

**Are You in the Right Headspace?**

**Using a Mindfulness-Based Mobile Application as a Wellbeing Intervention in the  
Workplace**

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By

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## Abstract

Burnout is one of the fundamental challenges of working life, and those working in jobs involving high levels of emotional labour, like community support work, are most susceptible to developing it. Burnout is an important issue because it not only negatively impacts employee physical and mental health, but also patient quality of care, and it contributes to staff absenteeism and high staff turnover. The aim of the current study was to explore the effectiveness of a mindfulness-based smartphone application called Headspace as a wellbeing intervention for support workers. The study used a longitudinal design and studied 12 people randomly allocated into either a treatment group ( $n = 8$ ) or wait-list control group ( $n = 4$ ) who also completed the intervention. For 30 days participants listened to daily 10-minute guided meditations which were downloaded onto their workplace-assigned smartphones, meaning they could listen to them at their own convenience, something essential due to the mobile nature of the job. The results suggest that mindfulness delivered through smartphones can reduce burnout, perceived stress, negative affect and increase mindfulness, employee resilience and positive affect in community support workers. There were no significant changes for compassion fatigue or self-compassion. The present study contributes to the limited research on mindfulness-based smartphone-delivered wellbeing initiatives and is the first to study community support workers whilst addressing implications and directions for future research.

## Overview

According to a Wellbeing in the Workplace New Zealand study, in 2016 New Zealand lost 6.6 million working days due to absence (both sick-leave and absenteeism) which cost the country \$1.51 billion (Southern Cross, 2017). Absences are often due to stress and in New Zealand stress levels have increased for the second consecutive year, up 22.9% from 2015 (Southern Cross, 2017). General workload was cited as the main cause of anxiety and New Zealand is not alone in this, about 38% of workers globally are suffering from excessive workplace pressure (Southern Cross, 2017).

Because anxiety and mental health complaints have increased this has put pressure on mental health and support services, which are often delivered by NGOs (Non-Governmental Organization). Due to limited budgets, NGOs often have to focus on cost control and the most effective use of limited resources (Horner, Piercy, Eure & Woodard, 2014). As a result, healthcare professionals are expected to do more with less, even though inpatient and outpatient populations are growing (Horner et al., 2014; Goodman & Schorling, 2012; Shapiro, Brown & Biegel, 2007).

Support workers are healthcare professionals on the frontline of NGOs who support clients with medication management, household management, personal cares, addiction and recovery, navigating barriers to work and study, accessing government benefits, physical and psychiatric care, setting achievable goals and reconnecting with their family and culture. Alongside an extensive list of responsibilities, support workers in particular experience stressors in the form of shift work, low wages, low workplace autonomy and limited decision making ability for their client's care. Long-term experience of these stressors can result in high work strain, and long-term experience of high work strain has been associated with burnout (Bakker & Demerouti, 2007). Unfortunately, support worker access to stress

management resources or interventions to improve work-life balance are generally lacking or inconvenient. This is due to a combination of NGO budget constraints and third-party counselling referrals which occur outside of work hours (Dobie, Tucker, Ferrari & Rogers, 2016; Fortney, Luchterhand, Zakletskaia, Zgierska & Rakel, 2013). In order to improve the wellbeing outcomes of support workers, a previously underserved and understudied population, alternative wellbeing initiatives which suit their workplace need to be explored and tested for their effectiveness. Support workers are often mobile, their day is spent visiting clients in their homes rather than working in a central office. Mindfulness may be a flexible and suitable type of intervention for such employees. Therefore, this research aims to study the effectiveness of a brief daily mindfulness exercise on support workers delivered through a smartphone app that can be completed at their own convenience.

## **Job Stress**

Lazarus and Folkman's (1984) transactional model of stress describes stress as a process and stress experiences are the result of a person-situation interaction. The way a person responds to stress is a result of the way they appraise the situation and judge whether or not they have the resources and ability to cope with the internal or external demands placed on them. Cognitive appraisals consist of a primary appraisal (to assess the harm or threat a situation may pose) and then a secondary appraisal (which evaluates what can be done and the individual's ability to manage and cope with it). Coping follows from this appraisal of threat and can influence the level of emotional distress experienced. If an employee repeatedly appraises situations as stressful it may be because they are unable to identify and engage in effective coping strategies. It is the long-term exposure to stress levels alongside the feeling of being unable to cope effectively which leads to strain, and over time, developing burnout (Maslach & Jackson, 1986).

Jobs which involve emotional labour may increase the risk of. Emotional labour is the process of managing feelings and expressions to fulfil the requirements of a job (Russell-Hochschild, 1983). It may involve suppressing an emotion that is felt (e.g. upset at hearing about a client's traumatic experience) or expressing an emotion that is not actually felt (e.g. smiling and being positive no matter how the employee is really feeling). Burnout is especially prevalent in employees of highly emotional and interactive careers such as healthcare (Richardson, Jaber, Chan, Jesse, Kaur & Sangha, 2016; Luken & Sammons, 2016; Maslach, 1978; Freudenberger, 1974). Burnout is the result of an inadequate response to chronic occupational stress and "is a syndrome of emotional exhaustion, depersonalisation, and reduced personal accomplishment that can occur among individuals who do 'people work' of some kind" (Maslach & Jackson, 1986, p.1). With exhaustion, employees feel overextended and depleted of emotional and physical resources. It prompts the employee to distance themselves both emotionally and cognitively from their work as a means of coping. In a support worker capacity, it can exhaust a worker's ability to be empathic and responsive to the needs of their clients (Harker, Pidgeon, Klaassen & King, 2016; Maslach, Schaufeli & Leiter, 2001). Cynicism (also known as depersonalisation) is the interpersonal dimension of burnout. It refers to how employees may become negative, callous or detached from various aspects of their work (Maslach et al., 2001). This may present as a support worker attempting to put distance between themselves and clients by purposefully ignoring the qualities which make them unique individuals. This is because client demands are considered more manageable when they are viewed as impersonal objects in one's workplace (Maslach et al., 2001). Reduced feelings of personal achievement is the self-evaluative dimension of burnout and refers to how employees feel incompetent and lack a sense of achievement at work (Maslach et al., 2001). Support workers sometimes work with clients with severe and chronic mental illnesses who often do not make dramatic improvements (Raab, Sogge, Parker &

Flament, 2015). This may contribute to reduced self-efficacy if support workers repeatedly feel as though they are not meeting the demands or achievements they expect of themselves.

Burnout is the most severe outcome of chronic perceived stress. While burnout may not be experienced by all employees, chronic perceived stress itself has been found to be related to such negative outcomes as: physical health problems (fatigue, insomnia, heart disease, obesity), disrupted personal relationships, substance abuse, and psychological problems (aggression, anxiety, depression and suicidal ideation) (Kinnunen, Feldt, Sianoja, de Bloom, Korpela & Geurts, 2017; Luken & Sammons, 2016; Taylor, Millier & Robina, 2016; Huang, Li, Huang & Tang, 2015; Raab et al., 2015; Aikens, Astin, Pelletier, Levanovich, Baase, Park & Bodnar, 2014; Shapiro, Astin, Bishop & Cordova, 2005). Furthermore, there are also significant organisational consequences to stressed staff, including: staff absenteeism, extended sick leave, low productivity, low job satisfaction, high workplace turnover and reduced quality of care for clients including increased medication errors (Aikens et al., 2014; Bazarko, Cate, Azocar & Kreitzer, 2013; Bhui, Dinos, Stansfeld & White, 2012; West, Huschka, Novotny, Sloan, Kolars, Habermann & Shanafelt, 2006; Shapiro et al., 2005; Shanafelt, Bradley, Wipf & Back, 2002). Chronic stress not only impairs normal functioning, it is also reciprocal, which means the employee's heightened emotional and behavioural reactivity decreases their threshold for perception of threats thus sustaining the stress response (Bartlett, Lovell, Otahal & Sanderson, 2016, Lazarus & Folkman, 1984).

Not all employees exposed to excessive workplace demands reach the level where their stress results in exhaustion or burnout. This is because individuals have different resources available to them, such as personality and level of self-esteem, which can result in different appraisals (Park & Folkman, 1997; Lazarus & Folkman, 1984). Support workers are employed in an emotionally draining workplace where staff are vulnerable to being overloaded with stress (Raab et al., 2015). Although working with vulnerable or traumatized

clients can be highly rewarding, such exposure can also be a significant stressor for a support worker and lead to the development of compassion fatigue (Thieleman & Cacciatore, 2014). Compassion fatigue, also referred to as secondary traumatic stress, is defined as “the formal caregiver’s reduced capacity or interest in being empathic” or “bearing the suffering of clients” and is “the natural consequent behaviors and emotions resulting from knowing about a traumatizing event experienced or suffered by a person” (Figley, 1995, p. 7). It is seen as a response to cumulative empathic engagement in an intense interpersonal environment with high emotional and cognitive demands, such as listening to client’s traumatic experiences (Harker et al., 2016; Thieleman & Cacciatore, 2014). Compassion fatigue occurs when the emotional demands of clients outweigh the coping resources a support worker feels they have available to them. It can be described as ‘vicarious traumatization’ whereby an attempt to be empathic causes support workers to experience (to a lesser extent) the same feelings faced by clients in their care (Wood, Prins, Bush, Hsia, Bourn, Earley, Walser, & Ruzek, 2017). Much like their clients, when demands outweigh their resources a healthcare worker can present with symptoms which parallel post-traumatic stress disorder such as avoidance, intrusive thoughts, fear and sleep difficulties (Harker et al., 2016; Bride, 2007; Figley, 1999).

### **Preventative Wellbeing Initiatives**

The constitution of the World Health Organisation defines health as “the state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” (World Health Organization, 1948). Traditionally, preventative medicine has been viewed as enhancing health through strategies targeted at three different levels: primary, secondary and tertiary (Carmona & Liponis, 2017). Primary prevention seeks to prevent the advent of disease either by eliminating the causes of disease or by increasing disease resistance e.g. immunisation. Secondary prevention targets early detection and treatment of presymptomatic disease in order to avoid symptom onset, e.g., cervical smears or

psychological first aid training to detect early warning signs of poor mental health in colleagues and loved ones. Lastly, tertiary prevention strives to curtail the physical, mental and social consequences of established symptomatic disease e.g. attending support groups. Mindfulness interventions have been applied at all three stages in the realm of health promotion (Carmona & Liponis, 2017). In primary prevention, mindfulness has been associated with reducing the risk of obesity as mindful individuals tend to have more restrained and less emotional eating habits (Katterman, Kleinman, Hood, Nackers & Corsica, 2014). Mindfulness has also been associated with reducing blood pressure in patients with pre-symptomatic hypertension at the secondary prevention level (Hughes, Fresco, Myerscough, van Dulmen, Carlson & Josephson, 2013). Finally, at the tertiary level mindfulness has been associated with reducing psychological distress in chronic pain patients through positive reappraisal whereby difficult circumstances or events are reconstructed as positive or meaningful (Carmona & Liponis, 2017).

### **Mindful Meditation and the Mechanisms of Change**

Mindfulness can be a preventative strategy aimed at improving health and well-being from both a health promotion and disease management standpoint. Mindfulness meditation can be traced back to Buddhist traditions and refers to attending with awareness to one's present moment experience (Creswell, 2017; Eberth & Sedlmeier, 2012). Many guided mindfulness practices involve sitting quietly in a meditative state and encourages the participant to attend to their internal experience, such as their bodily sensations, thoughts and emotions, as well as their external environment, such as sights and sounds (Dane, 2015; Eberth & Sedlmeier, 2012; Baer, 2003). Any perceptions, cognitions or emotions that arise during the meditation, should be observed carefully, but not classified as good, bad, true or false (Baer, 2003). Practicing mindfulness involves having an open, curious and accepting attitude of these experiences in a detached or unreactive way, and treating them without

judgment and without modifying them (Cresswell, 2017; Eberth & Sedlmeier, 2012).

Accepting the present experience is not done as a way of passively resigning to a circumstance, but instead it implores the meditator to be inviting of experiences even if they are difficult (Cresswell, 2017). An intended consequence of this practice is to realize that most sensations, thoughts and emotions fluctuate or are transient, likened to waves in the sea (Baer, 2003).

Being mindful is to be actively engaged. It improves our attentional abilities by repeatedly updating and reorienting our attention back to the goal at hand rather than allowing mind wandering. Furthermore, it also works by deliberately suppressing thoughts unrelated to goals and inhibiting reaction cues and increasing cognitive flexibility through repeated shifting and redirecting of attention to the present when the mind wanders (Noone & Hogan, 2016). Novices of mindfulness may find their attention wanders off task fairly often. At these times they can practice their attentional control processes by recognising they have wandered off task and then redirecting their focus to the correct task (Jha, Morrison, Parker & Stanley, 2017). If such processes are repeated enough times during mindful practice, attentional control can be strengthened. Subsequently, in everyday life mind wandering is reduced as individuals have the enhanced ability to focus on the task before them (Jha et al., 2017).

Mindfulness-based interventions improve basic processes which increase perspective taking (Cresswell, 2017). Learning to observe one's present experience objectively may be a crucial psychological mechanism of change (Cresswell, 2017; Bishop, 2002). Individuals are given the chance to understand their habitual responses to stressful situations and instead develop a healthier way of responding (Shapiro et al., 2005). As a result, individuals have a greater response flexibility meaning they can cope better when confronted with a stressor (Chambers, Gullone & Allen, 2009). Mindfulness can intercept the stress cycle early, so that

instead of an individual appraising a situation as a threat, they instead judge it as a challenge capable of being addressed with their available resources (Bartlett et al., 2016).

The theoretical explanation for this mechanism of mindfulness is found within the transactional model of stress by Lazarus and Folkman (1984). This model describes stress as a person-situation interaction, and the way a person responds to stress is a result of the way they appraise the situation and whether or not they have the resources to cope with it. Based on this model it is theorised that mindful meditation helps people to change their primary appraisal of a situation from a threat to a challenge that can be conquered and an experience that some learning or growth can be gained from (Langer, 2014). Over time, creating a perceptual-shift in the way people relate and respond to sensory and cognitive-affective stimuli through mindfulness practice may transfer the locus of control for their stress from external work conditions to their internal coping resources (Van Gordon, Shonin, Zangeneh & Griffiths, 2014).

