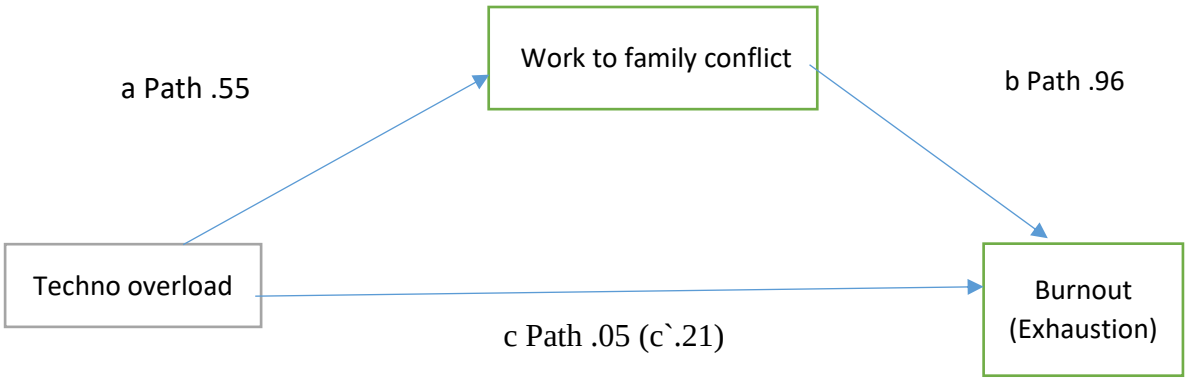
Techno Invasion: The indirect effect (B = .10, CI [.03, .19]) is significant, but the direct effect is not (B = .09, CI [-.04, .23]), suggesting mediation by WFC.

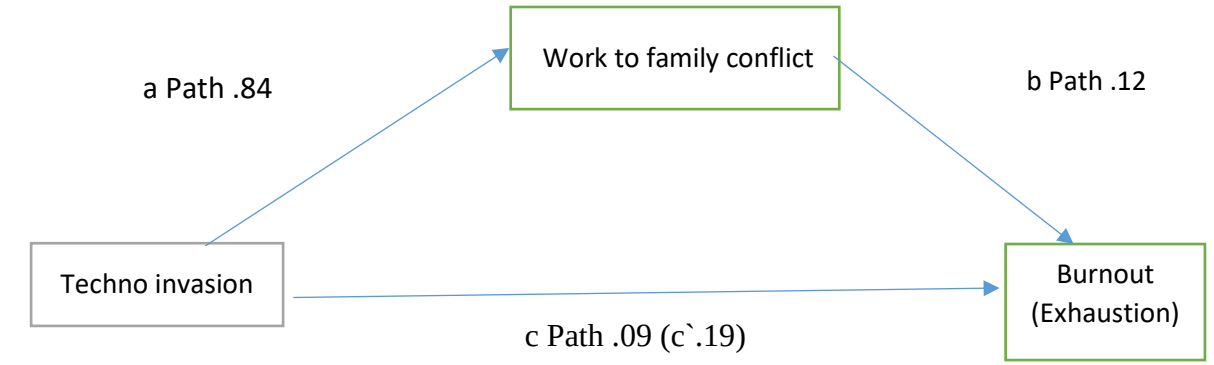
Techno Complexity: The indirect effect (B = .06, CI [.01, .11]) is significant, indicating partial mediation. The direct effect remains significant (B = .15, CI [.05, .24]).

Techno Insecurity: The indirect effect (B = .05, CI [.01, .10]) is significant, while the direct effect is non-significant (B = .07, CI [-.02, .17]).

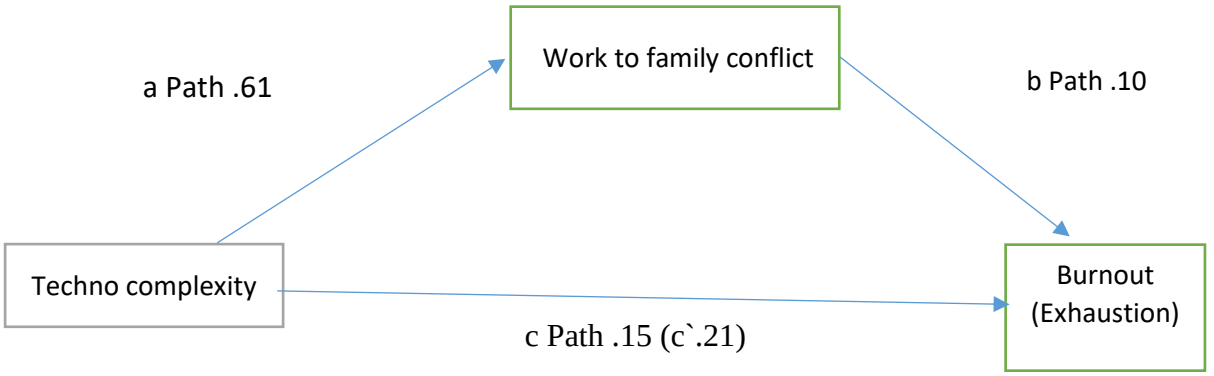
Techno Uncertainty: The indirect effect (B = .04, CI [.00, .09]) is significant. However, the total and direct effects are negative, with the direct effect being significant (B = -1.0, CI [-.21, -.00], p = .05).

Overall, WFC significantly mediates the relationship between most technostress components and exhaustion, with full mediation observed for techno invasion and techno insecurity.

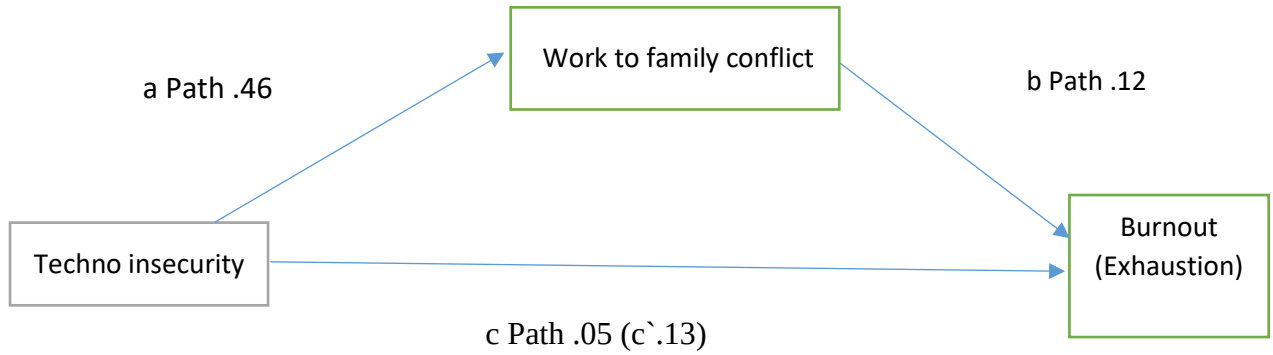




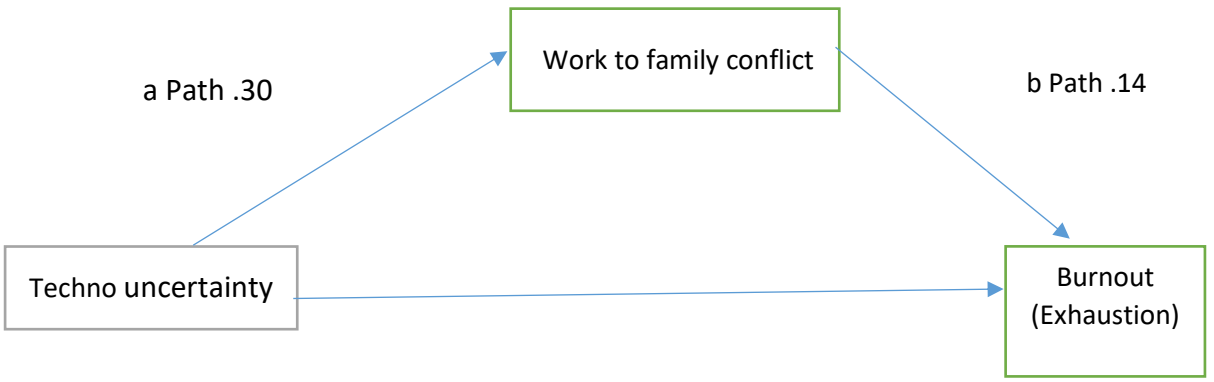
c Path .09 (c`.19)



c Path .15 (c`.21)



c Path .05 (c`.13)



c Path -.10 (c` -.06)

Table 17 *Technostress Mediation Analysis of Work Family Conflict as a Mediator between Technostress Components and Burnout (Disengagement) (N=245).*

Technostress → Work to Family Conflict → Disengagement								
					95% CI			
		Description	B	SE	LL	UL	*t*	*p*
Techno overload	Indirect Effect	TO→WFC→ D	.02	.01	-.00	.05		
	Total Effect	TO→ D	.08	.03	.01	.15	2.3	.01
	Direct Effect	TO→ D	.05	.03	.01	.13	1.5	.11.
Techno invasion	Indirect Effect	Tinvas→WFC→D	.04	.02	.00	.10		
	Total Effect	Tinvas→ D	.09	.05	-.02	.20	1.5	.11
	Direct Effect	Tinvas→ D	.04	.06	-.07	.16	.76	.44
Techno complexity	Indirect Effect	Tcomp→WFC→D	.02	.01	-.0	.05		
	Total Effect	Tcomp→D	.14	.03	.06	.21	3.5	.00
	Direct Effect	Tcomp→D	.12	.04	.03	.20	2.85	.00
Techno insecurity	Indirect effect	Tinsec→WFC→D	.02	.01	-.00	.05		
	Total Effect	Tinsec →D	.09	.04	2.1	.03	.00	.17
	Direct Effect	Tinsec →D	.06	.04	-.01	.15	1.5	.11
Techno uncertainty	Indirect Effect	Tuncer→WFC→D	.01	.01	-.00	.05		
	Total Effect	Tuncer→ D	.04	.04	-.13	-.05	-.87	.38
	Direct Effect	Tuncer→ D	-.06	.04	-.15	.03	-1.2	.19

Note. **WFC:** Work to Family Conflict,, **D:** Disengagement, To=Techno Overload, Tinvas= Techno invasion, Tcomp = Techno complexity, Tinsec = Techno insecurity, Tuncer= Techno uncertainty.

This table examines the mediating role of work-to-family conflict in the relationship between different technostress components and disengagement.

Techno overload shows a non-significant indirect effect (B = .02, CI [-.00, .05]), suggesting that work-to-family conflict does not mediate this relationship. The total effect is significant (B = .08, CI [.01, .15]), but the direct effect is not.

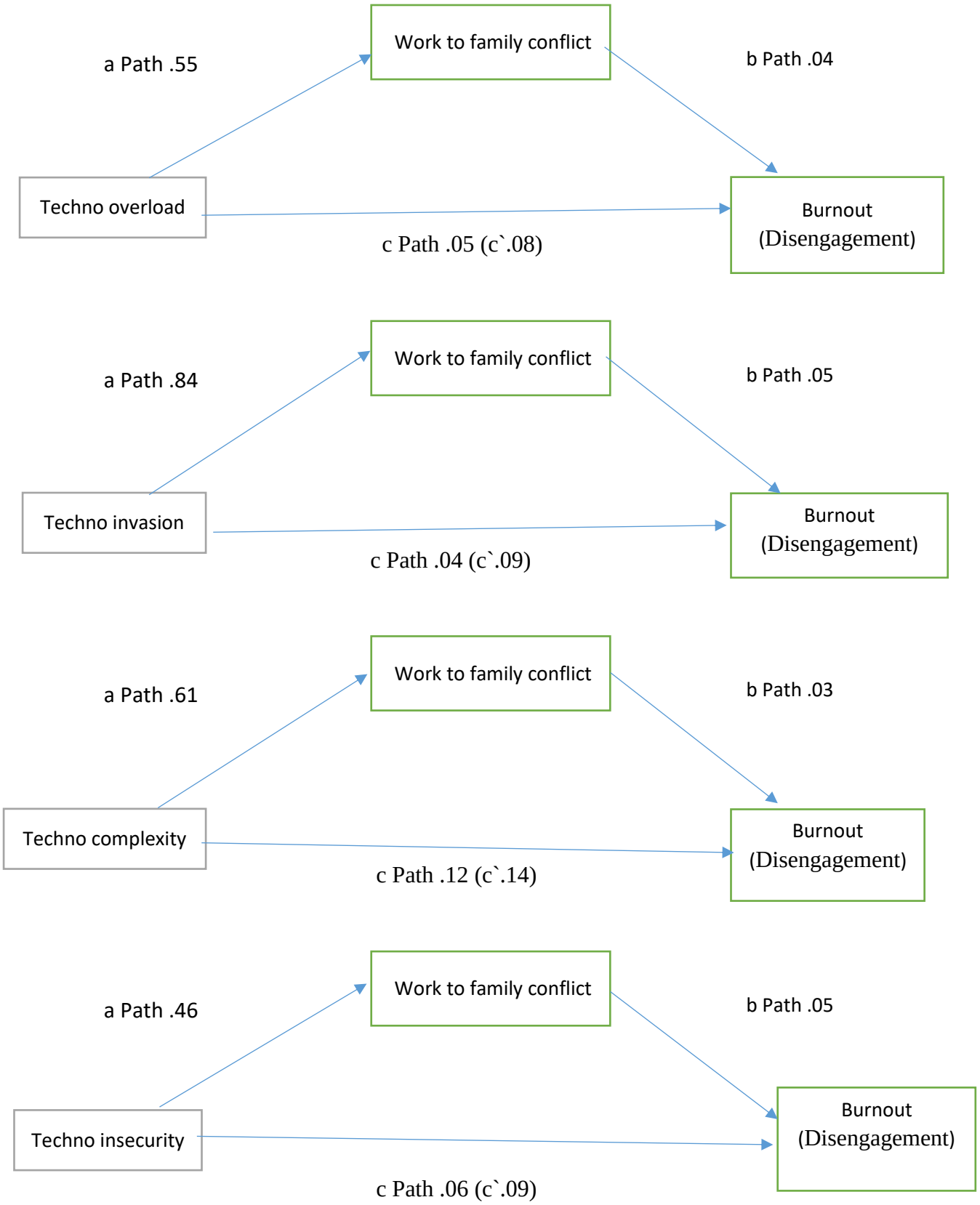
Techno invasion has a marginally significant indirect effect (B = .04, CI [.00, .10]). However, both the total effect (B = .09, CI [-.02, .20]) and the direct effect (B = .04, CI [-.07, .16]) are non-significant, suggesting no evidence for mediation.

Techno complexity shows a significant indirect effect (B = .02, CI [-.00, .05]) and a significant direct effect (B = .12, CI [.03, .20]), indicating that work-to-family conflict mediates the relationship.

Techno insecurity has a non-significant indirect effect (B = .02, CI [-.00, .05]) and a non-significant direct effect (B = .06, CI [-.01, .15]), suggesting no mediation.

Techno uncertainty has a non-significant indirect effect (B = .01, CI [-.00, .05]). Both the total and direct effects are also non-significant, indicating no mediation.

These results suggest that work-to-family conflict mediates the relationship between techno complexity and disengagement, while it does not significantly mediate the effects of techno overload, techno invasion, techno insecurity, or techno uncertainty.


Work to family conflict
a Path .55
b Path .04
Techno overload
Burnout
(Disengagement)
c Path .05 (c`.08)
Work to family conflict
a Path .84
b Path .05
Techno invasion
Burnout
(Disengagement)
c Path .04 (c`.09)
Work to family conflict
a Path .61
b Path .03
Techno complexity
Burnout
(Disengagement)
c Path .12 (c`.14)
Work to family conflict
a Path .46
b Path .05
Techno insecurity
Burnout
(Disengagement)
c Path .06 (c`.09)

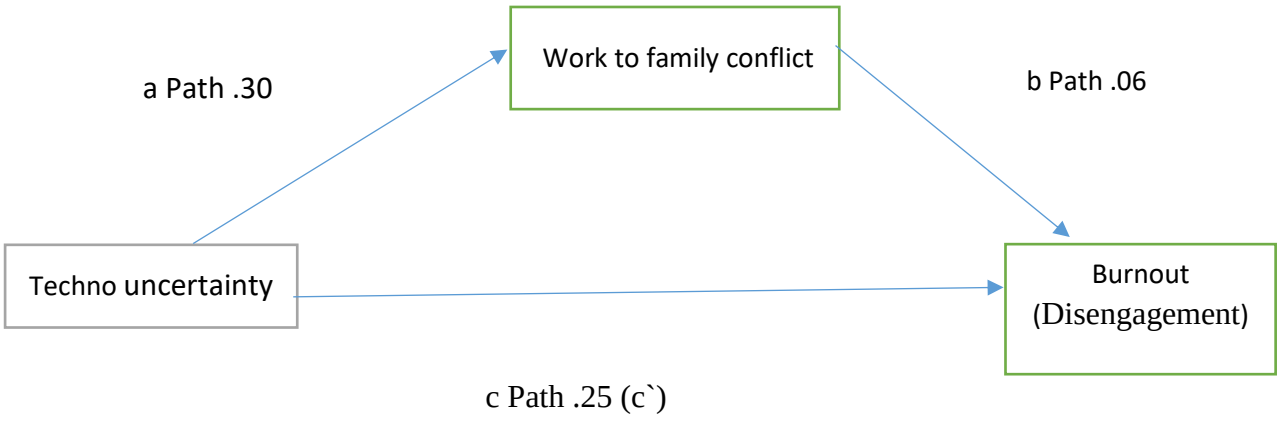


Table 18 *Mediation Analysis of Family to Work Conflict as a Mediator between Technostress and Burnout (N=245)*

				95% CI			
		B	*SE*	*LL*	*UL*	*t*	*p*
Indirect effect	TS→FWC→B	.02	.01	.00	.04		
Total effect	TS→B	.10	.02	.06	.15	5.06	.000
Direct effect	TS→B	.08	.02	.04	.13	3.81	.000

Note: TS=Technostress, FWC= Family Work Conflict, B= Burnout

Table displays the mediating role of family to work conflict in the relationship between technostress and burnout. The confidence interval for the indirect effect does not include zero (B=.020, 95% CI [.001, .040]). This indicates a statistically significant positive indirect effect of technostress on burnout through family work conflict. Additionally, the direct effect of technostress on burnout is significant (B=.088, t=3.8, p<.001), as the confidence interval does not contain zero. Taken together, these findings provide evidence that family work conflict mediates the relationship between technostress and burnout.

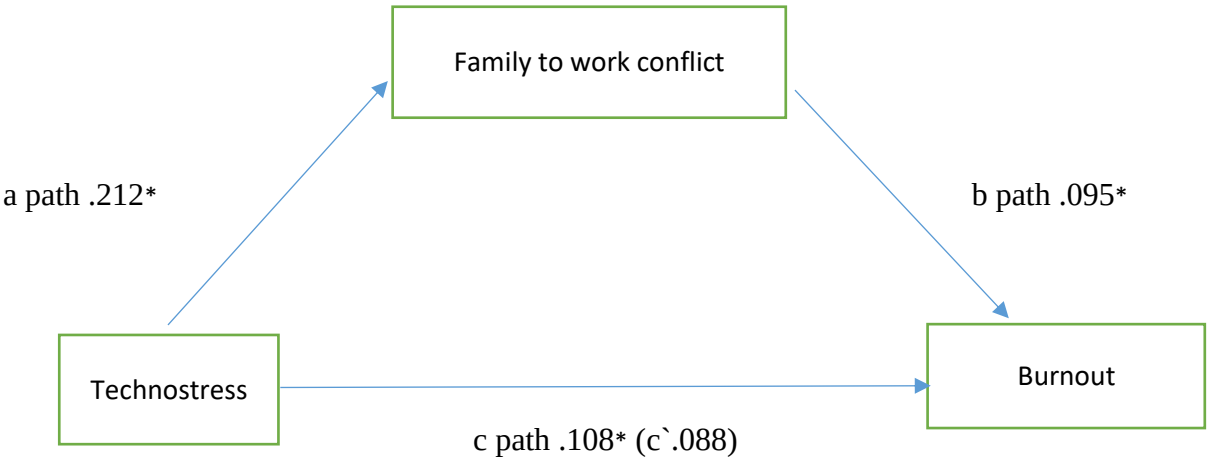


Table 19 *Mediation Analysis of Family Work Conflict as a Mediator between Technostress and Burnout (Exhaustion) (N=245).*

				95% CI			
	Exhaustion	*B*	*SE*	*LL*	*UL*	*t*	*p*
Indirect effect	TS→FWC→E	.01	.00	-.00	-.02		
Total effect	TS→E	.06	.01	.03	.08	4.2	.00
Direct effect	TS→E	.04	.01	.01	.07	3.1	.00

Note: TS=Technostress, FWC= Family to work conflict, E= Exhaustion

The table examines the mediating role of family to work conflict in the relationship between technostress and exhaustion.

The indirect effect of technostress on exhaustion through family-work conflict is not significant (B = .01, CI [-.00, .02]), indicating no mediation. The total effect of technostress

on exhaustion is significant (B = .06, CI [.03, .08], p = .00), as is the direct effect (B = .04, CI [.01, .07], p = .00).

These results suggest that technostress significantly predicts exhaustion, but family-work conflict does not mediate this relationship.

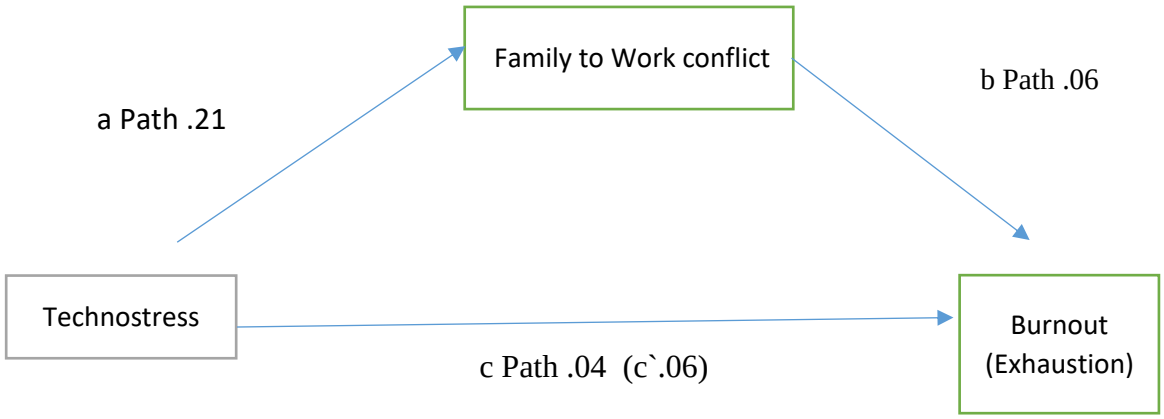


Table 20 *Mediation Analysis of Family to Work Conflict as a Mediator between Technostress and Burnout (Disengagement) (N=245).*

				95% CI			
	Disengagement	B	SE	LL	UL	t	p
Indirect effect	TS→FWC→D	.00	.00	-.00	.01		
Total effect	TS→D	.03	.01	.00	.05	2.6	.00
Direct effect	TS→D	.02	.01	.00	.05	2.2	.02

Note: TS=Technostress, FWC= Family to work conflict, D = Disengagement

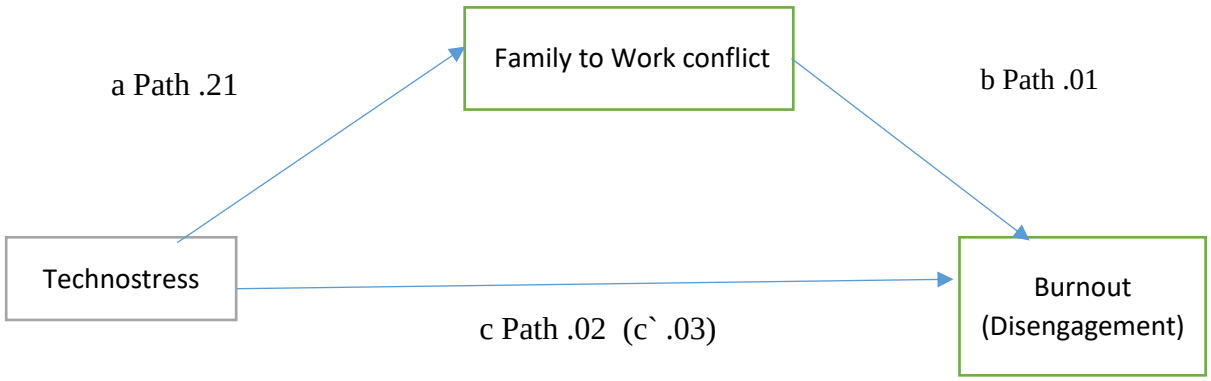


Table examines the mediating effect of family-work conflict between relationship of technostress and disengagement.

The indirect effect of technostress on disengagement through family-work conflict is not significant (B = .00, CI [-.00, .01]), indicating no mediation. The total effect of technostress on disengagement is significant (B = .03, CI [.00, .05], p = .00), as is the direct effect (B = .02, CI [.00, .05], p = .02).

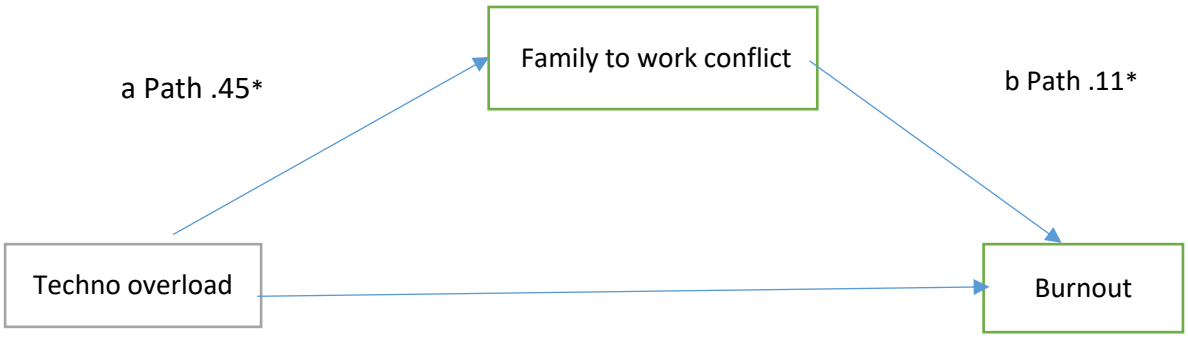
These results suggest that while technostress significantly predicts disengagement, family-work conflict does not mediate this relationship.

Table 21 *Mediation Analysis of Family to Work Conflict as a Mediator between components of Technostress and Burnout (N=245)*

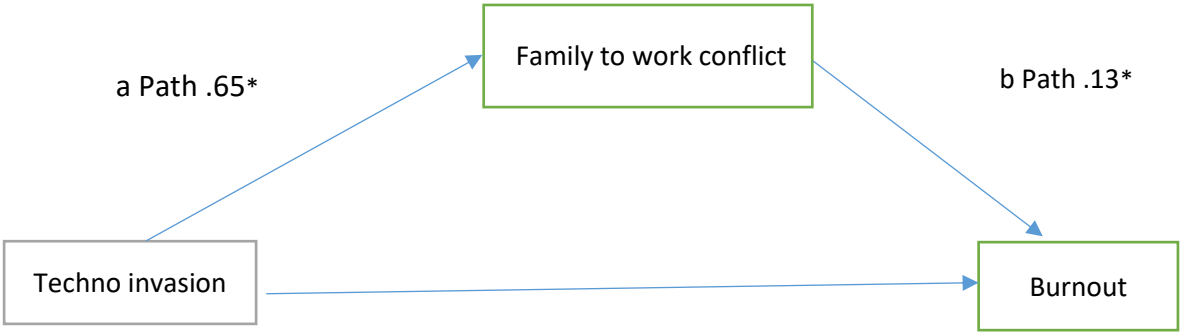
Technostress → Family Work Conflict → Burnout								
					95% CI			
		Description	B	SE	LL	UL	*t*	*p*
Techno overload	Indirect Effect	TO→FWC →B	0.05	0.02	0.01	0.09		
	Total Effect	TO→B	0.30	0.06	0.17	0.42	4.82	0.00
	Direct Effect	TO→B	0.25	0.06	0.12	0.37	3.88	0.00
Techno invasion	Indirect Effect	Tinvas→FWC→B	0.08	0.03	0.02	0.16		
	Total Effect	Tinvas→B	0.33	0.10	0.12	0.54	3.16	0.00
	Direct Effect	Tinvas→B	0.25	0.10	0.03	0.46	2.31	0.02
Techno complexity	Indirect Effect	Tcomp→FWC→B	0.06	0.03	0.00	0.12		
	Total Effect	Tcomp→B	0.37	0.07	0.24	0.52	5.34	0.00
	Direct Effect	Tcomp→B	0.32	0.07	0.17	0.46	4.28	0.00
Techno insecurity	Indirect effect	Tinsec→FWC→B	0.09	0.04	0.02	0.17		
	Total Effect	Tinsec →B	0.25	0.07	0.10	0.40	3.34	0.00
	Direct Effect	Tinsec →B	0.16	0.08	-0.00	0.32	1.93	0.05
Techno uncertainty	Indirect Effect	Tuncer→FWC→B	0.03	0.02	-0.01	0.09		
	Total Effect	Tuncer→ B	0.04	0.08	-.12	.22	.53	.59
	Direct Effect	Tuncer→ B	0.01	0.08	-.16	.18	.14	.89

Note. FWC: Family to Work Conflict, , B: Burnout, To=Techno Overload, Tinvas= Techno invasion, Tcomp = Techno complexity, Tinsec = Techno insecurity, Tuncer= Techno uncertainty.

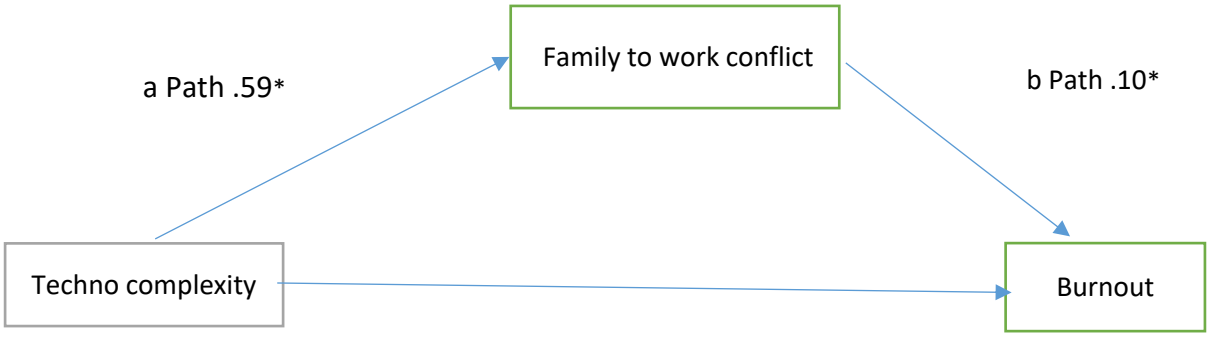
Table 10 presents the results of mediation analysis examining the role of Family to Work Conflict (FWC) as a mediator between five components of technostress and burnout. The results show that; Techno-overload showed a significant indirect effect on burnout through FWC (B = 0.05, 95% CI [0.01, 0.09]). The direct effect remained significant (B = 0.25, t = 3.88, p < .001), indicating mediation. For techno-invasion, there was a significant indirect effect via FWC (B = 0.08, 95% CI [0.02, 0.16]). The direct effect was also significant (B = 0.25, t = 2.31, p = .02), suggesting mediation. Techno-complexity demonstrated a significant indirect effect through FWC (B = 0.06, 95% CI [0.00, 0.12]). The direct effect remained significant (B = 0.32, t = 4.28, p < .001), indicating mediation. .Techno-insecurity showed a significant indirect effect on burnout through Family to Work Conflict (B = 0.09, 95% CI [0.02, 0.17]). However, the direct effect was not significant (B = 0.16, 95% CI [-0.00, 0.32], t = 1.93, p = .05), as the confidence interval included zero. The total effect was significant (B = 0.25, 95% CI [0.10, 0.40], t = 3.34, p < .001). These results suggest that Family to Work Conflict mediates the relationship between techno-insecurity and burnout, as the direct effect becomes non-significant when accounting for the mediator, while the indirect effect remains significant. For techno-uncertainty, the indirect effect through FWC was not significant (B = 0.03, 95% CI [-0.01, 0.09]). Neither the total effect (B = 0.04, t = 0.53, p = .59) nor the direct effect (B = 0.01, t = 0.14, p = .89) was significant, indicating no significant relationship between techno-uncertainty and burnout .Overall, Family to Work Conflict mediated the relationship between four components of technostress (techno-overload, techno-invasion, techno-complexity) and burnout. The mediating effect was not significant for Techno-insecurity and techno-uncertainty.



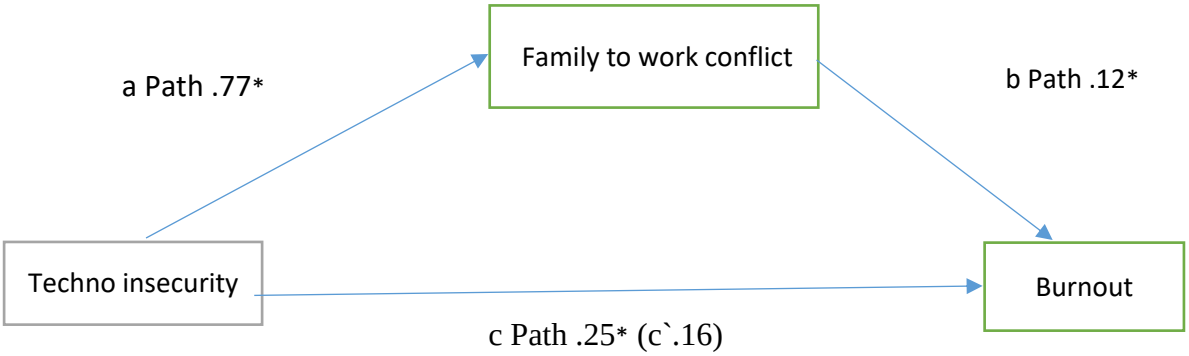
c Path .30* (c`.25*)



c Path .33* (c`.25*)



c Path .37* (c`.32*)



c Path .25* (c`.16)

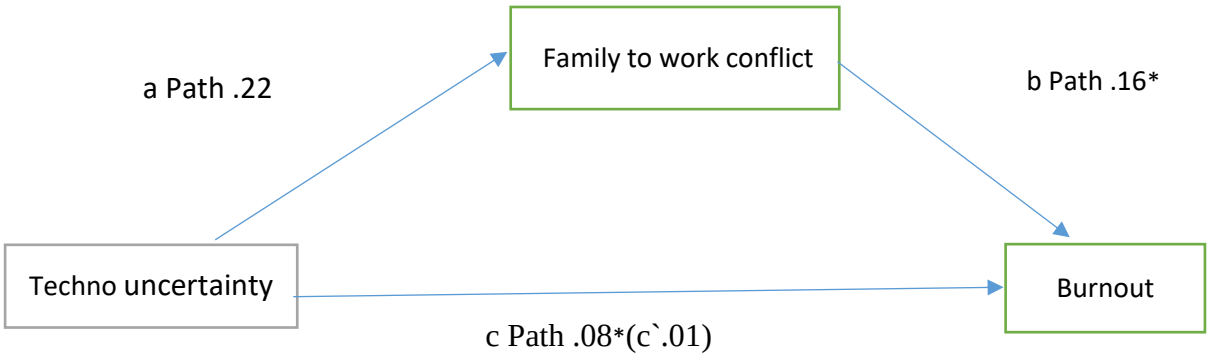

Family to work conflict
a Path .22
b Path .16*
Techno uncertainty
Burnout
c Path .08*(c`.01)

Table 22 *Mediation Analysis of Family to Work Conflict as a Mediator between components of Technostress and Burnout (Disengagement) (N=245)*

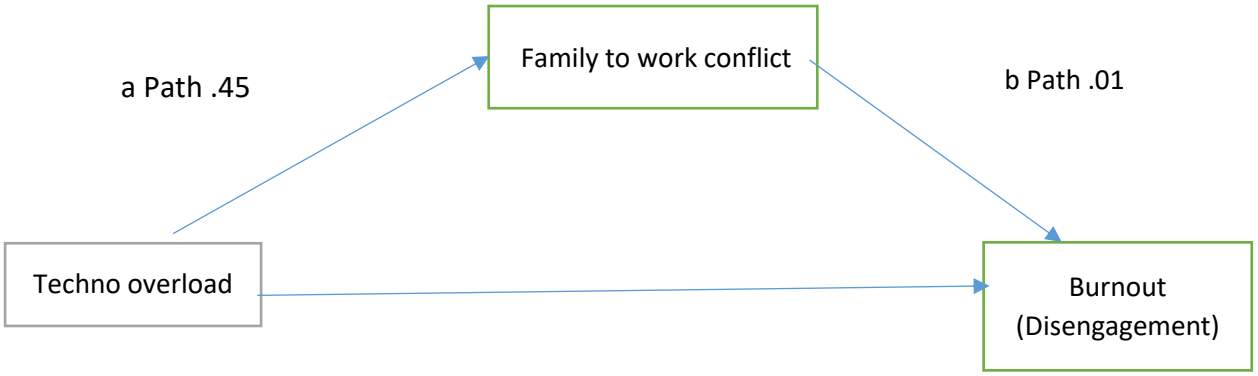
Technostress → Family Work Conflict → Burnout (Disengagement)								
					95% CI			
		Description	B	SE	LL	UL	*t*	*p*
Techno overload	Indirect Effect	TO→FWC →D	.00	.00	-.01	.02		
	Total Effect	TO→D	.08	.03	.01	.15	.23	.01
	Direct Effect	TO→D	.07	.03	.00	.14	2.05	.04
Techno invasion	Indirect Effect	Tinvas→FWC→D	.01	.01	-.01	.04		
	Total Effect	Tinvas→D	.09	.05	-.02	.20	1.5	.11
	Direct Effect	Tinvas→D	.07	.06	-.04	.19	1.2	.21
Techno complexity	Indirect Effect	Tcomp→FWC→D	.00	.01	-.02	-.03		
	Total Effect	Tcomp→D	.14	.03	.06	.01	3.5	.00
	Direct Effect	Tcomp→D	.13	.04	.05	.21	3.27	.00
Techno insecurity	Indirect effect	Tinsec→FWC→D	.01	.01	-.02	.04		
	Total Effect	Tinsec →D	.09	.04	.00	1.7	2.1	.03
	Direct Effect	Tinsec →D	.07	.04	-.01	.16	1.70	.09
Techno uncertainty	Indirect Effect	Tuncer→FWC→D	.00	.00	-.00	.02		
	Total Effect	Tuncer→ D	-.04	.04	-.13	.05	-.87	.38
	Direct Effect	Tuncer→ D	-.04	.04	-.14	.04	-1.04	.30

Note. FWC: Family to Work Conflict, , D: Disengagement, To=Techno Overload, Tinvas= Techno invasion, Tcomp = Techno complexity, Tinsec = Techno insecurity, Tuncer= Techno uncertainty.

