

The Effects of Mindfulness on Work-Related Stress, Wellbeing, Recovery Quality, and Employee Resilience

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Abstract

Work-related stress is on the rise in today's complex business environment. Stress is an important issue because it can negatively affect favourable work outcomes. The aim of the current study was to investigate the relationships between work-related stress and wellbeing, employee resilience, and recovery quality from work stress among managers. Furthermore, the potential moderating effect of mindfulness on these relationships was investigated. This study utilised a cross-sectional design to measure the five variables of interest (work stress, mindfulness, employee resilience, recovery quality, and wellbeing) through an online survey. A sample of 181 managers participated. The results suggest that mindfulness levels can buffer the effects that work stress has on employee resilience. The results also showed that work-related stress is negatively related to psychological wellbeing, recovery quality, and employee resilience. Overall, these findings provide foundational research for mindfulness-based work interventions to increase employee resilience among managers.

Introduction

Work-related stress is an increasing concern for employers due to the detrimental consequences that it can cause. These include high financial costs (due to productivity losses and turnover), workplace absences, and unfavourable effects on recovery quality, wellbeing, employee resilience, and job performance. For the purpose of this study, work-related stress is defined as an employee's experience of detrimental physiological and psychological responses that result when job requirements exceed their capabilities and resources (Levi, Sauter, & Shimomitsu, 1999).

Work stress can result in negative consequences for employers and employees alike. In the European Union, work-related stress is the second most prominent work issue, with stress rates rising (Eurofound, 2005; Skakon, Kristensen, Christensen, Lund, & Labriola, 2011). International research has found that work is likely to be an individual's main cause of stress (Cavanaugh, Boswell, Roehling, & Boudreau, 2000; Matthews, 2015). Moreover, in the United States, occupational stress costs up to 300 billion dollars per annum, and in the United Kingdom, it accounts for 60 percent of workplace absences (Cartwright, 2000). Therefore, due to its high prevalence and negative consequences, work stress is described as an epidemic within the Industrial and Organisational (I/O) psychology literature (Avey, Luthans, & Jensen, 2009; Cavanaugh et al., 2000; Le Fevre, Matheny, & Kolt, 2003).

Work stress has detrimental consequences on favourable work-related outcomes, including recovery quality, employee resilience, and wellbeing. For example, recovery is often unachievable when many stressors are present (Meijman & Mulder, 1998). Moreover, when stress is high, an employee's ability to behave resiliently is often hindered (Luthans & Youssef, 2007), and their wellbeing can be threatened (Andrea, Bultmann, van Amelsvoort, & Kant, 2009; Nielsen & Daniels, 2012).

Furthermore, work stress can negatively affect job performance. Detrimental physiological responses to work stress deplete mental, emotional, and physical resources (Cohen, 1980). This, in turn, decreases the energy available to perform tasks, leading to fatigue. Work stress reduces work engagement, tolerance for frustration, altruism, sensitivity for others, and accuracy (Cartwright, 2000). Because these are all factors that contribute to effective managerial performance (Motowidlo, Packard, & Manning, 1986), work stress can negatively affect a manager's to support their team (Bakker, Westman, & Van Emmerik, 2009). Ten Brummelhuis, Haar and Roche, (2014) found that when leaders are stressed, this has a "trickle down effect" on their followers, who in turn, also feel stressed. Thus, not only will work stress negatively affect the team leader, their whole team is likely to suffer.

Therefore, work stress is an important issue for organisational leaders. Managers¹ can experience significant stress within their role (Matthews, 2015; Skakon et al., 2011; Ten Brummelhuis et al., 2014). When managers have low stress levels, they are more likely to positively influence their followers to achieve organisational goals (Roche, Haar, & Luthans, 2014). However, the multiple demands and high stakes that a managerial role often entails can lead to high stress on an ongoing basis (Cavanaugh et al., 2000). Managers are the change agents of the organisation (Nielsen & Daniels 2012) and are held directly responsible for their teams (Jokinen, 2005). This requires decision-making that may affect a large percentage of staff and ensuring that their team performs satisfactorily. Managers are also expected to adapt to and solve the challenges within their business environments (Nielsen & Randall, 2009; Nielsen & Daniels, 2012). It is no surprise that with many demands and expectations, managers often suffer from performance pressure (Hardy, Mullen, & Jones, 1996), which in turn, can cause work-related stress.

¹ For the purpose of this study, a manager is defined as an employee that conforms to organisational standards and helps to direct others to achieve a duty (Madsen, 2015). A leader is defined as an employee who sets goals, motivates a team, and makes improvements to current ways of working (Madsen, 2015). In organisational settings, however, leaders are often titled managers, and the terms manager and leader are used synonymously. Therefore, the term manager will be used from here on in to denote both managers and leaders.

It is, however, difficult to minimise work stressors. Le Fevre et al. (2003) and Van der Klink, Blonk, Schene, and Van Dijk (2001) suggest that organisations should instead manage stress to minimise employees' perceptions of stress. One way that work stress can be managed is by learning coping processes. Coping can be defined as the efforts to manage demands that cause stress and threat to an individual (Lazarus, 1991). An emerging coping process and resource is mindfulness, which is defined as the "attention to and awareness of what is happening in the present moment" (Brown & Ryan, 2003, pp. 823.).

Mindfulness has been proposed to have a positive impact on various work-related outcomes. These include stress reduction (Shapiro, Astin, Bishop, & Cordova, 2005), recovery, resilience, wellbeing (Dane, 2011; Glomb et al., 2011; Weinstein & Ryan, 2011), and job performance (Reb, Narayanan, & Ho, 2015). Therefore, mindfulness may be an appropriate resource for managers, as they are frequently confronted with stressful situations (Roche et al., 2014). Moreover, such favourable work related outcomes can assist a manager to lead a team effectively (Ilies, Morgeson, & Nahrgang, 2005). Despite evidence of mindfulness' positive contribution to stress reduction in clinical settings, its role in workforce stress management has been infrequently examined in the I/O Psychology research (Brown, Ryan, & Creswell, 2007; Glomb, Duffy, Bono, & Yang, 2011).

The current study aims to provide evidence for the relationships between work-related stress and wellbeing, recovery quality, and employee resilience among individuals in managerial roles. This study also investigates the potential moderating effect of mindfulness on the relationships between work stress and psychological wellbeing, recovery quality, and employee resilience. The present study aims to provide preliminary evidence of the effects mindfulness may have on favourable work-related outcomes. In turn, this will form a foundation for future research to investigate what the best interventions may be to increase mindfulness, employee resilience, wellbeing, and recovery from stress in the workplace.

The Human Stress Response

Humans respond to stress through the “fight-or-flight” response. Lazarus (1966) proposed that potential stressors arouse the body through the endocrine and sympathetic nervous systems, leading the body to attack (fight) or flee (flight). If the individual determines that they have a chance of overcoming the stressor, they will act upon it (i.e., attack). For example, an employee may perceive constructive feedback as a challenge, rather than a threat. Therefore, they will act upon this stressor and thus, try to develop themselves in accordance with the feedback. Comparatively, if the stressor is perceived as a formidable threat, the nervous system will trigger negative physiological responses, leading the individual to flee the stressor (Cohen & Wills, 1985; Lazarus, 1966).

However, an individual’s stress response depends on their appraisal of the stressor. It is how an individual perceives a demand that determines if it will cause them eustress or distress (Cavanaugh et al., 2000; McEwen, 1998; Selye, 1987). Eustress and distress are two types of stress that are evident within an organisational setting. Eustress can be defined as good stress (Selye, 1987). The concept of eustress is in line with the Yerkes Dodson Law (Yerkes & Dodson, 1908), which suggests that stress is useful for work performance until the optimal level of stress is reached, with performance declining thereafter (Benson & Allen, 1979). Eustress provides employees with a sense of challenge, and it is considered helpful to accomplish tasks (Le Fevre et al., 2003). Contrarily, once an employee is stressed past their optimal level, this causes a dysfunctional type of stress. This form of stress is called distress, which can be defined as when a demand causes an individual to experience detrimental psychological or emotional responses (Mckenna, 2000).

It is important to note that eustress and distress are not mutually exclusive (Gibbons, Dempster, & Moutray, 2008). Thus, an individual can experience these two types of stress simultaneously (Gardner & O’Driscoll, 2007). For example, role overload may cause an employee to experience high anxiety, however, challenge and motivate them.

It is clear that an employee's appraisal of a stressor will determine if they will experience or eustress or distress. It is more likely that an employee will experience eustress if they appraise the stressor positively, and that an employee will experience distress if the stressor is appraised as threatening (McEwen, 1998). Only when the employee experiences distress will they experience detrimental physiological responses. Therefore, it is important that employees can appraise stressors as challenges to experience eustress.

Work-Related Stress Theoretical Models

Two work stress theoretical models are relevant to and thus have given rise to the current study's model. These include Lazarus's (1999) *Cognitive-Transactional Model of Stress (C-TMS)* and the *Job-Demands Resources (J-DR) model* (Baker & Demerouti, 2007). The C-TMS demonstrates how an employee tends to appraise job demands and the J-DR model shows the effects of job demands and resources on an employee. These two theoretical models of stress, as well as the model employed by the current study are described below.

Cognitive-Transactional Model of Stress

In applying the "fight-or-flight" stress response to the workplace, Lazarus' (1999) C-TMS of stress is relevant (Figure 1). Lazarus (1966; 1999) proposed that during a primary stress appraisal, an employee will perceive a work demand as a threat or a challenge. In the secondary appraisal, an employee will contemplate if they have the abilities and resources available to deal with the demand. As consistent with the "fight-or-flight" stress response, the outcome is determined by the employee's perception of the demand (Gardner, Fletcher, & McGowan, 2006). Thus, employees may perceive job demands differently. Individual differences will also affect how these demands are appraised and help determine the stress response and outcomes. For example, one employee may perceive a demand as a challenge, while another may appraise the same demand as a threat, thus resulting in two functionally different responses to stress (eustress and distress, respectively).