Furthermore, mindfulness meditation also alters how stress is processed physiologically. Typically when one encounters a threat that one does not feel they have the resources to cope with, the sympathetic nervous system is activated, which enables the “fight-or-flight” response (Creswell, Pacilio, Lindsay & Brown, 2014). This response is designed to either remove the person or the threat from the situation. When this response is enabled one may experience increased heart rate and increased breathing as the lungs dilate. However, people who practice mindfulness may process stress differently. Instead of appraising something as a threat, they may assess the situation and determine that they have the coping resources to handle the situation. Therefore, instead of being a threat, the situation is judged as a challenge the individual feels they can overcome. This translates to their parasympathetic nervous system being activated enabling the “rest-and-digest” process, which keeps the body in a relaxed state (Creswell, Pacilio, Lindsay & Brown, 2014; Ditto, Eclache & Goldman,

2006; Thayer & Lane, 2000). This process encourages the body to conserve its energy, heal and regenerate. Therefore, people learn to perceive once threatening situations as neutral. As their fear response is not activated, individuals can use other more adaptive emotions and behaviours (Tang, Hölzel & Posner, 2015). Studies found that treatment group healthcare workers participating in a mindfulness-based intervention had significantly lower perceived stress scores compared to their control group counterparts post-intervention, and this continued for up to 26 weeks post-intervention (Crowder & Sears, 2017; Lomas, Medina, Ivtzan, Rupprecht & Eiroa-Orosa, 2017; Klatt, Norre, Reader, Yodice & White, 2016; Spadaro & Hunker, 2016; Gu, Strauss, Bond & Cavanagh, 2015; Bazarko et al., 2013; Chiesa & Serretti, 2009; Shapiro et al., 2007; Shapiro et al., 2005).

Mindfulness shows promise at significantly reducing job burnout and perceived stress by building people's coping resources (Wood et al., 2017; Crowder & Sears, 2017; Luken & Sammons, 2016; Harker et al., 2016; Horner et al., 2014; Fortney et al., 2013; Bazarko et al., 2013; Goodman & Schorling, 2012; Shapiro et al., 2005).

One way to build coping resources is to increase the number of personal resources available to an individual. One type of personal resource which support workers can draw on in times of stress is their own level of self-compassion. In L'estrage, Timulak, Kinsella and D'Alton's (2016) study, participants described how before the mindfulness-based intervention group they had no self-focused time and their self-relating appeared to be dominated by harsh or critical attitudes. However, post mindfulness-based intervention, the group said they now gave themselves permission to take time out, their self-relating had shifted to a more positive and kinder focus, giving greater consideration to themselves rather than automatically yielding to others' agendas. They no longer saw being compassionate towards themselves as selfish, and felt more assertive within their decisions. It is suggested that it is the continual emphasis on being curious, kind and befriending of whatever

experience comes one's way is what facilitates self-compassion in mindfulness based interventions. In the above study, taking time out for oneself was perceived as an inherent part of mindfulness practice whereby they were able to engage in self-acceptance, particularly towards aspects of themselves they were self-critical of prior to the intervention. A recurring theme within participants was that they felt better able to confront these difficult parts of themselves after the intervention.

Self-compassion as a personal resource is not only beneficial to support workers but for their client's too. Gustin-Wiklund and Wagner (2013) found that compassion for others may be derived from self-compassion. They titled their study with the metaphor 'the butterfly effect of caring', which means the development of a sensitive, non-judgmental and respectful attitude towards oneself may be a contributing factor towards being compassionate towards others. Increased compassion towards clients may reduce the cynicism and emotional exhaustion components of burnout in an employee.

Emotional regulation is the term used to describe an individual's ability to effectively manage and respond to an emotional experience. Most people use a variety of emotional regulatory strategies and are able to apply them to different situations in order to adapt to the demands of the environment (e.g., going for a walk at lunch to manage stress at work). However, some people are limited in their available emotional regulation strategies and may engage in maladaptive ones (e.g., alcohol abuse). A mechanism by which mindfulness is believed to improve emotional regulation within employees is through the enhancement of self-compassion as an adaptive strategy (Wood et al., 2017; Van Gordon et al., 2014; Thieleman & Cacciatore, 2014; Christopher, Christopher, Dunnagan & Schure, 2006; Beddoe & Murphy, 2004). Self-compassion has been shown to have a positive relationship with life satisfaction, optimism, social connectedness, greater emotional resilience and ability to cope for people living with post-traumatic stress disorder. Moreover, self-compassion research

shows it buffers against stress, anxiety, depression, rumination, self-criticism, thought suppression and poorer patient outcomes (Richardson et al., 2016; Castonguay, Boswell, Constantino, Goldfried, & Hill, 2010; Neff, Kirkpatrick, & Rude, 2007a; Neff, Rude, & Kirkpatrick, 2007b; Neff, 2003a). Richardson and colleagues (2016) proposed that the culture of shame and blame can significantly increase an employee's susceptibility to burnout. For physicians in training mistakes happen, and these researchers suggested that self-compassion could teach trainees how to acknowledge difficult situations with mindful awareness, and that failures should be met with kindness and understanding as part of our common humanity. Neff (2003a) reported that women participants had significantly lower self-compassion than men and also engaged in more self-judgment (Richardson et al., 2016; Leadbeater, Kupermine, Blatt, & Hertzog, 1999; Nolen-Hoeksema, 1987). Therefore, because the majority of support workers are women, it is likely that on average self-compassion is low among support workers. If mindfulness training can help with self-compassion, it could be beneficial and relevant to the support worker profession (Bazarko et al., 2013).

It is proposed that higher levels of mindfulness may buffer against compassion fatigue through attunement, a type awareness and acceptance of the undesirable feelings one may experience (Thieleman & Cacciatore, 2014; Desbordes, Negi, Pace, Wallace, Raison, & Schwartz, 2012). It allows the employee to strengthen their ability to tolerate the negative emotions within themselves, and in turn model this to their clients. This can allow them to re-engage with emotions they may have detached from or avoided. Raab (2014) stated that mindfulness works by countering an individuals' over-identification (when a person attaches more meaning and weight to an emotion than necessary), which in turn reduces excessive fixation on their negative thoughts. Mindfulness acts on emotional regulation by strengthening the prefrontal cognitive control mechanisms and reducing the activity in brain regions associated with affect processing, such as the amygdala (Tang et al., 2015). This

means an individual has more control over how they react to a stressor. Sustained, nonjudgmental acceptance of anxiety-related experiences, without trying to avoid, escape or suppress them, may lead to reductions in emotional reactivity (Baer, 2003). This means that something once deemed as stressful to an employee is no longer appraised as threatening due to repeated exposure to it (Baer, 2003). Although mindfulness meditation does not deliberately attempt to target panic symptoms, by accepting the feelings when they arise, through exposure we can become desensitised to them and encourage the extinction of both fear responses and avoidance behaviours (Baer, 2003). During mindfulness practice, a support worker's thoughts may drift to thinking about the secondary trauma they feel through working with clients who have disclosed traumatic experiences. Repeated exposure and acceptance of these feelings during mindful meditation may reduce the distress these feelings cause the support worker (Baer, 2003). Practicing how to tolerate negative emotions may be a coping mechanism which reduces a support worker's susceptibility to compassion fatigue (Raab, 2014).

Individuals vary in their ability to both interpret and exert control over their emotional lives, which explains how some people manage themselves effectively during stressful circumstances, whereas others struggle significantly (Tugade & Fredrickson, 2004). Folkman and Moskowitz (2000) conducted a review which suggests that utilizing positive emotions during times of stress may help buffer against stress. Specifically, using positive coping strategies like positive reappraisal have been associated with positive affect and predict enhanced psychological wellbeing (Folkman & Moskowitz, 2000).

The broaden-and-build theory by Fredrickson (1998, 2001), is a useful framework which can help researchers understand why and how positive emotions can be advantageous in the coping process. Our negative emotions narrow our thought-action repertoire and in response our body only prepares to behave in certain automatic ways (for example, run away

when scared) (Tugade & Fredrickson, 2004). Alternatively, positive emotions do the reverse, they broaden our thought-action repertoire and expand the range of cognitions and behaviours we are prepared to have and do (Tugade & Fredrickson, 2004). This enhanced repertoire cultivates a person's physical, cognitive and social resources, so when confronted with stress the ability to experience positive emotions may help regulate the negative experience (Tugade & Fredrickson, 2004). This can be tested as the expression of emotions can be measured physiologically through heart rate and blood pressure monitoring. For example, negative emotions increase cardiovascular reactivity due to the body preparing for 'fight or flight', whereas positive emotions down-regulate the cardiovascular effects of negative emotions allowing the body to 'rest and digest' (Tugade & Fredrickson, 2004). Studies show positive associations between mindfulness and affective health. For example, higher levels of trait mindfulness have predicted lower negative affect and enhanced emotional regulation abilities (Weinstein, Brown, & Ryan, 2009; Brown & Ryan, 2003).

Mind-wandering is the antithesis of mindfulness and occurs 47% of the time. Individuals who engage in mind-wandering find it is usually followed by feelings of unhappiness (Killingsworth & Gilbert, 2010). When the mind wanders away from the present an individual may engage in maladaptive thinking which induces negative affect, for example focusing on regrets of the past or anxieties about the future. Mindfulness inhibits rumination about past and future events by attuning an individual to the present, which allows an individual to confront a stressor and feel as though they have the resources to overcome it as they are not caught up in rumination of regrets or anxieties. In time individuals may come to realise that such troubling thoughts and emotions are not accurate representations of reality (Good et al., 2016; Keng & Tong, 2016). Snippe, Shroever, Bos and Nyklicek (2015) studied 83 people who participated in a mindfulness-based stress reduction intervention. They were assessed daily, and it was found that day-to-day changes in mindfulness scores

predicted subsequent day-to-day changes in negative and positive affect (Snippe et al., 2015). Higher levels of mindfulness on one day predicted lower levels of negative affect and higher levels of positive affect the following day (Snippe et al., 2015). The reverse association did not emerge, therefore, it is less likely that affect impacts mindfulness (Snippe et al., 2015). Positive affect amidst stress appears to be advantageous in the coping process (Tugade & Fredrickson, 2004). Therefore, positive affect may be a resource which strengthens the coping process of support workers which in turn may reduce or mitigate the development of burnout.

### **Employee Resilience**

The workplace is becoming an increasingly competitive and pressured environment, therefore work performance averages are being pushed higher (Luthans & Youssef, 2007). Fortunately, resilient individuals, people who possess the adaptive mechanisms that allow them the flexibility to improvise responses to unexpected or undesirable situations, are not exceptional cases who defy adversity (Luthans & Youssef, 2007). Resilience can be learned and developed in almost everyone. This developed skill is called employee resilience and should be recognised as a form of psychological capital in the workplace (Good et al., 2016). Employee resilience is the employee's capability, aided by their company, to utilise resources and adapt and flourish at their workplace even when confronted with stressors (Kuntz, Naswall & Malinen, 2016). One's organisational context is therefore essential to employee resilience and requires organisational input to be cultivated, for example, focus on health and safety, employee growth support, encouraging healthy work-life balance, learning-oriented workplace and wellbeing initiatives (Hansen, 2016).

Resilient employees are valuable not only because they can recover from negative situations, but because they can also grow in the face of adversity (Good et al., 2016).

Resilience acts as a type of buffer which protects an individual from environmental influence and supports employees to exhibit faster emotional and physical recovery from stressors (e.g. high workloads) and return quicker to a state of internal equilibrium (Harker et al., 2016; Luthens & Youssef, 2007). This is due to the employee being more open to experience, emotionally stable and flexible towards work demands (Hansen, 2016). Participation in a mindfulness-based intervention has the capacity to enhance employee resilience as mindfulness can increase an individual's coping resources to the extent it outweighs the level of demands placed upon them. As mindful individuals become aware of their new flexible coping strategies and utilize them more, their confidence in their own ability to handle stressful situations may grow which in turn leads to greater resilience (Good et al., 2016; Crowder & Sears, 2007). Hansen (2016) found that work stress was negatively associated with employee resilience, whereas mindfulness levels were positively associated with employee resilience. Mindfulness was found to moderate the relationship between work stress and employee resilience, which suggests that mindfulness may decrease the detrimental effects of stress in the workplace. In addition, participants who had higher mindfulness scores also had the highest levels of employee resilience independent of their stress levels (Hansen, 2016). Harker and colleagues (2016) also discovered that higher scores on mindfulness and resilience significantly predicted lower scores of participant burnout. Greater resilience was also a predictor of low scores on the secondary traumatic stress scale (Harker et al., 2016).

### **Modifying an Individual's Level of Mindfulness**

Mindfulness is not something that some individuals have and others do not, individuals all lie on a continuum. As Kabat Zinn (2005) argues, the ability to be mindful is an inherent human capacity. However, due to dispositional tendencies, some individuals may enter a mindful state more often than others, which suggests mindfulness is a state-like construct which also can be measured at the trait level (Jamieson & Tuckey, 2016; Dane,

2015). State mindfulness appertains to the degree an individual is presently aware of paying attention to the present, whereas trait mindfulness is one's predisposition to be mindful in everyday life (Jamieson & Tuckey, 2016; Kiken, Garland, Bluth, Palsson, & Gaylord, 2015). Brown and Ryan (2003) found that without intervention, trait mindfulness is stable over time, however, participating in a mindfulness-based intervention can increase trait mindfulness (e.g., Forbes, Gutierrez, Johnson, 2017; Cavanagh, Strauss, Cicconi, Griffiths, Brown & Ryan, 2003; Aikens et al., 2014; Khoury, Lecomte, Fortin, Masse, Therien, Bouchard, Chapleau, Paquin, Hofmann, 2013; Shapiro, Oman, Thoresen, Plante, & Flinders, 2008; Shapiro et al., 2007). As individuals engage in deeper state mindfulness during meditative practice they will increase trait mindfulness over time and develop the tendency to exhibit mindful attitudes and behaviours in the context of everyday life (Kiken et al., 2014). This is possible as the recurrent activation of the neural networks involved in state mindfulness invoked during mindful meditation cause neuroplastic changes over time in both brain structure and function, such as increasing gray matter concentration in areas of the brain involved with: emotional regulation, learning and perspective taking (Hölzel, Carmody, Vangel, Congleton, Yerramsetti, Gard & Lazar, 2011; Garland, Gaylord, Boettiger & Howard, 2010). An increase in gray matter translates to better functioning and expertise in the behaviours listed. The increased density of gray matter in these locations are important because they show how repeated practice of state mindfulness restructures the brain in a way which enhances trait mindfulness, so individual's are more naturally mindful than before.

### **Mindfulness Based Interventions**

Programmes like mindfulness-based interventions have proved popular with employees as they tend to target staff in general rather than specific employees (Lomas et al., 2017). There is a growing number of studies which have found mindfulness-based interventions to be beneficial in improving employee wellbeing, stress levels, resilience,

service quality, worker-client relationship quality, task performance and employee turnover intentions through modifying the way individual's appraise and respond to stressors within the workplace (Crowder & Sears, 2017; Lomas et al., 2017; Dobie et al., 2016; Good et al., 2016; Reb, Narayanan & Ho, 2015; Raab et al., 2015; Grégoire & Lachance, 2015; Huang et al., 2015; Aikens et al., 2014; Van Gordon et al., 2014; Goodman & Schorling, 2012; Shapiro et al., 2005).