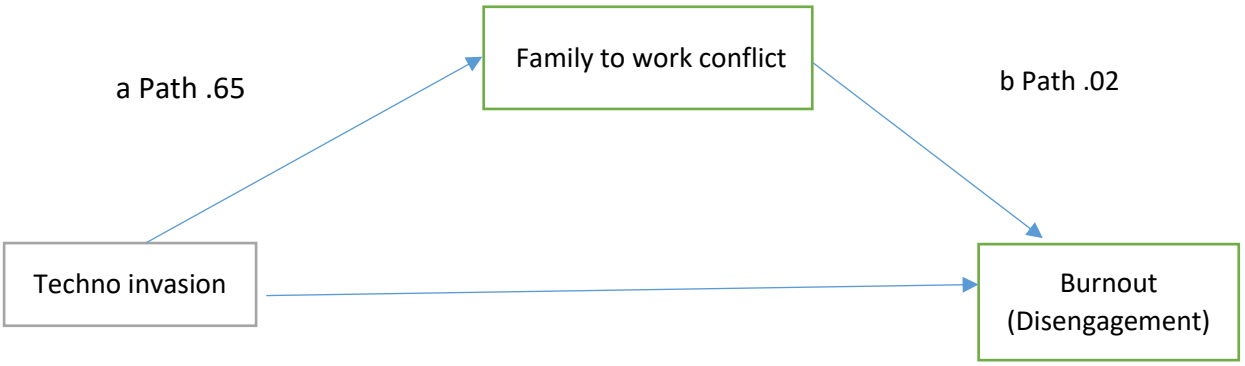
This table examines whether family-work conflict mediates the relationship between different components of technostress and disengagement.

The indirect effects for all technostress components are not significant, as their confidence intervals include zero. This indicates that family-work conflict does not mediate the relationship between any technostress component and disengagement.

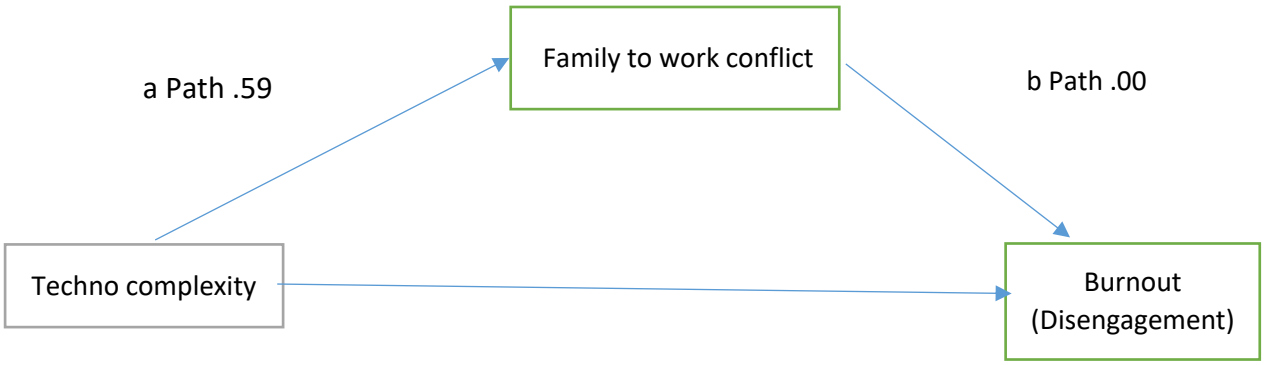
However, the total and direct effects of techno overload (B = .08, CI [.01, .15], p = .01) and techno complexity (B = .14, CI [.06, .21], p = .00) on disengagement are significant, suggesting that these components of technostress directly influence disengagement. The direct effect of techno insecurity on disengagement is marginally significant (B = .07, CI [-.01, .16], p = .09).



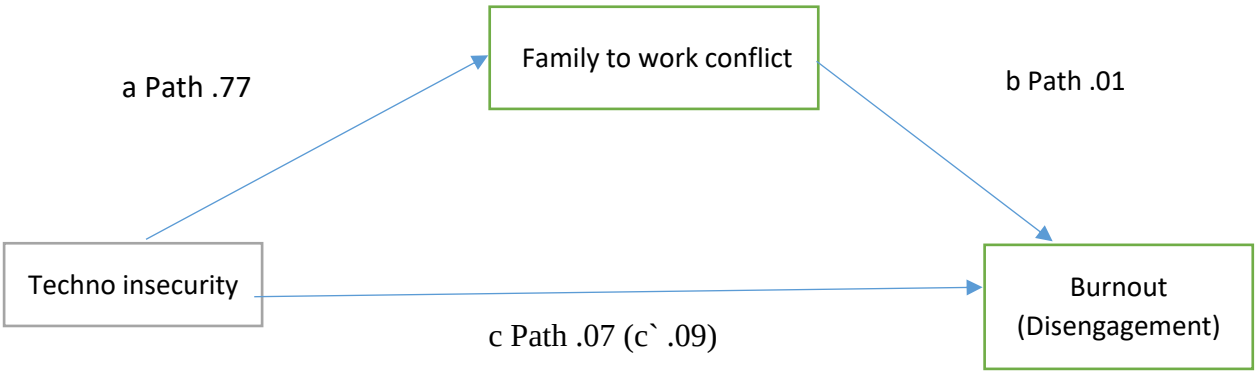
c Path .07 (c`.08)



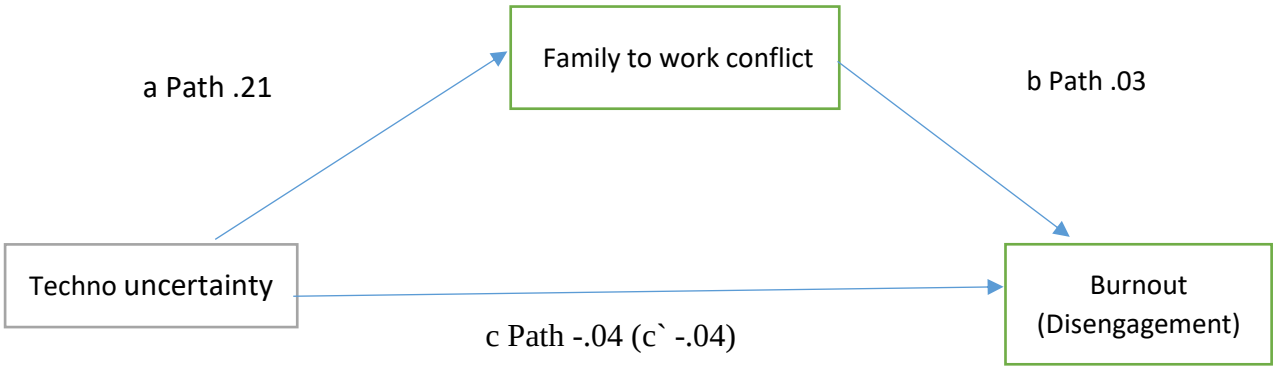
c Path .07 (c`.09)



c Path .13 (c`.14)



c Path .07 (c` .09)



c Path -.04 (c` -.04)

Table 23 *Mediation Analysis of Family to Work Conflict as a Mediator between components of Technostress and Burnout (Exhaustion) (N=245)*

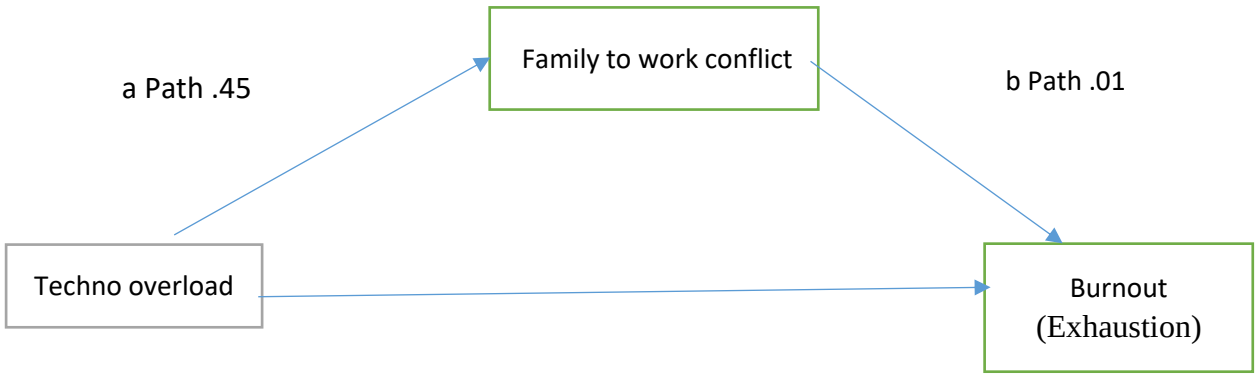
Technostress → Family Work Conflict → Burnout (Exhaustion)								
					95% CI			
		Description	B	SE	LL	UL	*t*	*p*
Techno overload	Indirect Effect	TO→FWC →E	.02	.01	-.00	.05		
	Total Effect	TO→E	.21	.04	.13	.29	5.2	.00
	Direct Effect	TO→E	.18	.04	.10	.26	4.3	.00
Techno invasion	Indirect Effect	Tinvas→FWC→E	.05	.02	.01	.10		
	Total Effect	Tinvas→E	.19	.06	.05	.33	2.82	.00
	Direct Effect	Tinvas→E	.14	.07	.00	.28	2.02	.04
Techno complexity	Indirect Effect	Tcomp→FWC→E	.03	.01	.00	.07		
	Total Effect	Tcomp→E	.21	.04	.12	.30	4.64	.00
	Direct Effect	Tcomp→E	.17	.04	.08	.27	3.66	.00
Techno insecurity	Indirect effect	Tinsec→FWC→E	.06	.02	.01	.11		
	Total Effect	Tinsec →E	.13	.05	.03	.23	2.73	.00
	Direct Effect	Tinsec →E	.07	.05	-.03	.18	1.40	.16
Techno uncertainty	Indirect Effect	Tuncer→FWC→E	.02	.01	-.00	.05		
	Total Effect	Tuncer→ E	.06	.05	-.17	.04	-1.12	.26
	Direct Effect	Tuncer→ E	.08	.05	-1.9	.02	-1.53	.12

Note. FWC: Family to Work Conflict, , E:Exaustion, To=Techno Overload, Tinvas= Techno invasion, Tcomp = Techno complexity, Tinsec = Techno insecurity, Tuncer= Techno uncertainty.

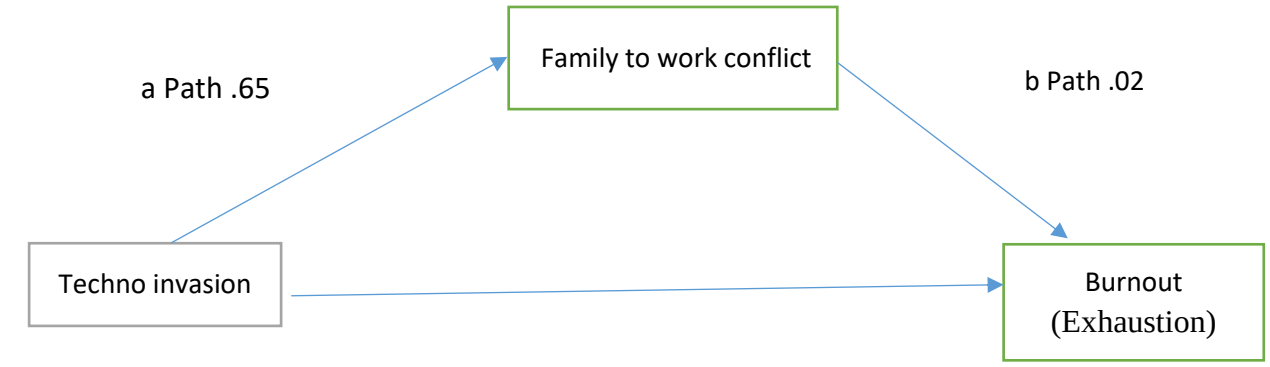
The table examines whether family-work conflict mediates the relationship between different components of technostress and exhaustion.

The indirect effects of techno invasion (B = .05, CI [.01, .10]), techno complexity (B = .03, CI [.00, .07]), and techno insecurity (B = .06, CI [.01, .11]) are significant, indicating that family-work conflict mediates their relationship with exhaustion. For techno overload and techno uncertainty, the indirect effects are not significant, as their confidence intervals include zero. This suggests that family-work conflict does not mediate their relationship with exhaustion. The total and direct effects of techno overload, techno invasion, and techno complexity remain significant, suggesting that these technostress components have both direct and indirect effects on exhaustion. The direct effect of techno insecurity is not significant (B = .07, CI [-.03, .18], p = .16), which indicates that its effect on exhaustion occurs primarily through family-work conflict. Techno uncertainty does not show a significant total or direct effect on exhaustion, suggesting no meaningful relationship between these variables.

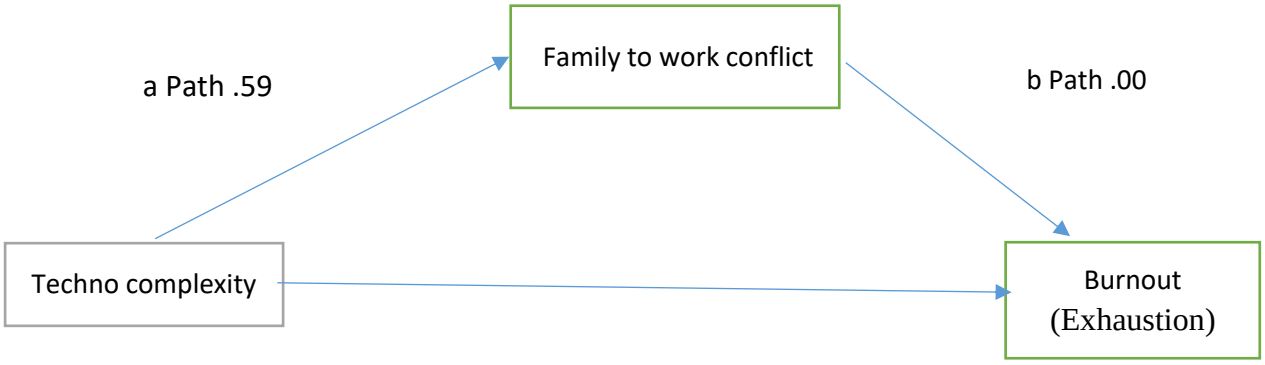
Overall, the results indicate that family-work conflict mediates the relationship between techno invasion, techno complexity, and techno insecurity with exhaustion, while techno overload and techno uncertainty influence exhaustion independently.



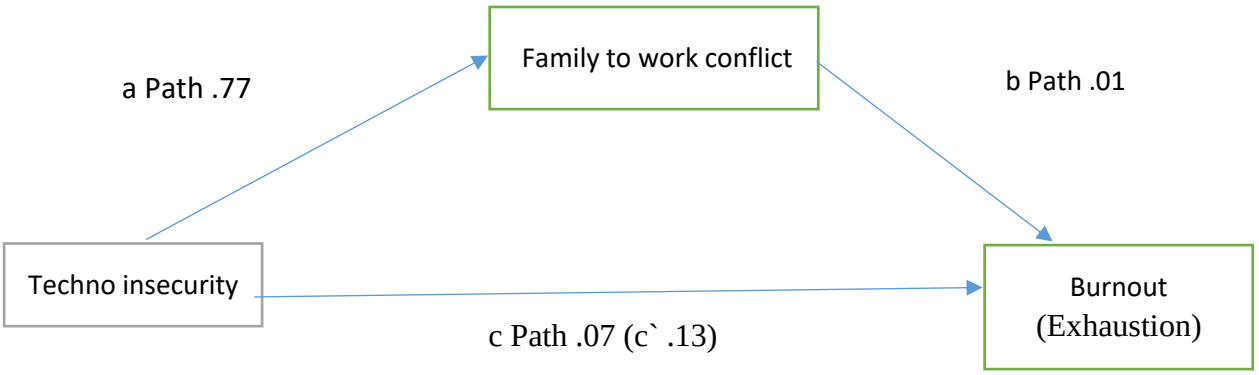
c Path .18 (c` .21)



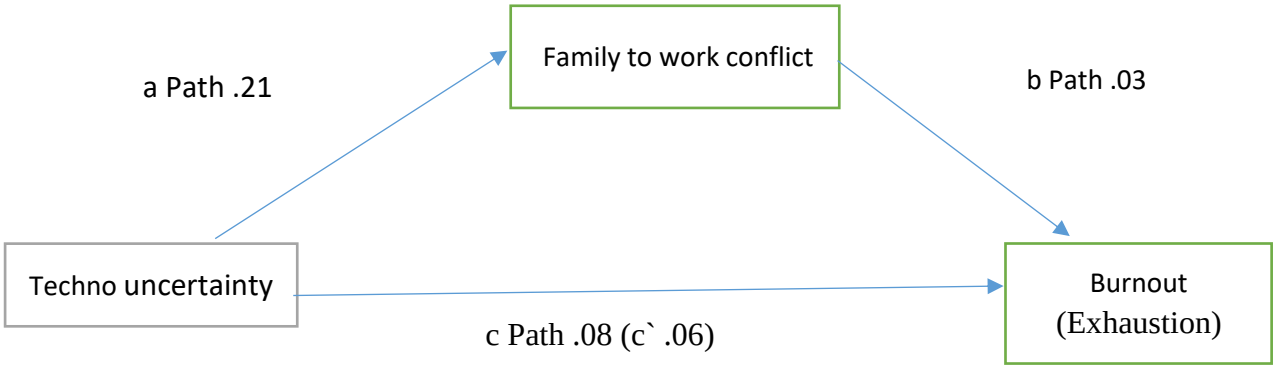
c Path .14 (c` .19)



c Path .17 (c` .21)



c Path .07 (c` .13)



c Path .08 (c` .06)

Table 24 *Mediation Analysis of Work Family Conflict as a Mediator between Technostress and Work Engagement (N=245).*

				95% CI			
		B	*SE*	*LL*	*UL*	*t*	*p*
Indirect effect	TS→WFC→WE	.04	.05	-.07	.13		
Direct effect	TS→WE	-.06	.09	-.25	.12	-.70	.48
Total effect	TS→WE	-.02	.08	-.19	.14	-.26	.79

Note: TS=Technostress, WFC= Work Family Conflict, WE= Work Engagement

Table 24 displays the mediating role of work-family conflict in the relationship between technostress and work engagement. The confidence interval for the indirect effect includes zero (B=.045, 95% CI [-.07, .134]). This indicates the indirect effect of technostress on work engagement through work-family conflict is not statistically significant. Furthermore, the direct effect of technostress on work engagement is not significant (B=-.06, *t*=-.703, *p*=.483), as the confidence interval also contains zero. Taken together, these findings show that work-family conflict does not significantly mediate the association between technostress and work engagement.

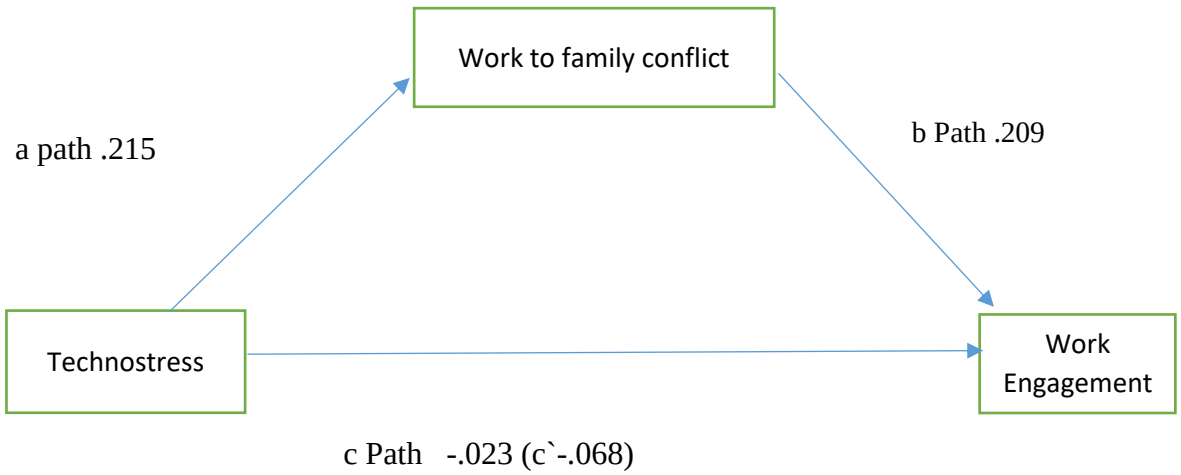


Table 25 *Mediation Analysis of Work Family Conflict as a Mediator between Technostress and Work Engagement (Vigor) (N=245).*

				95% CI			
		B	*SE*	*LL*	*UL*	*t*	*p*
Indirect effect	TS→WFC→V	.01	.01	-.025	.04		
Direct effect	TS→V	-..03	.03	-.10	.02	-.11	.27
Total effect	TS→V	-.02	.03	-.08	.03	-.74	.45

Note: TS=Technostress, WFC= Work Family Conflict, V= Vigor

The results indicate that work-family conflict does not mediate the relationship between technostress and vigor, as the indirect effect (B = .01, 95% CI [-.025, .04]) is not significant. Additionally, the direct effect of technostress on vigor (B = -.03, p = .27) and the total effect (B = -.02, p = .45) are also non-significant, suggesting that technostress does not have a meaningful impact on vigor, either directly or through work-family conflict.

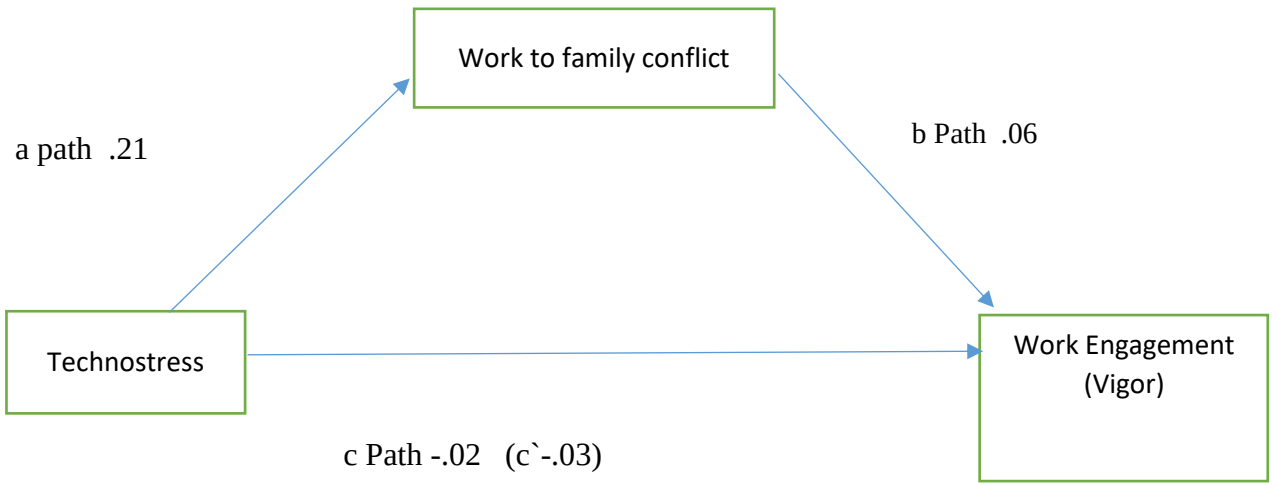


Table 26 Mediation Analysis of Work Family Conflict as a Mediator between Technostress and Work Engagement (Dedication) (N=245).

				95% CI			
		B	*SE*	*LL*	*UL*	*t*	*p*
Indirect effect	TS→WFC→D	.02	.01	-.01	.05		
Direct effect	TS→D	-.03	.03	-.09	.03	-.94	.34
Total effect	TS→D	-.00	.03	-.06	.05	-.30	.75

Note: TS=Technostress, WFC= Work Family Conflict, D= Dedication

The results suggest that work-family conflict does not mediate the relationship between technostress and dedication, as the indirect effect (B = .02, 95% CI [-.01, .05]) is not significant. Additionally, the direct effect of technostress on dedication (B = -.03, p = .34) and the total effect (B = -.00, p = .75) are also non-significant. This indicates that technostress does not have a meaningful impact on dedication, either directly or through work-family conflict.

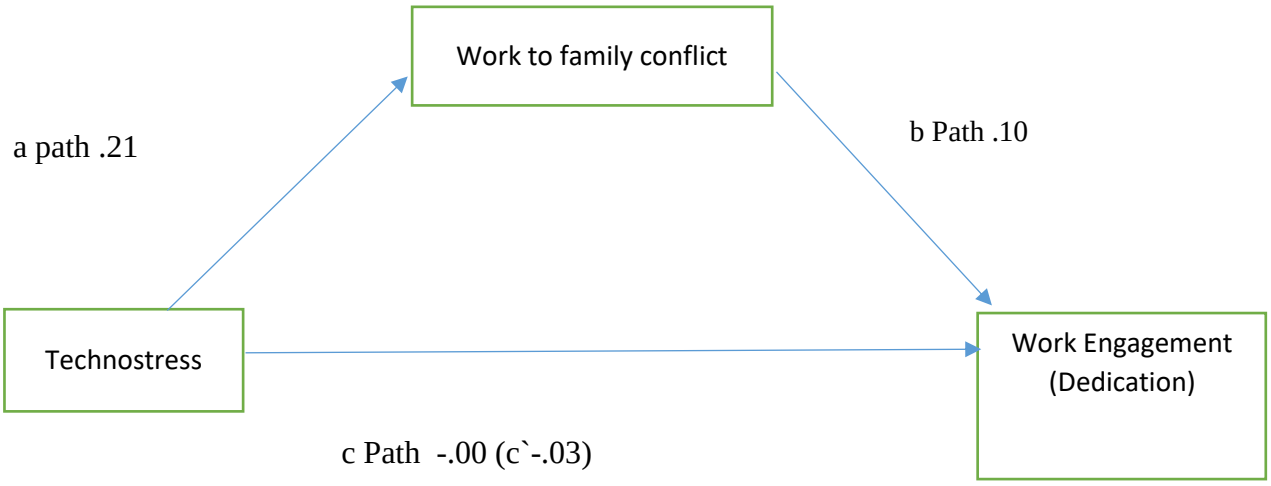


Table 27 Mediation Analysis of Work Family Conflict as a Mediator between Technostress and Work Engagement (Absorption) (N=245).

				95% CI			
		B	*SE*	*LL*	*UL*	*t*	*p*
Indirect effect	TS→WFC→A	.00	.02	-.04	.04		
Direct effect	TS→A	.00	.03	-.06	.07	.04	.96
Total effect	TS→A	.00	.03	-.05	.07	.29	.76

Note: TS=Technostress, WFC= Work Family Conflict, V= Vigor

The results indicate that work-family conflict does not mediate the relationship between technostress and absorption. The indirect effect (B = .00, 95% CI [-.04, .04]) is not significant, and both the direct effect of technostress on absorption (B = .00, p = .96) and the total effect (B = .00, p = .76) are also non-significant. These findings suggest that technostress has no meaningful influence on absorption, either directly or through work-family conflict.

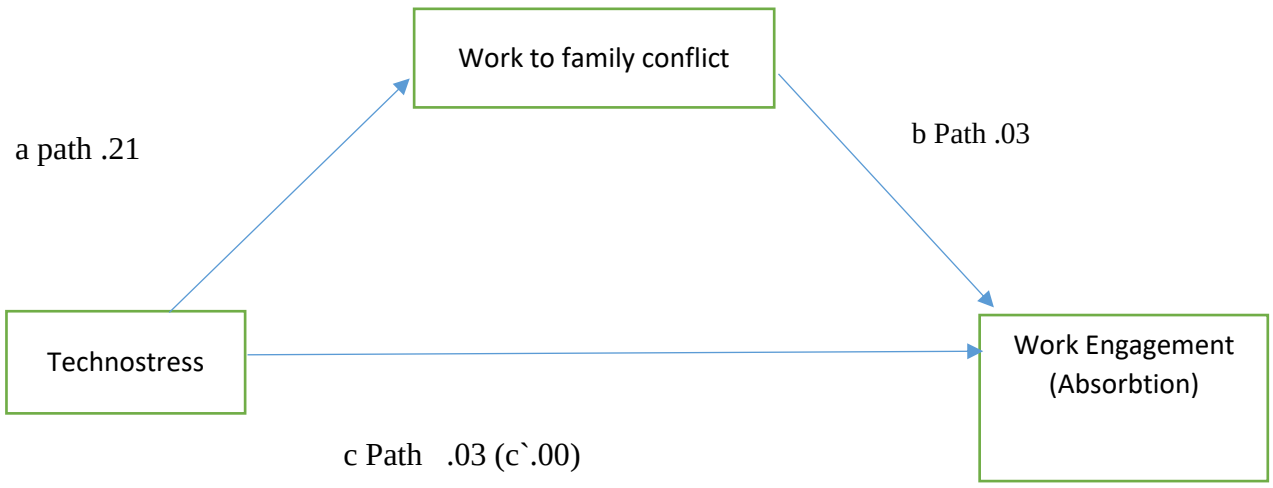
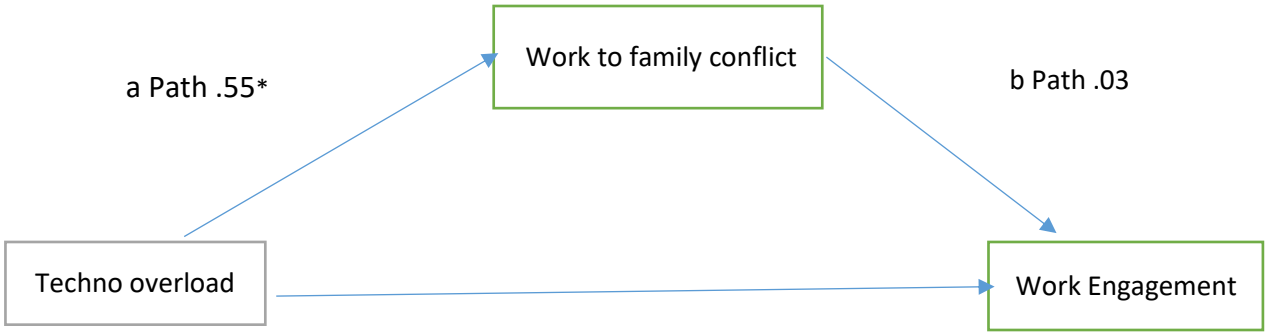


Table 28 *Mediation Analysis of Work Family Conflict as a Mediator between components of Technostress and Work Engagement (N=245).*

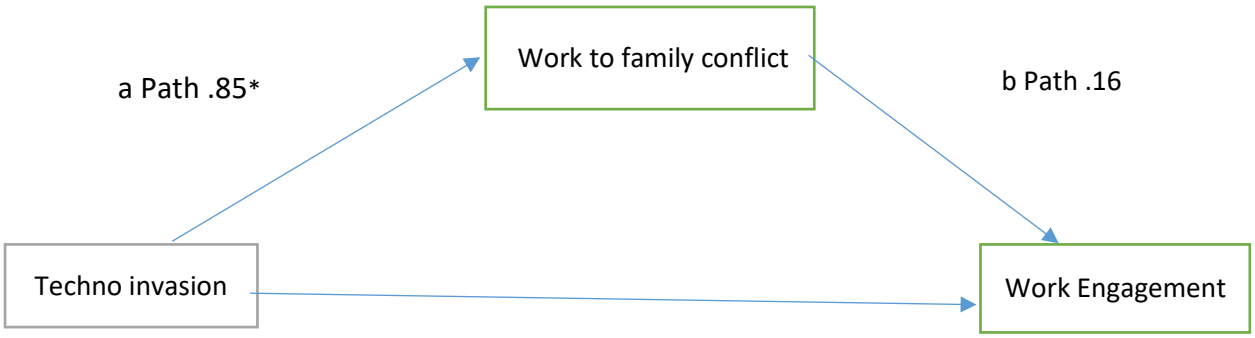
Technostress → Work Family Conflict → Work Engagement								
					95% CI			
		Description	B	SE	LL	UL	*t*	*p*
Techno overload	Indirect Effect	TO→WFC→ WE	0.02	0.13	-.28	0.25		
	Total Effect	TO→WE	0.50	0.25	0.00	0.99	1.99	0.04
	Direct Effect	TO→WE	0.48	0.27	-0.05	1.02	1.78	0.07
Techno invasion	Indirect Effect	Tinvas→WFC →WE	0.13	0.19	-0.26	0.50		
	Total Effect	Tinvas→WE	0.06	0.42	-0.77	0.89	0.14	0.88
	Direct Effect	Tinvas→WE	-0.07	0.45	-0.96	0.81	-0.17	0.86
Techno complexity	Indirect Effect	Tcomp→WFC →WE	0.19	0.13	-0.08	0.44		
	Total Effect	Tcomp→WE	-0.54	0.28	-1.11	0.02	-1.89	0.05
	Direct Effect	Tcomp→WE	-0.74	0.30	-1.35	-0.13	-2.39	0.01
Techno insecurity	Indirect effect	Tinsec→WFC →WE	0.12	0.10	-0.08	0.33	0.12	
	Total Effect	Tinsec →WE	-0.61	0.30	-1.21	-0.02	-2.05	0.04
	Direct Effect	Tinsec →WE	-0.74	0.31	-1.35	-0.12	-2.37	0.01
Techno uncertainty	Indirect Effect	Tuncer→WFC →WE	0.04	0.07	-0.10	0.22		
	Total Effect	Tuncer→ WE	0.23	0.34	-0.43	0.91	0.69	0.48
	Direct Effect	Tuncer→ WE	0.19	0.34	-0.48	0.87	0.56	0.57

Note. WFC: Work to Family Conflict,, WE, Work Engagement, To=Techno Overload, Tinvas= Techno invasion, Tcomp = Techno complexity, Tinsec = Techno insecurity, Tuncer= Techno uncertainty.