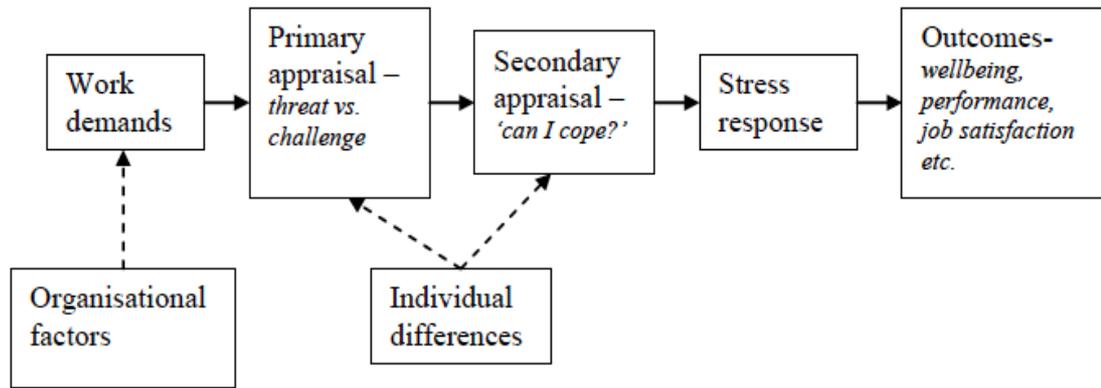


Figure 1. The Cognitive-Transactional Model of Stress (Lazarus, 1999)

This model is relevant to the current study due to the role of mindfulness in stress perception. Attention to and awareness of the current moment can decrease automatic thinking and curb premature judgment (Brown & Ryan, 2003). Mindfulness can help an employee to accurately appraise a demand as a threat or a challenge and take the time to evaluate the severity of the demand (Corcoran, Farb, Anderson, & Segal, 2010; Garland, Gaylord, & Fredrickson, 2011). Therefore, it will be interesting to investigate the effect of mindfulness on the relationships with stress and various work-related outcomes.

The Job Demands Resources model

The *Job-Demands Resources (J-DR) model* (Bakker & Demerouti, 2007) demonstrates the relationships between job demands and resources, and their flow-on effects (Figure 2). The J-DR model suggests that job demands are externally driven factors of the work environment, requiring constant emotional, mental, and physical exertion, which can lead to strain. Job demands include difficult work tasks, toxic workplace cultures, job insecurity, work schedules, business travel, work pressure, unsupportive work environments, and emotionally demanding interactions with supervisors and clients (Avey et al., 2009). The model shows that a lack of resources increases job demands, which consequently leads to negative outcomes, including strain. Employees experience stress when job demands exceed resource availabilities and/or require efforts to deal with these demands that the employee

lacks. Furthermore, stress can cause detrimental organisational outcomes including employee disengagement and turnover (Schaufeli & Bakker, 2004). However, job resources can play a buffering role and can help motivate staff. Baker and Demerouti (2007) define resources as protection factors that can help individuals to reduce or cope with job demands. Stress-buffering factors may include support, autonomy, and feedback (Baker & Demerouti, 2007).

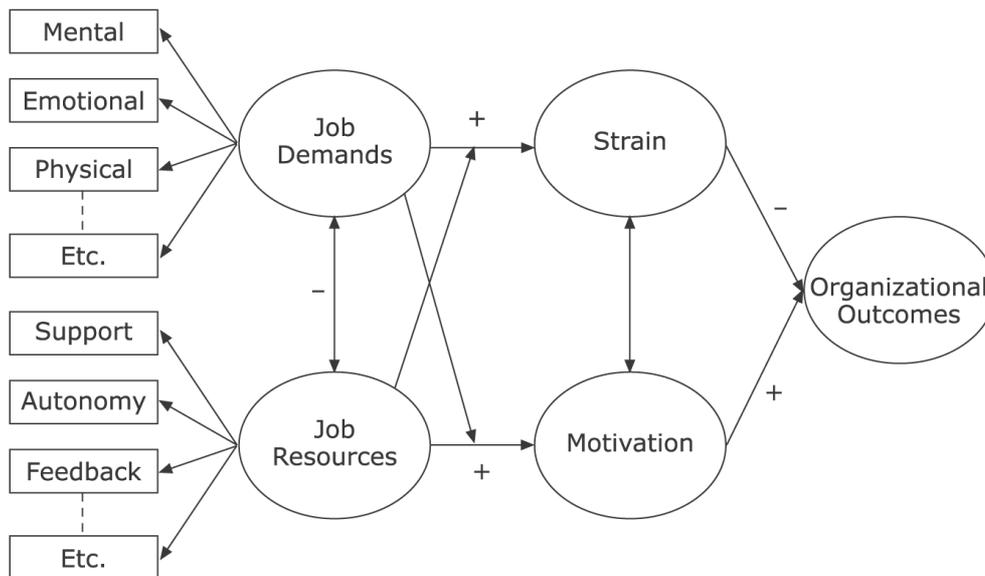


Figure 2. The Job-Demands Resources model (Baker & Demerouti, 2007) – ‘+’ indicate a positive relationship, while ‘-’ indicates a negative relationship.

This model is relevant to the current study due to mindfulness’ potential role as a job resource and as a potential coping mechanism. Although mindfulness research has not yet investigated this potential, previous research has determined mindfulness to be an effective resource for stress reduction (Andrea, Bultmann, Van Amelsvoort, & Kant, 2009; Shapiro, Astin, Bishop, & Cordova, 2005). It would be relevant to investigate if employees could utilise mindfulness as a job resource, and if mindfulness could buffer the detrimental effects of stress on favourable organisational outcomes. The current study aims to provide foundational evidence for these potential future research directions.

The Current Study’s Model

Mindfulness can be a resource that can both help employees appraise demands as less threatening and decrease work-related strain. Such a resource may be able to promote eustress and help to decrease distress. An organisation should provide an employee with adequate resources to meet demands and fulfil their role requirements, and for employees to appraise stressors positively. These work-related resources are important to promote eustress rather than distress (Le Fevre et al., 2003). Mindfulness can be conceptualised as a coping resource (Roche et al., 2014; Weinstein, Brown, & Ryan, 2009). More specifically, it can be utilised to accurately appraise a demand as a threat and to consider appropriate coping mechanisms. If a stressor is appraised as threatening, the cognitive recognition that is achieved by mindfulness can trigger coping mechanisms, which can help manage stressors (Baruch & Lambert, 2007).

The current study aims to investigate mindfulness as a potential buffering variable for the relationship between work-related stress and its various work-related outcomes, including psychological wellbeing, recovery quality, and employee resilience (Figure 3). Figure 3 demonstrates the proposed relationships in the current study, which form the 11 hypotheses that are presented in the following section.

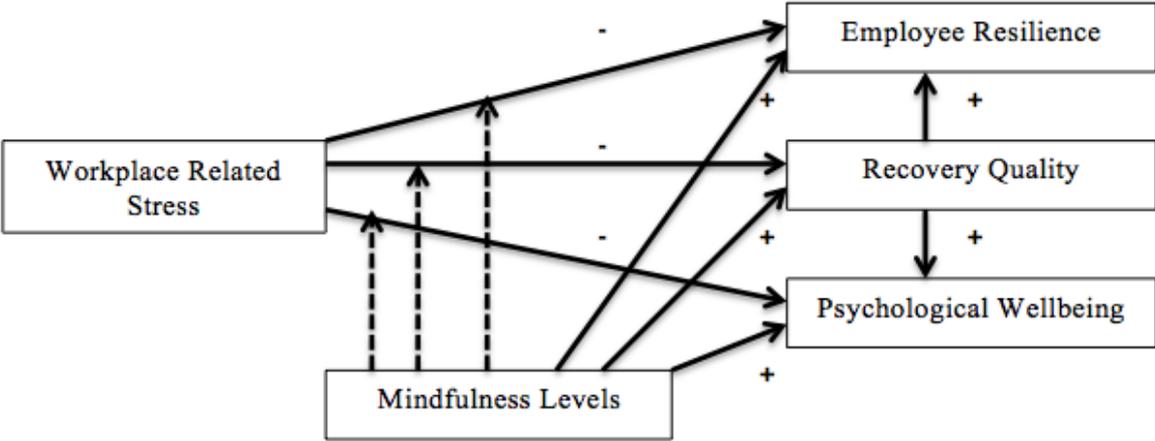


Figure 3. The proposed model for the current study - the bold arrows propose a main effect, while the dotted arrows propose a moderating relationship. The ‘+’ indicates a positive relationship, while ‘-’ indicates the variable relationship to be negative.

Outcomes of Work-Related Stress

Work-related stress has been found to negatively relate to a number of organisational outcomes including wellbeing, recovery quality, and employee resilience. The present study focuses on these relationships and investigates if mindfulness could buffer effects of stress on these outcomes. Moreover, the study will investigate the relationships between recovery quality and employee resilience, and wellbeing. The following sections describe these relationships in detail and present the hypotheses tested in this study.

The Relationship Between Work-Related Stress and Wellbeing

Work stress has a negative effect on employee wellbeing. Ill health in the occupational setting has steadily increased and is continuing to rise (Benach et al., 2002; Shnall, Dobson, & Roskam, 2009). Work stress is a major cause of burnout and is linked to detrimental health outcomes, including higher risk of contracting cardiovascular diseases (Schnall et al., 2009). Burnout and ill health have been shown to have a detrimental effect on wellbeing (Schaufeli, Wilmar, Toon, Taris, & Willem Van Rhenen, 2008; Wright & Hobfoll, 2004), which can further exacerbate the effects of stress on employees.

The detrimental effects of stress on wellbeing are of particular relevance for managers. When an individual faces frequent stressors, the “fight-or-flight” response is over activated (Lazarus, 1966). Consequently, this can produce high amounts of the stress hormones cortisol and adrenalin. As managers have many responsibilities and are often faced with stressful situations (Roche et al., 2014), this is a likely consequence for this occupational group. When managers experience work stress, this can lead to depression and high anxiety (Roche et al., 2014). Therefore, work-related stress challenges managers’ physical and mental health (Park, 2007), and in turn, can negatively impact their psychological wellbeing (Andrea et al., 2009; Bakker et al., 2009; Nielsen & Daniels, 2012).