The key strengths of mindfulness-based interventions in the work environment setting are that they are: empirically researched and effective, cost-effective, non-invasive to the organisation, non-invasive to the employee, acceptable to employees from a diverse range of cultures/religions/educational backgrounds, are cross-culturally effective, teach highly practical on-the-job practices and can improve both work-related mental health and job performance (Klatt et al., 2016; Bartlett et al., 2016; Van Gordon et al., 2014; Horner et al., 2014). Patients being taken care of by staff who have undergone a mindfulness-based intervention have also reported increased patient satisfaction and increased quality of care (Horner et al., 2014; Fortney et al., 2013).

One of the first interventions focusing on mindfulness was introduced by Jon Kabat-Zinn who created the 8-week Mindfulness-Based Stress Reduction (MBSR) (Kabat-Zinn, 1982). The MBSR programme consists of weekly 2-2.5 hours long group classes with a trained mindfulness teacher, accompanied by daily audio-guided home practice (45 minutes per day), and a day-long retreat which occurs during week six (Cresswell, 2017; Baer, 2003). Participants are also encouraged to practice mindfulness during general daily activities such as walking, standing and eating (Baer, 2003). Although initially created for chronic pain patients who were not responding well to traditional treatments, it has been applied successfully to a range of populations both clinical and non-clinical (Cresswell, 2017; Kabat-Zinn, 1982). However, there are problems with integrating MBSR programmes into the

workplace and attrition rates can be high due to how time-consuming the programme is (Shapiro et al., 2005).

Fortunately, there is more to offer than lengthy MBSR courses, in fact there is a wide variety of other mindfulness-based interventions of varying duration and course material - there is no one size fits all recommendation. As little as 5-10 minutes over 3-4 sessions can buffer affective reactivity and reduce impulsive behaviours immediately following training, and other mindfulness-based intervention workshops range between 2-3 hours to 2-3 days (Bartlett et al., 2016; Creswell, Taren, Lindsay, Greco, Gianaros, Fairgrieve, Marsland, Brown, Way & Rosen, 2016; Lim, Condon & DeSteno, 2015; Rosenberg, Zanesco, King, Aichele, Jacobs, Bridwell, MacLean, Shaver, Ferrer & Sahdra, 2015; Creswell et al., 2014; Mrazek, Franklin, Phillips, Baird & Schooler, 2013; Zeidan, Martucci, Kraft, Gordon, McHaffie & Coghill, 2011). Mindfulness-based interventions are adaptable to the workplace and have shown they can be effective in improving employee wellbeing and continually effective in follow-up months later compared to control groups (Bartlett et al., 2016; Horner et al., 2014; Grégoire & Lachance, 2014; Fortney et al., 2013). It appears that changes correlate with how much time participants engage with their mindfulness-based intervention homework, where the more one practices the better one's performance is (Jha et al., 2017) This may follow the same trend as physical exercise whereby larger or more regular doses are likely to produce larger effects (Creswell, 2017). However, it is more important that participants learn how to apply the formal mindfulness training skills to daily life (Creswell, 2017). Mindfulness-based interventions have also had their fundamental methodology changed, whereby there are sessions provided by phone call (Bazarko et al., 2013), through the web (Bennike, Wieghorst & Kirk, 2017; Spadaro & Hunker, 2016; Aikens et al., 2014; Krusche, Cyhlarova & Williams, 2013; Gluck & Maercker, 2011), and now more commonly through smartphone applications.

## Smartphone Interventions

Clinics and face-to-face therapy sessions are largely inaccessible to the public due to such barriers as cost, location, time, or wait-listing (Christensen & Hickie, 2010). The ubiquitous nature of smartphones makes them an ideal delivery method for large-scale workplace interventions (Mani, 2017; Howells, Ivtzan & Eiroa-Orosa, 2016; Harrison, Proudfoot, Wee, Parker, Pavlovic & Manicavasagar, 2011). Individuals tend to check their mobiles on average once every 6.5 minutes (Khalaf, 2013). Most of this time is spent using smartphone applications (apps) (Khalaf, 2013). Having a wellbeing initiative available through an app on such a regularly used device could help support workers create and maintain the habit of using the mindfulness app daily (Bakker, Kazantzis, Rickwood & Rickard, 2016). Smartphones are suited for mental health delivery as their ownership is not restricted by socioeconomic or demographic status and people seeking self-help can access thousands of downloadable apps instantly (Howells et al., 2016; Harrison et al., 2011). Smartphones may introduce people to psychoeducation, symptom monitoring or treatment options (Radovic, Vona, Santostefano, Ciaravino, Miller & Stein, 2016). These apps also provide anonymity, portability and familiarity which may be beneficial to people unsure of how to seek help, underserved populations, and those who cannot infiltrate the limited availability of mental health services (Creswell, 2017; Wood et al., 2017; Radovic et al., 2016; Bakker et al., 2015; Ly, Asplund & Andersson, 2014). Initiatives delivered through smartphones also have advantages in healthcare at the organisational level as they allow programmes to be distributed to a large amount of people at a low cost (Howells et al., 2016; Andersson, Cuijpers, Carlbring, Riper & Hedman, 2014; Jorm, Morgan & Malhi, 2013; Ahtinen, Mattila, Väykkynen, Kaipainen, Vanhala, Ermes, Sairanen, Myllymäki & Lappalainen, 2013; Christensen & Hickie, 2010).

Mindfulness exercises are suitable for smartphone apps because many are easy to explain and require repetitive practice, something that can be easily achieved at home without the guidance of an expensive therapist (van Emmerik, Berings & Lancee, 2017). There is already evidence abound for the association between smartphones and positive health outcomes in preventative health and clinical interventions (Donovan, Rodgers, Cousineau, McGowan, Luk, Yates & Franko, 2016; Stevens & Bryan, 2012; Ozdalga & Ahuja, 2012). Studies have found that smartphone apps can deliver mindfulness-based interventions which statistically significantly reduce burnout (Wood et al., 2017), compassion fatigue (Wood et al., 2017), depression (Mani, 2017; Howells et al., 2016; Ly et al., 2014), stress (James, 2016), emotional regularity difficulties (James, 2016; Rizvi, Dimeff, Skutch, Carroll & Linehan, 2011), whilst statistically significantly increasing levels of trait mindfulness (van Emmerik et al, 2017; James, 2016) induce feelings of relaxation (Chittaro & Vianello, 2016), increase positive affect (Mani, 2017) and encourage individuals to view their thoughts and emotions more objectively (Chittaro & Vianello, 2016). Participants often reported finding them functional and usable (Wood et al., 2017; Rikard, Arjmand, Bakker & Seabrook, 2016).

Mobile monitoring for patients has been largely (and successfully) used for chronic physical health conditions alongside their traditional care as it has encouraged patients to complete health homework assignments, take their medication at correct times and prompted them to keep on track with their health goals (Harrison et al., 2011). Monitoring has produced positive health outcomes in chronic health problems such as diabetes (Ferrer-Roca, Diaz-Cardama & Pulido, 2004), asthma (Cook, Modena & Simon, 2016) migraines (Kleiboer, Sorbi, Mérelle, Passchier & Doornen, 2009) as well as medication compliance and wellbeing. Mobile phones have also been documented to help in lifestyle interventions such as reducing alcohol consumption, smoking (Bricker, Mull, Kientz, Vilardaga, Mercer, Akioka & Heffner, 2014; Naughton, Prevost, Gilbert, & Sutton, 2012; Free, Knight, Robertson, Whittaker,

Edwards, Zhou, Rodgers, Cairns, Kenward & Roberts, 2011; Rizvi et al., 2011), gambling (Gee, Coventry & Birkenhead, 2005), increasing physical activity and controlling weight.

One example of a tested smartphone mindfulness-based intervention product is the Headspace app which delivers guided meditation through audio and video files to over six million users globally (Laurie & Blandford, 2016). Andy Puddicombe, a former Buddhist monk, is the creator and narrator of the meditations (Laurie & Blandford, 2016). The meditations can be downloaded either through the Headspace website or via the smartphone application available on Android and Apple iOS platforms through Google Play and iTunes stores respectively. Headspace encourages their users to complete a guided meditation every day and users can begin with Headspace's 'foundation' programme which teaches the basics of mindfulness and consists of 30 10-minute sessions (Laurie & Blandford, 2016). Headspace has achieved credibility by being identified in Mani, Kavanagh, Hides and Stoyanov's (2015) research as the highest-scoring mindfulness app available under the Mobile Application Rating Scale. It has also been shown as beneficial for clinical trials (Mani et al., 2015). Although apps are privately stored on your phone, participation in them can extend into an entire online app community which can help motivate users to engage with healthy activities with other users (Mani et al., 2015). Online app communities could substitute the lack of face-to-face therapeutic relationship available with a teacher/therapist. Studies that have used Headspace as an mindfulness-based intervention have shown very promising results in reducing stress (van Emmerik et al., 2017; James, 2016; Donovan et al., 2016), depressive symptoms (van Emmerik et al., 2017; Howells et al., 2016), emotional regulatory difficulties (James, 2016), job strain (Bostock & Steptoe, 2013) and increasing positive affect (Howells et al., 2016) and general wellbeing (van Emmerik et al., 2017; Bostock & Steptoe, 2013).

## **Purpose of Research**

For my research with support workers, I am implementing a mindfulness wellbeing initiative at the tertiary level, buffering (lessening the effect of) the negative effects of stress once it has already happened. The ability for employees to be flexible enough to accept, survive and thrive in the face of adversity and stressors is a crucial skill (Hansen, 2016). There is growing evidence that mindfulness practice can reduce job burnout and improve the wellbeing of healthcare workers, but there is no research on support workers specifically, an underserved population who are subjected to high work strain. The aim of this paper is to explore the effectiveness of a smartphone-based mindfulness wellbeing initiative and whether this could be implemented in workplaces as a way of promoting employee resilience to those in charge of New Zealand's most vulnerable citizens.

Through reviewing the research on how mindfulness can modify our attentional and reactional processes, the following hypotheses are formulated:

Using the mindfulness-based smartphone app will be associated with positive outcomes for support workers such as: a) decreased emotional exhaustion, b) decreased depersonalisation, c) an increased sense of personal achievement, d) decreased perceived stress, e) decreased compassion fatigue, f) increased self-compassion, g) increased positive affect, h) reduced negative affect and i) increased employee resilience.

## **Method**

### **Overview**

The current study employed a repeated measures design using both a treatment and wait-list control group. This involves using the same participants at every stage of the research including the control to measure the 10 variables of interest (mindfulness, emotional exhaustion, depersonalisation, personal achievement, perceived stress, compassion fatigue, self-compassion, positive affect, negative affect and employee resilience). A high-risk ethics application was approved by the University of Canterbury Human Ethics Committee based in early August, prior to data collection which commenced in late August 2017 (Reference: HEC 2017/71).

### **Sample and Procedure**

#### **Participation Recruitment**

In August 2017, an invitation email (see Appendix A for the invitation email) was sent to every Christchurch community support worker in a leading community-based mental health organisation. Due to few responders, in September I extended my invitation to other community-based mental health organisations. One organisation placed the invitation in their employee newsletter though I received no expressions of interest. Another organisation were confident in the wellbeing programme already in place at their company and declined to participate, and a third and final organisation showed interest to participate.

The invitation email explained the purpose of the intervention, the incentives of participating (a chance to win one of two x \$50 vouchers) and how long the process would be. The email also explained how participants were required to fill out consent forms (which included a request to make it known if they would like to receive a copy of the study's

findings) and how confidentiality would be upheld when their organisations received a summary of results after the study is complete.

### **Participant Demographics**

See Appendix B Table 1 for the participant pool's demographic information.

Originally the study had 16 participants, though 4 left the study because of: time restraints, no access to a smartphone, and because of a loss of contact with no explanation. Of those who completed the study, participants consisted of 12 community support workers. Of the 12 participants, 75% ( $n=9$ ) were female, and 25% ( $n=3$ ) were male. The age of participants ranged from 24-years to 62-years, with a mean of 35-years old. In terms of hours worked each week 100% ( $n=12$ ) listed that they worked 35+ hours per week which equates to full-time employment. The shortest time employed as a support worker was 23 months, and the longest was 36 years, with a mean of 6.8 years as a support worker. Of the 12 participants, 33.3% ( $n=4$ ) had used the Headspace smartphone application before, and 66.6% ( $n=8$ ) had not. Of the 12 participants, 41.7% ( $n=5$ ) had not used either mindfulness or meditation in the past, whereas 58.3% ( $n=7$ ) had, including: mindfulness groups, yoga, breathing techniques, grounding exercises and other meditative smartphone apps.

### **Procedure**

Participants were randomly assigned to either the treatment group or wait-list control group. On the day prior to beginning the intervention I gathered completed consent forms from participants (see Appendix C) and I supported each participant in setting up their Headspace account and taught them how to use it.

Participants listened to the 10 minute version (can also come in 3- and 5-minute sessions) ‘Foundation Level’ packs, narrated by Headspace founder Andy Puddicombe. The foundational levels aim to teach beginners the basic concepts of mindfulness.

Every day for 30 days participants completed 10-minute guided mindfulness-based meditations. The sessions often begin with a short animation discussing the focus of the day, this is followed by the guided mindful meditation, and then it ends with a summation of the session’s teachings.

The treatment group took surveys on day 1 (pre-intervention), day 14 (mid-intervention), day 30 (post-intervention) and day 60 (1 month follow-up). Participants in the wait-list control group took surveys on day 1 (1 month pre-intervention), day 30 (before day 1 of the intervention), day 44 (mid-intervention) and day 58 (post-intervention). The first survey contained an overview of the study and contact details for participants who may have experienced stress or distress whilst undertaking the intervention (see Appendix D).

Participants participated in the surveys through the Qualtrics website. A link was attached to the email I would send to them at the assigned times. These answers were automatically recorded onto the Qualtrics database.

## **Measures**

All qualitative and quantitative questions and scales can be found in Appendices E-K, except for the Abbreviated Maslach Burnout Inventory which is copyrighted.

**Pre- and Post- Intervention Questions.** Various demographic questions were included at the beginning of the first survey. These included: gender identification, age, hours worked per week, length of time in job, Headspace app experience and mindfulness/meditative experience in general. After completing the intervention participants

also answered a couple questions regarding the usability of the Headspace app including how easy it was to use and if they would use something similar again in the future.

**Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003).** The MAAS was designed to measure the level of awareness and attention to the present-moment experience, which are considered to be foundational to mindfulness (Brown & Ryan, 2003). It consists of 15 items and participants respond to each item using a six-point Likert scale ranging from 1 (almost always) to 6 (almost never). Examples of items include, “I tend to walk quickly to get where I’m going without paying attention to what I experience along the way.” With a mean score of the 15-items calculated, the higher the score reflects a higher level of trait mindfulness. Higher scores reflect higher levels of dispositional mindfulness. This scale has demonstrated good overall internal consistency, Brown and Ryan (2003) found an alpha level of .82. The MAAS has demonstrated high test-retest reliability. Coefficient alpha estimates for the MAAS in this study ranged from 0.96 to 0.97.