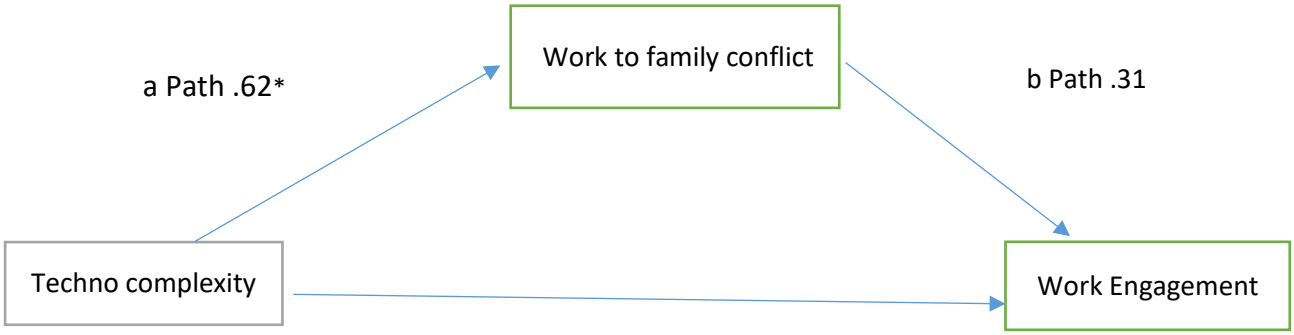
Table 28 presents the results of a mediation analysis examining the role of Work Family Conflict (WFC) as a mediator between five components of technostress and work engagement. The results shows: Techno-overload showed no significant indirect effect on work engagement through WFC (B = 0.02, 95% CI [-0.28, 0.25]). The total effect was significant (B = 0.50, t = 1.99, p = .04), but the direct effect is non-significant when accounting for the mediator (B = 0.48, t = 1.78, p = .07). For techno-invasion, there was no significant indirect effect via WFC (B = 0.13, 95% CI [-0.26, 0.50]). Neither the total effect (B = 0.06, t = 0.14, p = .88) nor the direct effect (B = -0.07, t = -0.17, p = .86) was significant, indicating no relationship between techno-invasion and work engagement. Techno-complexity demonstrated no significant indirect effect through WFC (B = 0.19, 95% CI [-0.08, 0.44]). The total effect was not significant (B = -0.54, t = -1.89, p = .05), and the direct effect was significant (B = -0.74, t = -2.39, p = .01), suggesting a negative relationship between techno-complexity and work engagement that is not mediated by WFC. Techno-insecurity showed no significant indirect effect via WFC (B = 0.12, 95% CI [-0.08, 0.33]). Both the total effect (B = -0.61, t = -2.05, p = .04) and the direct effect (B = -0.74, t = -2.37, p = .01) were significant, indicating a negative relationship between techno-insecurity and work engagement that is not mediated by WFC. For techno-uncertainty, the indirect effect through WFC was not significant (B = 0.04, 95% CI [-0.10, 0.22]). Neither the total effect (B = 0.23, t = 0.69, p = .48) nor the direct effect (B = 0.19, t = 0.56, p = .57) was significant, indicating no relationship between techno-uncertainty and work engagement.In summary, Work Family Conflict did not significantly mediate the relationship between any of the five components of technostress and work engagement. Techno-complexity and techno-insecurity showed significant negative direct relationships with work engagement, while techno-overload had a significant positive total effect but a non-significant direct effect when accounting for the mediator. Techno-invasion and techno-uncertainty showed no significant relationships with work engagement.



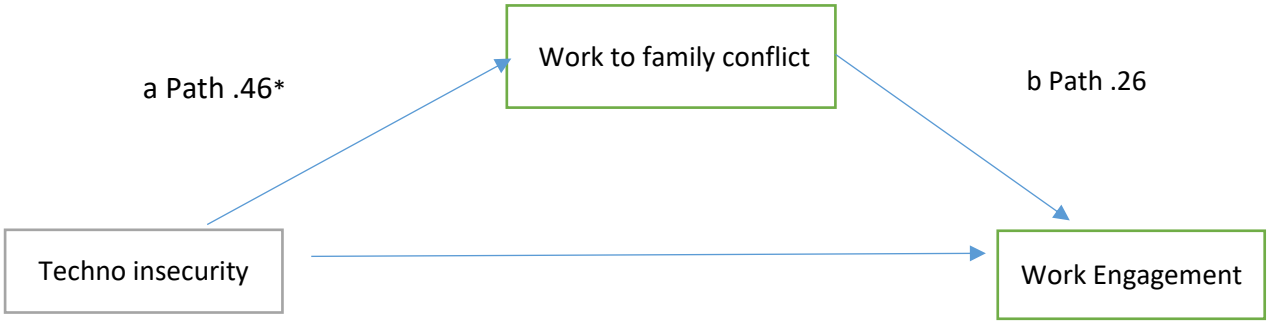
c Path .50* (c`.48)



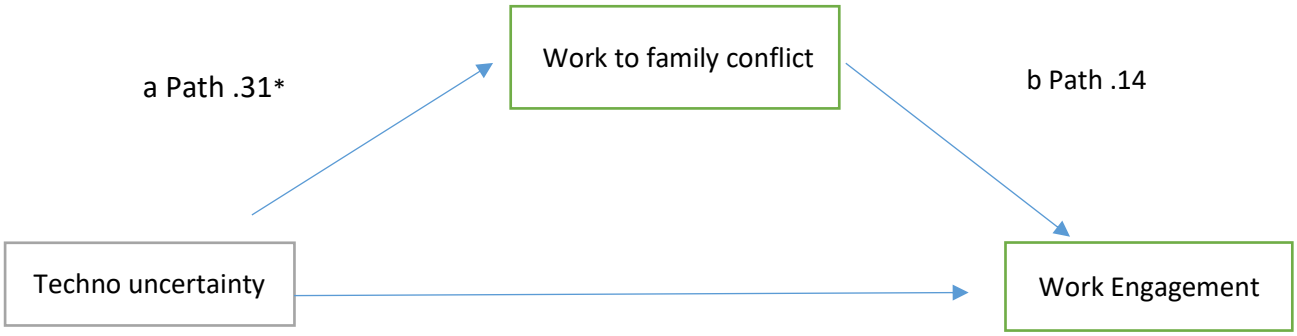
c Path .06 (c`-.07)



c Path -.54 (c`-.74*)



c Path -.61* (c`-.74*)s



c Path .23 (c`.19)

Table 29 *Mediation Analysis of Work Family Conflict as a Mediator between components of Technostress and Work Engagement (Vigor) (N=245).*

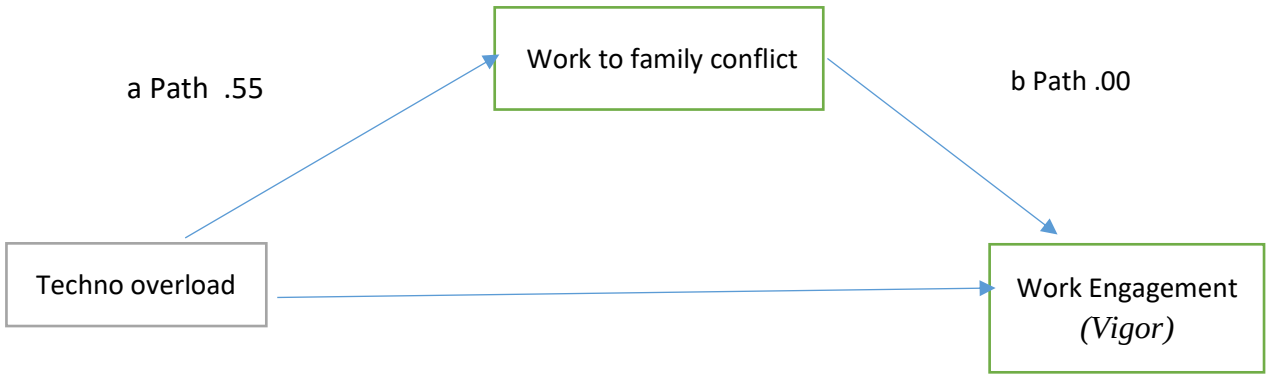
Technostress → Work Family Conflict → Work Engagement *(Vigor)*					95% CI			
		Description	B	SE	LL	UL	*t*	*p*
Techno overload	Indirect Effect	TO→WFC→V	.00	.04	-.09	.09		
	Total Effect	TO→V	.11	.08	-.05	.29	1.3	.18
	Direct Effect	TO→V	.11	.09	-.05	.29	1.32	.18
Techno invasion	Indirect Effect	Tinvas→WFC →V	.04	.06	-.09	.17		
	Total Effect	Tinvas→V	-.10	.15	-.46	.16	-.92	.35
	Direct Effect	Tinvas→V	-.14	.15	-.46	.19	-.92	.35
Techno complexity	Indirect Effect	Tcomp→WFC →V	.05	.04	-.05	.14		
	Total Effect	Tcomp→V	-.18	.10	-.38	.01	-.1.7	.07
	Direct Effect	Tcomp→V	-.23	.10	-.45	-.01	-2.1	.03
Techno insecurity	Indirect effect	Tinsec→WFC →V	.03	.03	-.04	.10		
	Total Effect	Tinsec →V	-.21	.10	-42	-.00	-1.99	.04
	Direct Effect	Tinsec →V	-.24	.11	-.46	-.02	-2.22	.02
Techno uncertainty	Indirect Effect	Tuncer→WFC →V	.01	.02	-.04	.07		
	Total Effect	Tuncer→ V	.01	.12	-.22	.25	.12	.90
	Direct Effect	Tuncer→ V	.00	.12	-.23	.24	.12	.97

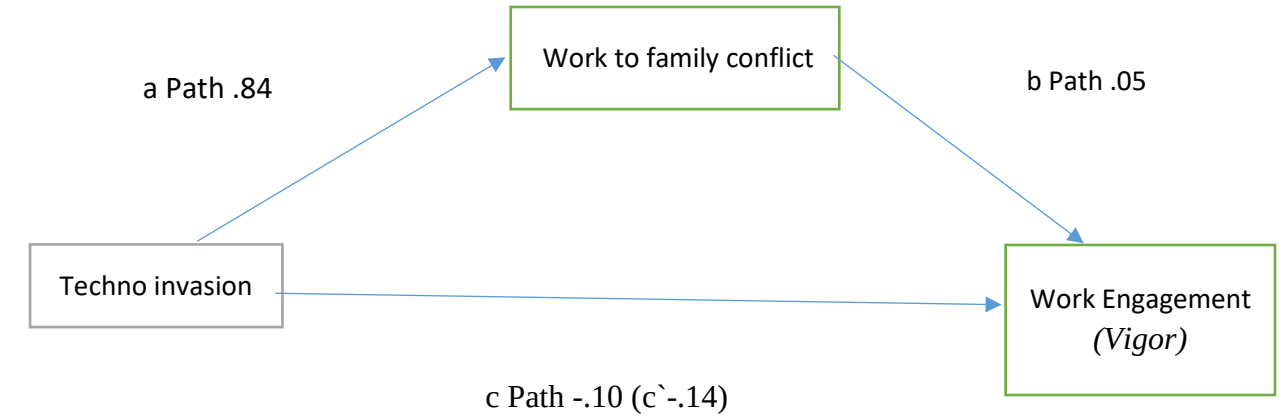
Note. WFC: Work to Family Conflict,, V=Vigor, To=Techno Overload, Tinvas= Techno invasion, Tcomp = Techno complexity, Tinsec = Techno insecurity, Tuncer= Techno uncertainty.

The results suggest mediation of work-family conflict between different components of technostress and work engagement (vigor). For techno overload, techno invasion, and techno uncertainty, work-family conflict does not mediate the relationship with work engagement, as the indirect effects are non-significant. Specifically, the indirect effects of techno overload (B = .00, 95% CI [-.09, .09]), techno invasion (B = .04, 95% CI [-.09, .17]), and techno uncertainty (B = .01, 95% CI [-.04, .07]) all have non-significant confidence intervals.

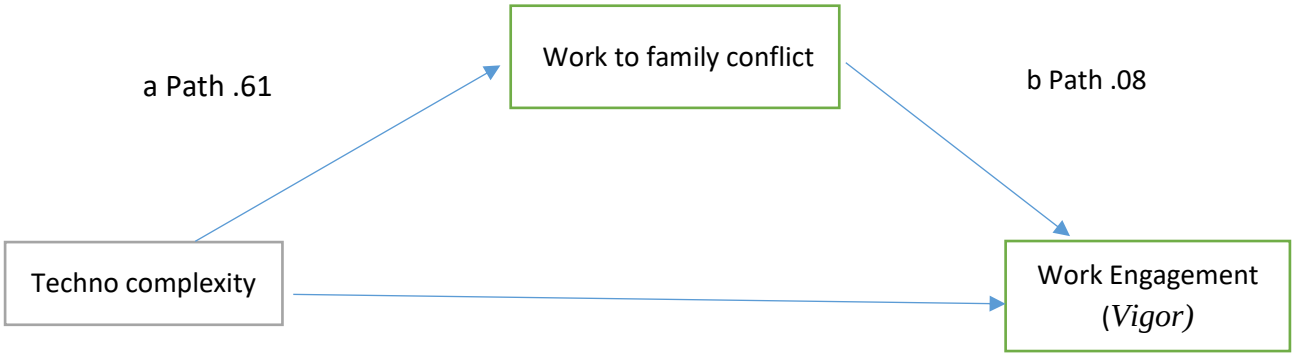
Techno complexity and techno insecurity show significant direct effects on work engagement. The indirect effect of techno complexity through work-family conflict (B = .05, 95% CI [-.05, .14]) is significant, with a total effect of B = -.18 (p = .07) and a direct effect of B = -.23 (p = .03). Similarly, techno insecurity has a significant indirect effect on work engagement through work-family conflict (B = .03, 95% CI [-.04, .10]), with a total effect of B = -.21 (p = .04) and a direct effect of B = -.24 (p = .02).

Thus, work-family conflict mediates the relationship between techno complexity and work engagement as well as between techno insecurity and work engagement, while it does not mediate the relationship for the other technostress components.

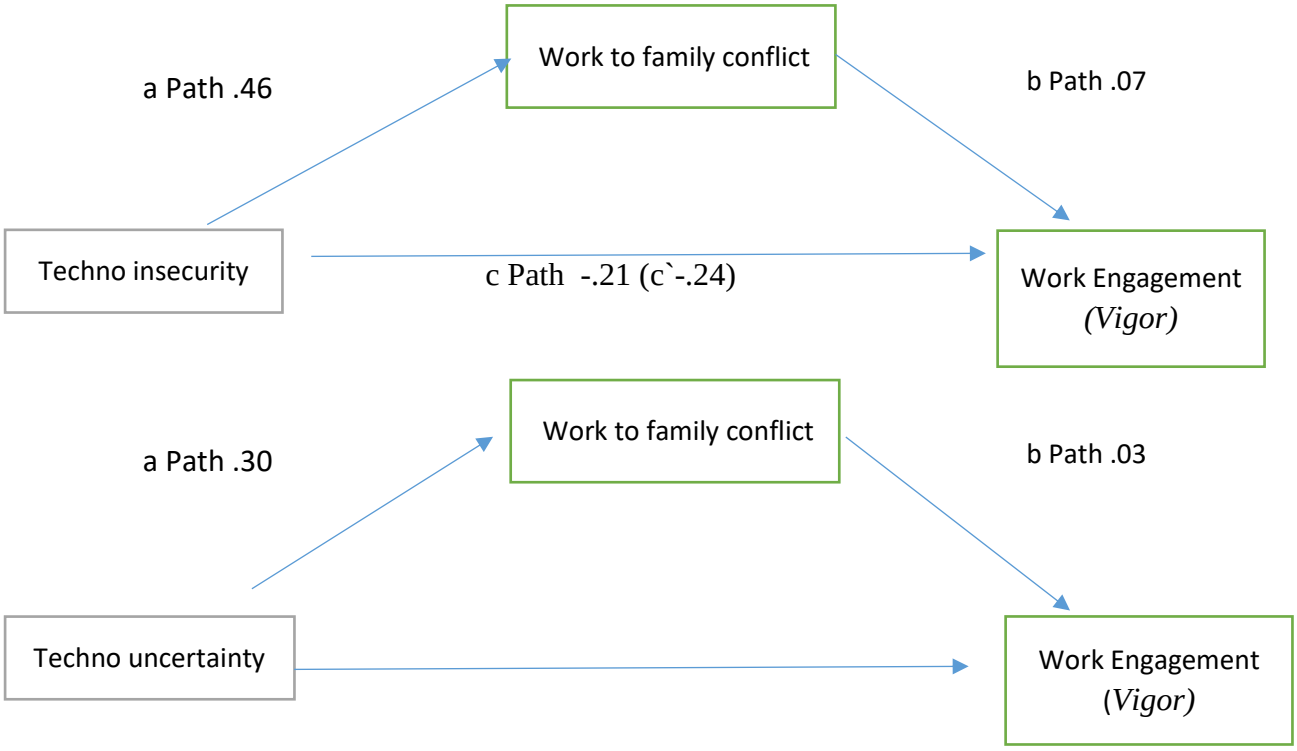




c Path -.10 (c`-.14)



c Path -.18 (c`-.23)



c Path .01 (c`.00)

Table 30 *Mediation Analysis of Work Family Conflict as a Mediator between components of Technostress and Work Engagement (Dedication) (N=245).*

Technostress → Work Family Conflict → Work Engagement (Dedication)					95% CI			
		Description	B	SE	LL	UL	*t*	*p*
Techno overload	Indirect Effect	TO→WFC→D	.01	.04	-.07	.09		
	Total Effect	TO→D	.21	.08	.04	.39	2.4	.01
	Direct Effect	TO→D	.20	.09	.01	.38	2.1	.03
Techno invasion	Indirect Effect	Tinvas→WFC →D	.07	.06	-.05	.20		
	Total Effect	Tinvas→D	-.08	.15	-.39	.22	--.07	.94
	Direct Effect	Tinvas→D	-.08	.15	-.39	.22	-.55	.58
Techno complexity	Indirect Effect	Tcomp→WFC →D	.09	.04	.00	.17		
	Total Effect	Tcomp→D	-.22	.10	-.42	-.30	-2.26	.02
	Direct Effect	Tcomp→D	-.31	.10	-.53	-.10	-2.97	.00
Techno insecurity	Indirect effect	Tinsec→WFC →D	.05	.03	-.00	.14		
	Total Effect	Tinsec →D	-.26	.10	-.47	-.05	-2.52	.01
	Direct Effect	Tinsec →D	-.32	.10	-.53	-.11	-2.99	.00
Techno uncertainty	Indirect Effect	Tuncer→WFC →D	.02	.02	-.02	.08		
	Total Effect	Tuncer→ D	.11	.11	-.11	.35	.97	.32
	Direct Effect	Tuncer→ D	.09	.12	-.14	.33	.78	.43

Note. WFC: Work to Family Conflict,, D=Dedication, To=Techno Overload, Tinvas= Techno invasion, Tcomp = Techno complexity, Tinsec = Techno insecurity, Tuncer= Techno uncertainty.

The results indicate that work-family conflict mediates the relationship between certain components of technostress and work engagement (dedication). Specifically, techno overload, techno complexity, and techno insecurity show significant indirect effects through work-family conflict on work engagement.

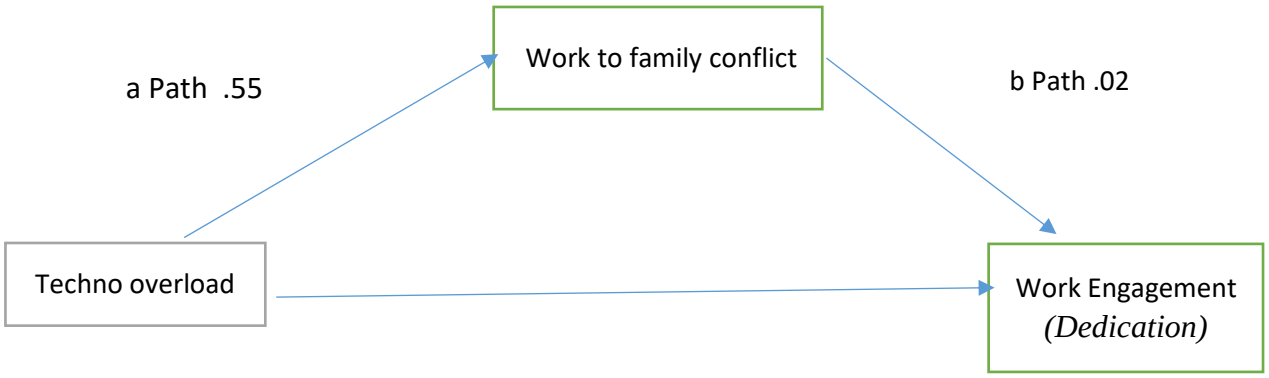
For techno overload, while the indirect effect is small (B = .01, 95% CI [-.07, .09]), the total effect is significant (B = .21, p = .01) with a direct effect of B = .20 (p = .03), suggesting that work-family conflict does play a role in the relationship between techno overload and dedication.

For techno complexity, the indirect effect through work-family conflict is significant (B = .09, 95% CI [.00, .17]), with a significant total effect (B = -.22, p = .02) and a direct effect (B = -.31, p = .00). This indicates a strong direct relationship between techno complexity and work engagement, with work-family conflict partially mediating the relationship.

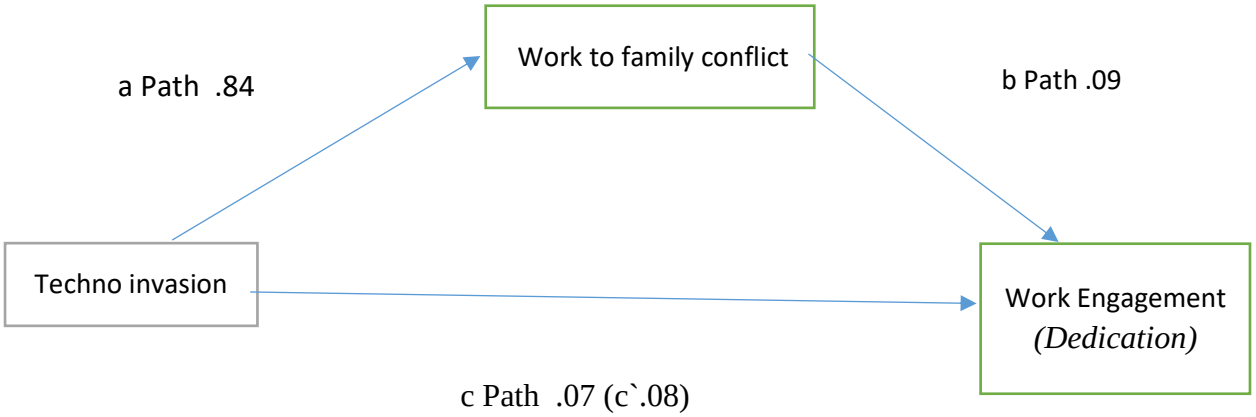
Similarly, techno insecurity shows a significant indirect effect (B = .05, 95% CI [-.00, .14]), with a total effect of B = -.26 (p = .01) and a direct effect of B = -.32 (p = .00), confirming that work-family conflict mediates the relationship between techno insecurity and work engagement.

However, for techno invasion and techno uncertainty, work-family conflict does not significantly mediate the relationship. The indirect effects for both techno invasion (B = .07, 95% CI [-.05, .20]) and techno uncertainty (B = .02, 95% CI [-.02, .08]) are not significant, and the total and direct effects are also non-significant, indicating no mediation.

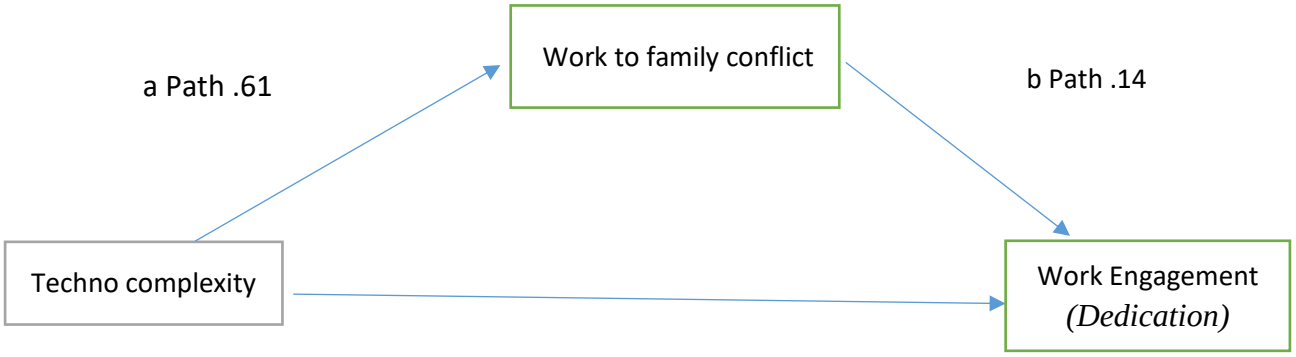
In summary, work-family conflict mediates the relationship between techno overload, techno complexity, and techno insecurity with work engagement (dedication), while it does not mediate the relationship for techno invasion or techno uncertainty.



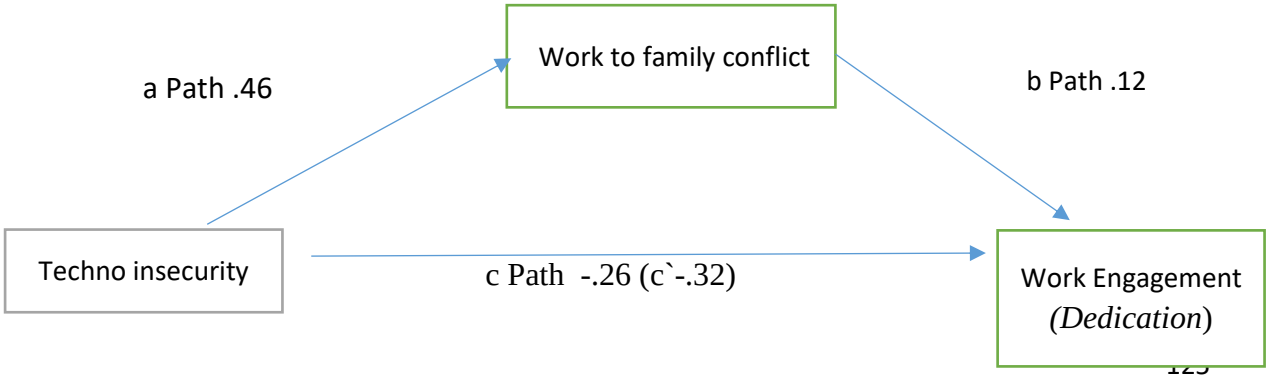
c Path .21 (c`.20)

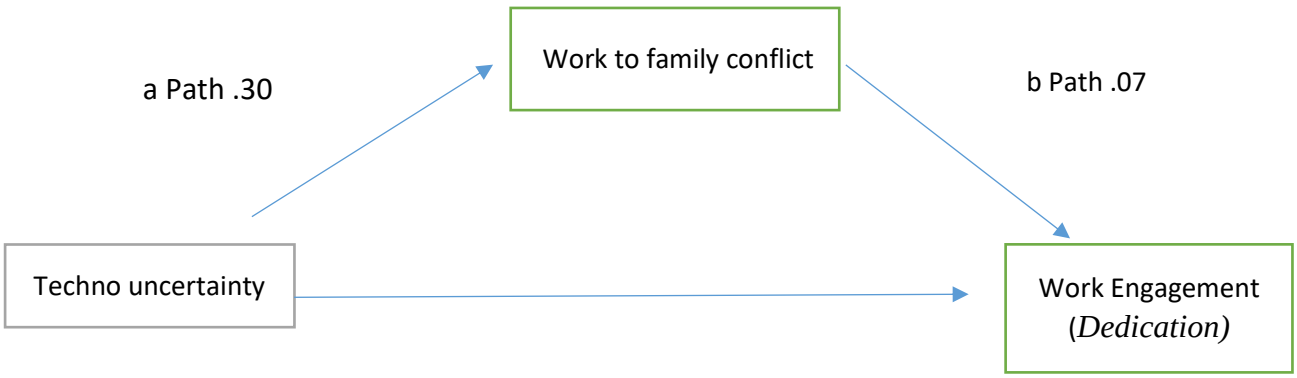


c Path .07 (c`.08)



c Path .22 (c`-.31)




Work to family conflict
a Path .30
b Path .07
Techno uncertainty
Work Engagement
(Dedication)

c Path .11 (c`.09)

Table 31 *Mediation Analysis of Work Family Conflict as a Mediator between components of Technostress and Work Engagement (Absorption) (N=245).*

Technostress → Work Family Conflict → Work Engagement *(Absorption)*					95% CI			
		Description	B	SE	LL	UL	*t*	*p*
Techno overload	Indirect Effect	TO→WFC→A	-.00	.05	-.11	.08		
	Total Effect	TO→A	.16	.09	-.02	.35	1.75	.08
	Direct Effect	TO→A	.16	.10	-.03	.36	1.64	.10
Techno invasion	Indirect Effect	Tinvas→WFC →A	.01	.07	-.14	.15		
	Total Effect	Tinvas→A	.17	.15	-.14	.48	1.08	.28
	Direct Effect	Tinvas→A	.15	.16	-.17	.48	.92	.35
Techno complexity	Indirect Effect	Tcomp→WFC →A	.04	.04	-.05	.13		
	Total Effect	Tcomp→A	-.14	.10	-.33	.07	-1.62	.10
	Direct Effect	Tcomp→A	-.18	.11	-.41	.04	-1.62	.10
Techno insecurity	Indirect effect	Tinsec→WFC →A	.02	.03	-.04	.10		
	Total Effect	Tinsec →A	-.13	.11	-.36	.08	-1.23	.21
	Direct Effect	Tinsec →A	-.16	.11	-.400	.06	-1.43	.15
Techno uncertainty	Indirect Effect	Tuncer→WFC →A	.00	.02	-.04	.07		
	Total Effect	Tuncer→ A	.10	.12	-.14	.35	.73	.46
	Direct Effect	Tuncer→ A	.09	.12	-.14	.35	.81	.41

Note. WFC: Work to Family Conflict,, A=Absorption, To=Techno Overload, Tinvas= Techno invasion, Tcomp = Techno complexity, Tinsec = Techno insecurity, Tuncer= Techno uncertainty.

The results in this table show that work-family conflict (WFC) does not significantly mediate the relationship between the components of technostress and work engagement (absorption).

For techno overload**,** the indirect effect through WFC is very small (B = -.00, 95% CI [-.11, .08]), and neither the total effect (B = .16, p = .08) nor the direct effect (B = .16, p = .10) is statistically significant, suggesting that WFC does not significantly influence the relationship between techno overload and absorption.

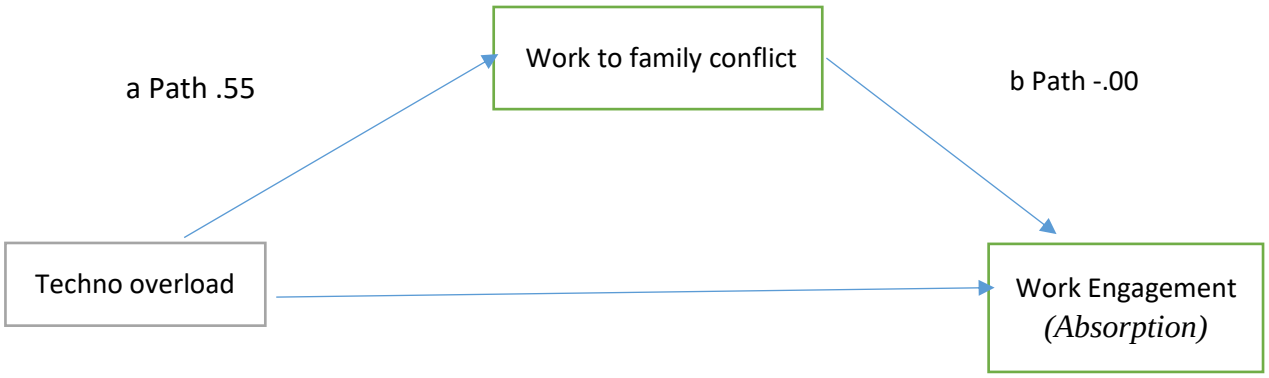
For techno invasion**,** while the indirect effect through WFC is small (B = .01, 95% CI [-.14, .15]), the total effect (B = .17, p = .28) and the direct effect (B = .15, p = .35) are also not significant, implying that WFC does not mediate the relationship between techno invasion and absorption.

For techno complexity**,** the indirect effect through WFC is small (B = .04, 95% CI [-.05, .13]), and although the total effect (B = -.14, p = .10) and direct effect (B = -.18, p = .10) are significant at the p = .10 level, the overall findings suggest that WFC is not a significant mediator for techno complexity and absorption.

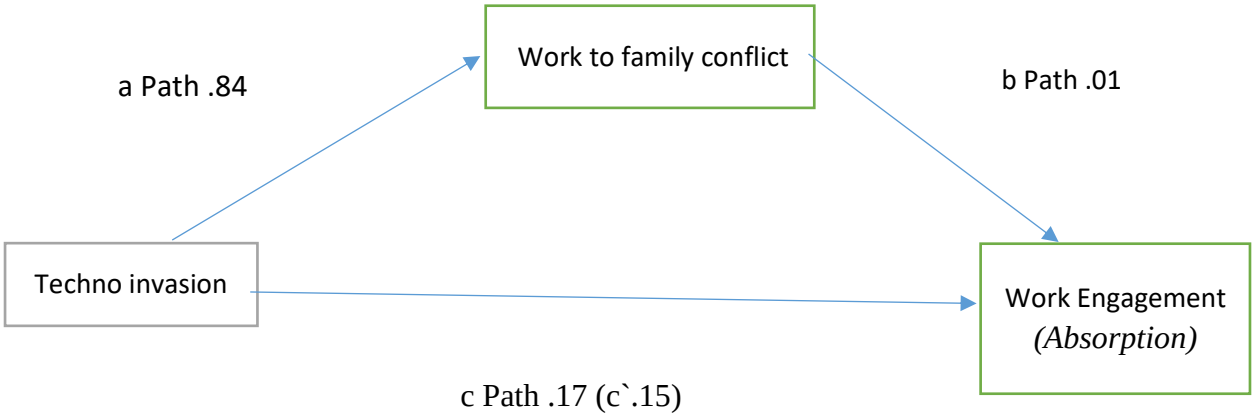
For techno insecurity**,** the indirect effect through WFC is also small (B = .02, 95% CI [-.04, .10]), with the total effect (B = -.13, p = .21) and direct effect (B = -.16, p = .15) showing no significant relationship between techno insecurity and absorption, further indicating no mediation by WFC.

Finally, for techno uncertainty**,** the indirect effect (B = .00, 95% CI [-.04, .07]) and both the total (B = .10, p = .46) and direct effects (B = .09, p = .41) are not significant, suggesting that WFC does not mediate the relationship between techno uncertainty and absorption.

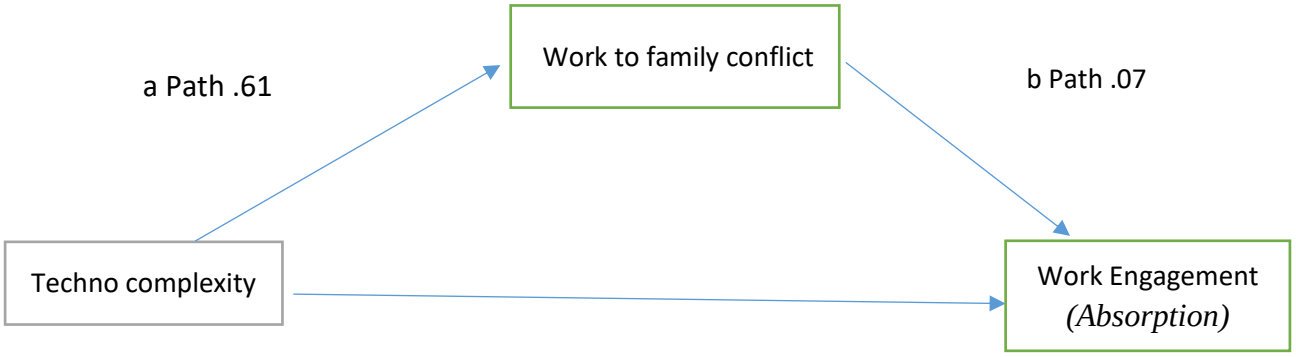
In summary, these findings suggest that work-family conflict does not significantly mediate the relationship between the various components of technostress and work engagement (absorption).