Although the literature outlines several facets of wellbeing, the current study will focus on psychological wellbeing. For the purpose of this study, psychological wellbeing can be defined as the extensiveness of positive attributes that contribute to psychological growth and development in life's challenges (Diener, 2009; Lundqvist, 2011). Psychological wellbeing will now be referred to as wellbeing throughout this paper.

Low wellbeing can cause detrimental work-related outcomes. These outcomes include low job satisfaction and commitment, negative work attitudes, and high turnover rates (Dane & Brummel, 2013; Hulsheger, Alberts, Feinholdt, & Lang, 2013; Leroy, Anseel, Dimitrova, & Sels, 2013). Moreover, when an employee's wellbeing declines, their productivity and job performance are likely to drop (Rusk & Waters, 2015). It is important to monitor wellbeing, as it has major impacts upon organisational outcomes and productivity. In alignment with previous literature, the following hypothesis is formulated:

Hypothesis 1: Work-related stress will be negatively related to wellbeing.

The Relationship Between Recovery Quality and Wellbeing

It is important to understand the recovery process to enhance employee health and wellbeing. Recovery is defined as the psychological, sociological, and physiological processes that occur when fatigue is reduced (Lundqvist & Kentta, 2010). In turn, energy and feelings of control are restored (Hobfoll, 1998). Recovery occurs when no demands that cause distress are present (Meijman & Mulder, 1998), typically during work breaks, vacation, evenings, and weekends. As discussed by Sonnentag, Binnewies, and Mojza (2008), employees recover through recovery experiences, which include psychological detachment, relaxation, sleep, and mastery experiences (i.e., hobbies or activities that an employee can master outside of work).

In the current study, only two components of recovery will be measured: psychological detachment and relaxation. Psychological detachment occurs when an employee can create mental and physical separation from their work situation (Sonnentag &

Bayrer, 2005; Sonnentag & Fritz, 2007). It is not a specific activity, rather, a psychological distance from work. Relaxation entails leisure activities that aim to relax the mind and the body (Sonnentag & Fritz, 2007). These may include meditation or muscle relaxation. It is important to note that individuals differ on their recovery preferences. For example, one person may recover better by taking a walk while another person may prefer to undertake a breathing exercise.

Recovery is particularly important for employees with demanding roles, including managers. Due to the nature of this role and the high responsibility attached to it, managers often face demanding situations (Roche et al., 2014). Managers often have little recovery time available, and they are under pressure to perform, which is accompanied by high stress levels (Hardy, Mullen, & Jones, 1996). Recovery can reduce physiological (Brosschott, Gerin, & Thayer, 2006) and psychological (Sonnentag & Fritz, 2007) strain symptoms such as tension and fatigue, which can cause stress. However, with the absence of recovery, employees may experience fatigue, which can lead to mental impairments, low wellbeing, and eventually, performance decrements (Sonnentag & Zijlstra, 2006). Effectively, a manager is unable to perform his/her duties to the same standard, without adequate recovery from stress.

To prevent such negative outcomes, it is important that employees can regulate their effort expenditure by adopting recovery strategies. When this occurs, an individual's energy, control, life satisfaction, and affective state increase (deCroon, Slutier, & Blonk, 2004; Geurts & Sonnentag, 2006; Sonnentag, Binnewies, & Mojza 2008). These outcomes should positively affect wellbeing. Therefore, the following is hypothesised:

Hypothesis 2: Recovery quality will be positively related to wellbeing.

The Relationship Between Work-Related Stress and Recovery Quality

Globalisation can negatively affect recovery from work stress. Globalisation can be defined as the rapid growth of capital and trade that occurs between international boundaries (Spiegel, Labonte, & Ostry, 2004). It is a dominant contributor to an increasingly complex

work environment. The effects of globalisation are evident in the emergence of new technologies, including robots, and information and communication technology systems (Benach, Mutaner, Benavides, Amable, & Jodar, 2002). These developments have had a significant effect on the business environment (Nielsen & Daniels, 2012), especially how employees transfer information (Kumar & Liu, 2005). For example, dominant communication methods including text, email, and Skype are constantly available, which make it difficult for employees to disconnect from work in their non-work hours. As managers are responsible for many staff members (Jokinen, 2005), and have an array of direct reports, managers are usually expected to be on call in their non-work hours. This inability to disconnect hinders the manager's ability to recover from work, in particular, their relaxation and psychological detachment. Unsurprisingly, a link has been established between this increased complexity arising from globalisation and recovery quality from stress (Benach et al., 2002; Landsbergis, 2003).

The autonomy paradox and telepressure also hinder recovery. These phenomena are particularly relevant to organisational managers because they have a large amount of responsibility and may be on call at all hours for overseas clients (Skakon et al., 2011). The autonomy paradox can be defined as a professional's navigation of their balance between personal autonomy and commitment to work (Mazmanian, Orlikowski, & Yates, 2013). However, to meet their work demands, employees may feel the need to be connected to work through information and communication technologies in their non-work hours. Due to these urges to be connected, an employee can experience telepressure. This is defined as an employee feeling pressure to be continuously connected to the office, even during their non-work time (Barber & Santuzzi, 2015). Consequently, employees connect to workplace activity through message-based technologies and may feel obligated to respond promptly to messages from clients, colleagues, and supervisors. The autonomy paradox and telepressure encourage a constant connection with one's work, which limits the employee to take extended breaks

(Barber & Santuzzi, 2015) and can negatively impact recovery from stress. In turn, this may create work-related stress. It is clear that high levels of work stress can lead to a lack of recovery quality. Thus, the following hypothesis is formulated:

Hypothesis 3: Work-related stress will be negatively related to recovery quality.

The Relationship Between Work Stress, Mindfulness, and Wellbeing

Mindfulness has many potential benefits and stands as a promising stress reduction resource for managers. When managers work within stressful situations, mindfulness may enable them to view situations at face value, and it may help eliminate the stress associated with past or future events (Andrea et al., 2009). In relation to managers, mindfulness has been suggested to help individuals in this role regulate emotions and pay further attention towards their environment. This helps to focus on a present interaction with a team member (Hannah, Woolfolk, & Lord, 2009; Ryan & Deci, 2008) and lowers the possibility of the manager withholding hasty judgement based on old heuristics (Brown & Ryan, 2003).

Mindfulness can positively affect wellbeing. Mindfulness has been suggested to support psychological needs satisfaction and self-directed functioning, and is recommended as a personal resource for employees with high responsibilities (Brown & Ryan, 2003; Leroy, Anseel, Dimitrova, & Sels, 2013; Weinstein & Ryan, 2011). Therefore, mindfulness is a promising wellbeing facilitation tool for managers (Eberth & Sedlmeier, 2012; Weinstein & Ryan, 2011). Mindfulness can increase wellbeing through self-regulation and fulfilling psychological needs including relatedness, autonomy, and competence (Hodgins & Knee, 2002). It can also contribute towards positive wellbeing by increasing purposefulness, coping capabilities and positive emotions, thereby encouraging the individual to appraise the stress more positively (Fredrickson, Cohn, Coffey, Pek, & Finkel, 2008). This conscious awareness can help regulate actions in a manner that can help fulfill these basic needs (Brown & Ryan, 2003). This in turn, can improve psychological wellbeing at work. Thus, in accordance with previous research the current study will investigate the following hypotheses:

Hypotheses 4: Mindfulness levels will be negatively related to work-related stress.

Hypothesis 5: Mindfulness levels will be positively related to wellbeing.

Hypothesis 6: Mindfulness will moderate the relationship between work-related stress and wellbeing.

The Relationship Between Work Stress, Mindfulness, and Recovery Quality

Mindfulness can have a positive effect on recovery from work-related stress.

Mindfulness is a tool that can provide an employee with detachment from work tasks and work-related thoughts, of which they can utilise at work or within their non-work hours.

Recovery requires a detachment from work, and mindfulness can help achieve this as the individual can be more attuned with the present moment. When an employee can be fully immersed within the present moment, this enables him/her to reappraise a potentially stressful situation by separating typical stimulus-response connections. In accordance with the C-TMS (Lazarus, 1999), when an employee faces a job demand, he/she will experience the primary stress appraisal where they will consider if the demand is a threat or a challenge. Mindfulness allows more flexible thinking, therefore, this may encourage the employee to perceive a colleague's constructive feedback as a challenge, rather than a threat. After non-judgementally categorising the current situation (i.e., being mindful), flexible cognition regarding the demand will help an employee to reassess the situation and help to perceive demands as challenges. Decoupling the job demand (e.g., constructive feedback) from the associated detrimental physiological consequence (i.e., work-stress) is proposed to aid recovery quality (Good et al., 2015) because the employee is faced with fewer threats.

According to the buffering hypothesis (Cohen & Wills, 1985), job resources can buffer the impact that stressors have on employees. Individuals with a higher level of mindfulness can be more resistant to work stressors, as they can recover faster from working within highly demanding and potentially stressful environments (Roche et al., 2014). Not surprisingly, it is proposed that mindfulness practices can facilitate recovery quality from

work stress (Brown & Ryan, 2003; Roche et al., 2014). Accordingly, the following hypotheses are formulated:

Hypothesis 7: Mindfulness levels will be positively related to recovery quality.

Hypothesis 8: Mindfulness will moderate the relationship between work-related stress and recovery quality.

The Relationship Between Work-Related Stress and Resilience

In a global business environment, the ability for employees to accept, survive, and thrive in the face of challenging situations and stressors is a crucial skill. Such a developmental capability is called employee resilience. This term builds upon organisational resilience, and is defined by Näswall, Kuntz, and Malinen (2015) as the “employee’s capability, facilitated and supported by the organisation to utilise resources and continually adapt and flourish at work, even when faced with challenging circumstances” (p. 5). This type of resilience requires the organisation to positively influence resilience through supporting factors. Such factors include transformational leadership, health and safety, employee growth, work-life balance, and a collaborative learning-oriented work environment. Thus, the organisational context is crucial to employee resilience (Grawitch, Gottschalk, & Munz, 2006; Näswall et al., 2015; Nilakant et al., in press).