**Abbreviated Maslach Burnout Inventory (aMBI; McManus, Winder & Gordon, 2002; Maslach & Jackson, 1986).** The aMBI is an abbreviated version of the Maslach Burnout Inventory. It consists of three subscales: emotional exhaustion, depersonalisation, and personal accomplishment. Each subscale has three items that are rated on a six-point Likert Scale, ranging from 1 (never) to 6 (everyday). Scores are summed, and higher scores in emotional exhaustion and depersonalisation suggest greater burnout, whereas higher scores in personal accomplishment suggest less burnout. Coefficient alpha estimates for the emotional exhaustion subscale in this study ranged from 0.76 to 0.86. Coefficient alpha estimates for the depersonalisation subscale in this study ranged from 0.73 to 0.90. Coefficient alpha estimates for the personal achievement subscale in this study ranged from 0.61 to 0.84.

**Perceived Stress Scale (PSS;** Cohen, Kamarck & Mermelstein, 1983). The PSS is a ten-item instrument used to assess the degree to which a person appraises their life events as stressful. Examples of items include: “In the last one month, how often have you felt that things were going your way?” Participants respond to each item using a five-point scale ranging from 0 (never) to 4 (very often). Item responses for each participant are summed after reverse scoring seven items, yielding a total score of perceived stress ranging from 0 to 40. Higher scores indicate higher levels of perceived stress. The scale has good internal reliability with coefficient  $\alpha$  of 0.84 and 0.85 in two samples of college students in previous research; test-retest reliability coefficient was 0.85. Coefficient alpha estimates for the PSS in this study ranged from 0.76 to 0.92.

**Professional Quality of Life - Secondary Traumatic Stress Subscale (PROQOL-STS;** Stamm, 2009). The PROQOL-STS measures compassion fatigue. It is a 5-point Likert scale ranging from 1 (never) to 5 (very often). It is about work-related secondary exposure to extremely or traumatically stressful events. A sample item includes “I find it difficult to separate my personal life from my life as a supporter”. Scores are summed and the average score on this scale is 50 (SD 10; alpha scale reliability .81). Higher scores indicate greater levels of experienced compassion fatigue. Coefficient alpha estimates for the secondary traumatic stress subscale in this study ranged from 0.76 to 0.88.

**Self-Compassion Scale - Short Form (SCS-SF;** Raes, Pommier, Neff, & Van Gucht, 2011). The SCS-SF is a 12-item version of the original 26-item SCS (Neff, 2003a). The SCS-SF was created by Raes et al. by choosing 12 items from the SCS (2 from each of 6 subscales) that had high correlations with both the total score on the SCS and their respective subscale scores, and that “reflected the breadth of the original subscale content” (p. 252). The SCS-SF thus was designed to measure the main components of self-compassion: self-kindness (e.g. “I try to be understanding and patient toward aspects of my personality I don’t

like”) vs. self-judgment (e.g. “I’m disapproving and judgmental about my own flaws and inadequacies”); common humanity (e.g. “I try to see my failings as part of the human condition”) vs. isolation (e.g. “When I’m feeling down, I tend to feel like most other people are probably happier than I am”); and mindfulness (“When something painful happens I try to take a balanced view of the situation”) vs. over-identification (e.g. “When I’m feeling down I tend to obsess and fixate on everything that’s wrong”). Item responses on the SCS-SF are indicated using a 5-point scale ranging from 1 (Never) to 5 (Very often). A total score is calculated by taking the mean of the 12 items after reverse scoring negatively worded items; higher scores reflect greater self-compassion. Total scores on the SCS-SF have been found to correlate highly (.98) with the 26-item SCS (Raes et al., 2011). The overall score on the SCS-SF has demonstrated adequate internal consistency with estimates of Cronbach’s alpha around .85 (Raes et al., 2011). Coefficient alpha estimates for the SCS in this study ranged from 0.90 to 0.95.

**Positive and Negative Affect Schedule (PANAS; Watson, Clark & Tellegen, 1988).**

The PANAS is one of the most widely used scales to measure mood or emotion. This scale consists of 20 items, with 10 items measuring positive affect (e.g., excited, inspired) and 10 items measuring negative affect (e.g., upset, afraid). Each item is rated on a five-point Likert Scale, ranging from 1 (very slightly or not at all) to 5 (extremely), to measure the extent to which the affect has been experienced in the past week. The scales are shown to be highly internally consistent, largely uncorrelated, and stable at appropriate levels over a 2-month time period. Coefficient alphas in the original study was .75 for positive affect and .81 for negative affect. Coefficient alpha estimates for the PANAS positive subscale in this study ranged from 0.83 to 0.92. Coefficient alpha estimates for the PANAS negative subscale in this study ranged from 0.76 to 0.85.

**Employee Resilience Scale** (Emp-Res; Naswall, Kuntz & Malinen, 2015). The employee resilience scale contains 9-items which capture a behavioural measure of employee resilience. The scale measures employee resilience as a developable capability. The employee resilience scale utilises a 7-point Likert scale ranging from 1 (never) and 7 (always) and a total score is calculated by taking the mean of the 9 items. A sample item includes “I successfully manage a high workload for long periods of time”. The employee resilience scale has a coefficient alpha reliability of .91 in the original study. Coefficient alpha estimates for the employee resilience scale in this study ranged from 0.84 to 0.95.

### **Data Analysis**

Descriptive statistics and repeated measures ANOVA were conducted on Statistical Package for the Social Sciences version 25 (SPSS Inc., Chicago, Illinois).

Due to the complications surrounding the appropriateness of applying group mean analysis to study small sample sizes, participant changes from pre- to post-intervention were analysed further using modified Brinley plots (Blampied, 2017). These graphs were created using Sigma Plot v12.1.

The original Brinley plot (Brinley, 1965) reported group mean data, whereas the modified Brinley graph plots a participant’s data at Time 1 (X-axis) and Time 2 (Y-axis) as a coordinate point. If the axes have the same scale, a common origin, and there has been no change between Time 1 and Time 2, the participant’s data point will fall on the 45° diagonal (the line of no effect). It may also fall close to it if there has been measurement error without any treatment effect. However, if there has been change due to treatment (using the Headspace smartphone app), the participant’s data point will lie off the diagonal. If the mindfulness intervention is successful this will be shown by consistent deviations from the diagonal (Blampied, 2017).

A line which cuts through the line of no effect shows the upper and lower boundaries of the RCI (Jacobson & Truax, 1991). Typically they would run on a diagonal alongside the line of no effect, however to make it easier to read the graphs a simpler representative line has been included. This is based on the Standard Error of the Difference Scores ( $S_{DIFF}$ ) and is calculated from the Standard Error of Measurement ( $S_{EM}$ ) for the particular measure. The RCI shows the magnitude of change required for the change to be reliable, that is, unlikely ( $p < .05$ ) due to measurement error alone. Data points lying within the upper and lower RCI boundaries do not show reliable change, however, those plotted outside the boundaries show either reliable improvement or reliable deterioration, depending on whichever the direction of the dependent variable's improvement is.

## Results

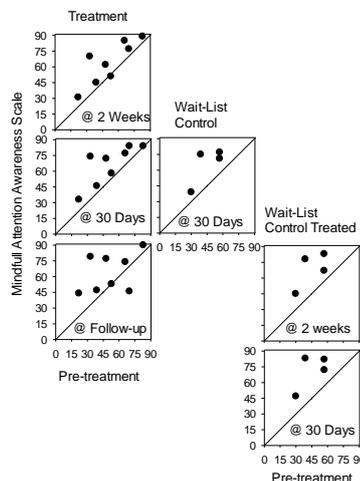
The descriptive statistics including the correlations, means, standard deviations, reliability scores (Cronbach's alpha) and repeated measures ANOVA for all of the variables in this study are reported in Appendix L Table 2 and Table 3.

### Mindfulness

The results from the treatment group supported the hypothesis that there would be an increase in mindfulness from T1-T4. This was significant,  $F(3, 21) = 3.25, p = 0.042$ , partial  $\eta^2 = 0.317$ . The modified Brinley plots show reliable improvement for most participants throughout and the intervention and at follow-up.

The results from the wait-list control group also supported the hypothesis and was significant,  $F(3, 9) = 12.16, p = 0.002$ , partial  $\eta^2 = 0.80$ . However, the wait-list control group had a large improvement in mindfulness scores during the month prior to them beginning the intervention (T1 M = 45.75, T2 M = 65.50), and then had only minimal increases for the duration of the intervention. The modified Brinley plots show reliable improvement at all stages of the intervention, but also during the month prior to beginning the intervention when the group was acting as the control.

**Fig.1** Modified Brinley plot showing Treatment and Wait-list Control group changes from baseline for the mindful attention awareness scale

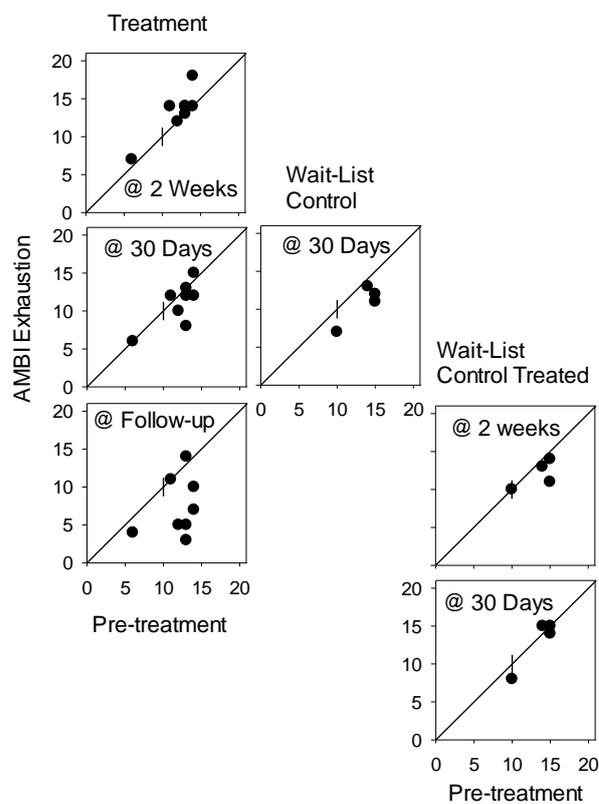


## A-MBI - Emotional Exhaustion

The results from the treatment group supported the hypothesis that there would be a decrease in emotional exhaustion from T1-T4. This was significant,  $F(3, 21) = 12.07, p = 0.00$ , partial  $\eta^2 = 0.633$ . The modified Brinley plots show reliable deterioration for the treatment group, which continues at follow-up.

The results of the wait-list control group also supported the hypothesis and were significant,  $F(3, 9) = 4.22, p = 0.04$ , partial  $\eta^2 = 0.585$ . The modified Brinley plots show fairly stable results throughout the intervention, and the issue of reliable deterioration during the month prior to beginning the intervention.

**Fig.2** Modified Brinley plot showing Treatment and Wait-list Control group changes from baseline for the emotional exhaustion subscale of the abbreviated Maslach burnout inventory

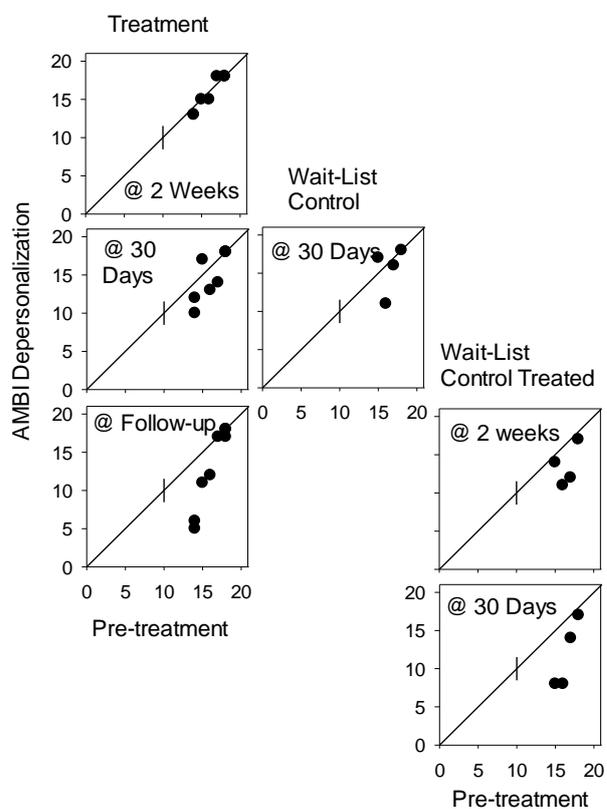


## A-MBI - Depersonalisation

The results from the treatment group supported the hypothesis that there would be a decrease in depersonalisation from T1-T4. This was significant,  $F(1.60, 11.17) = 4.95, p = 0.03$ , partial  $\eta^2 = 0.414$ . The modified Brinley plots show reliable deterioration for the treatment group, which continues at follow-up for most participants.

The results of the wait-list control group also supported the hypothesis and were significant,  $F(3, 9) = 4.02, p = 0.045$ , partial  $\eta^2 = 0.573$ . The modified Brinley plots reflect similar delayed treatment effects as the treatment group, and reliably deteriorates by the end of the intervention.

**Fig.3** Modified Brinley plot showing Treatment and Wait-list Control group changes from baseline for the depersonalisation subscale of the abbreviated Maslach burnout inventory

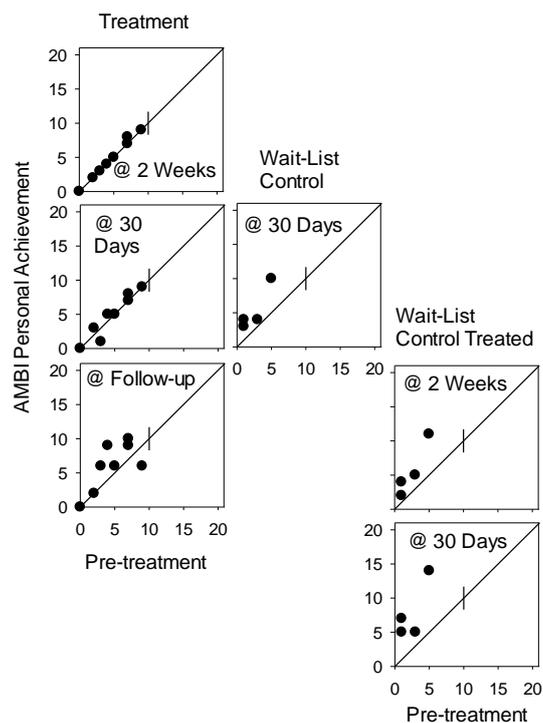


## A-MBI - Personal Achievement

The results from the treatment group supported the hypothesis that there would be an increase in scores of personal achievement from T1-T4. This however was not significant,  $F(1.42, 15.63) = 2.68, p = 0.113, \text{partial } \eta^2 = 0.196$ . The modified Brinley plots showed delayed reliable improvement for the treatment group for several participants at follow-up.