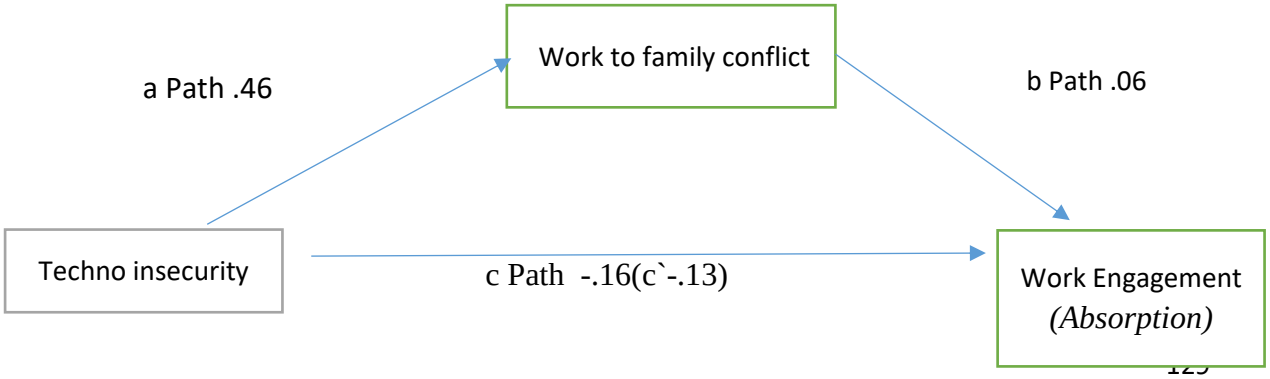
c Path .16 (c`.16)



c Path .17 (c`.15)



c Path -.18 (c`-.14)



c Path -.16(c`-.13)

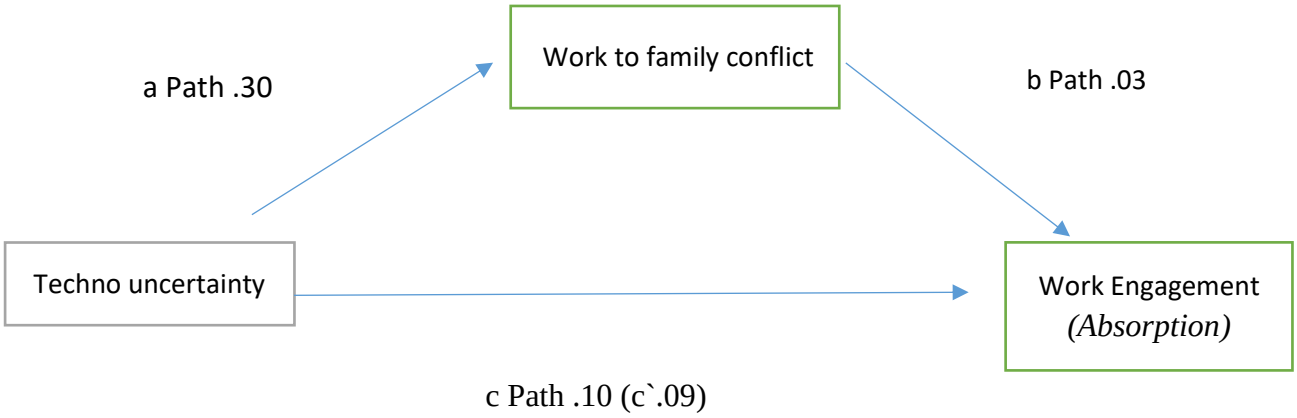


Table 32 *Mediation Analysis of Family to Work Conflict as a Mediator between Technostress and Work Engagement (N=245).*

				%CI			
		B	SE	LL	UL	*t*	*p*
Indirect effect	TS→FWC→WE	.02	.04	-.06	.12		
Direct effect	TS→WE	-.05	.09	-.23	.13	-.53	.59
Total effect	TS→WE	-.02	.08	-.19	.14	-.26	.79

Note: TS=Technostress, FWC= Family Work Conflict, WE= Work Engagement

Table displays the mediating role of family to work conflict in the relationship between technostress and work engagement. The confidence interval for the indirect effect through family-work conflict includes zero (B=.045, 95% CI [-.07, .134]). This indicates the indirect effect of technostress on work engagement through family-work conflict is not statistically significant. Furthermore, the direct effect of technostress on work engagement is not significant (B=-.05, *t*=-.532, *p*=.596), as the confidence interval also contains zero.

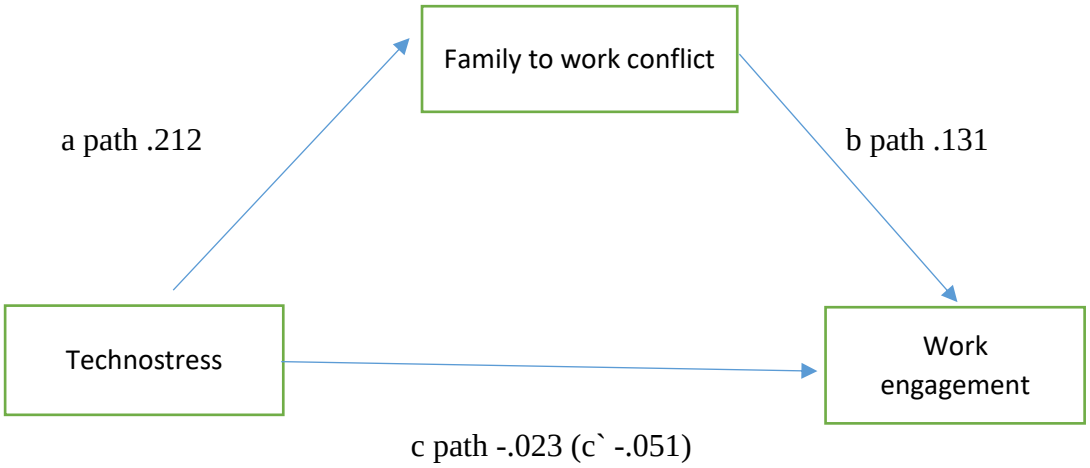


Table 33 *Mediation Analysis of Family to Work Conflict as a Mediator between Technostress and Work Engagement (Vigor) (N=245).*

				%CI			
		B	SE	LL	UL	*t*	*p*
Indirect effect	TS→FWC→V	.02	.01	-.02	.04		
Total effect	TS→V	-.02	.03	-.08	.03	-.74	.45
Direct effect	TS→V	-.03	.o3	-.10	.03	-1.06	.28

Note: TS=Technostress, FWC= Family Work Conflict, V= Vigor

Table shows that family-to-work conflict (FWC) does not mediate the relationship between technostress (TS) and work engagement (vigor). Both the indirect effect (B = .02, p = .45) and the direct effect (B = -.03, p = .28) are not significant, indicating no meaningful influence of FWC on this relationship.

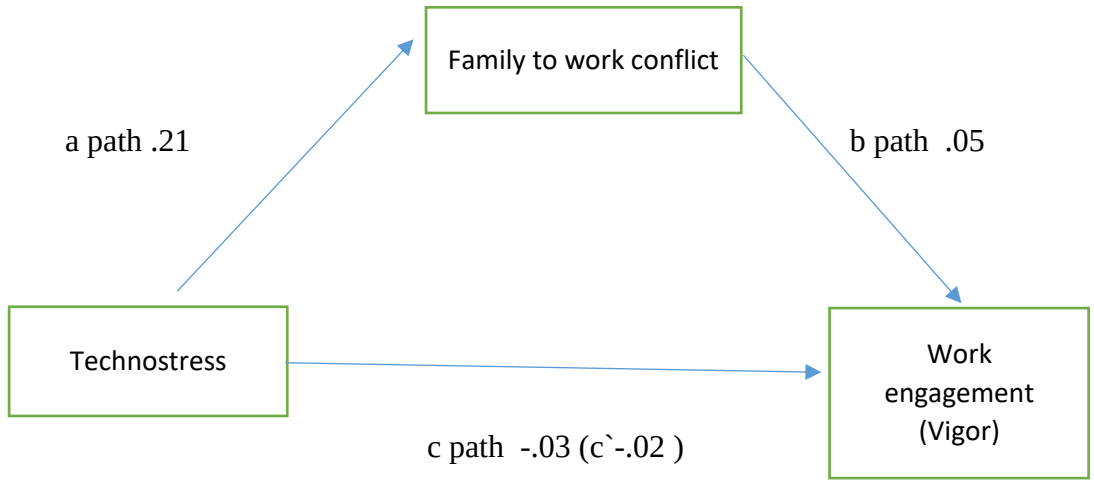


Table 34 *Mediation Analysis of Family to Work Conflict as a Mediator between Technostress and Work Engagement (Dedication) (N=245).*

				%CI			
		B	SE	LL	UL	*t*	*p*
Indirect effect	TS→FWC→D	.00	.01	-.03	.03		
Direct effect	TS→D	-01	.03	-.07	.05	-.33	.73
Total effect	TS→D	-.00	.03	-.06	.05	-.30	.75

Note: TS=Technostress, FWC= Family Work Conflict, D= Dedication

Table shows that family-to-work conflict (FWC) does not mediate the relationship between technostress (TS) and work engagement (dedication). Both the indirect effect (B = .00, p = .73) and direct effect (B = -.01, p = .75) are not significant, suggesting that FWC does not significantly influence this relationship.

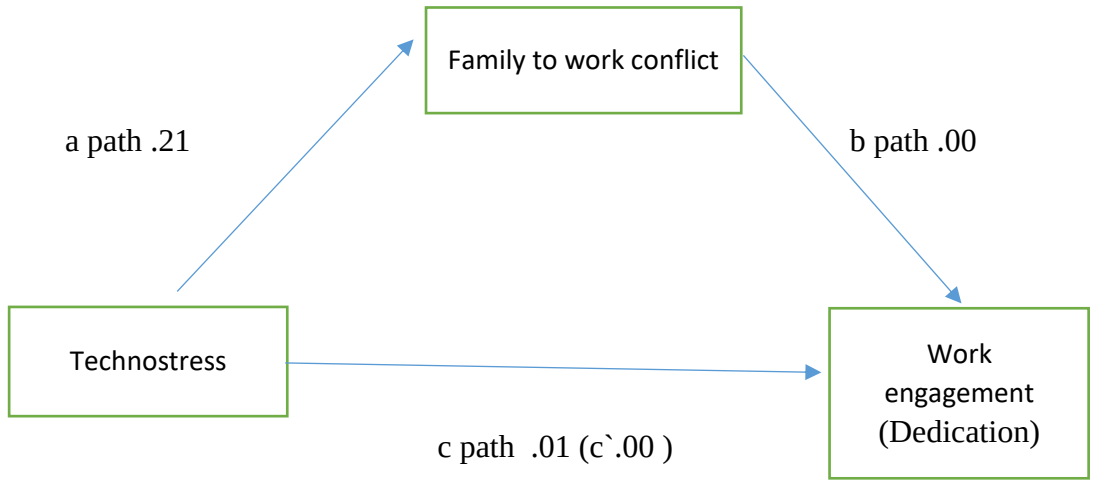


Table 35 *Mediation Analysis of Family to Work Conflict as a Mediator between Technostress and Work Engagement (Absorption) (N=245).*

				%CI			
		B	SE	LL	UL	*t*	*p*
Indirect effect	TS→FWC→A	.01	.01	-.02	.04		
Direct effect	TS→A	-.00	.03	-.07	.06	-10	.91
Total effect	TS→A	.00	.03	-.05	.07	.29	.76

Note: TS=Technostress, FWC= Family Work Conflict, A= Absorption

Table indicates that family-to-work conflict (FWC) does not mediate the relationship between technostress (TS) and work engagement (absorption). The indirect effect is not significant (B = .01, p = .91), and the direct effect is also non-significant (B = -.00, p = .76), suggesting that FWC does not play a role in this relationship.

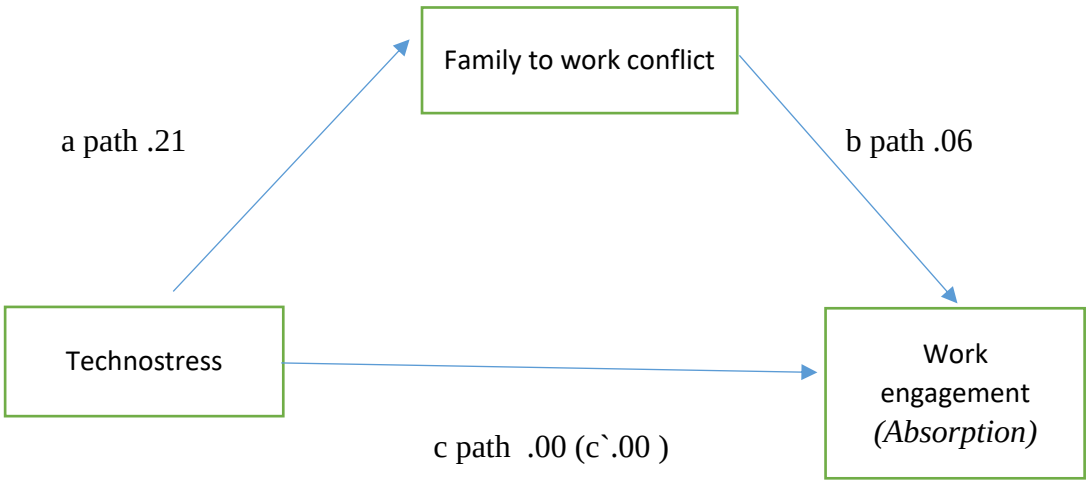

Family to work conflict
a path .21
b path .06
Technostress
Work engagement (Absorption)
c path .00 (c`.00)

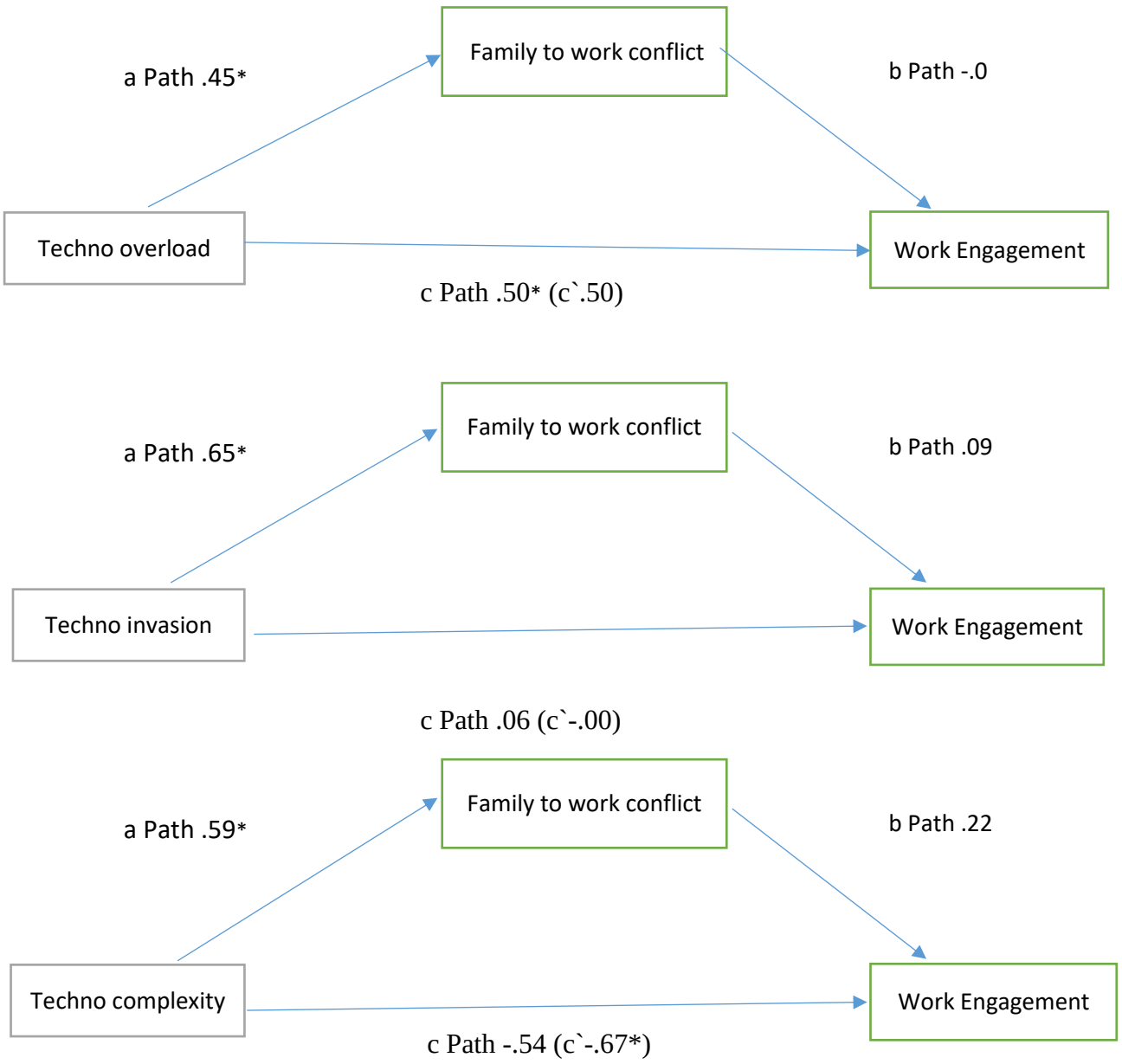
Table 36 *Mediation Analysis of Family to Work Conflict as a Mediator between components of Technostress and Work Engagement (N=245).*

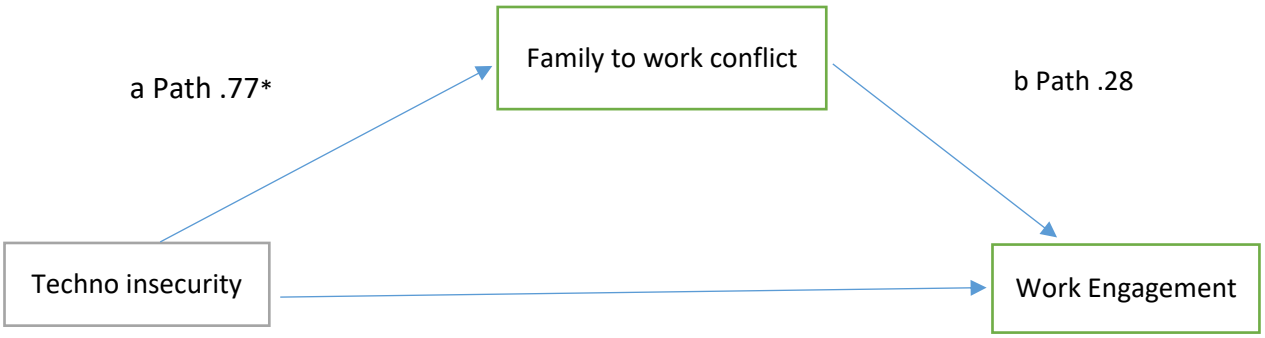
Technostress → Family Work Conflict → Work Engagement								
					95% CI			
		Description	B	SE	LL	UL	*t*	*p*
Techno overload	Indirect Effect	TO→FWC →WE	0.00	0.09	-0.19	0.19		
	Total Effect	TO→WE	0.50	0.25	0.00	0.99	1.99	0.04
	Direct Effect	TO→WE	0.50	0.26	-0.02	1.02	1.90	0.05
Techno invasion	Indirect Effect	Tinvas→FWC →WE	0.06	0.14	-0.20	0.38		
	Total Effect	Tinvas→WE	0.06	0.42	-0.77	0.89	0.14	0.88
	Direct Effect	Tinvas→WE	-0.00	0.43	-0.86	0.86	-0.0	0.99
Techno complexity	Indirect Effect	Tcomp→FWC →WE	0.13	0.12	-0.11	0.39		
	Total Effect	Tcomp→WE	-0.54	0.28	-1.11	0.02	-1.89	0.05
	Direct Effect	Tcomp→WE	-0.67	0.30	-1.28	-0.07	-2.21	0.02
Techno insecurity	Indirect effect	Tinsec→FWC →WE	0.21	0.17	-0.12	0.56		
	Total Effect	Tinsec →WE	-0.61	0.30	-1.21	-0.02	-2.04	0.04
	Direct Effect	Tinsec →WE	-0.83	0.33	-1.48	-0.18	-2.52	0.01
Techno uncertainty	Indirect Effect	Tuncer→FWC →WE	0.02	0.05	-0.07	0.14		
	Total Effect	Tuncer→ WE	0.24	0.34	-0.43	0.91	0.69	0.48
	Direct Effect	Tuncer→ WE	0.22	0.34	-0.45	0.89	0.63	0.52

Note. FWC: Family to work Conflict, WE, Work Engagement, To=Techno Overload, Tinvas= Techno invasion, Tcomp = Techno complexity, Tinsec = Techno insecurity, Tuncer= Techno uncertainty.

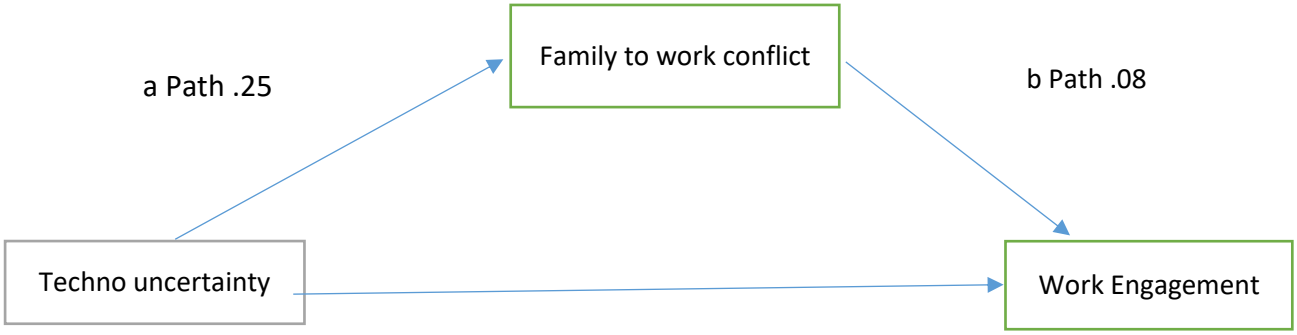
Table 11 presents the results of a mediation analysis examining the role of Family to Work Conflict (FWC) as a mediator between five components of technostress and work engagement. Results shows that Techno-overload showed no significant indirect effect on work engagement through FWC (B = 0.00, 95% CI [-0.19, 0.19]). The total effect was significant (B = 0.50, t = 1.99, p < .05), while the direct effect was not significant (B = 0.50, t = 1.90, p = .05), suggesting techno-overload and work engagement is not mediated by FWC. For techno-invasion, there was no significant indirect effect via FWC (B = 0.06, 95% CI [-0.20, 0.38]). Neither the total effect (B = 0.06, t = 0.14, p > .05) nor the direct effect (B = -0.00, t = -0.0, p > .05) was significant, indicating no relationship between techno-invasion and work engagement. Techno-complexity demonstrated no significant indirect effect through FWC (B = 0.13, 95% CI [-0.11, 0.39]). The total effect was marginally significant (B = -0.54, t = -1.89, p = .05), and the direct effect was significant (B = -0.67, t = -2.21, p < .05), suggesting a negative relationship between techno-complexity and work engagement that is not mediated by FWC.Techno-insecurity showed no significant indirect effect via FWC (B = 0.21, 95% CI [-0.12, 0.56]). Both the total effect (B = -0.61, t = -2.04, p < .05) and the direct effect (B = -0.83, t = -2.52, p < .05) were significant, indicating a negative relationship between techno-insecurity and work engagement that is not mediated by FWC.For techno-uncertainty, the indirect effect through FWC was not significant (B = 0.02, 95% CI [-0.07, 0.14]). Neither the total effect (B = 0.24, t = 0.69, p > .05) nor the direct effect (B = 0.22, t = 0.63, p > .05) was significant, indicating no relationship between techno-uncertainty and work engagement. In summary, Family to Work Conflict did not significantly mediate the relationship between any of the five components of technostress and work engagement. Techno-complexity and techno-insecurity showed significant negative direct relationships with work engagement, while techno-overload had a significant positive total effect and a marginally significant direct effect. Techno-invasion and techno-uncertainty showed no significant relationships with work

engagement. These results suggest that while some components of technostress are related to work engagement, these relationships are not mediated by Family to Work Conflict.





c Path -.61* (c`-.83*)



c Path .24 (c`.22)

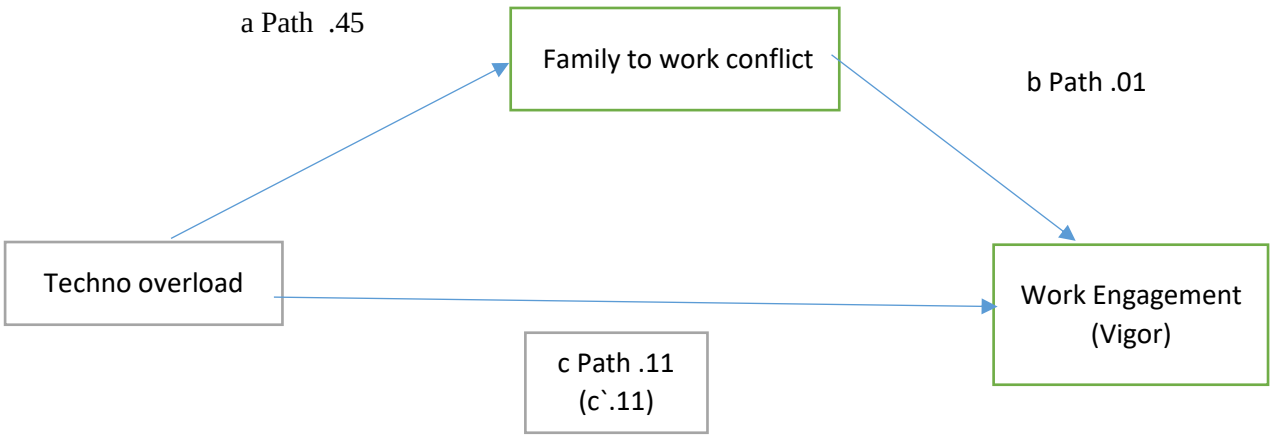
Table 37 *Mediation Analysis of Family to Work Conflict as a Mediator between components of Technostress and Work Engagement (Vigor) (N=245).*

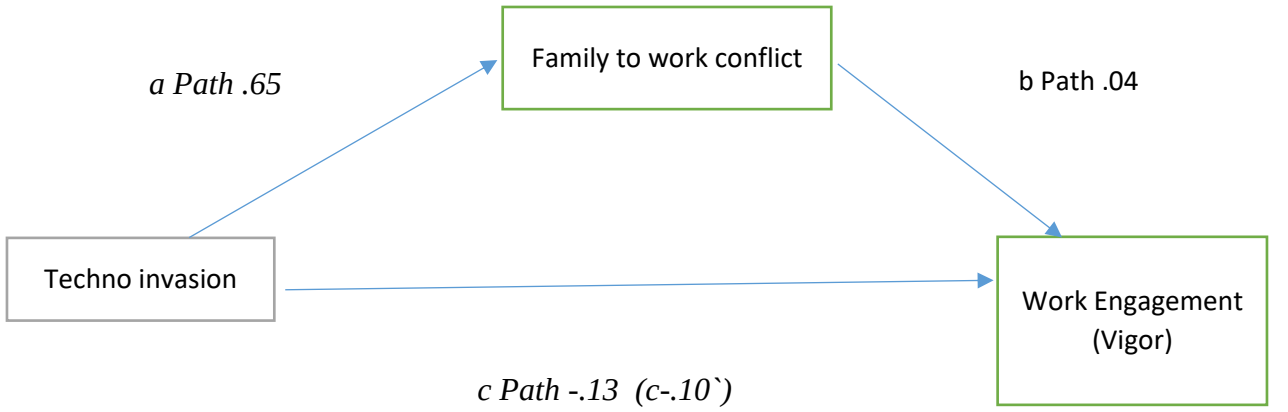
Technostress → Family Work Conflict → Work Engagement (Vigor)								
					95% CI			
		Description	*B*	*SE*	*LL*	*UL*	*t*	*p*
Techno overload	Indirect Effect	TO→FWC →V	.00	.03	-.06	.07		
	Total Effect	TO→V	.11	.08	-.05	.29	1.32	.18
	Direct Effect	TO→V	.11	.09	-.07	.29	1.20	.22
Techno invasion	Indirect Effect	Tinvas→FWC →V	.02	.04	-.06	.13		
	Total Effect	Tinvas→V	-.10	.15	-.39	.19	-.67	.50
	Direct Effect	Tinvas→V	-.13	.15	-.43	.17	-.67	.50
Techno complexity	Indirect Effect	Tcomp→FWC →V	.04	.04	-.04	.13		
	Total Effect	Tcomp→V	-.18	.10	-.38	.01	-1.7	.07
	Direct Effect	Tcomp→V	-.22	.10	-.44	-.01	-2.09	.03
Techno insecurity	Indirect effect	Tinsec→FWC →V	.07	.06	-.04	.20		
	Total Effect	Tinsec →V	-.21	.10	-.42	-.00	-1.99	.04
	Direct Effect	Tinsec →V	-.28	.11	-.51	-.05	-2.4	.01
Techno uncertainty	Indirect Effect	Tuncer→FWC →V	.00	.01	-.02	.05		
	Total Effect	Tuncer→V	.01	.12	-.22	.25	.12	.90
	Direct Effect	Tuncer→ V	.00	.12	-.22	.25	.12	.90

Note. FWC: Family to work Conflict, V, Vigor, To=Techno Overload, Tinvas= Techno invasion, Tcomp = Techno complexity, Tinsec = Techno insecurity, Tuncer= Techno uncertainty.

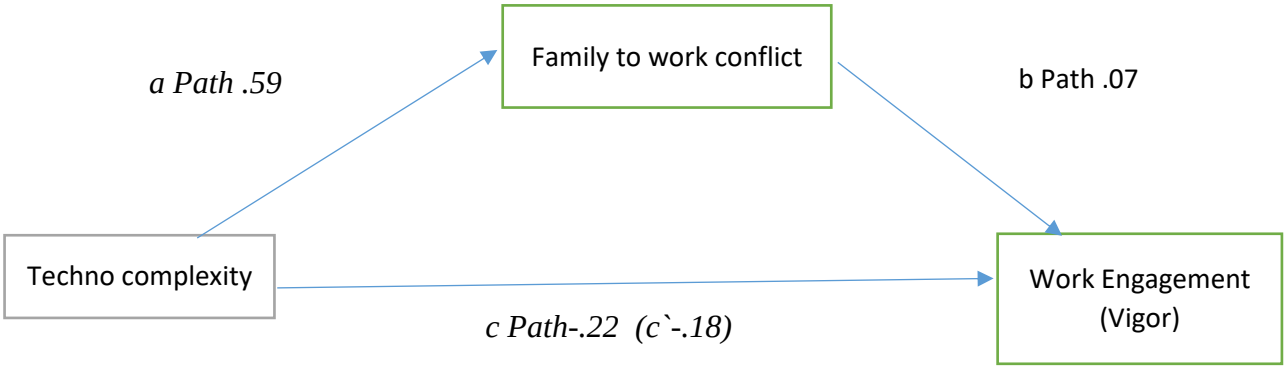
The indirect effect of Techno overload through FWC on vigor is not significant (B = .00, p = .22), and both the total (B = .11, p = .18) and direct effects (B = .11, p = .22) also lack significance, suggesting no mediation effect. Similarly, the indirect effect of Techno invasion through FWC on vigor is not significant (B = .02, p = .50), and both total (B = -.10, p = .50) and direct effects (B = -.13, p = .50) are also non-significant. FWC partially mediates the relationship between Techno complexity and vigor, with a significant direct effect (B = -.22, p = .03), but the indirect effect is not significant (B = .04, p = .07), suggesting that FWC does not fully mediate this relationship. The indirect effect of Techno insecurity through FWC on vigor is significant (B = .07, p = .04), and both the total (B = -.21, p = .04) and direct effects (B = -.28, p = .01) are significant, indicating that FWC plays a mediating role between Tinsec and vigor. No significant indirect (B = .00, p = .90), total (B = .01, p = .90), or direct effect (B = .00, p = .90) is observed for technouncertanity indicating no mediation effect.