Resilience can have a positive effect on stress, while stress can have a negative effect on resilience. Employees who are resilient are better able to deal with stressors and overcome challenges (Luthans & Youssef, 2007). Resilience can facilitate recovery from stressful work events (Avey et al., 2009). Thus, employee resilience is helpful for employees to be able to deal with work stressors when they arise. This is because the employee is more open to experience, emotionally stable, and flexible to job demands (Tugade & Fredrickson, 2004). However, work-stress can negatively affect employee resilience. According to the J-DR model (Baker & Demerouti, 2007), stress occurs when job demands are high and resources

are low. This imbalance may prevent employees to engage in resilient behaviours. Based on these findings, the current study proposes the following hypothesis:

Hypothesis 9: Work stress will be negatively related to employee resilience.

The Relationship Between Work Stress, Mindfulness, and Resilience

Mindfulness can help employees to become more resilient. Although this is a relatively new area of research, Good et al. 2015 and Glomb et al. 2011 suggest that mindfulness can help to develop employee resilience through persistence and affective regulation. Mindfulness can allow an employee to take a “decentered” perspective in response to potentially stressful work situations (Bishop et al., 2004). As a result, stressors are appraised to be less threatening (Good et al., 2015). For example, an employee may witness an abusive boss threatening another employee, which typically would trigger negative physiological responses, leading to work-related stress. However, experiencing such an event with high mindfulness could remove the association between this negative experience and the detrimental physiological responses, which may leave the employee less stressed. Employees will be better able to persevere through such demanding work situations, as mindfulness also helps to provide a nonjudgmental attitude to the present situation allowing them to reinterpret the present moment (Brown & Ryan, 2003). As recovery from toxic events is a core aspect of resilience, mindfulness may be able to foster resilience in this way (Good et al., 2015). Furthermore, a key requirement to be resilient in a work context is the ability to be nonreactive and accepting of others’ emotions and thoughts (Glomb et al., 2011). Mindfulness will allow employees to approach their staff positively, and additionally, it may protect them from others negative personas through reduced reactivity and regulation of affect.

Mindfulness also helps employees to increase emotional intelligence, which is a key component in resilience development. Employees with high mindfulness levels tend to be more resilient towards stress because they do not perceive stressful events to be as stressful in comparison to employees with lower mindfulness levels (Good et al., 2015). Moreover, they

are better able to cope with stressors. Mindfulness can provide employees with the necessary psychological resources to manage stress, freeing up means to enact resilient behaviours.

To ensure optimal task performance and leadership capabilities in the workplace, it is important that managers can remain resilient to various stressors and challenges. It is clear that being mindful can help increase resilience when experiencing work stress. In accordance with previous research the following hypotheses are proposed:

Hypothesis 10: Mindfulness levels will be positively related to employee resilience.

Hypothesis 11: Mindfulness will moderate the relationship between work-related stress and employee resilience.

Method

Overview

The current study employed a cross-sectional design to measure the five variables of interest (work stress, mindfulness levels, employee resilience, recovery quality and wellbeing) at one time point. A high-risk ethics application was approved by the University of Canterbury Human Ethics Committee based in June, prior to data collection that commenced in July 2015 (Reference: HEC 2015/62).

Procedure and Sample

Participant Recruitment

In July, an invitation email (see Appendix A for the invitation email) was sent to twelve business professionals who currently attain a senior level management or leadership role. The terms manager and leader are sometimes used interchangeably within a business setting (Jokinen, 2005; Nienaber, 2010). Therefore, these roles were investigated together. These professionals were known to the researcher and within their networking base. This group was targeted because it was assumed by the researcher they will have a wide network

of contacts, and secondly, they are likely to experience stress in their role (cf. Roche et al., 2014).

The invitation email explained the purpose of the survey, the incentives of participating, and how long the survey would take. It also included the survey link, the researcher's contact details, and outlined that completing the survey would signify participants' consent for the results to be published. The invitation email instructed these contacts to forward the email to any employee working at a corporate organisation in a managerial or leadership position. A snowballing method (Goodman, 1961) was employed because this method is useful for researching sensitive topic areas, such as stress and wellbeing (Faugier & Sargeant, 1997). Two contacts declined to both forwarding the email and completing the survey themselves. The remaining ten contacts copied and forwarded this invitation email and sent it to appropriate employees within their professional networking base. This was estimated to be around 200 employees. The recruitment email was also sent to the Human Resources Institute of New Zealand (HRINZ) research forum, inclusive of 800 individuals. These include academics, students, and I/O Psychology practitioners who are interested in research projects. The survey link was left open for a period of six weeks.

Participants participated in the survey online through the Qualtrics website (www.qualtrics.com). Their answers were automatically recorded onto a database. This occurred at the participants' own leisure, preferably when the participant was in a low stress state. Before commencement of the survey, participants were guided through an online consent form (see Appendix B). At the end of the questionnaire, participants were lead to a debrief survey (see Appendix C). This explained the purpose of the survey and gave participants several follow-up options These included being offered an opportunity to receive a copy of the study's findings, to enter a prize draw for participating in the study, and to be included on a contact list to participate in future research. Participants could choose from none to all of the options. The prize pool included seven \$100 value Westfield vouchers,

where the winners were randomly drawn. The end of the debrief survey noted contact details for participants who may have experienced stress or distress while answering the questionnaire and sources of mindfulness information.

The total number of participants was 221, an approximate response rate of 22%. However, this is likely to be an underestimation because some of the individuals who received the interest email may also be a part of the HRINZ research forum. 40 participants did not fully complete the questionnaire. Therefore, their data was not included in further analyses. This reduced the sample to 181 (N = 181) participants. The sample mean age was 38.54 years (SD = 10.71). This sample consisted of 49.7% of men and 50.3% of women, which included 174 New Zealand based employees and 7 overseas. See Appendix D for the effective sample characteristics.

Measures

Demographics

Various demographic questions were included at the end of the survey. This included age, location, number of direct reports, mindfulness experience, duration of being titled a manager or leader, and gender (see Appendix E for the demographic questions).

Scales

Responses to all survey items were provided on a 1-5 Likert scale, 1 “*never*”, 2 “*almost never*”, 3 “*sometimes*”, 4 “*fairly often*” and 5 “*very often*”. The items were pilot tested by ten colleagues of the researcher. This occurred to ensure that the items were relevant to the context and appropriate to the culture of a primarily New Zealand based sample. See Appendix F for the full version of the current study’s survey.

Mindfulness attention awareness scale

The Mindfulness Attention Awareness Scale (MAAS) created by Brown and Ryan (2003) measures mindfulness levels. It is the most common measure of mindfulness (Leroy et

al., 2013; Roche et al., 2014; Weinstein & Ryan, 2011) thus, it is well established. MAAS is highly appropriate for the current study because it measures the awareness or attention of what is happening in the present (Brown & Ryan, 2003). This is important because other mindfulness scales measure other components of mindfulness such as gratitude, acceptance, trust and empathy, which are irrelevant to the current study. MAAS has received extensive commendation throughout the literature (e.g., MacKillop, & Anderson, 2007; Van Dam, Earleywine, & Borders, 2010) for its high validity and promising psychometric properties. Coefficient alpha estimates for the MAAS in the original study ranged from .82 to .87.

The original MAAS included 15 items, and utilises a 1-6 Likert scale, where 1 represents “*almost always*” to 6 “*almost never*”. A lower score indicates a lower level of mindfulness and a higher score indicates a higher level of mindfulness. Sample items include “*It seems I am running on automatic, without much awareness of what I’m doing*” and “*I find myself doing things without paying attention.*” All 15 items from the original MAAS were included within the current study and were reverse coded to reflect that a higher score indicates high mindfulness and a lower score indicates low mindfulness.

Perceived stress scale

The Perceived Stress Scale (PSS) by Cohen, Kamarck, and Mermelstein (1983) measures the extent to which one perceives their life situations as being stressful. This measure is highly relevant to the current study due to its emphasis placed upon stress appraisal. PSS aims to capture the degree to which individuals find their lives uncontrollable, overloading and unpredictable. The original PSS anchors ranged from 0 “*never*” to 4 “*very often.*” Within the current survey, only 8 of the 14 original items were utilised. This is because respondents were asked to answer in relation to work situations only. Therefore, “in the workplace” or “at work” was added on to each scale item. The wording of the questions was altered to read “how often....” rather than “in the last month...” This is because a month’s timeframe is given within the survey instructions (See Appendix F). Sample items

include “*How often have you felt nervous or stressed at work?*” and “*How often have you been angered because of things that were outside of your control at work?*” Lower scores reflect lower stress, while higher scores reflect higher work stress. Only one item required reverse coding. The original PSS coefficient alpha ranges from .84 to .86.

Employee resilience scale

The Employee Resilience (Emp-Res) scale contains 9 items that capture a behavioural measure of employee resilience (Näswall, Kuntz, & Malinen, 2015). The Emp-Res scale measures employee resilience as a developable capability. This is opposing to previous literature (e.g., Wagnild & Young, 1993) that considers employee resilience to be a stable trait. The Emp-Res scale utilises a 7-Point Likert scale where 1 reflects “*never*” to 7 “*almost always*.” All 9 original items were used in the current scale. A sample item includes “*I successfully manage a high workload for long periods of time.*” The Emp-Res scale has a coefficient alpha reliability of .91.

Recovery experience questionnaire

The Recovery Experience Questionnaire (REQ) created by Sonnentag and Fritz (2007) measures four components of recovery quality experiences, namely relaxation, control, mastery, and psychological detachment from work. This is in respect to their leisure time. Thus, REQ can identify the experiences that deter from and increase an employee’s wellbeing outside of work. The original REQ consists of 35 items, including 6 psychological detachment, 9 relaxation, 9 control and 11 mastery. However, the short version (Sonnentag, Binnewies, & Mojza 2008) was adapted for this study and includes 4 items each for the psychological detachment, relaxation, and mastery experiences subscales. Relaxation and psychological detachment items were utilised in the current study, as the mastery experiences and items were deemed irrelevant. Overall, this questionnaire is a valid approach to measure an employee’s recovery quality processes and contributes to the aim of better understanding the effects of work-related stressors on an employee (deCroon, Slutier, & Blonk, 2004;

Sonnentag & Fritz, 2007). The REQ Cronbach alpha ranged from .82 to .89. This gives evidence to a highly reliable scale (Kinnunen, Mauno, & Siltaloppi, 2010).