The results of the wait-list control group also supported the hypothesis and were significant,  $F(3, 9) = 10.41, p = 0.003, \text{partial } \eta^2 = 0.776$ . The wait-list control group had a large improvement in personal achievement scores during the month prior to them beginning the intervention (T1 M = 2.50, T2 M = 5.25). This improvement can be seen on the modified Brinley plots where reliable improvement occurs at every stage of the intervention, included when they were acted as a control group.

**Fig.4** Modified Brinley plot showing Treatment and Wait-list Control group changes from baseline for the personal achievement subscale of the abbreviated Maslach burnout inventory

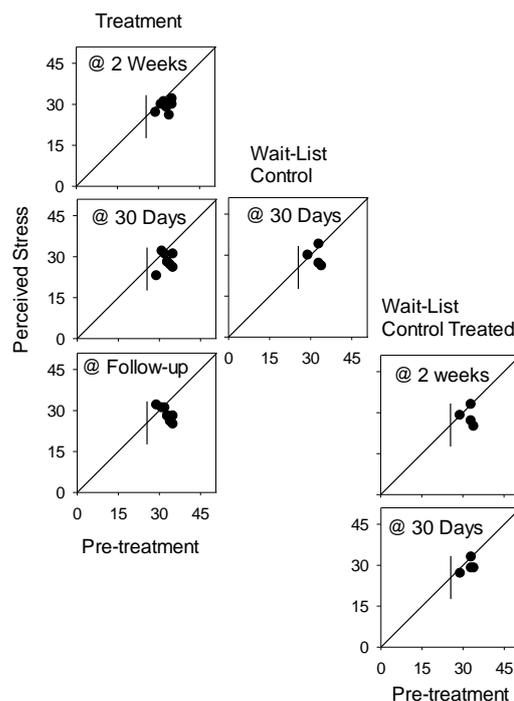


## Perceived Stress

For the treatment group, consistent with the hypothesis, there was a significant decrease in total PSS scores from T1-T4,  $F(3, 21) = 6.10, p = 0.004$ , partial  $\eta^2 = 0.466$ , with only minimal increase of perceived stress at the one-month follow-up. The modified Brinley plots show deterioration of perceived stress throughout the intervention, but they are not reliable changes.

However, the changes in the wait-list control group did not reach significance,  $F(3, 9) = 2.09, p = 0.172$ , partial  $\eta^2 = 0.411$  and also showed improvement during the month prior to them beginning the intervention (T1 M = 32.75, T2 = 29.25) which is surprising for a control group. The modified Brinley plots show minimal deterioration of perceived stress, however this is not a reliable change.

**Fig.5** Modified Brinley plot showing Treatment and Wait-list Control group changes from baseline for the perceived stress scale

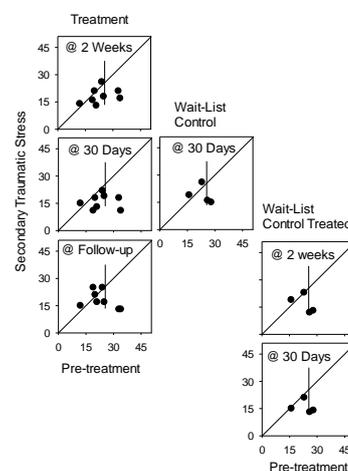


## Secondary Traumatic Stress

For the treatment group, consistent with the hypothesis, there was a decrease of secondary traumatic stress from T1-T4. However, this was not significant  $F(1.54, 10.76) = 3.47, p = 0.078, \text{partial } \eta^2 = 0.331$ . There was also a moderate increase of secondary traumatic stress scores at the one-month follow-up. The modified Brinley plots show deterioration of secondary traumatic stress, particularly at the 30 day measurement mark, however this is not reliable for the majority of participants, and there is an increase in secondary traumatic stress at the one-month follow-up.

The wait-list control group was also consistent with the hypothesis, and showed a decrease of secondary traumatic stress throughout the intervention, however this was not significant  $F(1.04, 3.13) = 2.44, p = 0.132, \text{partial } \eta^2 = 0.448$ . Additionally, the wait-list control group showed improvements during the month prior to them beginning the intervention (T1 M = 23.50, T2 M = 18.23). The modified Brinley plots show stable results over time, with base-line, 2-week and 30-day scores appearing almost identical with borderline reliable deterioration for a couple participants.

**Fig.6** Modified Brinley plot showing Treatment and Wait-list Control group changes from baseline for the professional quality of life – secondary traumatic stress scale

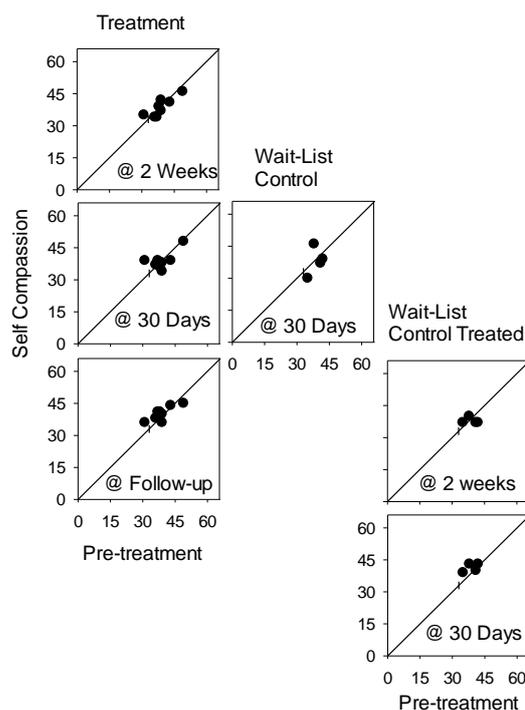


## Self-Compassion

The results from the treatment group did not support the hypothesis that there would be an increase of self-compassion scores from T1-T4,  $F(3, 21) = 0.638$ ,  $p = 0.599$ , partial  $\eta^2 = 0.084$ . The scores were fairly stable throughout the intervention, though were their highest at the one-month follow-up period (T4). The modified Brinley plots reflect the stability of the scores for all participants, which are borderline reliable for both improvement and deterioration for self-compassion scores.

The wait-list group had similar results for self-compassion and did not support the hypothesis  $F(3, 9) = 1.06$ ,  $p = 0.41$ , partial  $\eta^2 = 0.26$ . Interestingly they too had their highest scores at T4 of the intervention. The modified Brinley plots show the scores are relatively stable throughout the intervention, however their scores did tend to trend towards reliable improvement.

**Fig.7** Modified Brinley plot showing Treatment and Wait-list Control group changes from baseline for the self-compassion scale – short form

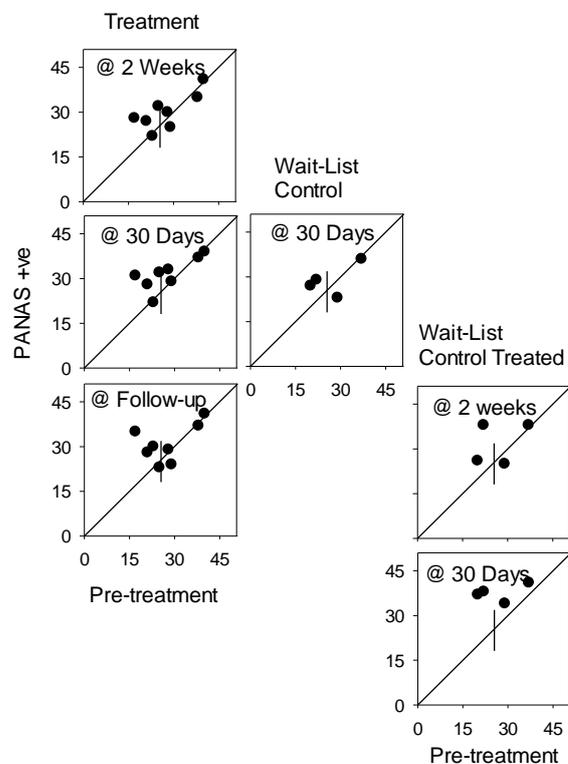


## PANAS - Positive

The results from the treatment group supported the hypothesis that there would be an increase in positive affect scores from T1-T4, however this was not significant,  $F(3, 21) = 1.551, p = 0.231, \text{partial } \eta^2 = 0.181$ . The modified Brinley plots showed improvement in almost all participants, and some reached reliable improvement.

The results from the wait-list control group also supported the hypothesis and were significant,  $F(3, 9) = 4.77, p = 0.003, \text{partial } \eta^2 = 0.614$ . However, the wait-list control group also showed improvements during the month prior to them beginning the intervention (T1 M = 27.00, T2 M = 28.75). This can be seen in the modified Brinley plots. These plots also show that by day 30 of the intervention, all participants were showing reliable improvement.

**Fig.8** Modified Brinley plot showing Treatment and Wait-list Control group changes from baseline for the positive subscale of the positive and negative affect scale

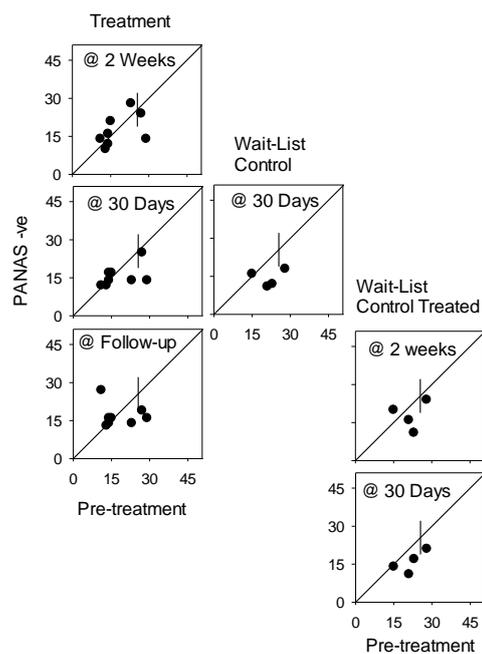


## PANAS - Negative

The results from the treatment group supported the hypothesis that there would be a decrease in negative affect scores from T1-T4. However, this was not significant,  $F(3, 21) = 0.398, p = 0.756, \text{partial } \eta^2 = 0.054$ . The modified Brinley plots show a trend of either no change or deterioration of negative affect scores, and some had reliably deteriorated.

The results from the wait-list control group also supported the hypothesis but were not significant,  $F(3, 9) = 3.51, p = 0.06, \text{partial } \eta^2 = 0.54$ . However, the wait-list control group also showed large improvements during the month prior to them beginning the intervention (T1 M = 21.75, T2 M = 14.25). The modified Brinley plots showed reliable deterioration for a couple of the participants, however this also occurred during the control month prior to beginning the intervention.

**Fig.9** Modified Brinley plot showing Treatment and Wait-list Control group changes from baseline for the negative subscale of the positive and negative affect scale

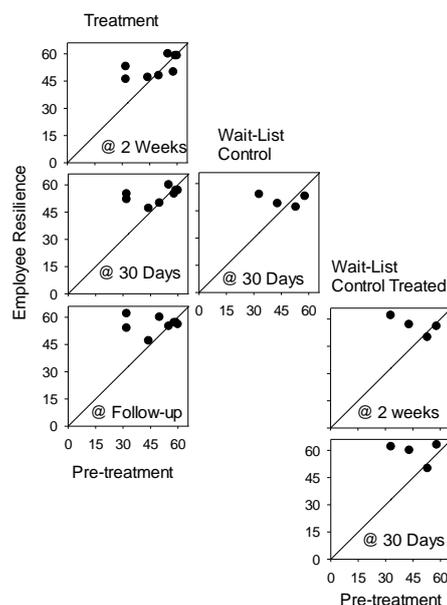


## Employee Resilience

The results from the treatment group supported the hypothesis that there would be an increase in employee resilience scores from T1-T4, however this was not significant,  $F(1.41, 9.90) = 2.14, p = 0.174$ , partial  $\eta^2 = 0.234$ . The modified Brinley plots show reliable improvement at all stages of treatment.

The results from the wait-list control group also supported the hypothesis, but it was not significant,  $F(3, 9) = 2.28, p = 0.15$ , partial  $\eta^2 = 0.43$ . Additionally, the wait-list control group showed improvements during the month prior to them beginning the intervention (T1 M = 46.75, T2 M = 50.75). The modified Brinley plots show a general trend towards reliable improvement of employee resilience scores, but also the reliable changes, both of improvement and deterioration, of participants during the month prior to beginning the intervention.

**Fig.10** Modified Brinley plot showing Treatment and Wait-list Control group changes from baseline for the employee resilience scale



## Discussion

The aim of this research was to explore the effectiveness of a smartphone-based mindfulness wellbeing initiative and whether this could be implemented in the workplace for support workers. For 30 days participants in the treatment group listened to 10 minutes of guided mindfulness meditation daily at their own convenience on their work assigned smartphones. The wait-list control group also participated in the 30 day intervention after 30 days of no mindfulness as they acted as the control. This research contributes to the limited exploration of mindfulness-based interventions delivered through smartphone technology. Additionally, it highlights the previously unstudied workforce of community support workers who are currently on the verge of significant financial recognition by the New Zealand government, who have recognised the high demand and importance of the high strain job.

### Overall Findings

**Mindful Attention Awareness Scale.** It was hypothesized that the participants completing the intervention would experience an increase in their scores of trait mindfulness. The results of this study supported this hypothesis and were statistically significant using the traditional cut-off  $p < .05$  as well as showing reliable improvement from baseline to post-treatment in the modified Brinley plots. This is in line with previous research showing that participating in a mindfulness-based intervention can increase trait mindfulness because when individuals engage in deeper state mindfulness during meditative practice they increase trait mindfulness over time and develop the tendency to exhibit mindful attitudes and behaviours in the context of everyday life (Forbes, Gutierrez, Johnson, 2017; Kiken et al., 2014).

**Abbreviated Maslach Burnout Inventory.** It was predicted that the participants completing the intervention would experience a reduction in their emotional exhaustion and depersonalisation subscale scores. The results of this study supported these hypotheses and were statistically significant. The corresponding modified Brinley plots showed reliable

change and deterioration of such scores from baseline which continued at one month follow-up. This corroborates previous research which found that mindfulness-based interventions in the workplace reduced employee burnout (Fortney et al., 2013; Bazarko et al., 2013).

Additionally as mindfulness levels were significantly increased in this study, it supports previous research which found that higher mindfulness scores predicted lower burnout rates in healthcare professionals (Harker et al., 2016).

It was predicted that the participants completing the intervention would experience an increase in their personal achievement subscale scores. The results of this study supported this hypothesis but were not significant. Perhaps in a similar vein of how self-compassion did not increase during this study, possibly kindness and appreciation towards oneself and our abilities takes the longest to repair after burnout. The modified Brinley plots showed that there was improvement of scores by one month follow-up but this appeared to be a delayed treatment effect. Therefore, possibly a longer study could track if the support workers sense of personal achievement increases at a slower rate than the previous subscales, or if it remains minimal.