In conclusion, FWC mediates the relationship between techno insecurity and vigor, but does not mediate the relationship between other technostress components and vigor

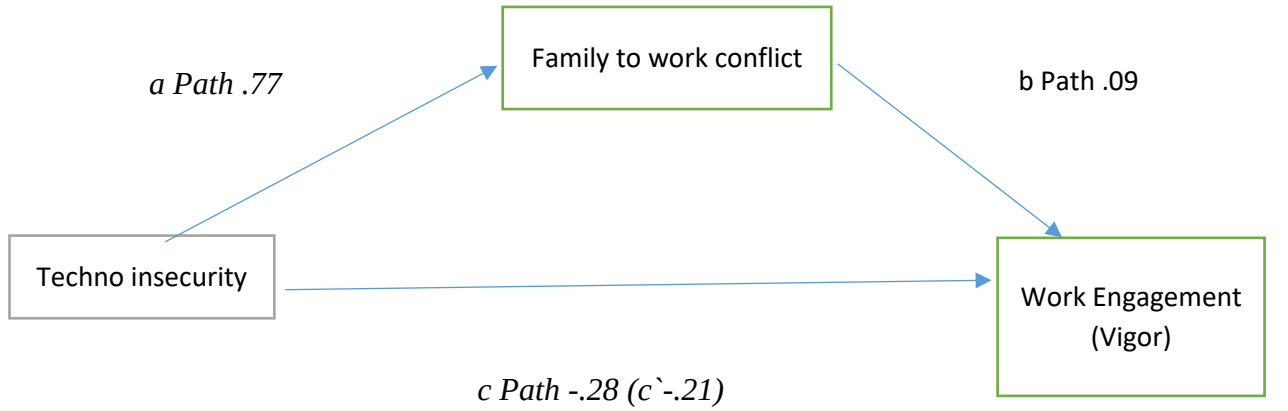




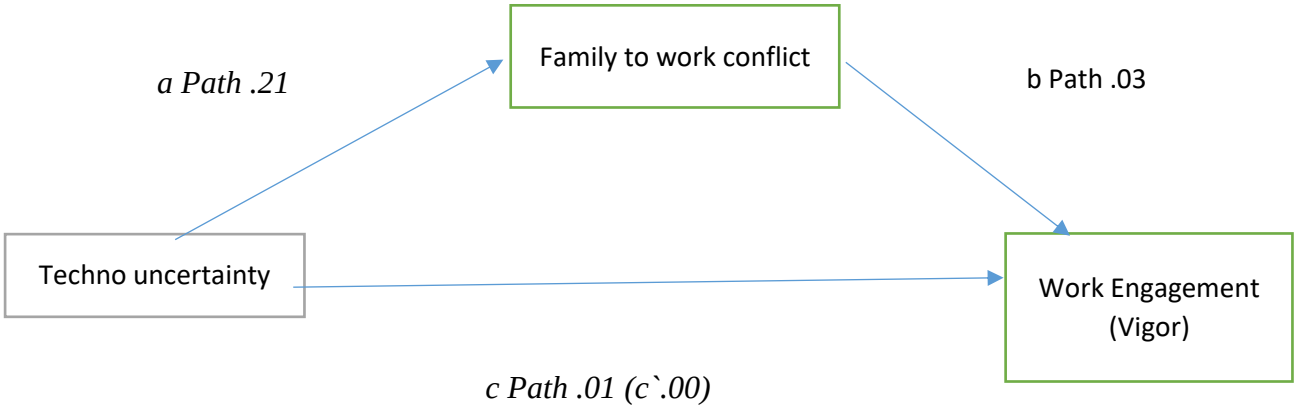
c Path -.13 (c-.10`)



c Path-.22 (c`-.18)



c Path -.28 (c`-.21)

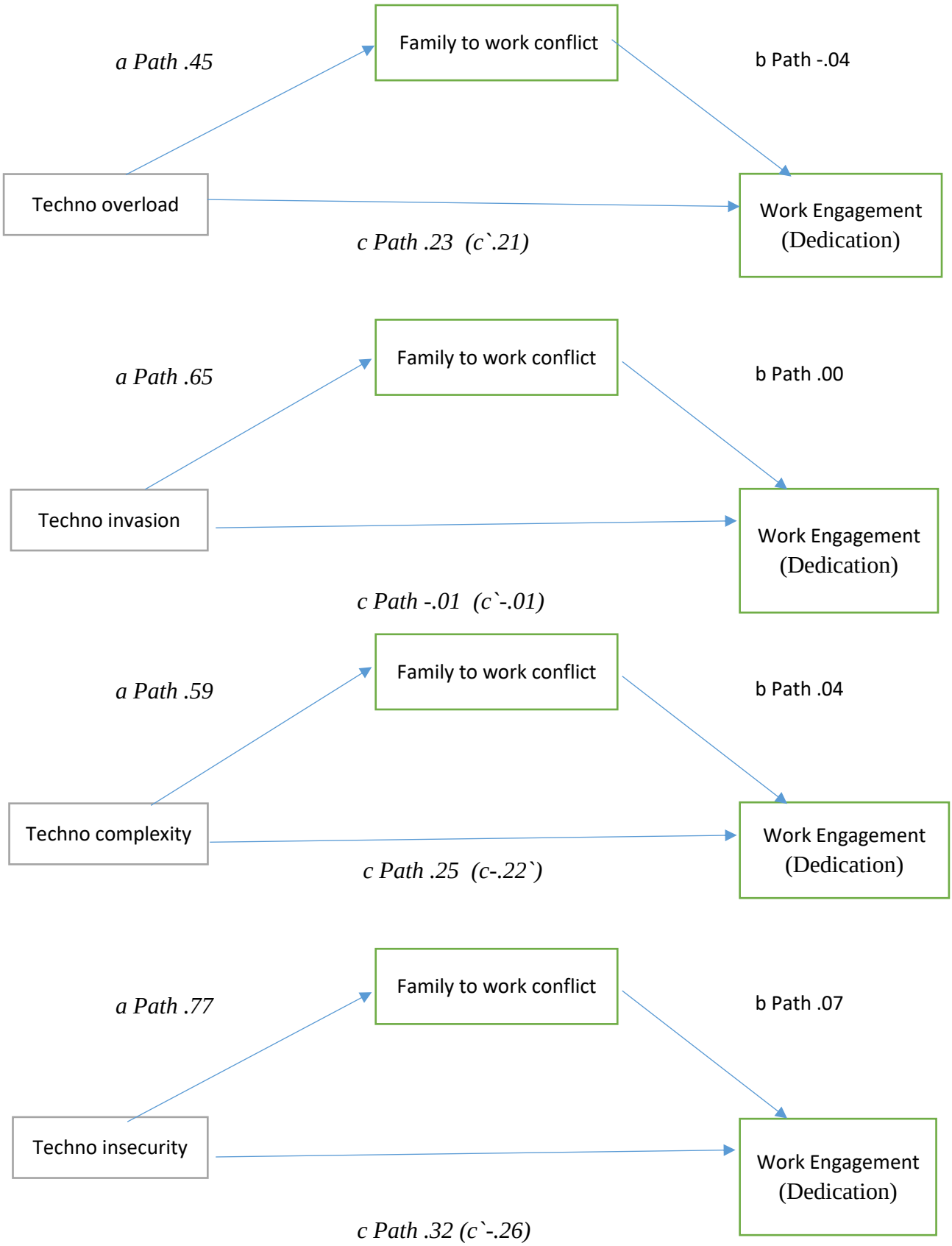


c Path .01 (c`.00)

Table 38 *Mediation Analysis of Family to Work Conflict as a Mediator between components of Technostress and Work Engagement (Dedication) (N=245)*

Technostress → Family Work Conflict → Work Engagement (Vigor)								
					95% CI			
		Description	*B*	*SE*	*LL*	*UL*	*t*	*p*
Techno overload	Indirect Effect	TO→FWC →D	-.01	.03	-.08	.04		
	Total Effect	TO→D	.21	.08	.04	.39	2.48	.01
	Direct Effect	TO→D	.23	.09	.05	.41	2.58	.01
Techno invasion	Indirect Effect	Tinvas→FWC→ D	.00	.04	-.09	.10		
	Total Effect	Tinvas→D	-.01	.14	-.31	.28	-.07	.94
	Direct Effect	Tinvas→D	-.01	.15	-.31	.29	-.07	.93
Techno complexity	Indirect Effect	Tcomp→FWC→ D	.02	.04	-.05	.11		
	Total Effect	Tcomp→D	-.22	.10	-.42	-.30	-2.26	.02
	Direct Effect	Tcomp→D	-.25	.10	-.46	-.04	-2.40	.01
Techno insecurity	Indirect effect	Tinsec→FWC→ D	.05	.06	-.06	.17		
	Total Effect	Tinsec →D	-.26	.10	-.47	-.05	-2.52	.01
	Direct Effect	Tinsec →D	-.32	.11	-.54	-.09	-2.78	.00
Techno uncertainty	Indirect Effect	Tuncer→FWC→ D	-.00	.01	-.04	.03		
	Total Effect	Tuncer→D	.11	.12	-.11	.35	.97	.32
	Direct Effect	Tuncer→ D	.11	.12	-.11	.35	.97	.32

Note. FWC: Family to work Conflict, D, Dedication, To=Techno Overload, Tinvas= Techno invasion, Tcomp = Techno complexity, Tinsec = Techno insecurity, Tuncer= Techno uncertainty.


a Path .45
Family to work conflict
b Path -.04
Techno overload
Work Engagement (Dedication)
c Path .23 (c`.21)
a Path .65
Family to work conflict
b Path .00
Techno invasion
Work Engagement (Dedication)
c Path -.01 (c`-.01)
a Path .59
Family to work conflict
b Path .04
Techno complexity
Work Engagement (Dedication)
c Path .25 (c-.22`)
a Path .77
Family to work conflict
b Path .07
Techno insecurity
Work Engagement (Dedication)
c Path .32 (c`-.26)

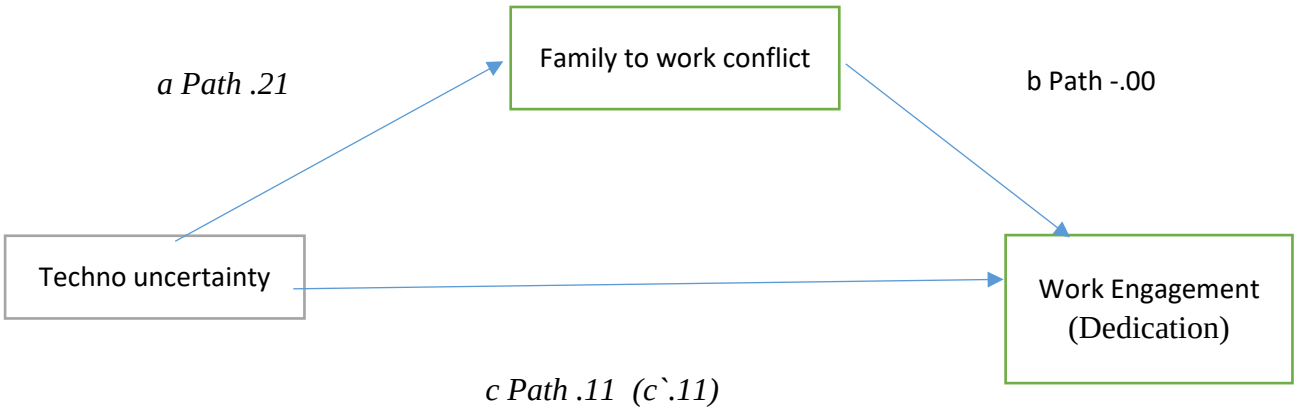


Table shows that family-to-work conflict (FWC) mediates the relationship between some components of technostress and work engagement (dedication). Specifically, techno overload (B = -.01, p = .01), techno complexity (B = .02, p = .02), and techno insecurity (B = .05, p = .01) all show significant indirect effects through FWC on dedication. Direct effects are also significant for techno overload (B = .23, p = .01), techno complexity (B = -.25, p = .01), and techno insecurity (B = -.32, p = .00). However, there are no significant indirect or direct effects for techno invasion and techno uncertainty.

Table 39 *Mediation Analysis of Family to Work Conflict as a Mediator between components of Technostress and Work Engagement (Absorption) (N=245)*

Technostress → Family Work Conflict → Work Engagement (Vigor)								
					95% CI			
		Description	*B*	*SE*	*LL*	*UL*	*t*	*p*
Techno overload	Indirect Effect	TO→FWC →A	.01	.03	-.05	.08		
	Total Effect	TO→A	.16	.09	-.02	.35	1.75	.08
	Direct Effect	TO→A	.15	.09	-.04	.34	1.52	.12
Techno invasion	Indirect Effect	Tinvas→FWC →A	.03	.05	-.63	.15		
	Total Effect	Tinvas→A	.17	.15	-.14	.48	1.00	.28
	Direct Effect	Tinvas→A	.14	.16	-.18	.46	.85	.39
Techno complexity	Indirect Effect	Tcomp→FWC →A	.05	.04	-.03	.15		
	Total Effect	Tcomp→A	-.14	.10	-.35	.07	-1.28	.19
	Direct Effect	Tcomp→A	-1.98	.11	-.42	.02	-.1.7	.08
Techno insecurity	Indirect effect	Tinsec→FWC →A	.08	.06	-.03	.22		
	Total Effect	Tinsec →A	-.13	.11	-.36	.08	-1.23	.21
	Direct Effect	Tinsec →A	-.22	.12	-.47	.01	-1.81	.07
Techno uncertainty	Indirect Effect	Tuncer→FWC →A	.01	.02	-.02	.06		
	Total Effect	Tuncer→A	.10	.12	-.16	.34	.71	.47
	Direct Effect	Tuncer→A	.09	.12	-.16	.34	.71	.47

Note. FWC: Family to work Conflict, A, Absorption, To=Techno Overload, Tinvas= Techno invasion, Tcomp = Techno complexity, Tinsec = Techno insecurity, Tuncer= Techno uncertainty

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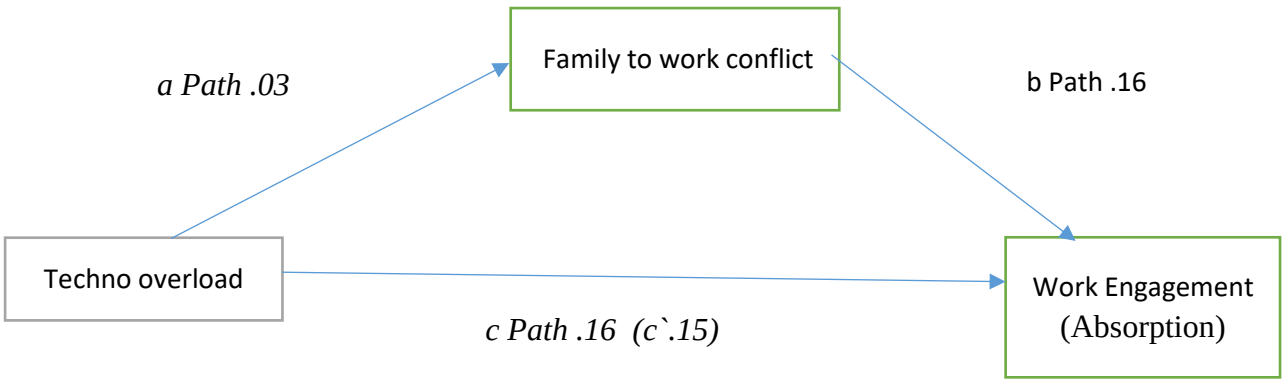
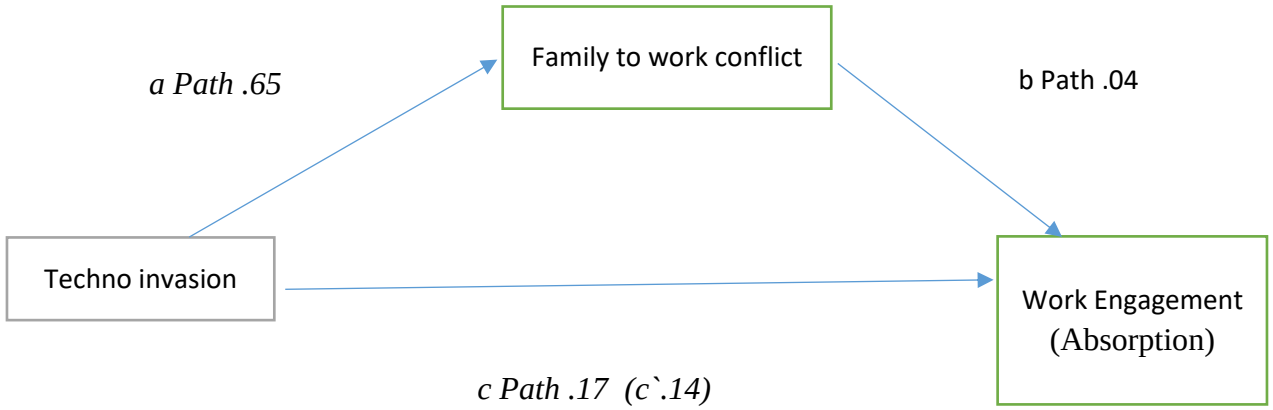
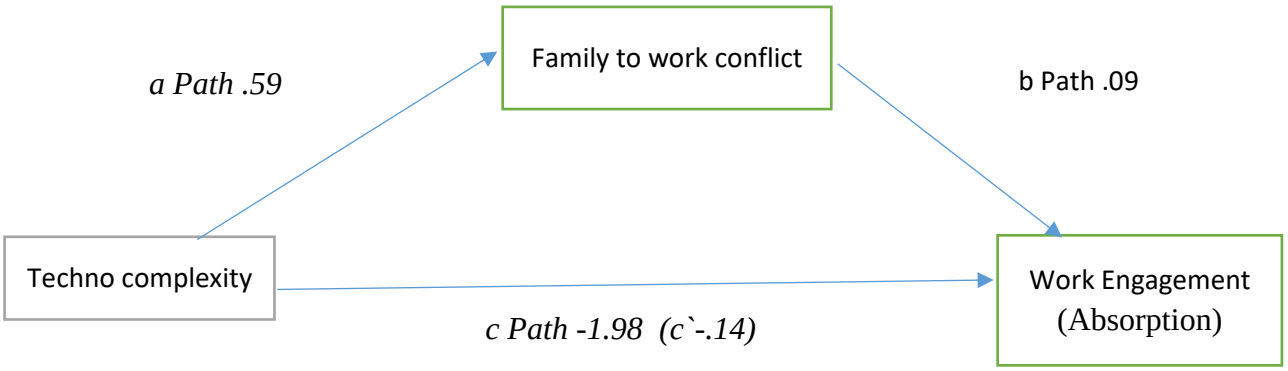
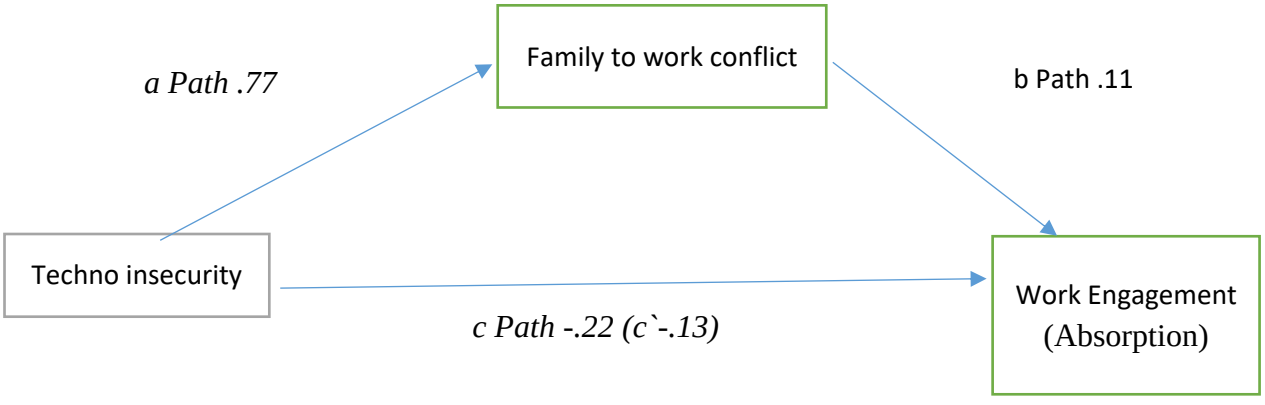
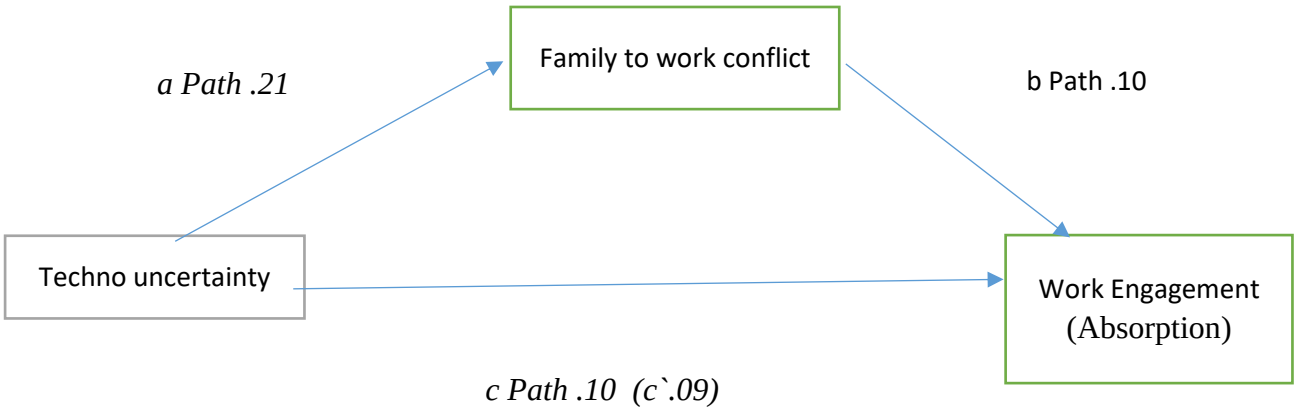

Family to work conflict
a Path .03
b Path .16
Techno overload
Work Engagement (Absorption)
c Path .16 (c`.15)


Family to work conflict
a Path .65
b Path .04
Techno invasion
Work Engagement (Absorption)
c Path .17 (c`.14)


Family to work conflict
a Path .59
b Path .09
Techno complexity
Work Engagement (Absorption)
c Path -1.98 (c`-.14)


Family to work conflict
a Path .77
b Path .11
Techno insecurity
Work Engagement (Absorption)
c Path -.22 (c`-.13)



The analysis shows the following results for family-to-work conflict (FWC) as a mediator between technostress components and work engagement (absorption):

The indirect effect of techno overload through FWC on absorption is not significant (B = .01, p = .08). The total effect is marginally significant (B = .16, p = .08), but the direct effect is not significant (B = .15, p = .12). The indirect effect of techno invasion through FWC on absorption is not significant (B = .03, p = .28), with no significant total or direct effects (total: B = .17, p = .28; direct: B = .14, p = .39). The indirect effect of techno complexity through FWC on absorption is not significant (B = .05, p = .19), and the total effect is also not significant (B = -.14, p = .19). However, the direct effect is marginally significant (B = -.22, p = .08). The indirect effect of techno insecurity through FWC on absorption is significant (B = .08, p = .07). However, the total effect is not significant (B = -.13, p = .21), while the direct effect is marginally significant (B = -.22, p = .07). The indirect effect of techno uncertainty through FWC on absorption is not significant (B = .01, p = .47), with no significant total or direct effects (total: B = .10, p = .47; direct: B = .09, p = .47). Overall, FWC mediates some relationships, particularly with techno overload, complexity, and insecurity, though some effects are marginal or not significant.

Table 40 *Moderating Effect of Work-to-Life Boundaries on Technostress and Work to Family Conflict (N = 245).*

	WFC				*95% CI*	
Predictors	B	SE	*t*	*P*	*LL*	*UL*
Constant	47.53	6.33	7.50	.00	35.06	60.00
TS	-.31	.08	-3.57	.00	-.49	-.14
WLB	-.16	.19	-.88	.37	-.54	.20
TS x WLB	.00	.00	1.41	.15	-.00	.00
R^2	.19					
ΔR^2	.00					
F (3.00) =19.69, p < .001						

Note. WFC: Work to Family Conflict, WLB: Work-to-life boundaries TS: Technostress.

Table presents moderating impact of work-to-life boundaries (WLB) on the relationship between technostress (TS) and work-to-family conflict (WFC). The investigation into moderation used Hayes' (2013) regression model 1 via the PROCESS macro. The regression coefficients, calculated F statistic, and direct and interaction effects of the study variables indicate that work-to-life boundaries (WLB) does not moderate the relationship between technostress (TS) and work-to-family conflict. Moderation is indicated by a significant interaction effect; however, in this case, the interaction is not significant, b = 0.00, *95% CI* [-0.00, 0.00], t = 1.41, p > .005, suggesting that the relationship between technostress (TS) and work-to-family conflict is not moderated by work-to-life boundaries (WLB). The effect of technostress (TS) on work-to-family conflict is significant, b = -0.31, t = -3.57, p < 0.001, indicating that higher levels of technostress predict higher levels of work-to-family conflict.

However, the effect of work-to-life segmentation/integration (WLB) on work-to-family conflict is not significant, b = -0.16, t = -0.88, p >.001. The overall model explains 19% of the variance in work-to-family conflict *(R^2 = 0.19).*

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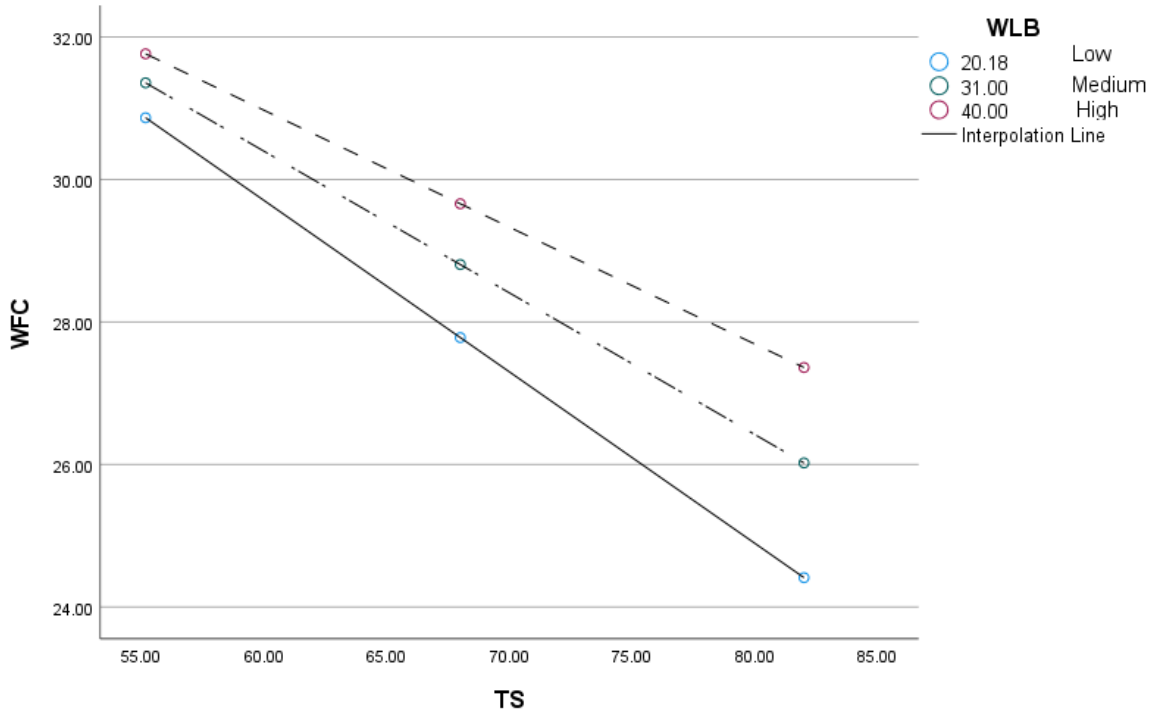


Note; *WLB= Work Life Boundaries, WFC= Work to family Conflict TS= Technostress*
Dotted slope (- - - - -) represents high, (.___. .___.) presents Medium and (_____) presents Low Work Life Boundaries.

Figure 2 Interaction of Work-to-Life Boundaries on Technostress and Work to Family Conflict

Table 41 *Moderating Effect of Work-to-Life Boundaries on components of Technostress and Work to Family Conflict (N = 245).*

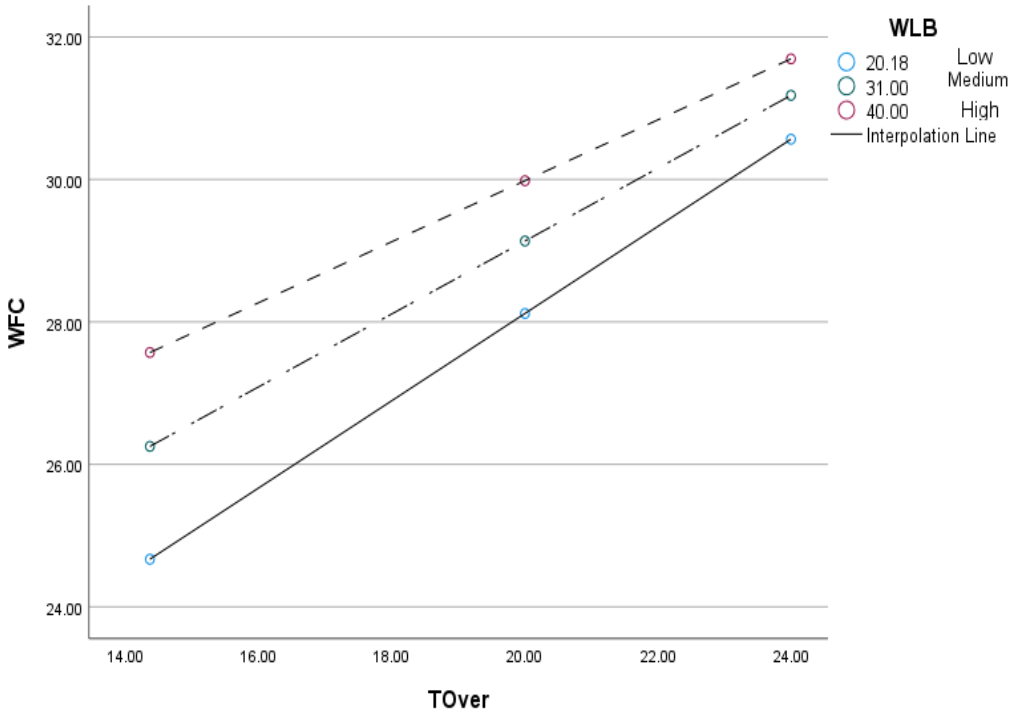
	WFC				*95% CI*	
Predictors	B	SE	*t*	*p*	*LL*	*UL*
Constant	10.23	5.08	2.01	0.04	0.23	20.24
Techno Overload	0.79	0.26	3.04	0.00	0.28	1.31
WLB	0.27	0.15	1.75	0.07	-0.03	0.59
Techno Overload x WLB	-0.01	0.01	-1.16	0.24	-0.02	0.00
R^2	0.16					
ΔR^2	0.01					
F (3.00) =15.42, $p < .001$						
Constant	15.71	4.21	3.72	0.00	7.40	24.02
Techno Invasion	1.04	0.44	2.32	0.02	0.15	1.92
WLB	0.19	0.13	1.43	0.15	-0.07	0.46
Techno Invasion x WLB	-0	0.01	-0.59	0.55	-0.03	0.01
R^2	0.14					
ΔR^2	0.00					
F (3.00) = 13.44, p < .001						
Constant	7.35	4.97	1.47	.14	-2.44	17.15
Techno Complexity	1.25	0.34	3.63	.00	0.57	1.92
WLB	0.41	0.15	2.70	.00	0.11	0.71
Techno Complexity x WLB	-0.02	0.01	-2.04	.04	-0.04	-0.00
R^2	0.17					
ΔR^2	0.01					
F (3.00) = 16.5016, p < .001						
Constant	9.28	5.10	1.82	.06	-0.76	19.33
Techno Insecurity	1.12	0.35	3.12	.00	0.41	1.83
WLB	0.44	0.16	2.76	.01	0.12	0.75
Techno Insecurity x WLB	-0.02	0.01	-2.06	.04	-0.04	-0.00
R^2	0.11					
ΔR^2	0.01					
F (3.00) = 10.13, p < .001						
Constant	19.49	5.19	3.75	.00	9.26	29.71
Techno Uncertainty	0.37	0.38	0.97	.33	-0.38	1.12
WLB	0.19	0.17	1.12	.26	-0.14	0.52
Techno Uncertainty **x** WLB	-0.00	0.01	-0.31	.76	-0.03	0.02
R^2	0.06					
ΔR^2	0.00					
F (3.00) = 5.04, p = .0021						

Note; WFC: work to family Conflict**, WLB=** Work-to-Life Boundaries

Table 16 presents the moderating effect of work-to-life boundaries (WLB) on the relationship between five components of technostress and work-to-family conflict (WFC). The analysis used Hayes' (2013) regression model 1 via the PROCESS macro. Results for each component shows that: Techno-overload: The interaction between techno-overload and WLB was not significant (b = -0.01, 95% CI [-0.02, 0.00], t = -1.16, p > .05), indicating that WLB does not moderate this relationship. Techno-overload significantly predicted WFC (b = 0.79, t = 3.04, p < .01). The model explained 16% of the variance in WFC (R^2 = 0.16), with a non-significant change when adding the interaction term (ΔR^2 = 0.01). Techno-invasion: WLB did not moderate the relationship between techno-invasion and WFC (b = -0.00, 95% CI [-0.03, 0.01], t = -0.59, p > .05). Techno-invasion significantly predicted WFC (b = 1.04, t = 2.32, p < .05). The model accounted for 14% of the variance in WFC (R^2 = 0.14), with no significant improvement from the interaction term (ΔR^2 = 0.00). Techno-complexity: A significant interaction was found between techno-complexity and WLB (b = -0.02, 95% CI [-0.04, -0.00], t = -2.03, p < .05), suggesting that WLB moderates this relationship. Both techno-complexity (b = 1.25, t = 3.63, p < .01) and WLB (b = 0.41, t = 2.70, p < .01) significantly predicted WFC. The model explained 17% of the variance in WFC (R^2 = 0.17), with a small but significant improvement from the interaction term (ΔR^2 = 0.01). Techno-insecurity: The interaction between techno-insecurity and WLB was significant (b = -0.02, 95% CI [-0.04, -0.00], t = -2.06, p < .05), indicating that WLB moderates this relationship. Both techno-insecurity (b = 1.12, t = 3.12, p < .01) and WLB (b = 0.44, t = 2.76, p < .01) significantly predicted WFC. The model accounted for 11% of the variance in WFC (R^2 = 0.11), with a small but significant improvement from the interaction term (ΔR^2 = 0.01). Techno-uncertainty: WLB did not moderate the relationship between techno-uncertainty and WFC (b = -0.00, 95% CI [-0.03, 0.02], t = -0.31, p > .05). Techno-uncertainty did not significantly predict WFC (b = 0.37, t =

0.97, p > .05). The model explained only 6% of the variance in WFC ($R^2 = 0.06$), with no significant improvement from the interaction term ($\Delta R^2 = 0.00$).

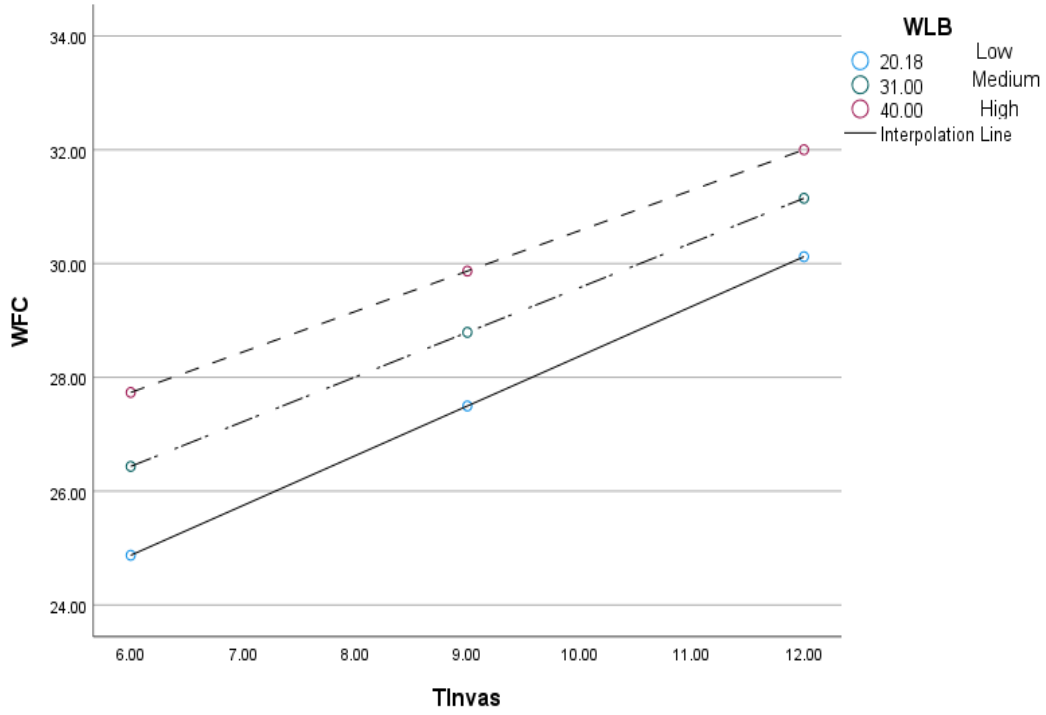
In summary, work-to-life boundaries significantly moderated the relationships of techno-complexity and techno-insecurity with work-to-family conflict, but not the relationships of techno-overload, techno-invasion, or techno-uncertainty with work-to-family conflict.



Note; *WLB= Work Life Boundaries, WFC= Work to family Conflict TO= Techno Overload*

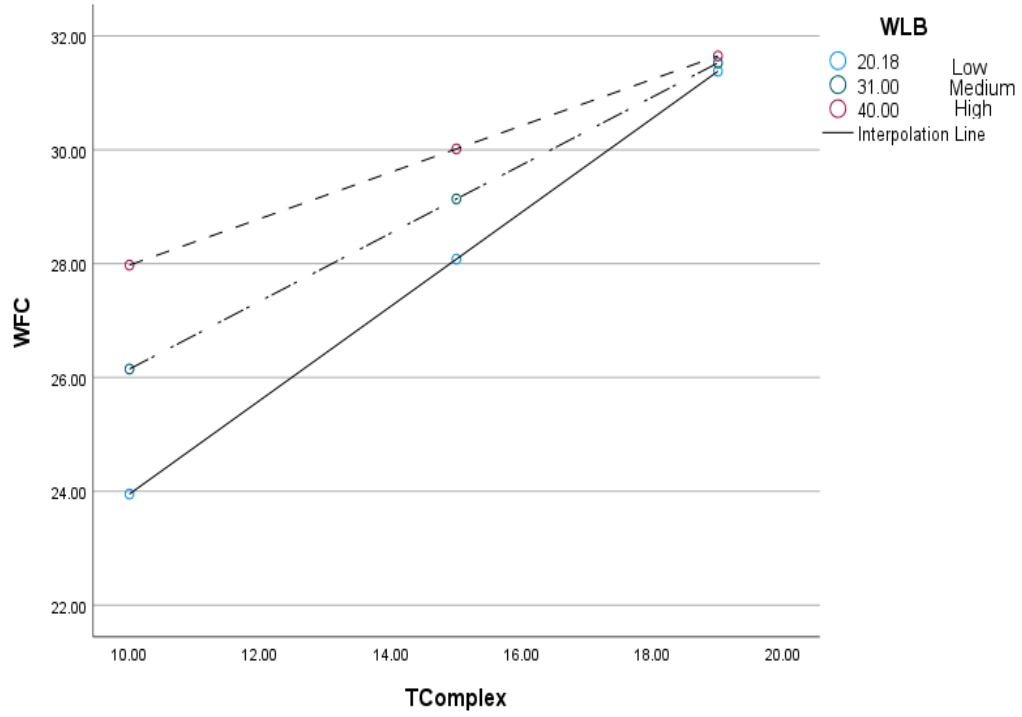
Dotted slope (- - - - -) represents high, (.___. .___.) presents Medium and (____) presents Low Work Life Boundaries.