During pilot testing, several colleagues of the researcher highlighted that two items were very similar to the other in the REQ, which required editing for this study. These items were “*Tonight, I distanced myself from work*” and “*Tonight, I did relaxing things.*” The first was omitted, due to its potential vagueness. This reduced the scale from eight items to six. Also the wording was altered from the original scale. In the current survey, the questions commence with “last night,” rather than “tonight,” (See Appendix F), with a view to better suit participants completing the survey during the day. A sample psychological detachment item includes “*Last night, I forgot about work.*” A sample relaxation item includes “*Last night, I took time for leisure.*”

World health organisation psychological wellbeing scale

The World Health Organisation Psychological Wellbeing Scale (WHO-PWS) by Bradley (1994) was designed to measure depressed mood, anxiety, and positive wellbeing. More specifically, to measure cognitive symptoms, rather than somatic and physical symptoms (i.e., weight loss). As identified by Bradley (1994) and Wredling et al. (1995), the scale indicates strong construct validity, internal consistency, face validity, and content reliability. For example, the original WHO-PWS coefficient alpha ranges from .79 to .83.

The original WHO-PWS consists of 22 items in total. These include 6 anxiety, 4 energy, 6 positive wellbeing, and 6 depressed mood items, and it is scored on a 3-Point Likert scale, where 0 signifies “*not at all*” to 3 “*all the time.*” In the current study, only the 6 items that measure positive wellbeing were included. These items are closely linked with Seligman’s (2011) five elements of wellbeing (positive emotion, engagement, positive relationships, meaning, and accomplishment) model. The current scale’s instructions outlined participants to consider their feelings within the last three weeks in a holistic manner, not

restricted to within the workplace. A sample item includes *“I have lived the kind of life I have wanted to.”*

Data Analysis

Overview

Statistical analyses were conducted on Statistical Package for the Social Sciences (SPSS), version 21. Following recoding for some variables, factor analyses, descriptive statistics, correlational, and hierarchical moderated regression analyses were undertaken. A description of the statistical analyses of the data collected in this study is provided in the section below.

Measurement properties

All 9 of the MAAS and one PSS response items required recoding. Next, exploratory within factor analyses were undertaken. A principal axis factoring extraction with an oblique rotation was selected, with the criteria of eigenvalues <1 for factors to be extracted.

A within-construct factor analysis was undertaken for the PPS. However, the items cross-loaded on to more than two factors, as demonstrated by the scree plot, and the eigenvalues exceeded 1 for more than one factor. The item: *“how often have you found yourself thinking about things that you have to accomplish at work?”* correlation with the other items did not exceed $r = .28$, the communalities value was $.09$, and the factor loading for this item did not exceed $.30$ in any factor. As suggested by Shultz, Whitney, and Zickar (2013), an item must load at least $.3$ or above, onto one factor. Based on a qualitative analysis, the item did not fit well with the other items within the scale (See Appendix G). Therefore, this item was deleted. Once removed, the total variance explained by the PSS increased from 38.14% to 42.29% and the Cronbach’s alpha increased from $.78$ to $.83$. Item PS01 *“how often have you felt that you were on top of things at work?”* also loaded onto two factors. It demonstrated a low communality of $.21$. Moreover, its correlations with the other items did

not exceed $r = .42$, and the factor loading was $.45$. Although this is just above the cut-off value, the variance explained increased from 42.29% to 45.90% and the Cronbach's alpha increased from $.75$ to $.83$ when this item was deleted. See Appendix H for the results of the amended within-construct factor analysis for the PSS, after removal of the above items.

Next, within-construct factor analyses were undertaken for MAAS, WHO-PWS, REQ, and Emp-Res. Items loaded onto one factor per scale. The communalities and factor loadings were satisfactory for all items. See Appendix I, Tables I1, I2, I3 and I4 for the results of the within-construct factor analysis tables for these scales.

Results

Preliminary Analysis

Before testing the hypotheses, potential differences in mindfulness between participants with previous mindfulness training/experience and those without was tested. An independent samples t-test showed that there were no significant differences in mindfulness scores between participants with previous mindfulness experience/training ($M = 3.33$, $SD = .39$) and those without ($M = 3.24$, $SD = .49$) in this sample ($t(176) = 1.37$, $p = .17$ [two-tailed]). The magnitude in the differences of the means (mean difference = $.09$, 95% CI : $-.04$ to $.22$) was small (eta squared = $.001$), indicating that there were no significant differences in mindfulness levels between the two groups. Therefore, due to the similarity of mindfulness levels among the two groups, they did not need to be separated in further analyses.

Descriptive Statistics

The descriptive statistics including the correlations, means, Standard Deviations (SD) and reliability scores (Cronbach's alpha) for all of the variables in this study are reported in Table 1.

Table 1

Correlations, means, standard deviations and reliability scores (α) for all variables

Variable	M	SD	α	1	2	3	4	5	6	7
1. Years titled as a manager/ leader	10.05	7.98	-	1.0						
2. Direct reports	7.70	9.89	-	.08	1.0					
3. Wellbeing	3.90	.62	.81	.05	.07	1.0				
4. Recovery Quality	3.42	.72	.88	-.03	-.10	.36**	1.0			
5. Employee Resilience	4.00	.46	.81	.09	.07	.38**	.26**	1.0		
6. Mindfulness	3.27	.41	.81	.07	.13	.24**	.31**	.45**	1.0	
7. Stress	3.18	.86	.83	-.05	-.01	-.36**	-.53**	-.36**	-.60**	1.0

*p <.05; **p <.01
N = 181

Test of Hypotheses

Correlational Analyses

Table 1 shows that work stress is significantly and negatively related to wellbeing ($r = -.36, p < .01$), recovery quality ($r = -.53, p < .01$), employee resilience ($r = -.36, p < .01$), and mindfulness ($r = -.60, p < .01$). Wellbeing is significantly and positively related to recovery quality ($r = .36, p < .01$) and mindfulness levels ($r = .24, p < .01$). As shown in Table 1, mindfulness levels are significantly and positively related to recovery quality ($r = .31, p < .01$) and employee resilience ($r = .45, p < .01$). Overall, these results provide support for Hypotheses 1, 2, 3, 4, 5, 7, 9, and 10.

Hierarchical Regression Analyses

To test the remaining hypotheses, hierarchical regression analyses were run in two steps. In the initial stage of output interpretation, the assumptions were checked. These included multicollinearity, outliers, normality, linearity, homoscedasticity and independence of residuals. None of these assumptions were violated.

Step 1

Prior to this analysis, stress and mindfulness were centred. In step 1 of the hierarchical regression, stress and mindfulness were the predictor variables used to investigate the relationships among the three outcome variables: wellbeing, recovery, and employee resilience. See Table 2 for the regression analyses.

Table 2

Regression analyses for the outcome variables resilience, recovery quality, and wellbeing

Variable	β	Employee Resilience				Recovery Quality					Wellbeing				
		B	SE	R ²	R ² Change	B	B	SE	R ²	R ² Change	B	B	SE	R ²	R ² Change
<i>Step 1</i>															
Mindfulness	.25**	.28	.09			-.04	-.06	.14				.07	.09	.12	
Stress	-.18*	-.10	.05	.15**		-.46**	-.39	.07	.20**			-.31**	-.23	.06	.13
															**
<i>Step 2</i>															
Mindfulness	.28**	.30	.09			-.06	-.09	.14				.08	.11	.12	
Stress	-.17	-.09	.05			-.47**	-.39	.07				-.31**	-.22	.06	
StressxMindful	-.15*	-.16	.08	.17*	.02*	.09	.14	.11	.20	.01		-.05	-.08	.10	.13
															.00

*p <.05; **p <.01

Note. Inclusion of any potential control variables (age, gender, years titled as manager/leader) did not result in any difference in results.

For employee resilience, the amount of variance explained was significant, ($R^2 = .15$, $F(2,178) = 15.37$, $p = <.01$). The regression coefficient for stress was $B = -.10$, $p = .04$, and for mindfulness $B = .28$, $p = .00$. These results show that 15% of variance in employee resilience is explained by mindfulness and stress, which provides support for Hypotheses 9, 10 and 11.

For recovery quality, the amount of variance explained was also significant, ($R^2 = .20$, $F(2,178) = 21.61$, $p = <.01$). The regression coefficient for stress was $B = -.39$, $p = .00$, and for mindfulness $B = -.06$, $p = .65$. These results show that 20% of variance in recovery is explained by mindfulness and stress, which provide further support for Hypotheses 3 and 7.

For wellbeing, the amount of variance explained was significant, ($R^2 = .13$, $F(2,178) = 13.03$, $p = <.01$). The regression coefficient for stress was $B = -.23$, $p = .00$, and for mindfulness $B = .09$, $p = .45$. The results show that 13% of variance in wellbeing is explained by mindfulness and stress, which provides further support for Hypotheses 1 and 5.

Step 2

Prior to this analysis, an interaction term was created by multiplying the centred variables *stress* and *mindfulness*. This term was then entered into step 2 of the hierarchical regression analysis (see Table 2). Step 2 of this analysis tested whether mindfulness levels moderate the relationship between work-related stress and any of the following: employee resilience, recovery quality, and wellbeing.

The moderated regression analysis showed that mindfulness interacted with stress to predict employee resilience. This is shown by a statistically significant model, $R^2 = .17$, $F(2,178) = 12.02$, $p = <.01$, R squared change = .02, F change (3,177) = 4.67, $p = <.01$. The unstandardized regression coefficient for the interaction term between stress and mindfulness was $B = -.16$, $p = <.05$. Therefore, these results provide evidence to support Hypothesis 11. Figure 4 shows the interaction plot, which plots different levels of resilience at high (+1 SD) and low (-1 SD) levels of stress and mindfulness. The overall finding is that those participants with high mindfulness levels reported the highest levels of employee resilience, irrespective

of their stress level. Indeed, participants who reported low stress and high mindfulness reported the highest employee resilience, while participants with high mindfulness levels that reported high stress reported the second highest resilience levels. However, participants with low mindfulness but high stress levels, reported slightly higher resilience in comparison to participants that reported both low mindfulness and low stress levels.