**Perceived Stress Scale.** It was predicted that participants completing the intervention would experience a reduction in perceived stress scores. Consistent with this hypothesis, participant scores showed a significant decrease of perceived stress from pre-treatment to post-treatment. The modified Brinley plots showed that all participants had similar perceived stress scores, as individual results are plotted very close to one another in every graph, and were also at similar levels between the treatment and wait-list control group. Previous research has shown that mindfulness can intercept the stress cycle early, so that instead of an individual appraising a situation as a threat, they instead judge it as a challenge capable of being addressed with their available resources (Bartlett et al., 2016). In accordance with the transactional model of stress, modifying the way an individual appraises a potential stressor

they encounter, may in turn reduce the perception of stress they are feeling (Lazarus & Folkman, 1984).

**Professional Quality of Life – Secondary Traumatic Stress Scale.** It was hypothesized that the participants completing the intervention would experience a reduction in secondary traumatic stress scores, a form of compassion fatigue. Caused when the emotional demands of clients outweigh the coping resources a support worker feels they have available to them, it has been suggested that higher levels of mindfulness may buffer against compassion fatigue through attunement, a type awareness and acceptance of the undesirable feelings one may experience (Thieleman & Cacciatore, 2014). It allows the employee to strengthen their ability to tolerate the negative emotions within themselves. Raab (2014) stated that mindfulness works by countering an individual's over-identification (when a person attaches more meaning and weight to an emotion than necessary), which in turn reduces excessive fixation on their negative thoughts. Contrary to previous research, the participant scores did not reflect this, and instead scores remained fairly stable throughout the study. A possible explanation for this could be the self-report nature of the scale. The scale asks participants to state to the degree how preoccupied they are when working with clients, and asks if they experience intrusive thoughts. These personal questions are trauma-based and participants may have answered in a way which sounds more socially desirable or professional.

**Self Compassion Scale – Short Form.** It was predicted that the participants completing the intervention would show an increase in self-compassion scores as mindfulness teaches that failures should be met with kindness and understanding as part of our common humanity (Richardson et al., 2016). This hypothesis was not supported and self-compassion scores remained fairly stable throughout the intervention. This is reflected in the modified Brinley plots which show the scores barely deviated from the line of no change.

Interestingly, scores were their highest at T4, post-intervention for both the treatment and wait-list control groups. This suggests that self-compassion may take longer to develop and requires a longer study to track such changes over several months rather than weeks.

**Positive and Negative Affect Scale.** It was predicted that the participants completing the intervention would experience an increase in their positive affect scores and reduction in negative affect scores from pre-treatment to post-treatment. This was based on previous research which showed that higher levels of mindfulness on one day was able to accurately predict reduced levels of negative affect and higher levels of positive affect the next day (Snippe et al., 2015). In particular, positive affect amidst stress appears to be advantageous in the coping process (Tugade & Fredrickson, 2004). Therefore, positive affect may be a resource which strengthens the coping process of support workers which in turn may reduce or mitigate the development of burnout. According to the modified Brinley plots, most participants did not show reliable change from baseline to post-intervention, and scores did not vary considerably across the study. The repeated measured ANOVA results of this study showed that the pattern of change was in line with both of the aforementioned hypotheses for affect, but given the small sample the results were not significant. However, the results are encouraging and should be investigated in a study with more power.

**Employee Resilience Scale.** It was hypothesized that the participants completing the intervention would experience an increase in their employee resilience scores from pre-treatment to post-treatment. This is because previous research has suggested that participation in a mindfulness-based intervention has the capacity to enhance employee resilience as mindfulness can increase an individual's coping resources to the extent it outweighs the level of demands placed upon them (Good et al., 2016). As mindful individuals become aware of their new flexible coping strategies and utilize them more, their confidence in their own ability to handle stressful situations may grow which in turn leads to greater resilience

(Crowder & Sears, 2007). The results of this study showed that the pattern of change was in line with the hypothesis, but given the small sample the results were not significant.

However, the results are encouraging and should be investigated in a study with more power.

The modified Brinley plots showed reliable improvements for most participants throughout the whole intervention.

### **Theoretical Implications**

According to the transactional model of stress, stress is the result of how a person appraises a situation and whether or not they believe they have the resources to cope (Lazarus & Folkman, 1984). Long-term exposure to stress levels alongside the feeling of being unable to cope effectively leads to strain, and over time burnout develops (Maslach & Jackson, 1986). Employees working in jobs that are high in emotional labour, such as community support work, are most susceptible to developing burnout (Richardson et al., 2016). It is theorised that mindfulness-based interventions help people change their primary and secondary appraisals of situations from being a threat to being a challenge they have the resources to overcome and/or learn and grow from. This intervention consisting of using the Headspace smartphone application 10 minutes a day has contributed to increasing participant positive affect, reducing negative affect and increasing mindfulness. These may be resources that participants feel they can now use and employ after the primary appraisal of a situation, and in turn they now see the situation as less threatening or not threatening at all. As the employee resilience scores of participants trended towards improvement, this can also reflect that employees feeling increasingly capable to handle stressful situations more confidently than previously.

### **Strengths and Limitations**

A significant strength of this study was using a natural sample of participants in real-world conditions as it increases the ecological validity of the research (Brewer, 2000). The

implication of this is that the outcomes of the intervention are relevant and useful to the real workplace environment. This was reflected in the high compliance to the 30 day intervention and the qualitative data reflected the quantitative findings, with participants quoting the intervention as having been something they “would definitely use again”, and found it “easy to use” and “handy to have”.

The longitudinal nature of the study with 4 measurement points was a methodological strength. Additionally, I dealt with the small sample size by using single-case research methods to analyse the data (Blampied, 2017). These plots were able to give a visual representation of the participants’ progress throughout the intervention and were particularly helpful at identifying possible delayed treatment effects of variables, such as self-compassion, which require more time to change within the participants.

Something that needs to be taken into consideration is that the control group exhibited vast improvements before engaging in the intervention, after participating in the baseline survey. As a wait-list control group one would expect improvement once the intervention had started, not during the month prior to beginning when they were not using the intervention. A possible explanation for this was that having someone take an interest in their health may have made them already feel more supported. Perhaps hearing from colleagues that were in the treatment group who felt it was working was enough to make people look forward to or be primed for the intervention.

The recruitment of participants was challenging, thus the small sample size. This means that the findings of the current research may not be generalizable or representative of the target population. This difficulty can be attributed to community support workers feeling as though they were already pushed to their time limits, and could not commit to adding a task to their already exhaustive list of responsibilities each day.

An additional barrier to getting participants was that the general population's understanding of mindfulness is vague and the benefits of it are not well known. Possibly this lack of information contributed to the difficulty of recruiting participants. Future studies may require explaining mindfulness in more depth first within the invitation to potential participants.

An additional limitation was the use of self-report outcomes measures. This method is subjective and people tend to respond in ways that promote the person they want to be, rather than how they truly feel or act (Paulhus & Vazire, 2007). However, for this study it was the most appropriate way to measure the variables.

### **Considerations for Future Research**

The results of this thesis show that smartphone technology has some potential for helping improve wellbeing and reducing burnout symptoms. Smartphone-based methodology is a rational progression for researchers to make because it could remove the geographical, cultural and economic barriers to people accessing wellbeing initiatives, whilst researchers benefit from gathering real-world data.

Headspace, the smartphone application used in this study, releases more mindfulness courses to their subscribers regularly, which provides opportunities for future research. Whilst my study looked at a general foundational mindfulness course, a future study could focus on a specific workplace productivity mindfulness course. The research in the present study could be expanded by focusing on whether or not such specified courses are indeed more, less or equally as useful as a general mindfulness course. Furthermore, Headspace now offers mindfulness meditations at new time dosages (10 minute, 15 minute and 20 minutes long). My study focused on the 10 minute sessions; however a future study could compare

the three and contribute evidence towards the long-running question around to what degree mindfulness meditation dosage impacts a person's wellbeing.

Future studies could look at running an intervention within two similar services at an organisation, whereby one serves as the treatment intervention group and the second act as the control. Enhanced information could be gathered about participants during the study, including statistics about stress leave, sick leave, manager reports, supervision outcomes, and patient satisfaction scores. This would allow for the environment of the two groups could be controlled for.

## **Conclusions**

Efforts should be directed towards enhancing support worker wellbeing, as this high strain job is susceptible to developing burnout. The current study has shown that mindfulness training, potentially delivered through smartphone technology, has the potential to support mental health among support workers, and possibly to all New Zealand employees.

Burnout impacts more than the lives of the employees, it also negatively impacts the level and quality of care a patient receives, and can cause disruption within organisations managing high staff absenteeism and turnover. The mental health sector in New Zealand is on the verge of receiving a nationwide review by the current Labour government, therefore, improving the working conditions, and in turn the health outcomes of patients, will be a priority where such research will be valuable (The Beehive, Office of the Prime Minister, 2018).

## References

- Ahtinen, A., Mattila, E., Väykkynen, P., Kaipainen, K., Vanhala, T., Ermes, M., Sairanen, E., Myllymaki, T., & Lappalainen, R. (2013). Mobile mental wellness training for stress management: feasibility and design implications based on a one-month field study. *JMIR mHealth and uHealth, 1*(2).
- Aikens, K. A., Astin, J., Pelletier, K. R., Levanovich, K., Baase, C. M., Park, Y. Y., & Bodnar, C. M. (2014). Mindfulness goes to work: impact of an online workplace intervention. *Journal of occupational and environmental medicine / American College of Occupational and Environmental Medicine-Journal Article, 56*(7), 721.
- Andersson, G., Cuijpers, P., Carlbring, P., Riper, H., & Hedman, E. (2014). Guided Internet-based vs. face-to-face cognitive behavior therapy for psychiatric and somatic disorders: a systematic review and meta-analysis. *World Psychiatry, 13*(3), 288-295.
- Baer, R. A. (2003). Mindfulness Training as a Clinical Intervention: A Conceptual and Empirical Review. *Clinical Psychology: Science and Practice, 10*(2), 125-143.
- Bakker, A. B., & Demerouti, E. (2007). The job demands-resources model: State of the art. *Journal of managerial psychology, 22*(3), 309-328.
- Bakker, D., Kazantzis, N., Rickwood, D., & Rickard, N. (2016). Mental Health Smartphone Apps: Review and Evidence-Based Recommendations for Future Developments. *Journal Article, 3*(1), e7.
- Bartlett, L., Lovell, P., Otahal, P., & Sanderson, K. (2016). Acceptability, Feasibility, and Efficacy of a Workplace Mindfulness Program for Public Sector Employees: a Pilot Randomized Controlled Trial with Informant Reports. *Mindfulness, 8*(3), 639-654.
- Bazarko, D., Cate, R. A., Azocar, F., & Kreitzer, M. J. (2013). The Impact of an Innovative Mindfulness-Based Stress Reduction Program on the Health and Well-Being of Nurses Employed in a Corporate Setting. *Journal of Workplace Behavioral Health,*

28(2), 107-133.

- Beddoe, A. E., & Murphy, S. O. (2004). Does mindfulness decrease stress and foster empathy among nursing students? *The Journal of nursing education, 43*(7), 305.
- Bennike, I. H., Wieghorst, A., & Kirk, U. (2017). Online-based mindfulness training reduces behavioral markers of mind wandering. *Journal of Cognitive Enhancement, 1-10*.
- Bhui, K. S., Dinos, S., Stansfeld, S. A., & White, P. D. (2012). A synthesis of the evidence for managing stress at work: a review of the reviews reporting on anxiety, depression, and absenteeism. *Journal of environmental and public health, 2012*.
- Bishop, S. R. (2002). What do we really know about mindfulness-based stress reduction? *Psychosomatic medicine, 64*(1), 71-83.
- Blampied, N. M. (2017). Analyzing therapeutic change using modified Brinley plots: History, construction, and interpretation. *Behavior therapy, 48*(1), 115-127.
- Bostock, S. K., & Steptoe, A. (2013). *Can finding headspace reduce work stress? A randomised controlled workplace trial of a mindfulness meditation app*. Paper presented at 71st Annual Scientific Meeting of the American-Psychosomatic-Society. (pp. A36-A37). Miami, Florida.
- Brewer, M. (2000). Research Design and Issues of Validity. In Reis, H. and Judd, C. (eds) *Handbook of Research Methods in Social and Personality Psychology*. Cambridge, UK:Cambridge University Press.
- Bricker, J. B., Mull, K. E., Kientz, J. A., Vilaradaga, R., Mercer, L. D., Akioka, K. J., & Heffner, J. L. (2014). Randomized, controlled pilot trial of a smartphone app for smoking cessation using acceptance and commitment therapy. *Drug and Alcohol Dependence, 143*, 87-94.
- Bride, B. E. (2007). Prevalence of Secondary Traumatic Stress among Social Workers. *Social Work, 52*(1), 63-70.

- Brown, K. W., & Ryan, R. M. (2003). The Benefits of Being Present: Mindfulness and Its Role in Psychological Well-Being. *Journal of Personality and Social Psychology*, 84(4), 822-848.
- Carmona, R. H., & Liponis, M. (2017). *Integrative Preventive Medicine*: Oxford University Press.
- Castonguay, L. G., Boswell, J. F., Constantino, M. J., Goldfried, M. R., & Hill, C. E. (2010). Training implications of harmful effects of psychological treatments. *American Psychologist*, 65(1), 34.
- Cavanagh, K., Strauss, C., Cicconi, F., Griffiths, N., Wyper, A., & Jones, F. (2013). A randomised controlled trial of a brief online mindfulness-based intervention. *Behaviour research and therapy*, 51(9), 573-578.
- Cavanagh, K., Strauss, C., Cicconi, F., Griffiths, N., Wyper, A., & Jones, F. (2013). A randomised controlled trial of a brief online mindfulness-based intervention. *Behaviour research and therapy*, 51(9), 573-578.
- Chambers, R., Gullone, E., & Allen, N. B. (2009). Mindful emotion regulation: An integrative review. *Clinical Psychology Review*, 29(6), 560-572.
- Chiesa, A., & Serretti, A. (2009). Mindfulness-based stress reduction for stress management in healthy people: a review and meta-analysis. *The journal of alternative and complementary medicine*, 15(5), 593-600.
- Chittaro, L., & Vianello, A. (2016). Evaluation of a mobile mindfulness app distributed through on-line stores: A 4-week study. *International Journal of Human-Computer Studies*, 86, 63-80.
- Christensen, H., & Hickie, I. B. (2010). Using e-health applications to deliver new mental health services. *The Medical journal of Australia*, 192(11 Suppl), S53.
- Christopher, J. C., Christopher, S. E., Dunnagan, T., & Schure, M. (2006). Teaching Self-

- Care Through Mindfulness Practices: The Application of Yoga, Meditation, and Qigong to Counselor Training. *Journal of Humanistic Psychology*, 46(4), 494-509.
- Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of health and social behavior*, 385-396.
- Cook, K. A., Modena, B. D., & Simon, R. A. (2016). Improvement in Asthma Control Using a Minimally Burdensome and Proactive Smartphone Application. *The Journal of Allergy and Clinical Immunology: In Practice*, 4(4), 730-737.
- Creswell, J. D. (2017). Mindfulness Interventions. *Annual review of psychology*, 68(1), 491-516.
- Creswell, J. D., Pacilio, L. E., Lindsay, E. K., & Brown, K. W. (2014). Brief mindfulness meditation training alters psychological and neuroendocrine responses to social evaluative stress. *Psychoneuroendocrinology*, 44, 1-12.
- Creswell, J. D., Taren, A. A., Lindsay, E. K., Greco, C. M., Gianaros, P. J., Fairgrieve, A., Marsland, A., Warren Brown, K., Baldwin, M., & Rosen, R. K. (2016). Alterations in resting-state functional connectivity link mindfulness meditation with reduced interleukin-6: a randomized controlled trial. *Biological psychiatry*, 80(1), 53-61.
- Crowder, R., & Sears, A. (2017). Building Resilience in Social Workers: An Exploratory Study on the Impacts of a Mindfulness-based Intervention. *Australian Social Work*, 70(1), 17-29.
- Dane, E. (2011). Paying Attention to Mindfulness and Its Effects on Task Performance in the Workplace. *Journal of Management*, 37(4), 997-1018.
- Desbordes, G., Negi, L. T., Pace, T. W., Wallace, B. A., Raison, C. L., & Schwartz, E. L. (2012). Effects of mindful-attention and compassion meditation training on amygdala response to emotional stimuli in an ordinary, non-meditative state. *Frontiers in human neuroscience*, 6. 40-48.