Figure 3 Interaction of Work-to-Life Boundaries on Techno overload and Work to Family Conflict



Note; *WLB= Work Life Boundaries, WFC= Work to family Conflict TS= Technostress*
Dotted slope (- - - - -) represents high, (.___. .___.) presents Medium and (____) presents Low Work Life Boundaries.

Figure 4 Interaction of Work-to-Life Boundaries on Techno invasion and Work to Family Conflict



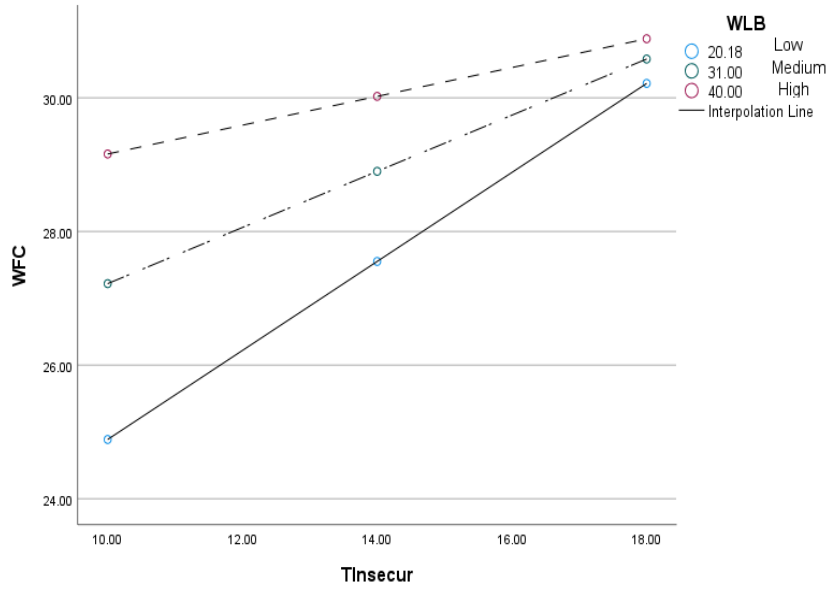
Note; *WLB= Work Life Boundaries, WFC= Work to family Conflict TComp= Techno Complexity*

Dotted slope (- - - - -) represents high, (.___. .___.) presents Medium and (____) presents Low Work Life Boundaries.

Figure 5 Interaction of Work-to-Life Boundaries on Techno complexity and Work to Family Conflict

Simple slopes analysis indicates that the interaction between technostress and work-life boundary characteristics was significant at all three levels of the moderator. Examination of the interaction plot reveals that the relationship between technostress and work-family conflict is moderated by work-life boundary characteristics across low, moderate and high levels of work-life integration/segmentation.

These results support our hypotheses that work-life boundary characteristics moderate the relationship between technostress and work-family conflict. Specifically, low work-life integration (high segmentation) appears to buffer the impact of technostress on work-family conflict.



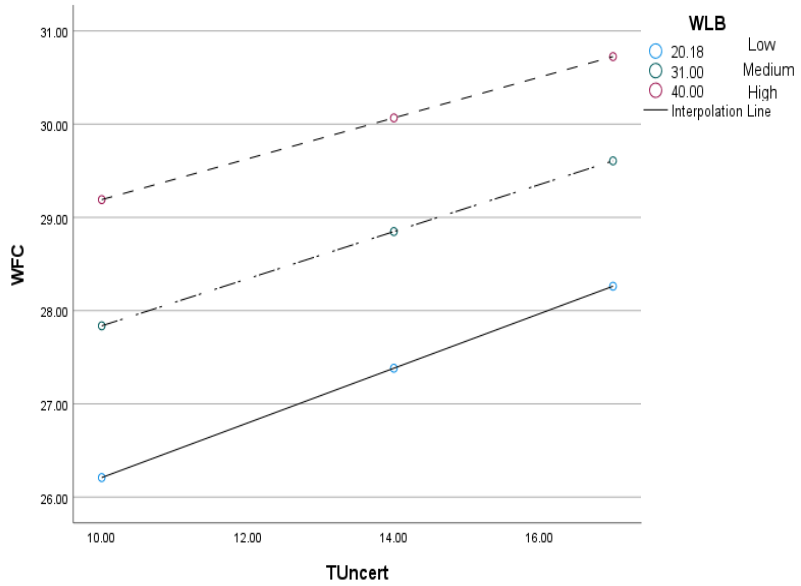
Note; *WLB= Work Life Boundaries, WFC= Work to family Conflict Tinsec= Techno insecurity*

Dotted slope (- - - - -) represents high, (.___. .___.) presents Medium and (____) presents Low Work Life Boundaries.

Figure 6 Interaction of Work-to-Life Boundaries on Techno insecurity and Work to Family Conflict

Simple slopes analysis indicates that the interaction between techno-insecurity and work-life boundary characteristics was significant at all levels of the moderator. Examination of the interaction plot reveals that the relationship between techno-insecurity and work-to-family conflict is moderated by work-life boundary characteristics across low, moderate and high levels of work-life integration/segmentation.

These results support our hypotheses that work-life boundary characteristics moderate the relationship between techno-insecurity and work-to-family conflict.



Note; *WLB= Work Life Boundaries, WFC= Work to family Conflict Tuncer= Techno uncertanity*

Dotted slope (- - - -) represents high, (.___. .___.) presents Medium and (____) presents Low Work Life Boundaries.

Figure 7 Interaction of Work-to-Life Boundaries on Techno uncertainty and Work to Family Conflict

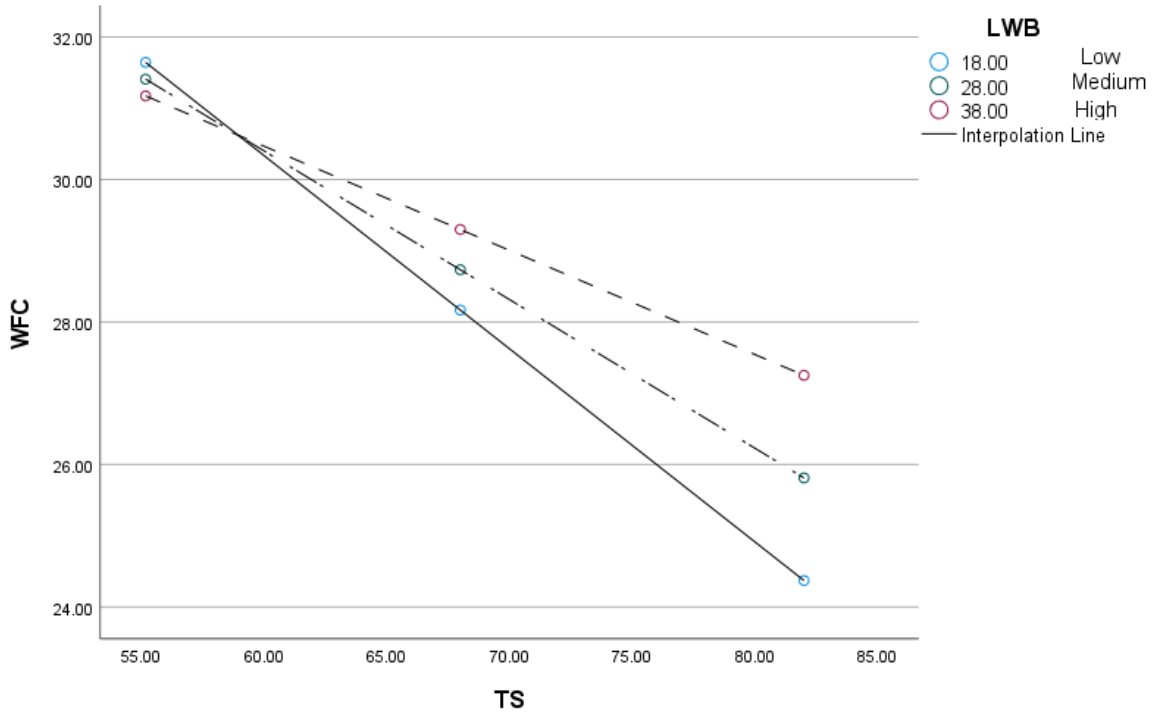
Table 42 *Moderating Effect of Life-to-Work Boundaries on Technostress and Work to family conflict (N = 245).*

	WFC				*95% CI*	
Predictors	B	SE	*t*	*P*	*LL*	*UL*
Constant	53.24	5.42	9.81	.00	42.55	63.92
TS	-.38	.07	-5.05	.00	-.53	-.23
LWB	-.36	.17	-2.08	.03	-.72	.02
TS x LWB	.006	.002	1.41	.01	.00	.01
R^2	.20					
ΔR^2	.02					
F (3.00) =20.321, $p < .001$						

Note. WFC: Work to Family Conflict, LWB: Life-to-work boundaries, TS: Technostress,

Table 17 presents the regression coefficients concerning the examination of the moderating influence of life-to-work boundaries (LWB) on the relationship between technostress (TS) and work-to-family conflict (WFC). The regression coefficients, calculated F statistic, and direct and interaction effects of the study variables indicate that life-to-work boundaries (LWB) moderates the relationship between technostress (TS) and work-to-family conflict. Moderation is indicated by a significant interaction effect, and in this case, the interaction is significant, b = 0.00, 95% *CI* [0.00, 0.01], t = 1.41, $p < 0.05$, suggesting that the relationship between technostress (TS) and work-to-family conflict is moderated by life-to-work boundaries (LWB). The main effect of technostress (TS) on work-to-family conflict is significant, b = -0.38,

t = -5.05, p < 0.001, indicating that higher levels of technostress predict higher levels of work-to-family conflict. The main effect of life-to-work boundaries (LWB) on work-to-family conflict is also significant, b = -0.36, t = -2.08, p < 0.05. The overall model explains 20% of the variance in work-to-family conflict (R^2 = 0.20), and the addition of the interaction term between TS and LWB significantly improved the model (ΔR^2 = 0.02).



Note; *LWB= Life to Work Boundaries, WFC= Work to family Conflict TS-Technostress.*

Dotted slope (- - - - -) represents high, (.___. .___.) presents Medium and (_____) presents Low Work Life Boundaries

Figure 8 Interaction of Life-to-Work boundary on Technostress and Work to Family Conflict

Simple slopes analysis indicates that the interaction between technostress and life-to-work boundary characteristics was significant at all levels of the moderator. Examination of the interaction plot reveals that the relationship between technostress and work-to-family conflict is moderated by life-to-work boundary characteristics across low, moderate and high (9.56) levels of life-to-work boundaries.

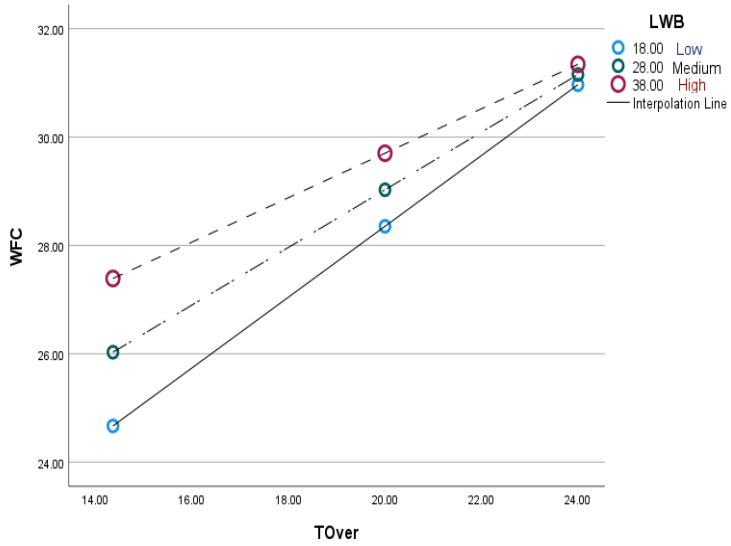
Table 43 *Moderating Effect of Life-to-Work Boundaries on components of Technostress and Work to family conflict (N = 245).*

	WFC				*95% CI*	
Predictors	B	SE	*t*	*p*	*LL*	*UL*
Constant	9.70	4.57	2.12	.034	0.69	18.70
Techno Overload	0.87	0.23	3.72	.00	0.41	1.33
LWB	0.31	0.16	1.97	.05	-0.00	0.62
Techno Overload x LWB	-0.01	0.01	-1.51	.13	-0.03	0.00
R^2	0.16					
ΔR^2	0.01					
F (3.00) = 15.10, p < .001						
Constant	13.55	3.56	3.80	.00	6.53	20.57
Techno Invasion	1.44	0.38	3.76	.00	0.69	2.19
LWB	0.28	0.12	2.29	.02	0.04	0.52
Techno Invasion x LWB	-0.02	0.01	-1.71	.08	-0.05	0.00
R^2	0.14					
ΔR^2	0.01					
F (3.00) = 13.08, p < .001						
Constant	3.07	4.23	0.73	.46	-5.27	11.41
Techno Complexity	1.66	0.29	5.75	.00	1.09	2.23
LWB	0.57	0.14	4.21	.00	0.31	0.84
Techno Complexity x LWB	-0.04	0.01	-3.89	.01	-0.05	-0.02
R^2	0.19					
ΔR^2	0.05					
F (3.00) = 19.03, p < .001						
Constant	17.44	4.63	3.77	.00	8.32	26.56
Techno Insecurity	0.71	0.33	2.14	.03	0.06	1.36
LWB	0.18	0.15	1.18	.24	-0.12	0.48
Techno Insecurity x LWB	-0.01	0.01	-0.89	.37	-0.03	0.01
R^2	0.07					
ΔR^2	0.00					
F (3.00) = 6.50, p = .0003						
Constant	14.34	4.67	3.07	.00	5.14	23.54
Techno Uncertainty	0.87	0.34	2.61	.00	0.21	1.53
LWB	0.37	0.16	2.33	.02	0.06	0.68
Techno Uncertainty x LWB	-0.02	0.01	-1.83	.07	-0.04	0.00
R^2	0.05					
ΔR^2	0.01					
F (3.00) = 4.45, p = 0.0046						

Note; LWB= life-to-work boundaries, **WFC**= Work to family Conflict

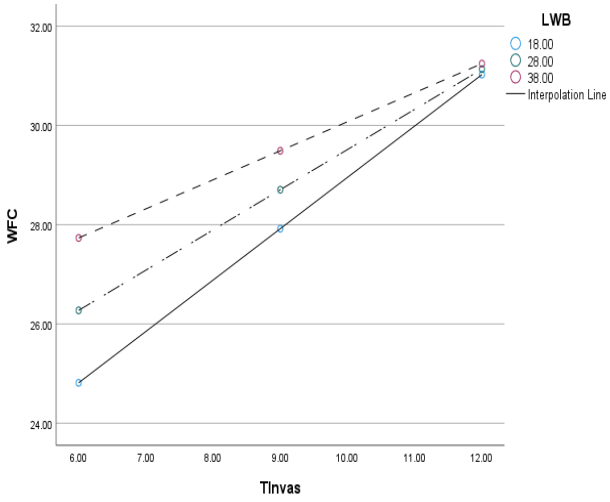
Table 18 presents the moderating effect of life-to-work boundaries (LWB) on the relationships between five components of technostress and work-to-family conflict (WFC). Results showed; Techno-overload: The interaction between techno-overload and LWB was not significant (b = -0.01, 95% CI [-0.03, 0.00], t = -1.51, p > .05), indicating that LWB does not moderate this relationship. Techno-overload significantly predicted WFC (b = 0.87, t = 3.72, p < .001). The model explained 16% of the variance in WFC ($R^2 = 0.16$), with a non-significant change when adding the interaction term ($\Delta R^2 = 0.01$). Techno-invasion: LWB did not significantly moderate the relationship between techno-invasion and WFC (b = -0.02, 95% CI [-0.05, 0.00], t = -1.71, p > .05). Techno-invasion significantly predicted WFC (b = 1.44, t = 3.76, p < .001). The model accounted for 14% of the variance in WFC ($R^2 = 0.14$), with a small but non-significant improvement from the interaction term ($\Delta R^2 = 0.01$). Techno-complexity: A significant interaction was found between techno-complexity and LWB (b = -0.04, 95% CI [-0.05, -0.02], t = -3.89, p < .01), suggesting that LWB moderates this relationship. Both techno-complexity (b = 1.66, t = 5.75, p < .001) and LWB (b = 0.57, t = 4.21, p < .001) significantly predicted WFC. The model explained 19% of the variance in WFC ($R^2 = 0.19$), with a significant improvement from the interaction term ($\Delta R^2 = 0.05$). Techno-insecurity: The interaction between techno-insecurity and LWB was not significant (b = -0.01, 95% CI [-0.03, 0.01], t = -0.89, p > .05), indicating that LWB does not moderate this relationship. Techno-insecurity significantly predicted WFC (b = 0.71, t = 2.14, p < .05). The model accounted for 7% of the variance in WFC ($R^2 = 0.07$), with no significant improvement from the interaction term ($\Delta R^2 = 0.00$). Techno-uncertainty: LWB did not significantly moderate the relationship between techno-uncertainty and WFC (b = -0.02, 95% CI [-0.04, 0.00], t = -1.83, p > .05). Techno-uncertainty significantly predicted WFC (b = 0.87, t = 2.61, p < .01). The model explained 5% of the variance in WFC ($R^2 = 0.05$), with a small but non-significant improvement from the interaction term ($\Delta R^2 = 0.01$).

In summary, life-to-work boundaries significantly moderated only the relationship between techno-complexity and work-to-family conflict.



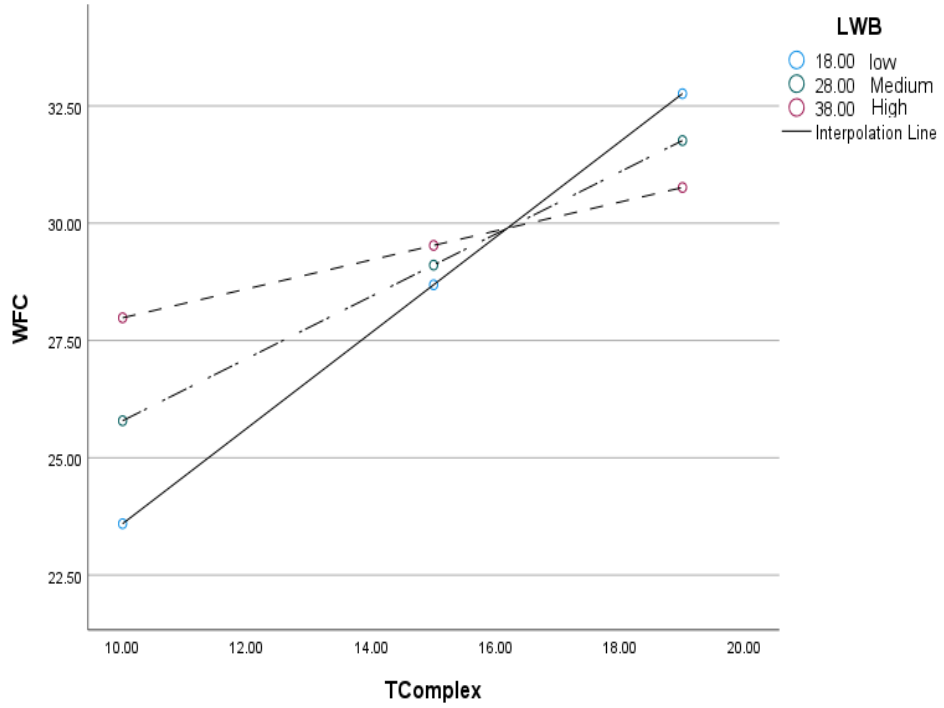
Note; *LWB= Life to Work Boundaries, WFC= Work to family Conflict Tover-Techno overload*
Dotted slope (- - - - -) represents high, (.___. .___.) presents Medium and (____) presents Low Work Life Boundaries

Figure 9 Interaction of Life-to-Work boundary on Techno overload and Work to Family Conflict.



Note; *LWB= Life to Work Boundaries, WFC= Work to family Conflict Tinvas-Techno invasion*
Dotted slope (- - - - -) represents high, (.___. .___.) presents Medium and (____) presents Low Work Life Boundaries

Figure 10 Interaction of Life-to-Work boundary on Techno invasion and Work to Family Conflict.



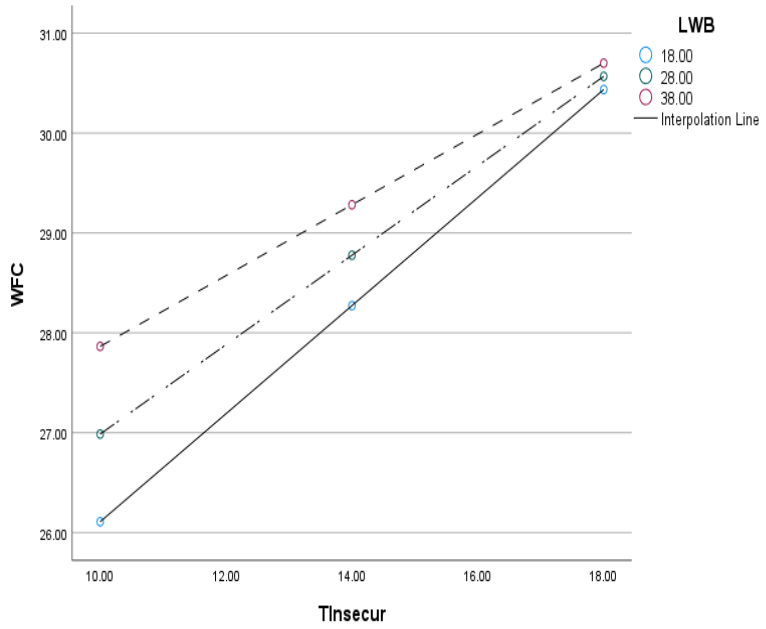
Note; *LWB= Life to Work Boundaries, WFC= Work to family Conflict TechnoCo= Techno complexity.*

Dotted slope (- - - - -) represents high, (.___. .___.) presents Medium and (____) presents Low Work Life Boundaries

Figure 11 Interaction of Life-to-Work boundary on Techno Complexity and Work to Family Conflict.

Simple slopes analysis indicates that the interaction between techno-complexity (TechnoCo) and life-to-work boundary characteristics (TLtoWB) was significant at all levels of the moderator. Examination of the interaction plot reveals that the relationship between techno-complexity and work-to-family conflict (TWTOFC) is moderated by life-to-work boundary characteristics across low, moderate and high levels of life-to-work integration/segmentation.

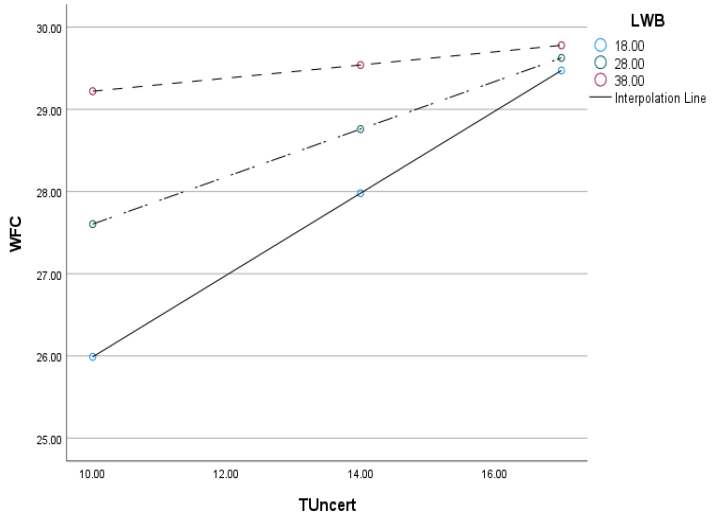
These results support our hypotheses that life-to-work boundary characteristics moderate the relationship between techno-complexity and work-to-family conflict.



Note; *LWB= Life to Work Boundaries, WFC= Work to family Conflict Tinsec= Techno insecurity*

Dotted slope (- - - - -) represents high, (.___. .___.) presents Medium and (____) presents Low Work Life Boundaries

Figure 12 Interaction of Life-to-Work boundary on Techno Insecurity and Work to Family Conflict.



Note; *LWB= Life to Work Boundaries, WFC= Work to family Conflict Tinsec= Techno insecurity*

Dotted slope (- - - - -) represents high, (.___. .___.) presents Medium and (____) presents Low Work Life Boundaries

Figure 13 Interaction of Life-to-Work boundary on Techno Insecurity and Work to Family Conflict.

Table 44 *Moderating Effect of Work to Life Boundaries on Technostress and Family to Work Conflict (N = 245).*

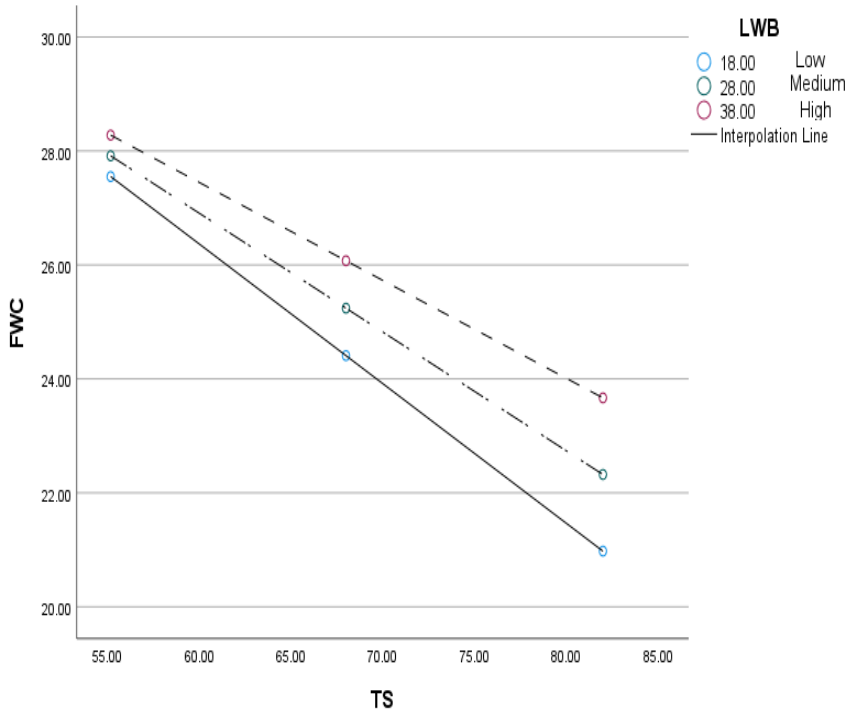
	FWC				*95% CI*	
Predictors	B	SE	*t*	*p*	*LL*	*UL*
Constant	41.34	6.75	6.12	.00	28.02	54.65
TS	-.26	.09	-2.77	.00	-.45	-.07
WLB	-.06	.20	-.32	.74	-.46	.33
TS x WLB	.00	.00	.63	.52	-.00	.01
R^2	.16					
ΔR^2	.00					
F (3.00) =16.2571, $p < .001$						

Note. FWC: Family to work Conflict, WLB: Work-to-life boundaries, TS: Technostress.

Table 19 presents the regression coefficients concerning the examination of the moderating influence of work-to-life boundaries (WLB) on the relationship between technostress (TS) and family-to-work conflict (FWC). The regression coefficients, calculated F statistic, and direct and interaction effects of the study variables indicate that work-to-life boundaries (WLB) does not moderate the relationship between technostress (TS) and family-to-work conflict.

Moderation is indicated by a significant interaction effect; however, in this case, the interaction is not significant, $b = 0.00$, 95% *CI* [-0.00, 0.01], $t = 0.63$, $p > 0.05$, suggesting that the relationship between technostress (TS) and family-to-work conflict is not moderated by work-to-life segmentation/integration (WLB). The main effect of technostress (TS) on family-to-work conflict is significant, $b = -0.26$, $t = -2.77$, $p < 0.01$, indicating that higher levels of

technostress predict higher levels of family-to-work conflict. However, the main effect of work-to-life boundaries (WLB) on family-to-work conflict is not significant, b = -0.06, t = -0.32, $p > 0.05$. The overall model explains 16% of the variance in family-to-work conflict ($R^2 = 0.16$), and the addition of the interaction term between TS and WLB did not significantly improve the model ($\Delta R^2 = 0.00$).



Note; *LWB= Life to Work Boundaries, FWC= Family to Work Conflict TS= Technostress*

Dotted slope (- - - - -) represents high, (.___. .___.) presents Medium and (____) presents Low Work Life Boundaries

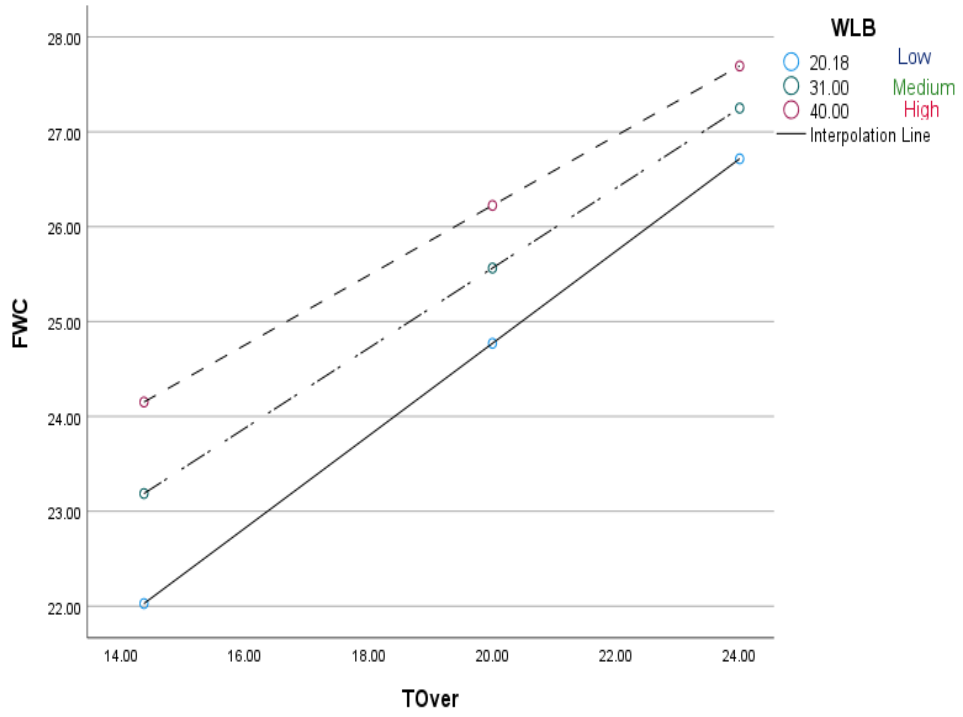
Figure 14 Interaction of Life-to-Work boundary on Technostress and Family to work Conflict.

Table 45 *Moderating Effect of Work to Life Boundaries on components of Technostress and Family to Work Conflict (N = 245).*

		FWC			*95% CI*	
Predictors	B	SE	*t*	*p*	*LL*	*UL*
Constant	11.14	5.53	2.01	.05	0.25	22.04
Techno Overload	0.61	0.29	2.13	.03	0.05	1.17
WLB	0.19	0.17	1.12	.27	-0.15	0.53
Techno Overload x WLB	-0.01	0.01	-0.69	.49	-0.02	0.01
R^2	0.10					
ΔR^2	0.00					
F (3.00) = 8.55, p = .0000						
Constant	19.15	4.59	4.17	.00	10.1	28.19
Techno Invasion	0.36	0.49	0.74	.46	-0.60	1.32
WLB	0.02	0.15	0.12	.90	-0.27	0.31
Techno Invasion x WLB	0.01	0.02	0.54	.59	-0.02	0.04
R^2	0.08					
ΔR^2	0.00					
F (3.00) = 6.85, p < .001						
Constant	9.60	5.36	1.79	.07	-0.96	20.15
Techno Complexity	0.91	0.37	2.46	.01	0.18	1.64
WLB	0.24	0.16	1.45	.14	-0.09	0.56
TechnoComplexity x WLB	-0.01	0.01	-0.98	.33	-0.03	0.01
R^2	0.13					
ΔR^2	0.00					
F (3.00) = 11.49, p < .001						
Constant	7.82	5.13	1.52	.12	-2.29	17.93
Techno Insecurity	1.09	0.36	3.02	.00	0.38	1.80
WLB	0.23	0.16	1.43	.15	-0.09	0.55
Techno Insecurity x WLB	-0.01	0.01	-1.01	.31	-0.03	0.01
R^2	0.18					
ΔR^2	0.00					
F (3.00) = 18.04, p < .001						
Constant	16.33	5.52	2.96	.00	5.46	27.21
Techno Uncertainty	0.41	0.40	1.02	.31	-0.38	1.21
WLB	0.21	0.18	1.21	.22	-0.14	0.56
Techno Uncertainty x	-0.01	0.01	-0.61	.54	-0.03	0.02
R^2	0.03					
ΔR^2	0.00					
F (3.00) = 2.70, p < .05						

Table 20 presents the moderating effect of work-to-life boundaries (WLB) on the relationship between five components of technostress and family-to-work conflict (FWC). The results showed that; Techno-overload: The interaction between techno-overload and WLB was not significant (b = -0.01, 95% CI [-0.02, 0.01], t = -0.69, p > .05), indicating that WLB does not moderate this relationship. Techno-overload significantly predicted FWC (b = 0.61, t = 2.13, p < .05). The model explained 10% of the variance in FWC (R^2 = 0.10), with no significant change when adding the interaction term (ΔR^2 = 0.00). Techno-invasion: WLB did not moderate the relationship between techno-invasion and FWC (b = 0.01, 95% CI [-0.02, 0.04], t = 0.54, p > .05). Techno-invasion did not significantly predict FWC (b = 0.36, t = 0.74, p > .05). The model accounted for 8% of the variance in FWC (R^2 = 0.08), with no significant improvement from the interaction term (ΔR^2 = 0.00).Techno-complexity: No significant interaction was found between techno-complexity and WLB (b = -0.01, 95% CI [-0.03, 0.01], t = -0.98, p > .05), suggesting that WLB does not moderate this relationship. Techno-complexity significantly predicted FWC (b = 0.91, t = 2.46, p < .05). The model explained 13% of the variance in FWC (R^2 = 0.13), with no significant improvement from the interaction term (ΔR^2 = 0.00).Techno-insecurity: The interaction between techno-insecurity and WLB was not significant (b = -0.01, 95% CI [-0.03, 0.01], t = -1.01, p > .05), indicating that WLB does not moderate this relationship. Techno-insecurity significantly predicted FWC (b = 1.09, t = 3.02, p < .01). The model accounted for 18% of the variance in FWC (R^2 = 0.18), with no significant improvement from the interaction term (ΔR^2 = 0.00). Techno-uncertainty: WLB did not moderate the relationship between techno-uncertainty and FWC (b = -0.01, 95% CI [-0.03, 0.02], t = -0.61, p > .05). Techno-uncertainty did not significantly predict FWC (b = 0.41, t = 1.02, p > .05). The model explained only 3% of the variance in FWC (R^2 = 0.03), with no significant improvement from the interaction term (ΔR^2 = 0.00).