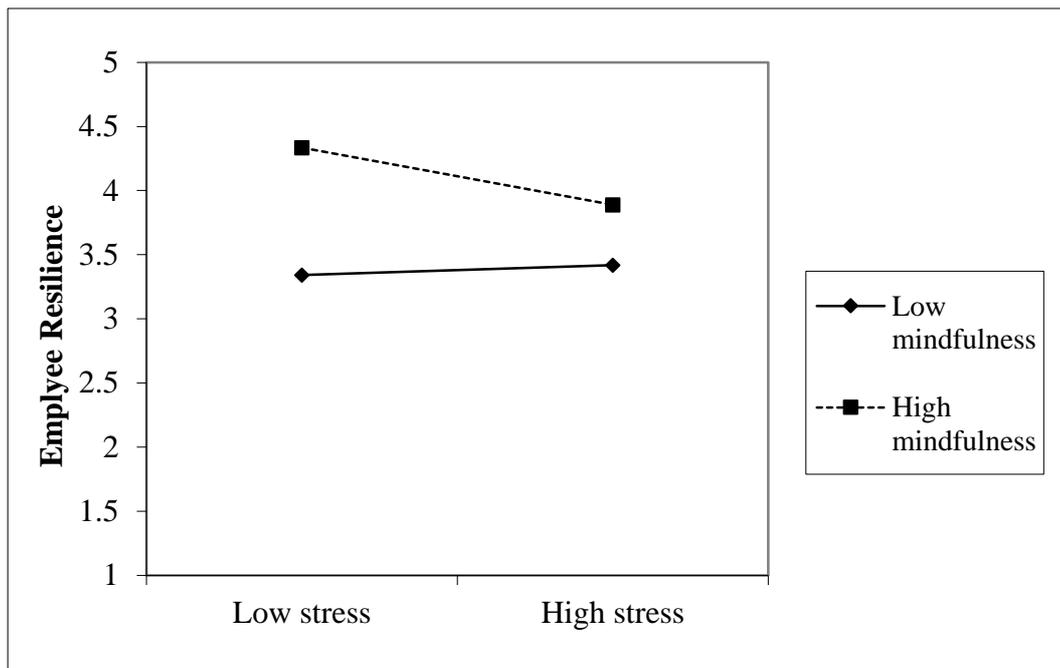


Figure 4. Interaction effect for employee resilience with stress and resilience

The moderated regression analysis showed that mindfulness did not interact with stress to predict recovery quality, $R^2 = .13$, $F(2,178) = 14.98$, $p = .21$, R squared change = .01, F change (3,177) = 1.57, $p = .21$. The unstandardised regression coefficient for the interaction between stress and mindfulness is $B = .14$, $p = .21$. Therefore, this indicates that overall, Hypothesis 8 was not supported.

The moderated regression analysis showed that mindfulness did not interact with stress to predict wellbeing, $R^2 = .20$, $F(2,178) = 8.86$, $p = .45$, R squared change = .00, F change (3,177) = .58, $p = .45$. The unstandardised regression coefficient for the interaction

between stress and mindfulness is $B = -.08, p = .45$. Therefore, this indicates that overall, Hypothesis 6 was not supported.

Discussion

The current study builds on the previous literature regarding the relationship of work stress and employee resilience, recovery quality from stress and wellbeing. In particular, the primary aim of the study was to investigate the potential buffering effect that mindfulness has on these three relationships. The hypothesised relationships were mostly supported, encouraging further research on the potential effects of work stress on recovery quality and wellbeing. Below, each of the hypotheses are discussed individually.

Supporting Hypothesis 1, work-related stress was negatively related to wellbeing. This is consistent with previous findings (e.g., Andrea et al., 2009; Bakker et al., 2009), which suggest that work stress is detrimental for developing and maintaining the two facets of psychological wellbeing, levels of pleasant emotion and life satisfaction. As managers are often faced with stressful work circumstances (Nielsen & Daniels 2012), when work stressors accumulate, this can take a negative toll upon a manager's wellbeing. Thus, it is crucial that organisations can help their employees manage stress, which will help to increase employees' wellbeing.

As proposed by Hypothesis 2, recovery was positively related to wellbeing. This is consistent with organisational research conducted by Sonnentag and Zijlstra (2006), who proposed that high recovery quality can support wellbeing. During the recovery process and by engaging in appropriate recovery experiences, employees gain resources to better deal with work stressors and job demands (Hobfoll, 1998). Therefore, evidence from the current study could encourage future research to investigate which element(s) of recovery are the most effective in increasing wellbeing. In turn, this could have implications for which recovery techniques and tools organisations choose to provide their employees as wellbeing initiatives.

As tested by Hypothesis 3, work stress was negatively related to recovery quality. Due to the high amounts of pressure managers are typically placed under (Roche et al., 2014), it proves difficult for this occupational group to recover. Furthermore, in a high stress role, it is more difficult to psychologically detach from work and engage in relaxation-based activities (Hardy, Mullen, & Jones, 1996). As it is hard to reduce workplace demands, further research exploration could investigate ways for organisations to promote recovery quality.

The results support Hypothesis 4, which proposed mindfulness levels to be negatively related to work-related stress. This finding is not surprising, as mindfulness is proposed to be an effective stress intervention (Andrea et al., 2009; Shapiro et al., 2005). Moreover, mindfulness can help employees to view stressors at face value and decouple automatic stressor responses (Good et al., 2015). Building upon this finding, further research is encouraged to investigate what mindfulness techniques are the most effective to help reduce employees' stress levels in an organisational setting.

The results also supported Hypothesis 5, which proposed mindfulness levels to be positively related to wellbeing. This finding was consistent with past research that suggests mindfulness can benefit employee wellbeing (Leroy, Anseel, Dimitrova, & Sels, 2013; Weinstein & Ryan, 2011). Mindfulness can assist self-regulation and the fulfilment of psychological needs (Brown & Ryan, 2003). Moreover, mindful employees are intrinsically oriented (Brown & Kasser, 2005), therefore they are more likely to be consciously aware if they are lacking core facets of wellbeing, including life satisfaction and positive emotion. The foundational findings supporting Hypotheses 4 and 5, should encourage I/O researchers to conduct studies with the view to gather further evidence of mindfulness' benefits on stress and wellbeing in the workplace. In turn, this will help mindfulness to be a more marketable intervention for stress and wellbeing.

Hypothesis 6 proposed that mindfulness levels will moderate the relationship between work-stress and wellbeing, and it was not supported. This shows that mindfulness may not

buffer the effects that work stress has on wellbeing. This finding is in contrary with previous research (e.g. Fredrickson et al., 2008). However, previous research has not studied this moderating relationship in application to the occupational group of business managers.

The results indicated that mindfulness levels are positively related to recovery quality from stress. Thus, Hypothesis 7 was supported. This finding supports previous research regarding this relationship (e.g., Brown & Ryan, 2003; Roche et al., 2014). Being mindful can help employees detach themselves from work-related thoughts, and therefore, they can be more attentive of their present recovery experiences outside of work hours.

Hypothesis 8, which proposed that proposed mindfulness can moderate the relationship between work-related stress and recovery quality from work-related stress, was not supported. However, mindfulness interventions have to be implemented on a long-term basis for employees to positively benefit from the intervention's effects (Grossman, Niemann, Schmidt & Walach, 2004). The current study was not experimental, thus, it would be worth exploring if there is such a moderating relationship in future longitudinal research with managers as participants. Moreover, it would be interesting to research the implementation of an experimental longitudinal study to investigate long-term changes in mindfulness levels with regard to its effects on perceived work stress, wellbeing, and recovery.

The results suggest that work stress is negatively related to employee resilience, supporting Hypothesis 9. Although this field of research is relatively recent, high stress can negatively impact an employee's ability to undertake resilient behaviours

Moreover, mindfulness levels are positively related to employee resilience and mindfulness can moderate the relationship between work stress and employee resilience. Therefore, Hypotheses 10, and 11 were also supported. These findings are consistent with research conducted by Glomb et al. (2011), who found that affective regulation and persistence can be developed through mindfulness, which are two components of employee

resilience. Interestingly, the participants who reported high mindfulness also reported the highest levels of employee resilience, regardless of their stress level.

There are several theoretical and practical implications for the findings of this study on the relationship between stress, mindfulness, and employee resilience. First, as work-stress was negatively related to wellbeing, employee resilience, and recovery quality, this suggests that work-stress can be detrimental to such favourable organisational outcomes. Therefore, organisations need to be made aware of the detrimental consequences stress can have on their employees. The evidence supporting the moderating effect of mindfulness on employee resilience at high stress levels suggests how mindfulness may help decrease the detrimental effects of stress in the workplace. For example, even when an employee reports they are highly stressed at work but are mindful, mindfulness has the potential to buffer the effects of work-related stress on employee resilience. This finding is foundational evidence for employee resilience research in I/O psychology.

Limitations

Several limitations of the study require attention. These include the subjective nature of self-report, the potential risk of common method variance, and the cross-sectional design. These limitations are discussed in the section below.

First, the data were collated through self-report. Although this method is quick, cost effective, and easy to administer, it is subjective (Paulhus & Vazire, 2007). Nevertheless, this was the most appropriate way to measure the variables in the current study. Objective measures, such as heart rate, were not practical to use in this research. In addition, this study was interested in subjective experiences of work stress. For example, heart rate would not be an accurate measure of work stress because non-work stress cannot be controlled for (Semmer, Grebner, & Elfering, 2004). It was important to control for non-work stress because affect at home strongly relates to affect at work (Sonnentag et al., 2008). Thus, if an employee

experiences stress at home, this may negatively interfere with their work. To prevent participants reporting non-work stress, each survey question derived from the PSS included the addition of “at work.”

Self-report can also increase the risk of Common Method Variance (CMV). As self-report was the only type of measurement method, this could have inflated variable relationships (Spector, 2006). As discussed by Shultz, Whitney, and Zickar (2013), factor analysis can help detect CMV by analysing variable relationship patterns. When exploratory factor analyses were undertaken, no items double loaded onto factors, and multicollinearity was not detected. Thus, CMV was accounted for by some degree in the factor analyses. Future mindfulness research would benefit from utilising a range of measurement methods, with the view to mitigate CMV.