- Ditto, B., Eclache, M., & Goldman, N. (2006). Short-term autonomic and cardiovascular effects of mindfulness body scan meditation. *Annals of Behavioral Medicine, 32*(3), 227-234.
- Dobie, A., Tucker, A., Ferrari, M., & Rogers, J. M. (2016). Preliminary evaluation of a brief mindfulness-based stress reduction intervention for mental health professionals. *Australasian Psychiatry, 24*(1), 42-45.
- Donovan, E., Rodgers, R. F., Cousineau, T. M., McGowan, K. M., Luk, S., Yates, K., & Franko, D. L. (2016). Brief report: Feasibility of a mindfulness and self-compassion based mobile intervention for adolescents. *Journal of Adolescence, 53*, 217-221.
- Eberth, J., & Sedlmeier, P. (2012). The Effects of Mindfulness Meditation: A Meta-Analysis. *Mindfulness, 3*(3), 174-189.
- Ferrer-Roca, O., Cárdenas, A., Diaz-Cardama, A., & Pulido, P. (2004). Mobile phone text messaging in the management of diabetes. *Journal of Telemedicine and Telecare, 10*(5), 282-285.
- Figley, C. R. (1995). *Compassion fatigue: coping with secondary traumatic stress disorder in those who treat the traumatized*. New York, US: Brunner/Mazel.
- Figley, C. R. (1999). Police compassion fatigue (PCF): Theory, research, assessment, treatment, and prevention. In J. M. Violanti & D. Paton (Eds.), *Police trauma: Psychological aftermath of civilian combat* (pp. 37-53). Springfield, IL, US: Charles C Thomas Publisher.
- Folkman, S., & Tedlie Moskowitz, J. (2000). Positive Affect and the Other Side of Coping. *American Psychologist, 55*(6), 647-654.
- Forbes, L., Gutierrez, D., & Johnson, S. K. (2017). Investigating Adherence to an Online Introductory Mindfulness Program. *Mindfulness, 1*-12.
- Fortney, L., Luchterhand, C., Zakletskaia, L., Zgierska, A., & Rakel, D. (2013). Abbreviated

- mindfulness intervention for job satisfaction, quality of life, and compassion in primary care clinicians: a pilot study. *Annals of family medicine* 11(5), 412.
- Fredrickson, B. L. (1998). What Good Are Positive Emotions? *Review of General Psychology*, 2(3), 300-319.
- Fredrickson, B. L. (2001). The Role of Positive Emotions in Positive Psychology: The Broaden-and-Build Theory of Positive Emotions. *American Psychologist*, 56(3), 218-226.
- Free, C., Knight, R., Robertson, S., Whittaker, R., Edwards, P., Zhou, W., Rodgers, A., Cairns, J., Kenward, M., & Roberts, I. (2011). Smoking cessation support delivered via mobile phone text messaging (txt2stop): a single-blind, randomised trial. *The Lancet*, 378(9785), 49-55.
- Freudenberger, H. J. (1974). Staff Burn-Out. *The Journal of Social Issues*, 30(1), 159-165.
- Garland, E. L., Gaylord, S. A., Boettiger, C. A., & Howard, M. O. (2010). Mindfulness training modifies cognitive, affective, and physiological mechanisms implicated in alcohol dependence: results of a randomized controlled pilot trial. *Journal of psychoactive drugs*, 42(2), 177-192.
- Gee, P., Coventry, K. R., & Birkenhead, D. (2005). Mood state and gambling: Using mobile telephones to track emotions. *British Journal of Psychology*, 96(1), 53-66.
- Glück, T., & Maercker, A. (2011). A randomised controlled pilot study of a brief, web-based mindfulness training. *International Journal of Integrated Care*, 11(6).
- Good, D. J., Lyddy, C. J., Glomb, T. M., Bono, J. E., Brown, K. W., Duffy, M. K., Baer, R., Brewer, S., & Lazar, S. W. (2016). Contemplating Mindfulness at Work: An Integrative Review. *Journal of Management*, 42(1), 114-142.
- Goodman, M. J., & Schorling, J. B. (2012). A Mindfulness Course Decreases Burnout and Improves Well-Being among Healthcare Providers. *The International Journal of*

- Psychiatry in Medicine*, 43(2), 119-128.
- Grégoire, S., & Lachance, L. (2015). Evaluation of a Brief Mindfulness-Based Intervention to Reduce Psychological Distress in the Workplace. *Mindfulness*, 6(4), 836-847.
- Gu, J., Strauss, C., Bond, R., & Cavanagh, K. (2015). How do mindfulness-based cognitive therapy and mindfulness-based stress reduction improve mental health and wellbeing? A systematic review and meta-analysis of mediation studies. *Clinical Psychology Review*, 37, 1-12.
- Hansen, E. (2016). *The Effects of Mindfulness on Work-Related Stress, Wellbeing, Recovery Quality, and Employee Resilience* (master's thesis). University of Canterbury, New Zealand.
- Harker, R., Pidgeon, A. M., Klaassen, F., & King, S. (2016). Exploring resilience and mindfulness as preventative factors for psychological distress burnout and secondary traumatic stress among human service professionals. *Work (Reading, Mass.)*, 54(3), 631.
- Harrison, V., Proudfoot, J., Wee, P. P., Parker, G., Pavlovic, D. H., & Manicavasagar, V. (2011). Mobile mental health: Review of the emerging field and proof of concept study. *Journal of Mental Health*, 20(6), 509-524.
- Hochschild, A. R. (2012). *The managed heart: Commercialization of human feeling*: University of California Press.
- Hölzel, B. K., Carmody, J., Vangel, M., Congleton, C., Yerramsetti, S. M., Gard, T., & Lazar, S. W. (2011). Mindfulness practice leads to increases in regional brain gray matter density. *Psychiatry Research: Neuroimaging*, 191(1), 36-43.
- Horner, J. K., Piercy, B. S., Eure, L., & Woodard, E. K. (2014). A pilot study to evaluate mindfulness as a strategy to improve inpatient nurse and patient experiences. *Applied nursing research : ANR*, 27(3), 198.

- Howells, A., Ivtzan, I., & Eiroa-Orosa, F. J. (2016). Putting the 'app' in Happiness: A Randomised Controlled Trial of a Smartphone-Based Mindfulness Intervention to Enhance Wellbeing. *Journal of Happiness Studies*, 17(1), 163-185.
- Huang, S.-L., Li, R.-H., Huang, F.-Y., & Tang, F.-C. (2015). The Potential for Mindfulness-Based Intervention in Workplace Mental Health Promotion: Results of a Randomized Controlled Trial. *PloS one*, 10(9), e0138089.
- Hughes, J. W., Fresco, D. M., Myerscough, R., van Dulmen, M., Carlson, L. E., & Josephson, R. (2013). Randomized controlled trial of mindfulness-based stress reduction for prehypertension. *Psychosomatic medicine*, 75(8).
- IBM Corp. Released 2017. IBM SPSS Statistics for Windows, Version 25.0. Armonk, NY: IBM Corp.
- James, J. (2016). *The effectiveness of a brief mobile phone-based mindfulness intervention: effects on stress, emotion regulation and life satisfaction in teachers* (Master's thesis). Manchester Metropolitan University, UK.
- Jamieson, S. D., & Tuckey, M. R. (2016). Mindfulness Interventions in the Workplace: A Critique of the Current State of the Literature. *Journal of Occupational Health Psychology*, 22(2), 180-193.
- Jha, A. P., Morrison, A. B., Parker, S. C., & Stanley, E. A. (2017). Practice Is Protective: Mindfulness Training Promotes Cognitive Resilience in High-Stress Cohorts. *Mindfulness*, 8(1), 46-58.
- Jorm, A. F., Morgan, A. J., & Malhi, G. S. (2013). The future of e-mental health. *Australian & New Zealand Journal of Psychiatry*, 47(2), 104-106.
- Kabat-Zinn, J. (1982). An outpatient program in behavioral medicine for chronic pain patients based on the practice of mindfulness meditation: theoretical considerations and preliminary results. *General hospital psychiatry*, 4(1), 33.

- Kabat-Zinn, J. (2005). *Wherever you go, there you are: mindfulness meditation in everyday life* (1st ed.). New York, US Hyperion.
- Katterman, S. N., Kleinman, B. M., Hood, M. M., Nackers, L. M., & Corsica, J. A. (2014). Mindfulness meditation as an intervention for binge eating, emotional eating, and weight loss: a systematic review. *Eating behaviors, 15*(2), 197-204.
- Keng, S.-L., & Tong, E. M. W. (2016). Riding the tide of emotions with mindfulness: Mindfulness, affect dynamics, and the mediating role of coping. *Emotion, 16*(5), 706-718.
- Khalaf, S. (2013). Flurry five-year report: It's an app world. The web just lives in it. *Flurry Blog*.
- Khoury, B., Lecomte, T., Fortin, G., Masse, M., Therien, P., Bouchard, V., Chapleau, K., Paquin, A., & Hofmann, S. G. (2013). Mindfulness-based therapy: a comprehensive meta-analysis. *Clinical Psychology Review, 33*(6), 763-771.
- Kiken, L. G., Garland, E. L., Bluth, K., Palsson, O. S., & Gaylord, S. A. (2015). From a state to a trait: Trajectories of state mindfulness in meditation during intervention predict changes in trait mindfulness. *Personality and Individual Differences, 81*, 41-46.
- Killingsworth, M. A., & Gilbert, D. T. (2010). A Wandering Mind Is an Unhappy Mind. *Science, 330*(6006), 932-932.
- Kinnunen, U., Feldt, T., Sianoja, M., de Bloom, J., Korpela, K., & Geurts, S. (2017). Identifying long-term patterns of work-related rumination: associations with job demands and well-being outcomes. *European Journal of Work and Organizational Psychology, 26*(4), 514.
- Klatt, M., Norre, C., Reader, B., Yodice, L., & White, S. (2016). Mindfulness in Motion: a Mindfulness-Based Intervention to Reduce Stress and Enhance Quality of Sleep in Scandinavian Employees. *Mindfulness, 8*(2), 481-488.

- Kleiboer, A., Sorbi, M., Mérelle, S., Passchier, J., & Doornen, L. v. (2009). Utility and preliminary effects of online digital assistance (ODA) for behavioral attack prevention in migraine. *Telemedicine and e-Health*, *15*(7), 682-690.
- Krusche, A., Cyhlarova, E., & Williams, J. M. G. (2013). Mindfulness online: an evaluation of the feasibility of a web-based mindfulness course for stress, anxiety and depression. *BMJ open*, *3*(11), e003498.
- Kuntz, J. R., Näswall, K., & Malinen, S. (2016). Resilient Employees in Resilient Organizations: Flourishing Beyond Adversity. *Industrial and Organizational Psychology*, *9*(2), 456-462.
- L'Estrange, K., Timulak, L., Kinsella, L., & D'Alton, P. (2016). Experiences of Changes in Self-Compassion Following Mindfulness-Based Intervention with a Cancer Population. *Mindfulness*, *7*(3), 734-744.
- Langer, E. J. (2014). *Mindfulness*: Da Capo Press.
- Laurie, J., & Blandford, A. (2016). Making time for mindfulness. *International journal of medical informatics*, *96*, 38-50.
- Lazarus, R. S., & Folkman, S. (1984). Coping and adaptation. *The handbook of behavioral medicine*, 282-325.
- Leadbeater, B. J., Kuperminc, G. P., Blatt, S. J., & Hertzog, C. (1999). A multivariate model of gender differences in adolescents' internalizing and externalizing problems. *Developmental psychology*, *35*(5), 1268.
- Lim, D., Condon, P., & DeSteno, D. (2015). Mindfulness and compassion: an examination of mechanism and scalability. *PloS one*, *10*(2), e0118221.
- Lomas, T., Medina, J. C., Ivtzan, I., Rupperecht, S., & Eiroa-Orosa, F. J. (2017). The impact of mindfulness on the wellbeing and performance of educators: A systematic review of the empirical literature. *Teaching and Teacher Education*, *61*, 132-141.

- Luken, M., & Sammons, A. (2016). Systematic Review of Mindfulness Practice for Reducing Job Burnout. *The American journal of occupational therapy: official publication of the American Occupational Therapy Association*, 70(2).
- Luthans, F., & Youssef, C. M. (2007). Emerging Positive Organizational Behavior. *Journal of Management*, 33(3), 321-349.
- Ly, K. H., Asplund, K., & Andersson, G. (2014). Stress management for middle managers via an acceptance and commitment-based smartphone application: A randomized controlled trial. *Internet Interventions*, 1(3), 95-101.
- Mani, M. (2017). *E-mindful health: Evaluation of mobile apps for mindfulness*. Queensland University of Technology,
- Mani, M., Kavanagh, D. J., Hides, L., & Stoyanov, S. R. (2015). Review and evaluation of mindfulness-based iPhone apps. *JMIR mHealth and uHealth*, 3(3).
- Maslach, C. (1978). The Client Role in Staff Burn-Out. *The Journal of Social Issues*, 34(4), 111-124.
- Maslach, C., Jackson, S. E., & Leiter, M. P. (1986). Maslach Burnout Inventory. Palo Alto. In: CA: Consulting psychologists press.
- Maslach, C., Jackson, S. E., & Leiter, M. P. (1996). *MBI: Maslach burnout inventory*. CPP, Incorporated.
- Maslach, C. H., Schaufeli, W. B., & Leiter, M. P. (2001). Job burnout. *Annual review of psychology*, 52(1), 397-422.
- McManus, I., Winder, B., & Gordon, D. (2002). The causal links between stress and burnout in a longitudinal study of UK doctors. *The Lancet*, 359(9323), 2089-2090.
- Mrazek, M. D., Franklin, M. S., Phillips, D. T., Baird, B., & Schooler, J. W. (2013). Mindfulness training improves working memory capacity and GRE performance while reducing mind wandering. *Psychological science*, 24(5), 776-781.