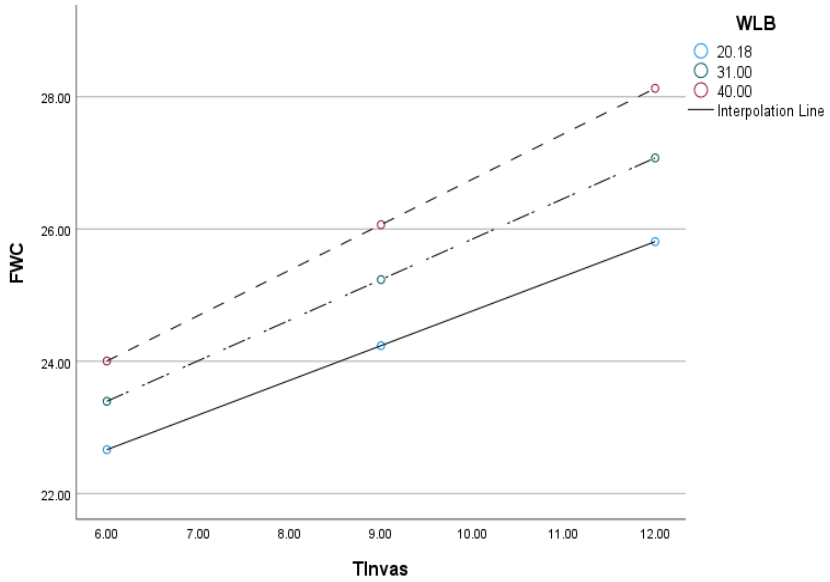
In summary, work-to-life boundaries did not significantly moderate the relationships between any of the five components of technostress and family-to-work conflict. Techno-overload, techno-complexity, and techno-insecurity significantly predicted family-to-work conflict, while techno-invasion and techno-uncertainty did not. The overall explanatory power of the models varied, with techno-insecurity explaining the most variance (18%) and techno-uncertainty explaining the least (3%).



Note; *WLB = Work to Life Boundaries, FWC= Family to Work Conflict Tover= Techno overload*

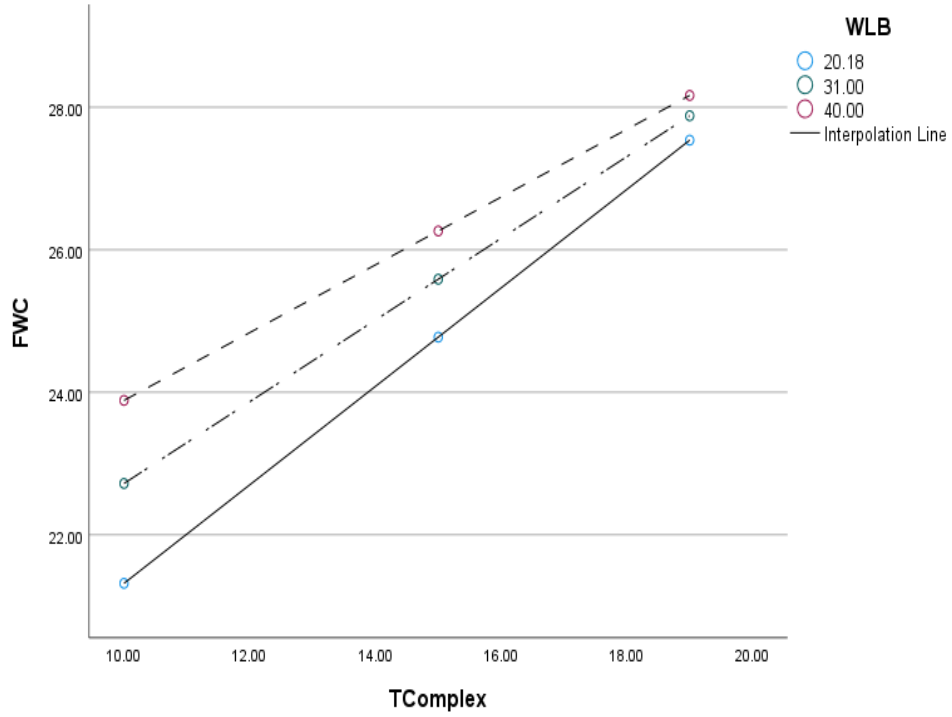
Dotted slope (- - - - -) represents high, (.___. .___.) presents Medium and (____) presents Low Work Life Boundaries

Figure 15 Interaction of Work to Life boundary on Techno Overload and Family to Work Conflict



Note; *WLB = Work to Life Boundaries, FWC= Family to Work Conflict Tinvas= Techno invasion*
Dotted slope (- - - - -) represents high, (.___. .___.) presents Medium and (____) presents Low Work Life Boundaries

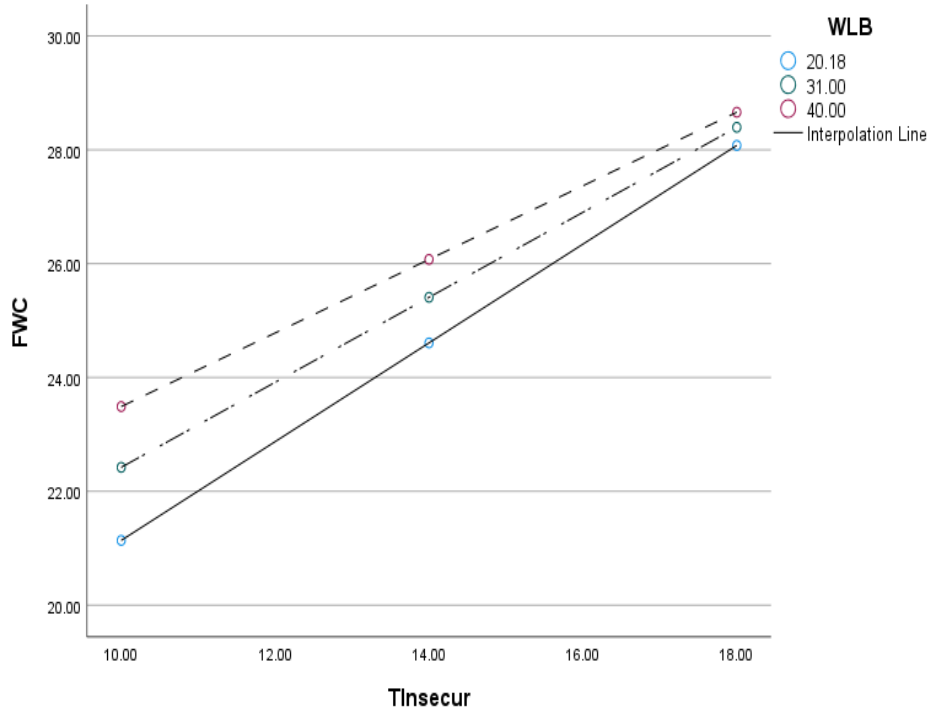
Figure 16 Interaction of Work to Life boundary on Techno invasion and Family to Work Conflict



Note; *WLB = Work to Life Boundaries, FWC= Family to Work Conflict Tcomplex= Techno complexity*

Dotted slope (- - - - -) represents high, (.___. .___.) presents Medium and (____) presents Low Work Life Boundaries

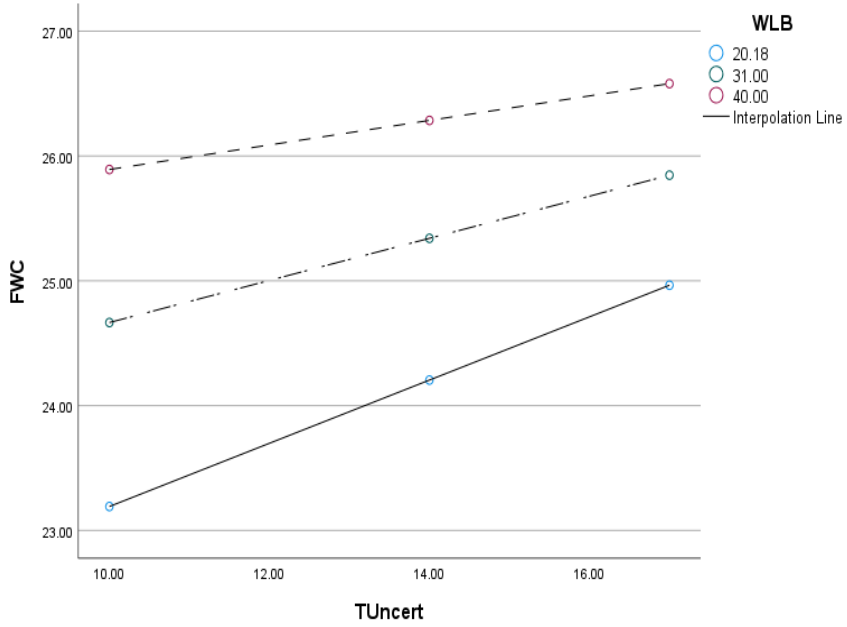
Figure 17 Interaction of Work to Life boundary on Techno complexity and Family to Work Conflict



Note; *WLB = Work to Life Boundaries, FWC= Family to Work Conflict Tinsec= Techno insecurity*

Dotted slope (- - - - -) represents high, (.___. .___.) presents Medium and (____) presents Low Work Life Boundaries

Figure 18 Interaction of Work to Life boundary on Techno insecurity and Family to Work Conflict



Note; *WLB = Work to Life Boundaries, FWC= Family to Work Conflict Tcomplex= Techno complexity*
Dotted slope (- - - - -) represents high, (.___. .___.) presents Medium and (____) presents Low Work Life Boundaries

Figure 19 Interaction of Work to Life boundary on Techno complexity and Family to Work Conflict

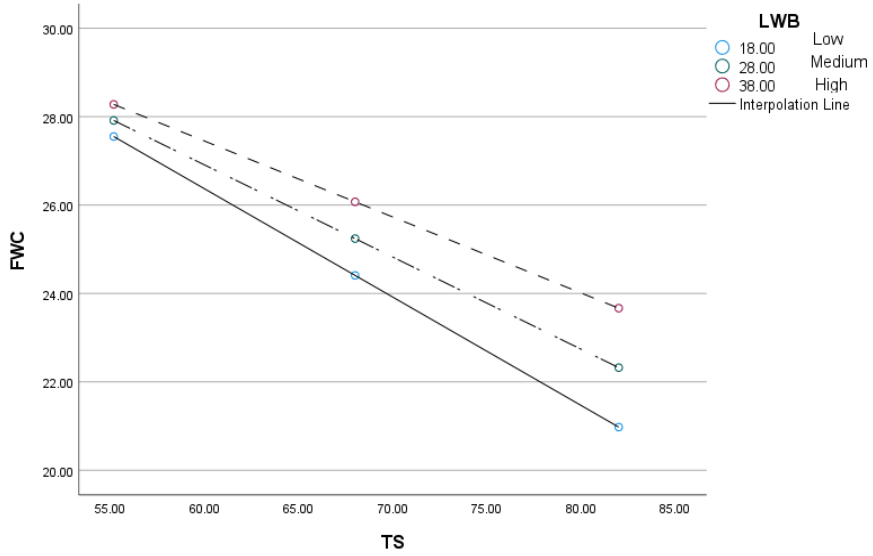
Table 46 *Moderating Effect of Life-to-Work Boundaries on Technostress and Family to Work Conflict (N = 245).*

	FWC				*95% CI*	
Predictors	B	SE	*t*	*p*	*LL*	*UL*
Constant	44.05	5.76	7.63	.00	32.69	55.42
TS	-.31	.08	-3.85	.00	-.47	-.15
LWB	-.16	.18	-.88	.37	-.53	.20
TS x LWB	.00	.00	1.37	.16	-.00	.01
R^2	.17					
ΔR^2	.00					
F (3.00) =17.6135, $p < .001$						

Note, FWC: Family to Work Conflict, LWB: Life-to-work boundaries, TS: Technostress,

Table 21 presents the regression coefficients concerning the examination of the moderating influence of life-to-work boundaries (LWB) on the relationship between technostress (TS) and family-to-work conflict (FWC). The regression coefficients, calculated F statistic, and direct and interaction effects of the study variables indicate that life-to-work boundaries (LWB) does not moderate the relationship between technostress (TS) and family-to-work conflict. Moderation is indicated by a significant interaction effect; however, in this case, the interaction is not significant, b = 0.00, 95% *CI* [-0.0, 0.01], t = 1.37, $p > 0.05$, suggesting that the relationship between technostress (TS) and family-to-work conflict (FWC) is not moderated by life-to-work boundaries (LWB). The main effect of technostress (TS) on family-to-work conflict is significant, b = -0.31, t = -3.85, $p < 0.001$, indicating that higher levels of technostress predict higher levels of family-to-work conflict. However, the main effect

of life-to-work boundaries (LWB) on family-to-work conflict is not significant, b = -0.16, t = -0.88, p > 0.05. The overall model explains 17% of the variance in family-to-work conflict (R^2 = 0.17), and the addition of the interaction term between TS and LWB did not significantly improve the model (ΔR^2 = 0.00).



Note; *LWB = Life to Work Boundaries, FWC= Family to Work Conflict TS= Technostress*

Dotted slope (- - - - -) represents high, (.___. .___.) presents Medium and (____) presents Low Life Work Boundaries

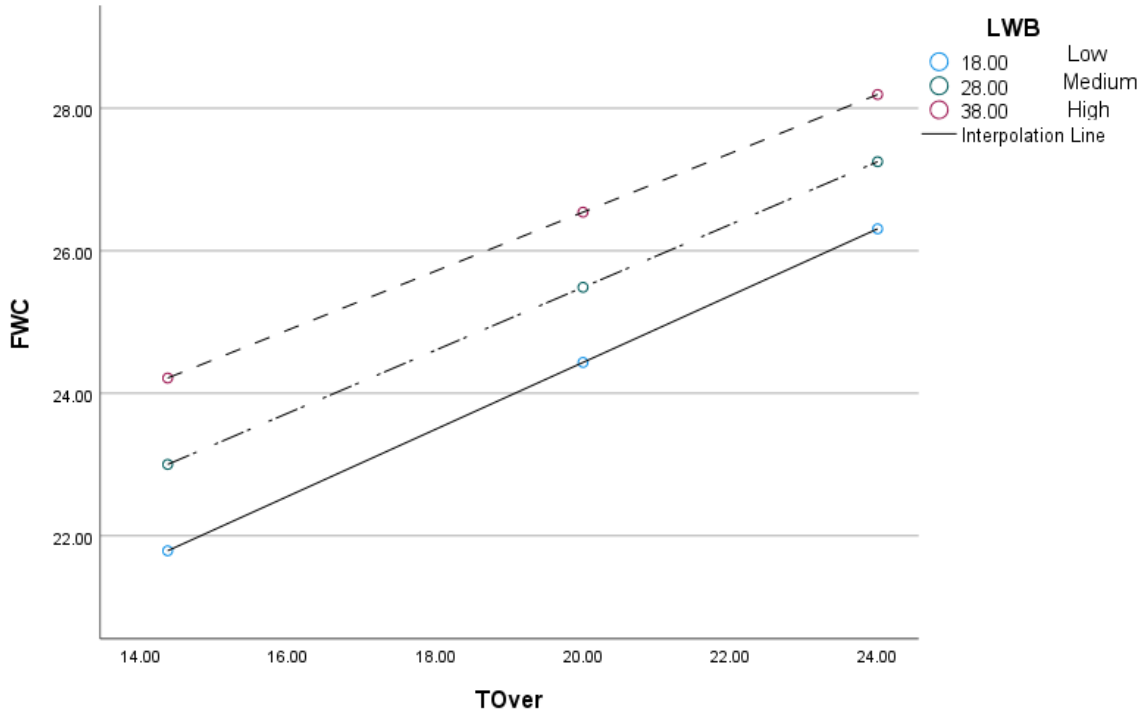
Figure 20 Interaction of Life to Work boundaries on Technostress and Family to Work Conflict

Table 47 *Moderating Effect of Life-to-Work Boundaries on Technostress and Family to Work Conflict (N = 245).*

	FWC				*95% CI*	
Predictors	B	SE	*t*	*p*	*LL*	*UL*
Constant	12.15	4.94	2.46	0.01	2.41	21.89
Techno Overload	0.52	0.25	2.05	0.04	0.02	1.02
LWB	0.16	0.17	0.94	0.38	-0.18	0.50
Techno Overload x LWB	-0.00	0.01	-0.32	0.89	-0.02	0.01
R^2	0.10					
ΔR^2	0.00					
F (3.00) = 9.42, p < 0.001						
Constant	11.96	3.84	3.11	0.00	4.39	19.54
Techno Invasion	1.14	0.41	2.77	0.01	0.33	1.96
LWB	0.28	0.13	2.08	0.04	0.01	0.54
Techno Invasion x LWB	-.02	0.01	-1.32	0.18	-0.05	0.01
R^2	0.09					
ΔR^2	0.01					
F (3.00) = 7.99, p < 0.001						
Constant	2.39	4.54	0.53	0.59	-6.56	11.33
Techno Complexity	1.41	0.31	4.56	0.00	0.80	2.02
LWB	0.50	0.15	3.39	0.08	0.21	0.79
Techno Complexity x LWB	-0.03	0.01	-2.88	0.00	-0.05	-0.01
R^2	0.15					
ΔR^2	0.02					
F (3.00) = 14.68, p < 0.001						
Constant	7.88	4.57	1.72	0.08	-1.13	16.89
Techno Insecurity	1.16	0.33	3.55	0.00	0.52	1.81
LWB	0.24	0.15	1.60	0.11	-0.06	0.54
Techno Insecurity x LWB	-.01	0.01	-1.35	0.17	-0.03	0.01
R^2	0.18					
ΔR^2	0.01					
F (3.00) = 17.68, p < 0.001						
Constant	17.84	4.94	3.61	0.00	8.10	27.57
Techno Uncertainty	0.30	0.35	0.85	0.39	-0.40	1.00
LWB	0.16	0.17	0.94	0.34	-0.17	0.49
Techno Uncertainty x LWB	-.00	0.01	-0.25	0.80	-0.03	0.02
R^2	0.03					
ΔR^2	0.00					
F (3.00) = 2.87, p = 0.0371						

Table 22 presents the moderating effect of life-to-work boundaries (LWB) on the relationships between five components of technostress and family-to-work conflict (FWC). The results shows that; Techno-overload: The interaction between techno-overload and LWB was not significant (b = -0.00, 95% CI [-0.02, 0.01], t = -0.32, p > .05), indicating that LWB does not moderate this relationship. Techno-overload significantly predicted FWC (b = 0.52, t = 2.05, p < .05). The model explained 10% of the variance in FWC (R^2 = 0.10), with no significant change when adding the interaction term (ΔR^2 = 0.00). Techno-invasion: LWB did not significantly moderate the relationship between techno-invasion and FWC (b = -0.02, 95% CI [-0.05, 0.01], t = -1.32, p > .05). Techno-invasion significantly predicted FWC (b = 1.14, t = 2.77, p < .01). The model accounted for 9% of the variance in FWC (R^2 = 0.09), with a small but non-significant improvement from the interaction term (ΔR^2 = 0.01). Techno-complexity: A significant interaction was found between techno-complexity and LWB (b = -0.03, 95% CI [-0.05, -0.01], t = -2.88, p < .01), suggesting that LWB moderates this relationship. Techno-complexity significantly predicted FWC (b = 1.41, t = 4.56, p < .001), while LWB was marginally significant (b = 0.50, t = 3.39, p = .08). The model explained 15% of the variance in FWC (R^2 = 0.15), with a significant improvement from the interaction term (ΔR^2 = 0.02). Techno-insecurity: The interaction between techno-insecurity and LWB was not significant (b = -0.01, 95% CI [-0.03, 0.01], t = -1.35, p > .05), indicating that LWB does not moderate this relationship. Techno-insecurity significantly predicted FWC (b = 1.16, t = 3.55, p < .001). The model accounted for 18% of the variance in FWC (R^2 = 0.18), with a small but non-significant improvement from the interaction term (ΔR^2 = 0.01). Techno-uncertainty: LWB did not moderate the relationship between techno-uncertainty and FWC (b = -0.00, 95% CI [-0.03, 0.02], t = -0.25, p > .05). Techno-uncertainty did not significantly predict FWC (b = 0.30, t = 0.85, p > .05). The model explained only 3% of the variance in FWC (R^2 = 0.03), with no significant improvement from the interaction term (ΔR^2 = 0.00).

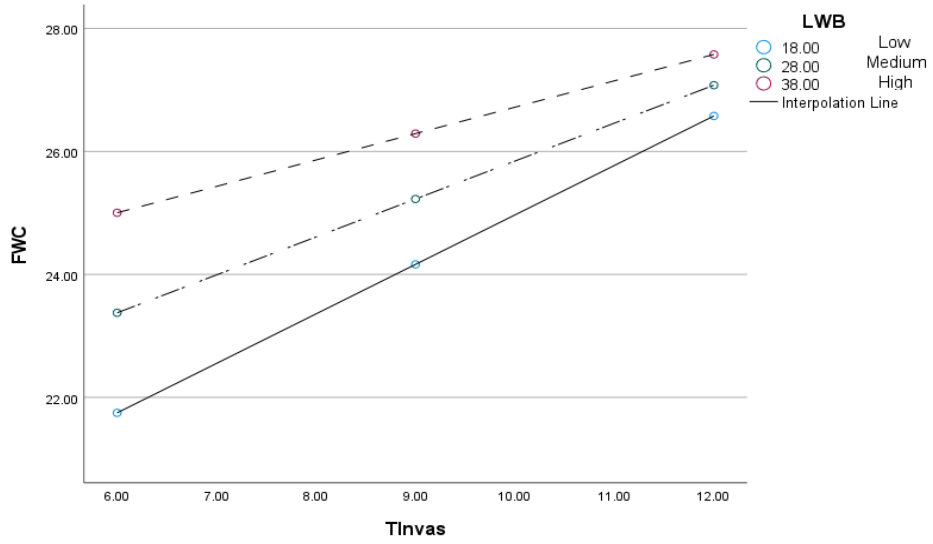
In summary, life-to-work boundaries significantly moderated only the relationship between techno-complexity and family-to-work conflict. Techno-overload, techno-invasion, techno-complexity, and techno-insecurity significantly predicted family-to-work conflict, while techno-uncertainty did not.



Note; *LWB = Life to Work Boundaries, FWC= Family to Work Conflict Tover= Techno overload*

Dotted slope (- - - - -) represents high, (.___. .___.) presents Medium and (____) presents Low Work Life Boundaries

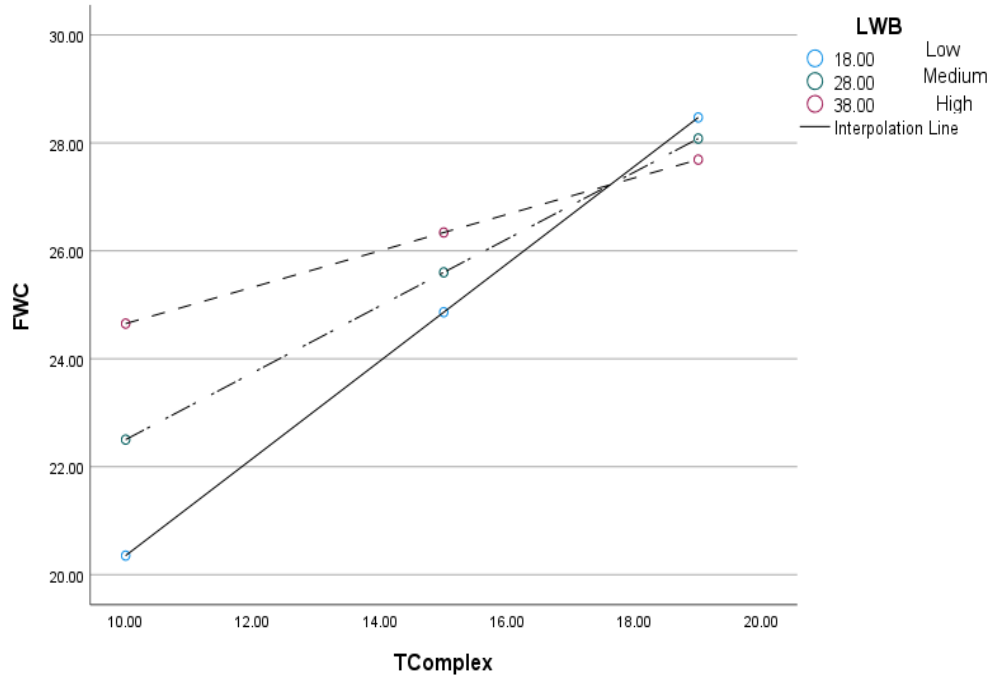
Figure 21 Interaction of Life to Work boundaries on Techno overload and Family to Work Conflict



Note; *LWB = Life to Work Boundaries, FWC= Family to Work Conflict Tinvasr= Techno invasion*

Dotted slope (- - - - -) represents high, (.___. .___.) presents Medium and (____) presents Low Work Life Boundaries

Figure 22 Interaction of Life to Work boundaries on Techno invasion and Family to Work Conflict

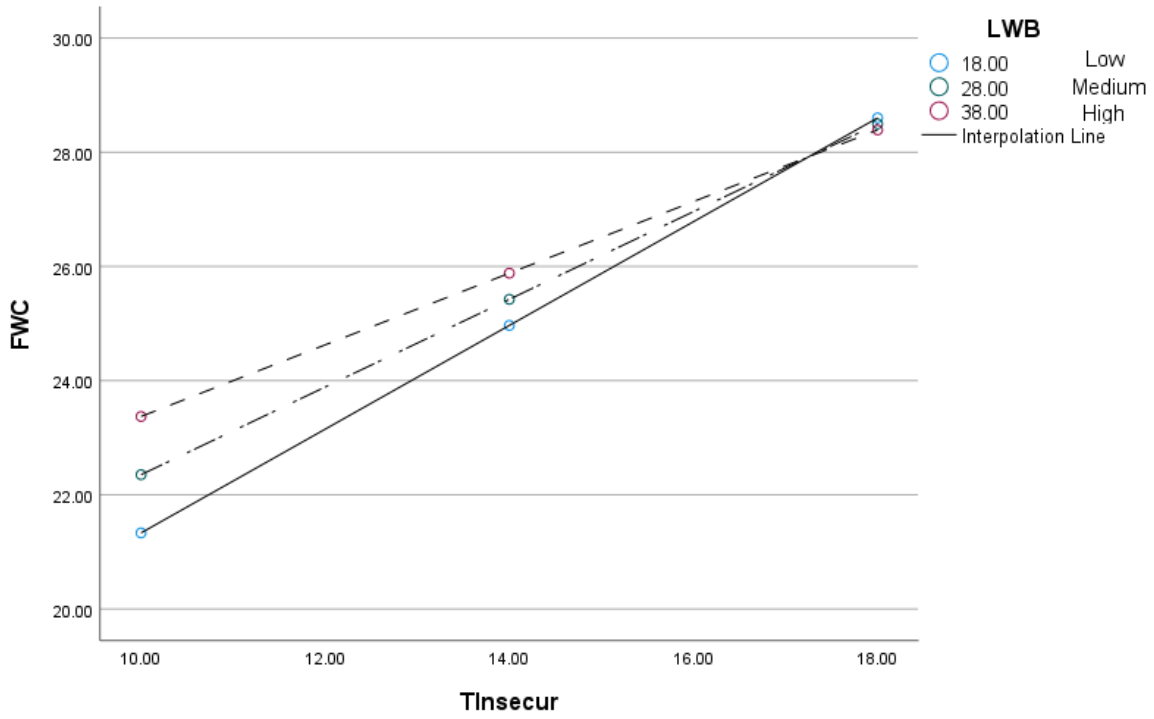


Note; *LWB = Life to Work Boundaries, FWC= Family to Work Conflict Tcomp= Techno complexity*

Dotted slope (- - - - -) represents high, (.___. .___.) presents Medium and (____) presents Low Work Life Boundaries

Figure 23 Interaction of Life to Work boundaries on Techno complexity and Family to Work Conflict

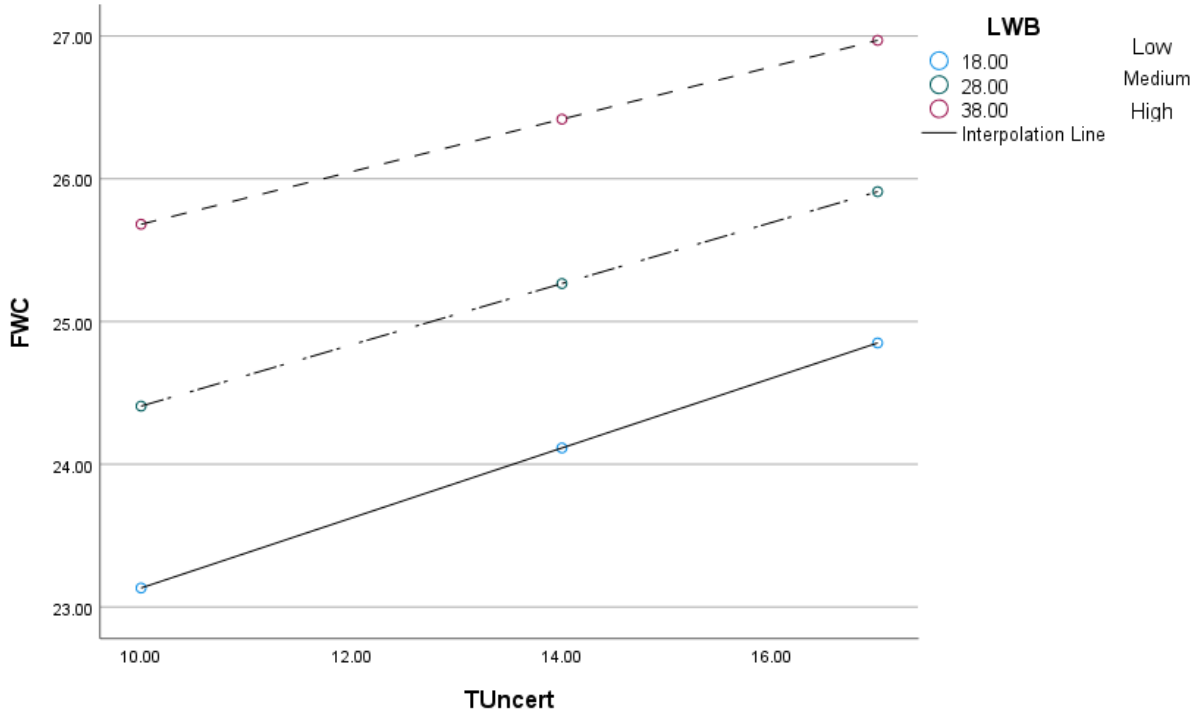
Simple slopes analysis indicated that the interaction between techno-complexity (TechnoCo) and life-to-work boundary characteristics (LWB) was significant at all levels of the moderator. Examination of the interaction plot reveals that the relationship between techno-complexity and work-to-family conflict (WFC) is moderated by life-to-work boundary characteristics across low, moderate, and high, levels of life-to-work integration/segmentation. These results support our hypotheses that life-to-work boundary characteristics moderate the relationship between techno-complexity and work-to-family conflict. The effect is most pronounced for those with high segmentation, as indicated by the steepest slope.



Note; *LWB = Life to Work Boundaries, FWC= Family to Work Conflict Tinsecur= Techno insecurity*

Dotted slope (- - - - -) represents high, (.___. .___.) presents Medium and (____) presents Low Work Life Boundaries

Figure 24 Interaction of Life to Work boundaries on Techno insecurity and Family to Work Conflict



Note; *LWB = Life to Work Boundaries, FWC= Family to Work Conflict Tuncert= Techno uncertainty*

Dotted slope (- - - - -) represents high, (.___. .___.) presents Medium and (____) presents Low Work Life Boundaries

Figure 25 Interaction of Life to Work boundaries on Techno uncertanity and Family to Work Conflict

Table 48 *Mean Difference in the Levels of Work Engagement, Burnout, Technostress, Work Family Conflict (WFC/FWC), and Work Life Boundaries (WLB/LWB) across IT, Telecommunication, and Media Industries (N=245)*

Variable	IT (n=95)		Telecommunication (n=82)		Media (n=68)				
	M	*SD*	*M*	*SD*	*M*	*SD*	*F*	*p*	η^2
WE	62.38	20.90	63.87	16.03	69.13	17.14	2.82	0.61	
B	36.55	4.82	38.02	5.22	36.97	3.93	2.20	.113	
TS	69.24	14.89	69.04	12.29	71.62	13.17	.814	.44	
TO	18.42	4.99	19.72	4.30	19.84	4.54	2.495	.08	
Tinv	8.76	2.88	8.55	2.80	9.52	2.61	2.471	.08	
Tcomp	14.31	4.56	14.27	3.93	14.79	3.53	.379	.68	
Tinsec	14.04	4.21	13.09	3.61	14.30	3.71	2.134	.12	
TUncer	13.73	3.66	13.41	3.27	13.17	3.44	.532	.58	
WFC	26.9	7.05	30.39	6.61	28.72	6.72	5.57	.00	0.04
FWC	28.60	7.51	25.48	7.11	25.38	7.23	.318	.72	
WLB	30.39	9.23	27.72	8.29	33.18	10.68	6.32	.00	0.05
LWB	30.07	9.59	25.44	8.67	27.78	9.92	5.35	.00	0.04

Note. **WE:** Work Engagement, **TS**: Technostress, **B:** Burnout, **WFC:** Work to Family Conflict, **FWC:** Family to Work Conflict, **WLB:** Work-to-life segmentation/integration **LWB**: Life-to-work segmentation/integration. **To**=Techno Overload, **Tinvas**= Techno invasion, **Tcomp** = Techno complexity, **Tinsec** = Techno insecurity, **TechnoUnr**= Techno uncertainty.s

Results reveals no significant differences across IT, Telecommunication, and Media industries in work engagement ($\eta^2 = .02$, small effect), burnout ($\eta^2 = .01$, small effect), or technostress ($\eta^2 = .00$, no effect). Similarly, there are no significant differences in techno

overload, techno invasion, techno complexity, techno insecurity and techno uncertainty across IT, Telecommunication, and Media.

Significant differences are observed in work-family conflict (WFC) (η^2 = .04, small effect) across industries. Telecommunication professionals reported the highest levels of WFC, followed by media and IT professionals. No significant difference is present in family-work conflict (FWC) (η^2 = .00, no effect) across IT, Telecommunication, and Media industries.

Work-life boundaries (WLB) differs significantly among industries (η^2 = .05, small effect). Media professionals reported the highest levels of WLB, followed by IT and telecommunication professionals. Life-work boundaries (LWB) also shows significant differences (η^2 = .04, small effect), with IT professionals reporting the highest levels, followed by media and telecommunication professionals.

Table 49a *Post hoc analysis for Work family conflict.*

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				95% CI	
i	j	mean difference (i-j)	P	LB	UB
IT	Telecommunication	-3.42*	.00	-5.85	-1.00
Telecommunication	Media	1.67	.29	-.97	4.31
Media	IT	1.75	.23	-.80	4.3

Post hoc analysis reveals significant differences in work-family conflict between IT and Telecommunication (-3.42, p = .003) indicating telecommunication employees scored significantly higher on WFC as compared to IT professionals.

Table 50b *Post hoc analysis for Work life boundaries.*

				95% CI	
i	j	mean difference(i-j)	P	LB	UB

IT	Telecommunication	2.67	.142	-.65	6.01
Telecommunication	Media	-5.45*	.001	-9.08	-1.83
Media	IT	2.67	.150	-.73	6.29

Post hoc analysis reveals significant differences in work-life boundaries between Telecommunication and Media (-5.457, p = .001), highlighting that media professionals scored significantly higher than the telecommunication employees on work life boundaries

Table 51c *Post hoc analysis for Life Work boundaries*

				95% CI	
i	**j**	mean difference(i-j)	P	LB	UB
IT	Telecommunication	4.62*	.00	1.29	7.97
Telecommunication	Media	-2.34	.28	-5.97	1.29
Media	IT	-2.28	.27	-5.81	1.23

Analysis of life-work boundaries shows significant difference between IT and Telecommunication (4.629, p = .004) reflecting IT professionals scored significantly higher on life work boundaries as compared to telecommunication employees.

Table 52 *Mean Difference in the Levels of Work Engagement, Burnout, Technostress, Work Family Conflict (WFC/FWC), and Work Life Boundaries (WLB/LWB) across marital status*.