A third limitation is the cross-sectional design of the current study. In the current study, previous theory supports the proposed directions of the variable relationships. However, due to the nature of a cross-sectional design, directionality and causality cannot be confirmed. Nevertheless, a cross-sectional design is an effective way to assess new theoretical models to confirm if longitudinal studies can be warranted (Spector, 2006).

Implications for Future Research

As shown in the study, mindfulness can buffer the effects that stress has on employee resilience. Moreover, those participants that reported high mindfulness also reported higher employee resilience than those participants with low mindfulness levels. Therefore, future research would benefit from quasi-experimental and longitudinal research to shed light upon what the best mindfulness work interventions are to help increase employee resilience.

It would be beneficial to investigate various stress reduction and mindfulness interventions that managers could utilise. While this research suggests that levels of mindfulness did not moderate the relationships between stress, wellbeing, and recovery, a

mindfulness intervention might show this effect. For example, in Mindfulness Based Stress Reduction (MBSR) (Grossman et al., 2004), participants take part in “homework activities” including meditation, mindful eating, breathing exercises, and yoga. MBSR has found to be helpful for managing stress in clinical and non-clinical settings (Chiesa & Serretti, 2009; Grossman et al., 2004). Future research could investigate if MBSR provides these benefits to managers.

In addition, future research would benefit from the investigation of other theories such as Positive Psychology, which has already been applied to clinical psychology interventions. For example, training could be provided to managers to reflect on their personal values, purpose, and strength to realise what is going right with their followers and their organisation (Rusk, & Waters, 2015), with the aim to encourage positive thinking. Previous researchers (e.g., Deci & Ryan, 1980; Rusk & Waters, 2015) who have applied positive psychology to a clinical setting found it to be beneficial for psychological wellbeing. Therefore, it would be interesting to study if application of these theories can help increase employee resilience and stress recovery.

Future I/O Psychology research could investigate the effect of stress on mindfulness and resilience levels at a predictively stressful time within an organisation. For example, a diary method (Ohly, Sonnentag, Niessen, & Zapf, 2015) requires participants to report their mindful experiences that are both internal and external to the workplace. Additionally, it would be interesting to investigate what job demands managers perceive as a threat versus a challenge and what demands managers typically perceive to be distressful. This information would provide an organisation with insight and understanding regarding stressful job demands.

Another area for future research is the inclusion of a mindfulness level gradient. Within the current study, only one categorical question was asked in relation to previous mindfulness experience. Because no definition of mindfulness provided, each participant may

have perceived mindfulness differently. Future research could more clearly differentiate participants by their mindfulness levels. Further questions regarding the type of mindfulness exposure, experience, or training could help future research to more clearly differentiate participants' mindfulness levels and to break into groups (e.g., a middle level of mindfulness).

Implications for Organisations

Organisations should ensure they have the appropriate resources and interventions for their employees to appraise stressors positively and to more effectively cope with stress. As previously noted, some stress (i.e., eustress) may be helpful to employees, as it can provide an element of challenge to their work (Cavanaugh et al., 2000). Training employees to view stressors and job demands as challenges rather than threats could prove useful (LeFevre et al., 2006). Organisations should conduct a needs analysis or stress audit (Gardner & O'Driscoll, 2007) to determine the prevalence and degree of work stress, then decide on appropriate interventions to be applied, such as mindfulness training programs.

Mindfulness training programs for leaders has many benefits. These include higher innovative and strategic thinking, emotional intelligence, enhanced listening skills increased decision-making quality, attentiveness, empathetic behaviours, citizenship, affect and job performance, and most importantly, stress reduction (Glomb et al., 2011). A high average level of stress in the current sample suggests that such stress interventions are required. The benefits of mindfulness training will ultimately help organisations by supporting employees and increasing productivity (Glomb et al., 2011; Shain & Kramer, 2004).

Mindful leader training can encourage transformational leadership. Transformational leadership supports higher follower job performance and job satisfaction (Bass, 1999; Judge & Piccolo, 2004). A transformational leader inspires, motivates, and is considerate of their followers (Bass, 1999). This is idealistic in comparison to transactional leaders that lead in a contingent manner, based on the organisation's financial goals. Mindful leaders are more

attuned to their followers' emotions and nonverbal communication, and have a higher chance of deciphering if a follower needs help (Good et al., 2015). In turn, this can help a leader decipher a follower's needs and provide the appropriate support, which are key components of transformational leadership (Judge & Piccolo, 2004).

Practical Challenges

Two practical challenges to organisations include the time commitment and potential reluctance employees may have in adopting mindfulness techniques. In the current study, the results suggest that those participants who have had previous mindfulness training are not more mindful than those who have not. However, the literature (e.g., Grossman et al., 2004) notes that mindfulness interventions are only successful on a long-term basis. This is difficult for organisations to commit to because in today's business environment, organisations desire immediate changes in the workplace. Thus, future interventions need to take this into consideration.

Another practical challenge is the potential reluctance that employees may have in utilising mindfulness interventions. Brown and Ryan (2003) discuss that each individual has an intrapersonal variation in their willingness, propensity, and ability to be mindful. Moreover, personality traits such as narcissism have been shown to reduce an individual's willingness to change and/or adopt changes (Campbell, Hoffman, Campbell, & Marchisio, 2011) and increase reluctance (Marcus & Schütz, 2005). If such interventions are made available, there is no certainty that employees will adopt them. Therefore, the benefits of mindfulness may be best procured if they are embedded within the organisational culture.

Conclusion

In today's business environment, it is crucial that employees can both cope with work-related stressors and appraise job demands more positively. Due to numerous reasons including globalisation and job complexity, it is unlikely that job demands will decrease over

time. Therefore, it is important that corporate organisations are open to employing resources that may help their employees cope with work stress. The current study has shown that mindfulness does have the potential to buffer the negative effects of work stress on employee resilience. This finding encourages future research to contribute further evidence towards this moderating relationship. Such research will help organisations acquire an effective employee resilience intervention. Offering these interventions to employees will strengthen an organisation's competitive advantage for attracting business leaders and managers and contribute to treating their staff as the most valuable source of capital.

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Appendix A

Invitation Email

Dear employees at (Organisation X),

My name is Emma Hansen and I am completing my Master of Science in Applied Psychology at the University of Canterbury.

A compulsory element of my course includes a research project. **I aim to investigate** the effect of business leaders and/or manager's awareness on resilience, recovery, wellbeing and workplace related stress. I require at least 100 leaders and/or managers to participate in my project by completing a short survey.

The survey will take less than 10 minutes to complete, to enter a prize draw to **win one of seven \$100 Westfield vouchers**.

Participation is voluntary and you are assured complete confidentiality and anonymity of data gathered. The University of Canterbury Human Ethics Committee has approved the project.

To complete the survey, please follow this link: http://canterbury.qualtrics.com/SE/?SID=SV_55250dn3S0MUQ9n by Saturday 1st August.

I appreciate your participation,

Kind regards,

Emma Hansen.

emma.hansen@pg.canterbury.ac.nz

Appendix B

Online Consent Form

The role of awareness on recovery quality and wellbeing of business leaders and managers

My name is Emma Hansen and this project is a requirement for my Master of Science in Applied Psychology.

The aim of my project is to investigate the effect of our awareness of everyday events on resilience, recovery, wellbeing and workplace related stress.

Your **involvement in this project involves completion of this survey, which will take less than 10 minutes**. Please note that there are no right or wrong answers, I'm simply interested in your opinions. Please attempt this questionnaire when you are in a low stress state.

You can receive a copy of the project results and/or enter the prize draw to win one of seven \$100 Westfield vouchers by noting your email address at the end of the survey. Participation is voluntary and you have the right to withdraw at any stage without penalty. You can complete this action by not submitting your responses or closing your browser before completing the survey. Because it is anonymous, it cannot be retrieved after that. The results of the project may be published, but you are assured complete confidentiality of data gathered in this investigation. **To ensure anonymity**, data will be stored on password-protected computers, which only the principal researcher and supervisor can access. The data will be destroyed after a period of five years. A thesis is a public document and will be available through the UC Library. The project is under the supervision of Katharina Naswall, who can be contacted on email at katharina.naswall@canterbury.ac.nz. She is available to discuss any concerns you may have about participation in the project.

Note that the project has been reviewed and approved by the University of Canterbury Human Ethics Committee. However, if you wish to make any enquires or place a complaint to the Committee, please contact the Chair at human-ethics@canterbury.ac.nz. By completing the questionnaire it will be understood that you have consented to participate in the project, and to publication of the project, with the understanding that anonymity will be preserved.

During survey completion, there is a small risk that you may find answering these questions stressful. This is because the questions may bring stressful work situations/scenarios to your attention. I suggest that if you experience any symptoms of distress while completing the questionnaire, please cease participation immediately. Additionally, if you need to contact a source of help, there are several counseling services that can guide you, including Lifeline (0800 543 354). If you experience any symptoms related to trauma, please contact Skylight counseling (0800 299 100).

Note: Please complete all questions. There is no 'back' button in the survey, so do not progress to the next stage until you are happy with your answers.

Thank you for your participation.

Emma Hansen
emma.hansen@pg.canterbury.ac.nz

Appendix C

Debrief Survey

Thank you for completing this survey. It will greatly help me with completion of my thesis, which is a requirement for the Master of Science in Applied Psychology.

The purpose of the study was to investigate the relationship between workplace related stress and wellbeing and recovery quality of business leaders and managers. A second aim of the study was to discover if mindfulness levels affected these two relationships. It was expected that the more mindful a person is, the more likely they are to have high quality recovery and resilience, and a satisfactory psychological wellbeing.

There is an opportunity to enter your email address below in several circumstances:

- 1) You are interested in entering the prize draw to win one of seven \$100 Westfield vouchers.
- 2) You are interested in receiving a copy of the completed study. It will be sent to you in approximately February 2016.
- 3) You are interested in participating in further research concerning mindfulness and work-related stress.