Variable	Married (n=89)		Divorced (n=1)		Widow (n=3)		Single (n=152)			
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F*	*p*
WE	66.81	21.06	49.0	-	77.0	9.5	63.40	16.86	1.32	.26
B	35.62	4.14	37.00		30.00	4.00	35.94	4.46	1.90	.13
TS	70.22	13.14	57.00		74.67	8.02	69.60	13.96	.46	.71
TO	18.93	4.66	17.00		22.33	4.04	19.38	4.69	.68	.56
Tinv	9.08	2.73	5.00		9.66	2.51	8.80	2.83	.90	.43
Tcomp	14.56	3.66	12.00		13.33	7.23	14.39	4.27	.22	.87
Tinsec	13.69	3.72	9.00		15.33	1.15	13.69	4.03	.74	.52
TUncer	13.69	3.53	14.00		14.00	1.73	13.32	3.46	.24	.86
WFC	27.39	6.84	34.00		33.33	5.50	29.18	6.95	1.94	.123
FWC	24.72	7.41	23.00		28.00	3.46	25.35	7.29	.32	.81
WLB	31.39	9.72	25.00		32.33	10.78	29.62	9.48	.78	.50
LWB	31.39	9.72	25.00		32.33	10.78	29.62	9.48	1.65	.17

Note. ***WE:*** *Work Engagement,* ***TS****: Technostress,* ***B:*** *Burnout,* ***WFC:*** *Work to Family Conflict,* ***FWC:*** *Family to Work Conflict,* ***WLB:*** *Work-to-life segmentation/integration* ***LWB****: Life-to-work segmentation/integration.* ***To****=Techno Overload,* ***Tinvas****= Techno invasion,* ***Tcomp*** *= Techno complexity,* ***Tinsec*** *= Techno insecurity,* ***TechnoUnr****= Techno uncertainty.*

Table 53 *Comparison of Technostress, Burnout, Work Engagement, Work family conflict and Work Life Boundaries between Males and Females (N=245)*

Variables	Male		Female		t(243)	Sig	Cohen's d
	M	SD	M	SD			
TS	70.90	13.66	67.45	13.21	1.85	.06	0.26
B	36.42	4.78	38.81	4.32	-3.73	.00	4.64
WE	65.33	19.62	63.47	15.77	0.72	.47	0.10
WFC	28.16	7.24	29.57	6.16	-1.48	.14	0.20
FWC	25.49	7.52	24.37	6.71	1.12	.27	0.15
WLB	30.37	9.39	30.07	10.01	0.23	.82	0.03
LWB	27.91	9.54	27.83	9.66	0.06	.95	0.01

Note. ***TS:*** *Technostress,* ***B:*** *Burnout,* ***WE:*** *Work Engagement,* ***WFC:*** *Work to Family Conflict,* ***FWC:*** *Family to Work Conflict,* ***WLB:*** *Work-to-life segmentation/integration* ***LWB****: Life-to-work segmentation/integration.* $p<.05$

Table 27 showed significant gender differences in burnout with males scoring lower than females (M=36.42, SD=4.78) and females (M=38.81, SD=4.32), t (243) = -.3.73, p= .001. The effect size, measured using Cohen's d, was (d = 4.64), suggesting a significant difference between males and females. However, for the remaining variables (TS, WE, WFC, FWC, WLB, LWB), there were no significant differences between males and females, and the effect sizes were small, suggesting negligible gender-based differences.

Table 54 Mean Difference in the Levels of Work Engagement, Burnout, Technostress, Work Family Conflict (WFC/FWC), and Work Life Boundaries (WLB/LWB) across different working hours (N=245)

Variables	8 hours		More than 8 hours		t(243)	Sig	Cohen's d
	M	SD	M	SD			
TS	71.36	13.92	67.99	12.99	1.94	.05	0.25
B	37.03	4.45	37.32	5.13	-0.49	.62	-0.06
WE	65.12	19.44	64.30	17.38	0.35	.73	0.04
WFC	28.10	7.00	29.19	6.87	-1.22	.22	-0.16
FWC	25.35	7.44	24.89	7.11	0.49	.62	0.06
WLB	31.63	9.69	28.64	9.20	2.46	.01*	0.32
LWB	29.22	9.64	26.27	9.25	2.43	.01*	0.31

Note. ***TS:*** *Technostress,* ***B:*** *Burnout,* ***WE:*** *Work Engagement,* ***WFC:*** *Work to Family Conflict,* ***FWC:*** *Family to Work Conflict,* ***WLB:*** *Work-to-life segmentation/integration* ***LWB****: Life-to-work segmentation/integration.*
p<.05

Table 28 shows that working hours did not significantly affect Technostress, Burnout, Work Engagement, Work-to-Family Conflict, or Family-to-Work Conflict. However, people who worked 8 hours a day had much better Work-to-Life Boundaries (WLB) and Life-to-Work Boundaries (LWB) than those who worked more than 8 hours.

Participants working 8 hours (M = 31.63, SD = 9.69) reported significantly higher work-to-life boundary segmentation/integration than those working more than 8 hours (M = 28.64, SD = 9.20). The difference was statistically significant, t(243) = 2.46, p = .014, and the effect size (Cohen's d = 0.32) indicates a small-to-moderate effect.

Similarly, Life-to-work boundary segmentation/integration was significantly higher for participants working 8 hours (M = 29.22, SD = 9.64) compared to those working more than 8 hours (M = 26.27, SD = 9.25). The difference was statistically significant, t (243) = 2.43, p = .016, and the effect size (Cohen's d = 0.31) suggests a small-to-moderate effect.

Table 55 Comparison of Technostress, Burnout, Work Engagement, Work family conflict and Work Life Boundaries between family system (N=245)

Variables	Nuclear		Joint		t(243)	Sig	Cohen's d
	M	SD	M	SD			
TS	69.06	13.89	70.43	13.39	.78	.43	.10
B	38.04	4.99	36.48	4.47	2.57	.01	.33
WE	66.17	18.17	66.65	18.74	1.06	.29	.13
WFC	29.58	6.95	27.80	6.86	1.95	.05	.25
FWC	25.78	7.54	24.65	7.06	1.19	.23	.15
WLB	30.34	10.13	30.24	9.14	.08	.93	.01
LWB	28.27	9.85	27.58	9.34	.55	.57	.07

*Note. **TS:** Technostress, **B:** Burnout, **WE:** Work Engagement, **WFC:** Work to Family Conflict, **FWC:** Family to Work Conflict, **WLB:** Work-to-life segmentation/integration **LWB**: Life-to-work segmentation/integration.*
p<.05

Table 35 compares technostress, burnout, work engagement, work-family conflict, and work-life boundaries between individuals from nuclear and joint family systems. The results show that individuals from nuclear families reported significantly higher burnout (M = 38.04, SD = 4.99) than those from joint families (M = 36.48, SD = 4.47), with a small effect size (Cohen's d = 0.33). No significant differences were found in technostress, work engagement),

family-to-work conflict, work-to-life boundaries or life-to-work boundaries, with all p-values indicating no significant effects. However, work-to-family conflict was slightly higher in nuclear families (M = 29.58, SD = 6.95) compared to joint families (M = 27.80, SD = 6.86).

Table 56 Comparison of Technostress, Burnout, Work Engagement, Work family conflict and Work Life Boundaries between part time job (N=245)

Variables	Yes		No		t(243)	Sig	Cohen's d
	M	SD	M	SD			
TS	73.80	14.79	69.08	13.25	2.00	.07	.34
B	36.35	5.13	37.32	4.68	-1.16	.24	.20
WE	62.88	24.60	65.10	17.15	-.68	.49	.12
WFC	27.55	7.59	28.80	6.81	-1.02	.30	.17
FWC	25.56	8.45	25.06	7.05	.39	.69	.06
WLB	32.03	101.29	29.95	9.45	1.24	.21	.21
LWB	28.54	11.58	27.76	9.14	.46	.64	.08

Note. ***TS:*** *Technostress,* ***B:*** *Burnout,* ***WE:*** *Work Engagement,* ***WFC:*** *Work to Family Conflict,* ***FWC:*** *Family to Work Conflict,* ***WLB:*** *Work-to-life segmentation/integration* ***LWB****: Life-to-work segmentation/integration.*
p<.05

Table 36 compares technostress, burnout, work engagement, work-family conflict, and work-life boundaries between individuals with part-time jobs and those without. The analysis shows that individuals with part-time jobs reported significantly higher technostress (M = 73.80, SD = 14.79) compared to those without part-time jobs (M = 69.08, SD = 13.25), with a small effect size (Cohen's d = 0.34). However, no significant differences were observed in burnout, work, work-to-family conflict, family-to-work conflict, work-to-life boundaries and life-to-work boundaries. These findings suggest that while individuals with part-time jobs

experience higher technostress, other factors like burnout, work engagement, and work-family conflict do not significantly differ between the two groups.

Table 57 Technostress prevalence levels across different sectors (IT, Telecommunication and Media)

	Frequency	Percent
IT	95	38.8
Telecommunication	82	33.5
Media	68	27.8
Total	245	100.0

Table 37 presents the prevalence levels of technostress across IT, Telecommunication, and Media. Among the 245 participants, the IT sector had the highest proportion of individuals experiencing technostress, with 95 participants (38.8%). This was followed by the Telecommunication sector, with 82 participants (33.5%), and the Media sector, with 68 participants (27.8%). These findings indicate that technostress is distributed across all sectors, with a relatively higher prevalence in the IT sector compared to Telecommunication and Media.

Chapter 5

DISCUSSION

This study examined the relationship between technostress, burnout, and work engagement among ICT professionals. The research also explored the mediating role of work-family conflict in these relationships, analyzing how it influences the impact of technostress on burnout and work engagement. Additionally, the study examined the moderating role of work-life boundary characteristics in the relationship between technostress and work-family conflict. By addressing these objectives, this research aimed to provide an understanding of how techno stress impact employees in the ICT sector. The findings offer valuable insights into the complex dynamics of the modern digital workplace, contributing for managing technostress in organizations.

The first hypothesis indicates that technostress predicts burnout, which is significantly crucial in the ICT industry, where professionals are constantly interacting with advanced technology and rapid technological changes are common in this field. Current findings supported this hypothesis, confirming that higher levels of technostress significantly relate to greater burnout. This finding aligns with previous literature revealing links between work-related technology use stress and burnout across different occupations including ICT users and other occupations as well e.g. teaching. (Bahr et al., 2023; Ya’acob & Aziz, 2021; Zhao et al., 2021). These findings highlight the pervasive detrimental impact of technostress on employee burnout regardless of occupation or work context. The confirmed relationship between these variables showcases the urgent need for ICT organizations to recognize and mitigate technostress to maintain employee well-being and productivity.

The second hypothesis stated that technostress leads to lower work engagement. However, this hypothesis was not confirmed in the present study. While it's common to consider that

stressed employees would be less engaged, the results indicate that the relationship is more complicated. This means every person's experience with burnout and engagement can differ, as they can be seen as opposite ends of a spectrum (Oi-lin, 2008). This finding differs with most previous research, which shows that technostress negatively affects work engagement. Many studies highlight the significant impact of technostress on various jobs, including remote workers, healthcare professionals, and general employees, supporting the idea of a negative link between technostress and work engagement (Bail et al., 2023; Dalmazi et al., 2022; Kot, 2022).

On the other hand, some research shows a different view. For instance, Okolo (2018) found a positive relationship between technostress and employee engagement, which goes against the negative link suggested by earlier studies. Another study done in Iraq during the COVID-19 pandemic found no real relationship between technostress and work engagement but did find a positive link between perceived support from supervisors and work engagement, suggesting that outside factors can affect employees' well-being (Mohammed, 2022).

These findings highlight the complex relationship between technostress and work engagement, showing that context and additional factors, like job design and supervisor support can affect this relationship is. Furthermore, our analysis revealed that only techno overload and techno insecurity significantly impacted work engagement, while other aspects like techno invasion, complexity, and uncertainty did not. This suggests that the context can vary and that support from co-workers or managers may help alleviate the effects of technostress (Halbesleben, 2010; Schaufeli & Bakker, 2004).

Third hypothesis states that work-family conflict mediates the relationship between technostress and burnout. Current study focused on two dimensions of work-family conflict (WFC), and found that both work-to-family conflict and family-to-work conflict significantly mediate the relationship between technostress and burnout.

Results showed higher levels of technostress led to increased work-to-family conflict, which then resulted in higher burnout. This finding supports previous research that links technostress to difficulties in balancing work and family, leading to burnout (Barber & Santuzzi, 2015; Mark, 2016). Regarding family-to-work conflict, it also played a mediating role, but its effects varied depending on the different aspects of technostress involved. This variation highlights that the way stress from family affects work may depend on the specific sources of technostress.

These results align with existing literature showing that technostress can disrupt personal time and create work-family conflict, leading to burnout (Barber & Santuzzi, 2015). Similarly, Mark (2016) noted that technology has blurred the boundaries between work and personal life, as employees often respond to work emails and messages while spending time with family and friends. This constant connectivity makes it difficult for employees to be mentally present during personal time, leading to work-life imbalance and ultimately, burnout.

The fourth hypothesis was; work-family conflict mediates the relationship between technostress and work engagement. Interestingly, while the overall findings did not support this hypothesis, a detailed examination revealed that specific dimensions of technostress showed varying impacts on work engagement. Notably, techno-insecurity showed significant mediation effects, while techno-overload and techno-complexity exhibited strong direct effects without mediation.

This suggests that the relationship between technostress and work engagement isn't straightforward and may involve several factors beyond just work-family conflict. Recent research (Tsai, 2023) confirms that stress can be influenced by organizational support, highlighting that effective interventions, like Employee Assistance Programs, can significantly mitigate the negative impacts of stress on workplace engagement.

The fifth hypothesis explored the moderating role of work-life boundary characteristics in the relationship between technostress and work-family conflict. This hypothesis focused on work- to-life segmentation/integration and life-to-work segmentation/integration. Work-to-life segmentation/integration did not moderate the relationship between technostress and work-to-family conflict. This result can be interpreted through the lens of Mellner and Aronsson (2014) who suggest that successful work-life balance is influenced not only by boundary management preferences but also by individual characteristics, psychosocial work factors, and sociodemographic factors. This multifaceted approach to work-life balance underscores the complexity of the relationship between technostress and work-family conflict. While the overall hypothesis was not supported, component-wise analysis revealed significant moderation effects for techno-complexity and techno-insecurity.

Life-to-work segmentation/integration moderating the relationship between technostress and work-to-family conflict was supported by the current data set. This finding aligns with previous literature suggesting that segmenting work from home results in greater enrichment of work roles (Paustian et al., 2016). It also corroborates earlier research indicating that blurred boundaries between work and home, often caused by technologies like smartphones, lead to increased conflict (Grant & Kiesler, 2001; Green, 2001, 2002; Hill et al., 1996). Derks and Bakker (2011) finding that daily work-home interference increases with greater smartphone use outside work hours further supports this result.

The sixth hypothesis explored the moderating role of work-life boundary characteristics in the relationship between technostress and family-to-work conflict. This hypothesis H6a focuses on work- to-life segmentation/integration and H6b on life-to-work segmentation/integration. Neither H6a nor H6b were supported by the overall data. However, a component-wise analysis of life-to-work segmentation/integration revealed that techno-complexity had a significant effect, while the other components remained non-significant.

Adaptation theory can provide a potential framework for understanding these results. According to this theory, while stressors may negatively impact individual well-being in the short term, people tend to adapt to new situations over time, with well-being returning to previous levels (Brickman, Coates & Janoff, 1978). In the context of our study, this suggests that while segmentation might initially exacerbate work-non work balance issues, its impact may diminish as individuals become accustomed to their work arrangements.

These findings underscore the complex and dynamic nature of the relationship between work-life boundaries and work-family conflict. They suggest that other factors, such as individual adaptability, the nature of technological stressors, and the specific work context, may play crucial roles in determining the effectiveness of boundary management strategies (Brickman, Coates, & Janoff-Bulman, 1978).

Future research should examine how well employee preferences for segmentation or integration match their actual job requirements, as this could yield valuable insights. For instance, individual beliefs about work and family might affect how technostress leads to work-family conflict. While some studies suggest that segmentation can be a useful strategy (Paustian et al., 2016; Grant & Kiesler, 2001), our findings show that the success of these strategies can vary based on personal situations and characteristics.

The present study makes several notable contributions to the literature. First, extending this research to ICT employees provides new insights into how technostress manifests across different occupations. Second, the study produced some findings that differ from previous literature and warrant further investigation for instance; the lack of a significant relationship between technostress and work engagement contrasts with most prior studies. Additional research should explore potential explanatory mechanisms besides work-family conflict that affect how technostress impacts work engagement.

5.1 Conclusion

This study has made significant contributions to understanding the associations between technostress, work engagement, burnout, and work-family conflict. Technostress positively related to burnout, highlighting its harmful impact. However, technostress did not negatively relate to work engagement, suggesting this link could depend on other factors. Also, while work-family conflict mediated technostress-burnout links relationship, it did not explain technostress-work engagement relationship. This points to more complex mechanisms needing study. Life-work boundaries buffered technostress effects on work-family conflict, making it a potential protective factor. Effective interventions may include training to help employees set boundaries around work technology use and mentally disengage from work during non-work time. This can reduce work-family conflict and burnout stemming from technostress. This study provides an important basis for better understanding the stresses faced by today's constantly connected employees and developing organizational initiatives to build engagement and prevent burnout.

In addition, this study contributes to a more comprehensive understanding of technostress by examining all five dimensions of techno-stressors. This approach provides a more holistic view compared to previous research, which often focused on single aspects such as techno-overload or techno-invasion (Gaudioso et al., 2017). This approach allows us to capture the complex interplay between various techno stressors and their collective impact on employees work and personal lives.

Overall, this study findings will ideally inform organizational efforts to promote employee well-being, motivation, and performance in the contemporary technology-driven workplace.

5.2 Limitations

Current study is not without shortcomings. There are several potential limitations to this research that should be addressed. First, there are many other factors that can explain the

relationship between technostress and work engagement. For example, perceived organizational support, stress management resources, EAPs (Employee Assistant Programs), work-life balance support and coping strategies (Tsai, 2023). Therefore, it is important to look deeper on other factors that can affect the relationship of study variables.

Another limitation was the lack of data on actual job demands and organizational norms regarding availability and responsiveness to work issues during non-work times. Always-on cultures and expectations of being constantly reachable might play an important role in technostress and work-family conflict which were not explored in this study.

Data was bound to Islamabad and Rawalpindi, so it is suggested to explore diversity and for generalizability of results, the data should be included from other parts too. Data was exclusively collected from IT, Telecom and Media professionals. Future research could expand the scope by including data from other industries and occupations which would provide a more comprehensive understanding of the topic.

The study design was cross-sectional. The relationships examined would be better supported using longitudinal designs that follow employees over time.

5.3 Recommendations for Future Studies

Future research should access factors such as; perceived support from one's employer, stress management and work-life balance programs, and employees' own coping strategies that may help buffer the impacts of technostress and prevent reduction of work engagement. Studies to access such organizational resources could provide stronger evidence for these explanatory mechanisms.

Future research should directly assess organizational policies, supervisor expectations, and typical practices around responding to work emails, messages, or calls after hours, on weekends, and during vacations. This could include surveys of organizational norms, observations of actual availability demands, or monitoring of off-hour communications.

Examining whether high demands for availability outside standard work hours exacerbate technostress and impair work-life balance could provide important insights.

Future studies could use longitudinal designs that follow employees over time.

5.4 Implications

The present study makes several notable contributions to the literature on technostress, work-family conflict, and employee well-being outcomes like burnout and work engagement. Extending this research to ICT employees provides new insights into how technostress manifests across different occupations. The findings emphasize the importance of managing ICT usage effectively. Organizations can offer training programs focused on time management and digital wellbeing, helping employees develop skills to prioritize tasks, set boundaries, and reduce distractions from technology. These programs can empower employees to manage their digital habits more effectively, thereby reducing technostress.

Organizations can promote a culture that prioritizes employee well-being and recognizes the importance of work-life balance. Organizations should encourage behaviors that reflect respect for personal time, such as setting boundaries around after-hours communication and validating employees' need to disconnect.

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ANNEXURE I

(Informed Consent)

Examining Technostress, Work Engagement, and Burnout: Role Of Work-Family Conflict And Work-Life Boundary Characteristics

Information Sheet for Organizations

Researcher: Ilsa Taj

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The Research Study:

I am a student of MPhil in the Department of Applied Psychology at NUML, conducting a research study on "Techno stress, work engagement, and burnout: role of work-family conflict and work-life boundary characteristics." My name is Ilsa Taj, and my email is ilsataj@gmail.com. I am collecting data from corporate employees for this research, which is a requirement for the completion of my degree. I assure you that the information obtained from this questionnaire will not be disclosed and will only be used for research-related purposes. You are allowed to withdraw your name and details from this research at any time if you don't feel comfortable.

Consent

I _____ have accurately read the above information. My Participation in this research project is voluntary.

Participant Signature: **Date:**

Researcher Signature: **Date:**

ANNEXURE II

(Demographic Sheet)

1. Gender
    a. Male b. Female

2. Age (in years)
    a. 25 or Below b. 26 – 35 c. 36 – 45 d. 46 or above

3. Sector of employment
    a. IT b. Telecom c. Media

4. Type of Organization
    a. Government b. Private

5. Marital status
    a. Married b. Divorced c. Window d. Single

6. Family system
    a. Nuclear b. Joint

7. Qualification
    a. Master or Below b. MS/Mphil c. Any other qualification.

8. Job experience in years
    a. 1 year or less b. 1 – 5 years c. 6 – 10 years
    d. 11 – 15 years e. 15 years or above

9. Working Hours
    a. 8 b. More than 8

10. Any part time job other than primary job?
    a. Yes b. No

ANNEXURE III

(Scales)

Oldenburg Burnout Inventory

Instructions: Below you find a series of statements with which you may agree or disagree. Using the scale, please indicate the degree of your agreement by selecting the number that corresponds with each statement.

		Strongly Agree	Agree	Disagree	Strongly Disagree
1.	I always find new and interesting aspects in my work.	1	2	3	4
2.	There are days when I feel tired before I arrive at work.	1	2	3	4
3.	It happens more and more often that I talk about my work in a negative way.	1	2	3	4
4.	After work, I tend to need more time than in the past in order to relax and feel better.	1	2	3	4
5.	I can tolerate the pressure of my work very well.	1	2	3	4
6.	Lately, I tend to think less at work and do my job almost mechanically.	1	2	3	4
7.	I find my work to be a positive challenge.	1	2	3	4
8.	During my work, I often feel emotionally drained.	1	2	3	4
9.	Over time, one can become disconnected from this type of work.	1	2	3	4
10.	After working, I have enough energy for my leisure activities.	1	2	3	4
11.	Sometimes I feel sickened by my work tasks.	1	2	3	4
12.	After my work, I usually feel worn out and weary.	1	2	3	4
13.	This is the only type of work that I can imagine myself doing.	1	2	3	4
14.	Usually, I can manage the amount of my work well.	1	2	3	4
15.	I feel more and more engaged in my work.	1	2	3	4
16.	When I work, I usually feel energized.	1	2	3	4

Work-life Boundary Characteristics

Please indicate where you place yourself between both ends of the scale. Work-to-life segmentation/integration.

S.No		1	2	3	4	5	6	7	
1	I never work from home	○	○	○	○	○	○	○	I often work from home
2	I never take work home	○	○	○	○	○	○	○	I often take work home
3	I always leave my workplace on time	○	○	○	○	○	○	○	I often leave my workplace late.
4	I never work after hours or on weekends	○	○	○	○	○	○	○	I often work after hours or on weekends.
5	I never think about work matters during my time off.	○	○	○	○	○	○	○	I often think about work matters during my time off.
6	I never communicate with people from work during my time off.	○	○	○	○	○	○	○	I often communicate with people from work during my time off.
7	I never talk about work with people from outside of work.	○	○	○	○	○	○	○	I often talk about work with people from outside of work.
8	Outside of work, I am a different person than I am at work.	○	○	○	○	○	○	○	Outside of work I am the same person as I am at work.
9	I never take care of non-work matters while physically at my workplace.	○	○	○	○	○	○	○	I often take care of non-work matters while physically at my workplace.
10	I have no personal items at my workplace.	○	○	○	○	○	○	○	I have many personal items at my workplace.
11	I never get to work late or leave early, in order to take care of non-work matters.	○	○	○	○	○	○	○	I often get to work late or leave early, in order to take care of non-work matters.
12	I never take care of non-work matters during scheduled work hours.	○	○	○	○	○	○	○	I often take care of non-work matters during scheduled work hours.

13	I never think about non-work issues while I am at work.	○	○	○	○	○	○	○	I often think about non-work issues while I am at work.
14	I never communicate with family and friends while I am at work.	○	○	○	○	○	○	○	I often communicate with family and friends while I am at work.
15	I never talk about my non-work life at work.	○	○	○	○	○	○	○	I talk a lot about my non-work life at work.
16	At work I behave completely different than at home.	○	○	○	○	○	○	○	At work I behave the same way as at home.

Work Engagement

Please read each statement carefully and decide if you ever feel this way about your job. If you have never had this feeling, cross the '0' (zero) in the space after the statement. If you have had this feeling, indicate how often you feel it by crossing the number (from 1 to 6) that best describes how frequently you feel that way.

0	1	2	3	4	5	6
Never	Almost never	Rarely	Sometimes	Often	Very often	Always

S#	STATEMENT	Never	Almost never	Rarely	Sometimes	Often	Very often	Always
1	At my work, I feel bursting with energy.	0	1	2	3	4	5	6
2	I find the work that I do full of meaning and purpose	0	1	2	3	4	5	6
3	Time flies when I'm working	0	1	2	3	4	5	6
4	At my job, I feel strong and vigorous	0	1	2	3	4	5	6
5	I am enthusiastic about my job	0	1	2	3	4	5	6
6	When I am working, I forget everything else around me	0	1	2	3	4	5	6
7	My job inspires me	0	1	2	3	4	5	6

8	When I get up in the morning, I feel like going to work	0	1	2	3	4	5	6
9	I feel happy when I am working intensely	0	1	2	3	4	5	6
10	I am proud on the work that I do	0	1	2	3	4	5	6
11	I am immersed in my work	0	1	2	3	4	5	6
12	I can continue working for very long periods at a time	0	1	2	3	4	5	6
13	To me, my job is challenging	0	1	2	3	4	5	6
14	I get carried away when I'm working	0	1	2	3	4	5	6
15	At my job, I am very resilient, mentally	0	1	2	3	4	5	6
16	It is difficult to detach myself from my job	0	1	2	3	4	5	6
17	At my work I always persevere, even when things do not go well	0	1	2	3	4	5	6

Work Family Conflict

Instructions: Please think of how your work influences your family.

	.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1.	My work keeps me from my family activities more than I would like.	1	2	3	4	5
2.	The time I must devote to my job keeps me from participating equally in household responsibilities and activities.	1	2	3	4	5
3.	I have to miss family activities due to the amount of time I must spend on work responsibilities.	1	2	3	4	5
4.	When I get home from work, I am often too frazzled to participate in family activities/responsibilities.	1	2	3	4	5

5.	I am often so emotionally drained when I get home from work that it prevents me from contributing to my family.	1	2	3	4	5
6.	Due to all the pressures at work, sometimes when I come home I am too stressed to do the things I enjoy.	1	2	3	4	5
7.	The problem-solving behaviors I use in my job are not effective in resolving problems at home.	1	2	3	4	5
8.	Behavior that is effective and necessary for me at work would be counterproductive at home.	1	2	3	4	5
9.	The behaviors I perform that make me effective at work do not help me to be a better parent and spouse.	1	2	3	4	5

Instructions: Please think of how your family influences your work.

	.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1.	The time I spend on family responsibilities often interferes with my work responsibilities.	1	2	3	4	5
2.	The time I spend with my family often causes me to not spend time in activities at work that could be helpful to my career.	1	2	3	4	5
3.	I have to miss work activities due to the amount of time I must spend on family responsibilities.	1	2	3	4	5
4.	Due to stress at home, I am often preoccupied with family matters at work.	1	2	3	4	5

5.	Because I am often stressed from family responsibilities, I have a hard time concentrating on my work.	1	2	3	4	5
6.	Tension and anxiety from my family life often weakens my ability to do my job.	1	2	3	4	5
7.	The behaviors that work for me at home do not seem to be effective at work.	1	2	3	4	5
8.	Behavior that is effective and necessary for me at home would be counterproductive at work.	1	2	3	4	5
9.	The problem-solving behaviors that work for me at home do not seem to be as useful at work.	1	2	3	4	5

Technostress Creators Scale

Please respond to the following statement and encircle the number to indicate your degree of agreement.

		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1.	I am forced by this technology to work much faster	1	2	3	4	5
2.	I am forced by this technology to do more work than I can handle	1	2	3	4	5
3.	I am forced by this technology to work with very tight time schedules.	1	2	3	4	5
4.	I am forced to change my work habits to adapt to new technologies.	1	2	3	4	5
5.	I have a higher workload because of increased technology complexity.	1	2	3	4	5

6.	I spend less time with my family due to this technology.	1	2	3	4	5
7.	I have to be in touch with my work even during my vacation due to this technology.	1	2	3	4	5
8.	I have to sacrifice my vacation and weekend time to keep current on new technologies.	1	2	3	4	5
9.	I feel my personal life is being invaded by this technology.	1	2	3	4	5
10.	I do not know enough about this technology to handle my job satisfactorily.	1	2	3	4	5
11.	I need a long time to understand and use new technologies.	1	2	3	4	5
12.	I do not have enough time to study and upgrade my technology skills.	1	2	3	4	5
13.	I find new employees to this organization know more about computer technology than I do.	1	2	3	4	5
14.	I often find it too complex for me to understand and use new technologies.	1	2	3	4	5
15.	I feel constant threat to my job security due to new technologies.	1	2	3	4	5
16.	I have to constantly update my technology skills to avoid being replaced.	1	2	3	4	5
17.	I am threatened by co-workers with newer technology skills.	1	2	3	4	5
18.	I do not share my knowledge with my coworkers for fear of being replaced.	1	2	3	4	5

19.	I feel there is less sharing of knowledge among co-workers for fear of being replaced.	1	2	3	4	5
20.	There are always new developments in the technologies we use in our organization.	1	2	3	4	5
21.	There are constant changes in computer software in our organization.	1	2	3	4	5
22.	There are constant changes in computer hardware in our organization.	1	2	3	4	5
23.	There are frequent upgrades in computer networks in our organization.	1	2	3	4	5

ANNEXURE IV

(Permission of Scales)

Oldenburg Burnout Inventory

Request to get permission to use oldenburg burnout inventory in research study

ilsa Taj
I am an M.phil student at the National University of Modern Languages completing a research in applied psychology. I am writing to ask for written permission to

Jonathon Halbesleben
to me

You have my permission to use the OLBI. I have attached the items and scoring instructions. Good luck with your research.

Jonathon

Jonathon Halbesleben, Ph.D.
Dean & Bodenstedt Chair
Tom C. Frost Distinguished University Chair for Business Excellence

The University of Texas at San Antonio
Alvarez College of Business
One UTSA Circle,
San Antonio, TX 78249-3209
Jonathon.Halbesleben@utsa.edu

Work-life Boundary Characteristics

Permission to use Work-Life Boundary Enactment Scale Inbox ×

Ilsa Taj <ilsataj97@gmail.com>
to tallen

Tue, 6 Jun, 15:58 (13 days ago)

I am an M.phil student at the National University of Modern Languages completing a research in applied psychology. I am writing to ask for written permission to use the instrument of Work-Life Boundary Enactment Scale in my research study. My thesis is entitled: "Technostress, work engagement and burnout: role of work-family conflict and work life boundary characteristics." and Dr. Shakira Huma Siddiqui is supervising my research.

Throughout my literature review, I found that this scale has adequate validity and reliability, and that it is increasingly being used by other sources. As a result, I decided to use your weighing scale.

I'd also like copies of the scale as well as standard instructions for conducting the scale, which will aid me in administering the test and analysing the data.

Furthermore, I confirm that I will use the Work-Life Boundary Enactment Scale for my research project and will not sell or even use it in any other manner.

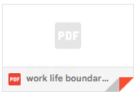
On all copies of the instrument, I shall include a declaration of attribution and copyright. If you have a specific credit statement that you'd like me to incorporate, please include it in your response.
I have also attached the article for your reference in which the mentioned scale is used.
If you do not have control over the copyright for these files, I would appreciate any information you can give me on who I should contact.

If these are acceptable terms and conditions, please indicate so by replying to me through e-mail at ilsataj97@gmail.com

Sincerely,

Ilsa Taj
M.Phil Scholar
National University of Modern Languages

One attachment • Scanned by Gmail



Tammy Allen
to me

Thu, 8 Jun, 19:56 (11 days ago)

Dear Ilsa,

You have permission to use the scale for research purposes. There are no other copies of the scale other than that which appears in the published paper. Good luck with your work.

Tammy

Work Engagement

Request for Permission to Use Utrecht Work Engagement Scale and Burnout Assessment Tool Inbox ×

Ilsa Taj
Dear Wilmar Schaufeli, I hope this email finds you well. My name is Ilsa Taj, and I am an M.Phil student at the National University of Modern Languages, special

Schaufeli, W.B. (Wilmar)
to me

Dear Ilsa,

Thank you very much for your interest in my work.
You may use the UWES free of charge, but only for non-commercial, academic research. In case of commercial use, we should draft a contract.
Please visit my website (address below) from which the UWES can be downloaded, as well as all my publications on the subject.

The BAT can be used free of charge for 0no-comkmercioal as well as commercial use. No permission is needed

Good luck with your research.

With kind regards,

Wilmar Schaufeli

Wilmar B. Schaufeli, PhD | Professor emeritus of Work and Organizational Psychology | *Social, Health & Organizational Psychology* | Utrecht University |P.O. Box 80.140, 3508 TC Utr
wilmarschaufeli.nl |citations|

Van: ilsa Taj <ilsataj97@gmail.com>
Datum: vrijdag 2 juni 2023 om 13:07
Aan: Wilmar Schaufeli <w.schaufeli@uu.nl>
Onderwerp: Request for Permission to Use Utrecht Work Engagement Scale and Burnout Assessment Tool

Work Family Conflict

Permission to use Work–Family Conflict Scale Inbox ×

Ilsa Taj <ilsataj97@gmail.com>
to Dawn_Carlson

Dear Dawn Carlson,

I am an M.phil student at the National University of Modern Languages completing a research in applied psychology. I am writing to ask for written permission to use the instrument of Work–Family Conflict in my research study. My thesis is entitled: "Technostress, work engagement Shakira Huma Siddiqui is supervising my research.

Throughout my literature review, I found that this scale has adequate validity and reliability, and that it is increasingly being used by other sources. As a result, I decided to use your weighing scale.

I'd also like copies of the scale as well as standard instructions for conducting the scale, which will aid me in administering the test and analysing the data.

Furthermore, I confirm that I will use the Work–Family Conflict scale for my research project and will not sell or even use it in any other manner.

On all copies of the instrument, I shall include a declaration of attribution and copyright. If you have a specific credit statement that you'd like me to incorporate, please include it in your response.
I have also attached the article in which the mentioned scale is used.
If you do not have control over the copyright for these files, I would appreciate any information you can give me on who I should contact.

If these are acceptable terms and conditions, please indicate so by replying to me through e-mail at ilsataj97@gmail.com

Sincerely,

Ilsa Taj
M.Phil Scholar
National University of Modern Languages.

One attachment • Scanned by Gmail ⓘ

Carlson, Dawn
to me

Attached is the information and permissions for my scales. Best of luck with your research.

Dawn

Dawn S. Carlson, Ph. D.
H. R. Gibson Chair of Organizational Development
Director McBride Center for International Business
Hankamer School of Business
Baylor University
HANKAMER SCHOOL OF BUSINESS
McBride Center for International Business

Technostress Creators Scale

Ilsa Taj <ilsataj97@gmail.com>
to m.tarafdar

Dear Monideepa Tarafdar,

I hope this email finds you well. I am writing to follow up on my previous emails regarding my request for permission to use the Technostress Creators Scale in my research study.

I apologize for any inconvenience caused, and I understand you may be busy. However, I wanted to kindly remind you that I am still awaiting your written permission to use the Techn

I sincerely appreciate your consideration of my request, and I look forward to receiving your response at your earliest convenience. If there are any specific instructions or materials y

Thank you for your time and attention to this matter.

Sincerely,

Ilsa Taj
M.Phil Scholar
National University of Modern Languages

•••

Tarafdar, Monideepa <m.tarafdar@lancaster.ac.uk>
to me

Translate to Urdu

Hello,

You can use the scale provided you cite the paper.

Good luck with your research.

Prof. Tarafdar

From: Ilsa Taj <ilsataj97@gmail.com>
Sent: 19 June 2023 10:28
To: Tarafdar, Monideepa <m.tarafdar@lancaster.ac.uk>
Subject: [External] Re: Request for Permission to Use the Technostress Creators Scale in Research Study