Please indicate if you would like to:

- Enter the draw to win one of seven Westfield vouchers
- Receive the study findings
- Participate in future research

If you have ticked any of the options noted above, please enter your email address below. It will only be used for the purpose(s) listed above. It will be stored separately from the data.

During the completion of the survey, there is a small risk that you may have found the survey caused you some distress or was perceived as somewhat stressful. This is due to the nature of the questions being asked, as they may have brought stressful work situations/scenarios to your awareness and attention. If you need to contact a source of help, there are several counseling services that can help guide you through stressful situations. These include Lifeline (contact number – 0800 543 354). Additionally, if you experience any symptoms related to trauma, please contact Skylight counseling on 0800 299 100.

If you would like to learn more about mindfulness or are wanting to seek help to increase your mindfulness, please refer to the following information: **Mindfulness Works**
<http://mindfulnessworks.co.nz> – This organisation offers introduction courses to mindfulness techniques which are on offer in Christchurch, Wellington and Auckland.

If you have any further questions or request any additional information, please do not hesitate to contact Emma Hansen at emma.hansen@pg.canterbury.ac.nz at any time. Thank you for your participation.

Appendix D

Table D1.

Effective sample characteristics

Characteristic	Sample
N	181
Age range (years)	23-65
Age mean (years)	38.54
Female (%)	50.3
Currently employed in NZ (%)	96.13
Previous mindfulness training (%)	53.6
Direct reports range (number of employees)	0-65
Direct reports mean (number of employees)	8.57
Years titled as manager or leader range	0-40
Years titled as manager or leader mean	10.78

Appendix E

Demographic Questions

- 1) How many years have you been titled as a manager or a leader? _____
- 2) How many employees directly report to you? _____
- 3) Do you have previous mindfulness experience or training?
 Yes
 No
- 4) What is your gender
 Male
 Female
- 5) What is your age? _____
- 6) Where are you currently situated?
 New Zealand
 Overseas

Appendix F

Online Survey

Below is a collection of statements about your everyday experiences. Using the scale below, please indicate how often you currently experience each one.

Please answer according to what *really reflects* your experience rather than what you think your experience should be.

Please treat each item separately from every other item.

Scale item	Never	Almost Never	Sometimes	Fairly Often	Very Often
I could be experiencing some emotion and not be conscious of it until some time later.					
I break or spill things because of carelessness, not paying attention, or thinking of something else.					
I find it difficult to stay focused on what's happening in the present.					
I tend to walk quickly to get where I'm going without paying attention to what I experience along the way.					
I tend not to focus feelings of physical tension or discomfort until they really grab my attention.					
I forget a person's name almost as soon as I've been told it for the first time.					
It seems I am "running on automatic," without much awareness of what I'm doing.					
I rush through activities without being really attentive to them.					
I get so focused on the goal I want to achieve that I lose touch with what I'm doing right now to get there.					
I do jobs or tasks automatically, without being aware of what I'm doing.					
I find myself listening to someone with one ear, doing something else at the same time.					
I drive places on 'automatic pilot' and then wonder why I went there.					
I find myself preoccupied with the future or the past.					
I find myself doing things without paying attention.					

I snack without being aware that I'm eating.					
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The following questions will ask you about your thoughts and feelings during the last month in your **workplace setting**. In each case you will be asked to rate **how often** you have felt a certain way. Although some questions are similar there are differences between them and you should treat each one as a separate question.

Choose the *most appropriate answer* that reflects your last four weeks in the **workplace.....**

Scale item	Never	Almost Never	Sometimes	Fairly Often	Very Often
How often have you felt that you were on top of things at work?					
How often have you been upset because of something that happened unexpectedly at work?					
How often have you felt nervous or stressed at work?					
How often have you been irritated due to daily hassles at work?					
How often have you felt that you could not cope with all the things you had to do at work?					
How often have you been angered because of things that were outside of your control at work?					
It seems I am "running on automatic," without much awareness of what I'm doing.					
How often have you felt difficulties piling up so high at work that you could not overcome them?					

The following questions assess how you manage challenges as part of your work role.

Please indicate your response to each question using the scale below:

Scale item	Never	Almost Never	Sometimes	Fairly Often	Very Often
I effectively collaborate with others to handle challenges at work.					
I successfully manage a high workload for long periods of time at work.					
I resolve crises competently at work.					
I learn from mistakes and improve the way I do my job at work.					

I re-evaluate my performance and continually improve the way I do my work.					
I effectively respond to feedback, at work, even criticism at work.					
I approach managers when I need their support at work.					
I use change at work as an opportunity for growth.					
I seek assistance at work when I need specific resources.					

Please indicate how often you feel each phase has applied to you in the last three weeks.

Scale item	Never	Almost Never	Sometimes	Fairly Often	Very Often
I have been happy, satisfied or pleased with my personal life.					
I have felt well adjusted to my life situation.					
I have lived the kind of life I have wanted to.					
I have felt eager to tackle my daily tasks or make new decisions.					
I have felt I could easily handle or cope with any serious problem or major change in my life.					
My daily life has been full of things that were interesting to me.					

Think about your typical working weeknight, to answer the following questions.

Scale item	Never	Almost Never	Sometimes	Fairly Often	Very Often
Last night, I forgot about work.					
When I get home, I can easily relax and 'switch off' from my work.					
Last night, I was able to let go of all my thoughts about work.					
Last night, I took time for leisure and down time.					
Last night, I was able to take a break from the demands of work.					
Last night, I used time to relax.					

Appendix G

Table G1.

Factor analysis of the PSS items before extraction

Item	Factor 1	h^2
How often have you felt that you were on top of things at work? (R)	.454	.206
How often have you been upset because of something that happened unexpectedly at work?	.637	.406
How often have you felt nervous or stressed at work?	.724	.524
How often have you been irritated due to daily hassles at work?	.686	.471
How often have you felt that you could not cope with all the things you had to do at work?	.705	.497
How often have you been angered because of things that were outside of your control at work?	.594	.353
How often have you felt difficulties piling up so high at work that you could not overcome them?	.710	.504
How often have you found yourself thinking about things that you have to accomplish at work?	.300	.090
Eigenvalue	3.051	
Percent of the variance	38.139	

^aPrincipal axis factor analysis, oblimin rotation

(R) = reverse coded

h^2 = communalities value

Appendix H

Table H1.

Factor analysis of the PSS items after extraction

	Factor 1	h^2
How often have you been upset because of something that happened unexpectedly at work?	.655	.429
How often have you felt nervous or stressed at work?	.720	.518
How often have you been irritated due to daily hassles at work?	.686	.470
How often have you felt that you could not cope with all the things you had to do at work?	.677	.458
How often have you been angered because of things that were outside of your control at work?	.630	.397
How often have you felt difficulties piling up so high at work that you could not overcome them?	.693	.481
Eigenvalue	2.754	
Percent of the variance	45.899	

^aPrincipal axis factor analysis, oblimin rotation

h^2 = communalities value

Appendix I

Table I1.

Factor analysis of the Emp-Res items

Item	Factor	h^2
I effectively collaborate with others to handle challenges at work	.512	.446
I successfully manage a high workload for long periods of time	.489	.414
I resolve crises competently at work	.516	.470
I learn from mistakes and improve the way I do my job	.684	.556
I re-evaluate my performance and continually improve the way I do my work	.635	.646
I effectively respond to feedback, at work, even criticism	.607	.412
I approach managers when I need their support	.596	.672
I use change at work as an opportunity for growth	.672	.485
I seek assistance at work when I need specific resources	.570	.528
Eigenvalue	3.319	
Percentage of the variance	51.43	

^aPrincipal axis factor analysis, oblimin rotation

h^2 = communalities value

Table I2.

Factor analysis of the WHO-PWS items

Item	Factor	h^2
I have been happy, satisfied or pleased with my personal life	.796	.726
I have felt well adjusted to my life situation	.731	.549
I have lived the kind of life I have wanted to	.813	.726
I have felt eager to tackle my daily tasks or make new decisions	.696	.602
I have felt I could easily handle or cope with any serious problem or major change in my life	.565	.460
My daily life has been full of things that were interesting to me	.636	.430
Eigenvalue	3.073	
Percentage of the variance	50.479	

^aPrincipal axis factor analysis, oblimin rotation

h^2 = communalities value

Table I3.

Factor analysis of the REQ items

Item	Factor	h^2
Last night, I forgot about work	.765	.585
When I get home, I can easily relax and ‘switch of’ from my work	.759	.576
Last night, I was able to let go of all my thoughts about work	.787	.619
Last night, I took time for leisure and down time	.707	.500
Last night, I was able to take a break from the demands of work	.793	.629
Last night, I used time to relax	.653	.427
Eigenvalue	3.336	
Percentage of the variance	55.602	

^aPrincipal axis factor analysis, oblimin rotation
 h^2 = communalities value

Table I4.

Factor analysis of the MAAS items

Item	Factor	h^2
I could be experiencing some emotion and not be conscious of it until some time later (R)	.379	.295
I break or spill things because of carelessness, not paying attention, or thinking of something else (R)	.348	.304
I find it difficult to stay focused on what’s happening in the present (R)	.695	.605
I tend to walk quickly to get where I’m going without paying attention to what I experience along the way (R)	.470	.434
I tend not to focus feelings of physical tension or discomfort until they really grab my attention (R)	.364	.358
I forget a person’s name almost as soon as I’ve been told it for the first time (R)	.309	.488
I rush through activities without being really attentive to them (R)	.578	.633
I get so focused on the goal I want to achieve that I lose touch with what I’m doing right now to get there (R)	.412	.340
I do jobs or tasks automatically, without being aware of what I’m doing (R)	.584	.379

I find myself listening to someone with one ear, doing something else at the same time (R)	.463	.355
I drive places on 'automatic pilot' and then wonder why I went there (R)	.472	.458
I find myself preoccupied with the future or the past (R)	.420	.286
I find myself doing things without paying attention (R)	.788	.710
I snack without being aware that I'm eating (R)	.522	.388
It seems I am "running on automatic," without much awareness of what I'm doing (R)	.584	.396
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Percentage of the variance	40.871	
Eigenvalue	3.989	
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^aPrincipal axis factor analysis, oblimin rotation

(R) = reverse coded

h^2 = communalities value