- Näswall, K., Kuntz, J., Hodliffe, M., & Malinen, S. (2015). *Employee Resilience Scale (EmpRes) Measurement Properties*. Resilient Organisations Research Report, 2015/04.
- Naughton, F., Prevost, A. T., Gilbert, H., & Sutton, S. (2012). Randomized controlled trial evaluation of a tailored leaflet and SMS text message self-help intervention for pregnant smokers (MiQuit). *Nicotine & Tobacco Research, 14*(5), 569-577.
- Neff, K. D. (2003). The development and validation of a scale to measure self-compassion. *Self and Identity, 2*(3), 223-250.
- Neff, K. D., Kirkpatrick, K. L., & Rude, S. S. (2007). Self-compassion and adaptive psychological functioning. *Journal of research in personality, 41*(1), 139-154.
- Neff, K. D., Rude, S. S., & Kirkpatrick, K. L. (2007). An examination of self-compassion in relation to positive psychological functioning and personality traits. *Journal of research in personality, 41*(4), 908-916.
- Nolen-Hoeksema, S. (1987). Sex differences in unipolar depression: evidence and theory. *Psychological bulletin, 101*(2), 259.
- Noone, C., & Hogan, M. J. (2016). A protocol for a randomised active-controlled trial to evaluate the effects of an online mindfulness intervention on executive control, critical thinking and key thinking dispositions in a university student sample. *BMC psychology, 4*(17), 17.
- Ozdalga, E., Ozdalga, A., & Ahuja, N. (2012). The smartphone in medicine: a review of current and potential use among physicians and students. *Journal of medical Internet research, 14*(5).
- Park, C. L., & Folkman, S. (1997). Meaning in the context of stress and coping. *Review of General Psychology, 1*(2), 115.
- Paulhus, D. L., & Vazire, S. (2007). The self-report method. *Handbook of research methods*

*in personality psychology, 1, 224-239.*

- Raab, K. (2014). Mindfulness, self-compassion, and empathy among health care professionals: a review of the literature. *Journal of health care chaplaincy, 20(3), 95-108.*
- Raab, K., Sogge, K., Parker, N., & Flament, M. F. (2015). Mindfulness-based stress reduction and self-compassion among mental healthcare professionals: a pilot study. *Mental Health, Religion & Culture, 18(6), 503-510.*
- Radovic, A., Vona, P. L., Santostefano, A. M., Ciaravino, S., Miller, E., & Stein, B. D. (2016). Smartphone Applications for Mental Health. *Cyberpsychology, Behavior, and Social Networking, 19(7), 465-470.*
- Raes, F., Pommier, E., Neff, K. D., & Van Gucht, D. (2011). Construction and factorial validation of a short form of the self-compassion scale. *Clinical psychology & psychotherapy, 18(3), 250-255.*
- Reb, J., Narayanan, J., & Ho, Z. W. (2015). Mindfulness at work: Antecedents and consequences of employee awareness and absent-mindedness. *Mindfulness, 6(1), 111-122.*
- Richardson, D. A., Jaber, S., Chan, S., Jesse, M. T., Kaur, H., & Sangha, R. (2016). Self-Compassion and Empathy: Impact on Burnout and Secondary Traumatic Stress in Medical Training. *Open Journal of Epidemiology, 6(03), 167.*
- Rickard, N., Arjmand, H.-A., Bakker, D., & Seabrook, E. (2016). Development of a Mobile Phone App to Support Self-Monitoring of Emotional Well-Being: A Mental Health Digital Innovation. *JMIR mental health, 3(4).*
- Rizvi, S. L., Dimeff, L. A., Skutch, J., Carroll, D., & Linehan, M. M. (2011). A pilot study of the DBT coach: an interactive mobile phone application for individuals with borderline personality disorder and substance use disorder. *Behavior therapy, 42(4),*

589-600.

- Rosenberg, E. L., Zanesco, A. P., King, B. G., Aichele, S. R., Jacobs, T. L., Bridwell, D. A., MacLean, D., Shaver, K., Ferrer, P., & Sahdra, B. K. (2015). Intensive meditation training influences emotional responses to suffering. *Emotion, 15*(6), 775.
- Shanafelt, T. D., Bradley, K. A., Wipf, J. E., & Back, A. L. (2002). Burnout and self-reported patient care in an internal medicine residency program. *Annals of internal medicine- Journal Article, 136*(5), 358.
- Shapiro, S. L., Astin, J. A., Bishop, S. R., & Cordova, M. (2005). Mindfulness-Based Stress Reduction for Health Care Professionals: Results From a Randomized Trial. *International Journal of Stress Management, 12*(2), 164-176.
- Shapiro, S. L., Brown, K. W., & Biegel, G. M. (2007). Teaching Self-Care to Caregivers: Effects of Mindfulness-Based Stress Reduction on the Mental Health of Therapists in Training. *Training and Education in Professional Psychology, 1*(2), 105-115.
- Shapiro, S. L., Oman, D., Thoresen, C. E., Plante, T. G., & Flinders, T. (2008). Cultivating mindfulness: effects on well-being. *Journal of Clinical Psychology, 64*(7), 840-862.
- Snippe, E., Nyklicek, I., Schroevers, M. J., & Bos, E. H. (2015). The Temporal Order of Change in Daily Mindfulness and Affect During Mindfulness-Based Stress Reduction. *Journal of Counseling Psychology, 62*(2), 106-114.
- Spadaro, K. C., & Hunker, D. F. (2016). Exploring the effects of an online asynchronous mindfulness meditation intervention with nursing students On Stress, mood, And Cognition: A descriptive study. *Nurse Education Today, 39*, 163-169.
- Stamm, B. H. (2009). Professional quality of life: Compassion satisfaction and fatigue version 5 (ProQOL).
- Stevens, C. J., & Bryan, A. D. (2012). Rebranding exercise: there's an app for that. *American Journal of Health Promotion, 27*(2), 69-70.

Systat Software Inc; [www.sigmaplot.com](http://www.sigmaplot.com)

Tang, Y.-Y., Hölzel, B. K., & Posner, M. I. (2015). The neuroscience of mindfulness meditation. *Nature reviews. Neuroscience*, *16*(4), 213-225.

Taylor, N. Z., & Millier, P. M. R. (2016). The contribution of mindfulness to predicting burnout in the workplace. *Personality and Individual Differences*, *89*, 123-128.

Thayer, J. F., & Lane, R. D. (2000). A model of neurovisceral integration in emotion regulation and dysregulation. *Journal of affective disorders*, *61*(3), 201-216.

The Beehive, Office of the Prime Minister. (2018, January 23<sup>rd</sup>). [Press release]. Retrieved from <https://www.beehive.govt.nz/release/inquiry-improve-mental-health-services>.

Thieleman, K., & Cacciatore, J. (2014). Witness to Suffering: Mindfulness and Compassion Fatigue among Traumatic Bereavement Volunteers and Professionals. *Social Work*, *59*(1), 34-41.

Tugade, M. M., & Fredrickson, B. L. (2004). Resilient Individuals Use Positive Emotions to Bounce Back From Negative Emotional Experiences. *Journal of Personality and Social Psychology*, *86*(2), 320-333.

Van Emmerik, A. A., Berings, F., & Lancee, J. (2017). Efficacy of a Mindfulness-Based Mobile Application: a Randomized Waiting-List Controlled Trial. *Mindfulness*, 1-12.

Van Gordon, W., Shonin, E., Zangeneh, M., & Griffiths, M. D. (2014). Work-Related Mental Health and Job Performance: Can Mindfulness Help? *International Journal of Mental Health and Addiction*, *12*(2), 129-137.

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: the PANAS scales. *Journal of Personality and Social Psychology*, *54*(6), 1063.

Weinstein, N., Brown, K. W., & Ryan, R. M. (2009). A multi-method examination of the effects of mindfulness on stress attribution, coping, and emotional well-being. *Journal*

*of research in personality*, 43(3), 374-385.

- West, C. P., Huschka, M. M., Novotny, P. J., Sloan, J. A., Kolars, J. C., Habermann, T. M., & Shanafelt, T. D. (2006). Association of Perceived Medical Errors With Resident Distress and Empathy: A Prospective Longitudinal Study. *JAMA*, 296(9), 1071-1078.
- Wiklund Gustin, L., & Wagner, L. (2013). The butterfly effect of caring—clinical nursing teachers' understanding of self-compassion as a source to compassionate care. *Scandinavian Journal of Caring Sciences*, 27(1), 175-183.
- Wood, A. E., Prins, A., Bush, N. E., Hsia, J. F., Bourn, L. E., Earley, M. D., Walser, R., & Ruzek, J. (2017). Reduction of Burnout in Mental Health Care Providers Using the Provider Resilience Mobile Application. *Community mental health journal*, 53(4), 452-459.
- Zeidan, F., Martucci, K. T., Kraft, R. A., Gordon, N. S., McHaffie, J. G., & Coghill, R. C. (2011). Brain mechanisms supporting the modulation of pain by mindfulness meditation. *Journal of Neuroscience*, 31(14), 5540-5548.

## Appendix A

### Invitation Email

#### Mindfulness at Work Wellbeing Study

You are invited to participate in a research project examining a mindfulness-based mobile application (called Headspace) as a wellbeing intervention for full-time Community Support Workers. CSWs work in a high stress job and research looking at how to best support the support worker is important. I am a CSW myself (at Housing and Recovery + Greers Road in Christchurch) and know first-hand how stressful the job can be. Your participation in this study would be greatly appreciated.

#### What does participation involve?

If you decide to participate you will be given a free month-long subscription to the Headspace phone app. You will be asked to complete 10 minutes of guided mindfulness meditation (using the app) each day (whenever and wherever you like) for 30 days. You will also be asked to complete four online surveys (less than 10 minutes each).

All participants will go in the running to win one of two \$50 Westfield mall vouchers randomly chosen on December 1st 2017.

This study is being conducted as part of my Master of Science degree (Psychology) at the University of Canterbury. Participation is entirely confidential. I will provide Emerge with a summary of overall findings, but no Emerge staff member will see your individual responses.

I hope to have you on board! To participate and for further information please contact me, Chelsea, at [chelsea.robinson@pg.canterbury.ac.nz](mailto:chelsea.robinson@pg.canterbury.ac.nz).

## Appendix B

Table 1

*Effective sample characteristics*

Characteristic	Sample
N	12
Gender	
Female	9 (75.0%)
Male	3 (25.0%)
Other	0 (0.0%)
Age range (years)	24-62
Age mean (years)	35
Hours worked per week	
35+ hours	12 (100%)
20-35 hours	0 (0%)
Less than 20 hours	0 (0%)
Time spent employed as a support worker range (years)	1.9-36
Time spent as a support worker mean (years)	6.8
Previous Headspace app use	4 (33.3%)
Previous mindfulness/meditation practice	7 (58.3%)

## Appendix C

### Online Consent Form

# Are You in the Right Headspace? Using a Mindfulness-Based Mobile Application as a Wellbeing Intervention in the Workplace Consent Form

- I have read and understood the description of the above-mentioned project.
- I understand what is required of me if I agree to take part in the research.
- I understand that participation is voluntary and I may withdraw at any time without penalty. Withdrawal of participation will also include the withdrawal of any information I have provided should this remain practically achievable.
- I understand that any information or opinions I provide will be kept confidential to the researcher and her thesis supervisor and that any published or reported results will not identify the participants. I understand that a thesis is a public document and will be available through the UC Library.
- I understand that all data collected for the study will be kept in locked and secure facilities and/or in password protected electronic form and will be destroyed after five years.
- I understand the risks associated with taking part and how they will be managed.
- I understand that I can contact the researcher [*Chelsea Robinson, chelsea.robinson@pg.canterbury.ac.nz*] or supervisor [*Katharina Näswall, katharina.naswall@canterbury.ac.nz*] for further information. If I have any complaints, I can contact the Chair of the University of Canterbury Human Ethics committee, Private Bag 4800, Christchurch (*human-ethics@canterbury.ac.nz*)
- I would like a summary of the results of the project.
- By typing below, I agree to participate in this research project.

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Please email this form back to [chelsea.robinson@pg.canterbury.ac.nz](mailto:chelsea.robinson@pg.canterbury.ac.nz).

If you would like to receive a summary of the completed research please write your email here:

## Appendix D

### Information Sheet for Participants

Thank you for taking an interest in my Master's thesis research. In this study I am investigating whether a mindfulness-based mobile application (called Headspace) could be a useful intervention tool for Community Support Workers and enhance their wellbeing. I myself am a CSW and my experiences as a frontline employee have inspired this project - to find a way to support the support worker. The benefits of mindfulness practices have been studied widely, but research into the effectiveness of mobile applications for mindfulness is lacking. Furthermore, there is growing evidence that mobile apps are increasing in popularity for supporting both physical and mental health and wellbeing in people. Thus, I wish to find if a mindfulness based phone app is a suitable intervention for workplace wellbeing in high strain jobs.

If you choose to participate in this study, you will be randomly assigned (based on the flip of coin) to one of two groups. The first group is called the 'treatment group' and starts the mindfulness intervention first. The second group is called the 'wait-list group', and starts the mindfulness intervention a month later and also acts as a comparison against the first group, to see if there is any difference between participants that completed the wellbeing intervention and those who did not. Once the first group has finished their month of mindful meditation then the second group starts it.

The wellbeing intervention involves downloading (with my assistance) the Headspace app onto your phone (the University will pay for the app subscription). You then take 10 minutes a day to listen to one of their guided mindfulness meditations (whenever and wherever you like, I would recommend somewhere quiet where you will most likely not be disturbed), for 30 days.

In addition to this you will complete an online survey sent out to your email. The treatment group will complete the survey four times, receiving them through email (this includes three surveys during your mindfulness month, and one follow up survey one month after the guided meditations end). The wait-list group will also complete four surveys sent out to your email. The timing is different for the wait-list group, as you will complete your first survey at the same time as the treatment group, then a second when you begin your mindfulness month, a third two weeks later, and a fourth when you finish your mindfulness month.

This survey takes less than 10 minutes to complete. Two participants of the study will be chosen at random on December 1st 2017 to win one of two \$50 Westfield mall vouchers. Additionally, feel free to request your personal wellbeing outcomes at the end of your final survey if you would like to see your progress and if mindfulness has had a significant effect on you.

Whilst practicing mindfulness there is the risk that your mind may wander and think about stressful experiences in your life at present. If this happens and you feel distressed in any way you can always contact me and we can talk about your options for support. Lifeline Aotearoa's telephone counselling service provides 24 hours a day, 7 days a week counselling and support which you can call for free on 0800 543 354. Additionally, OCP provides three free counselling services at locations near to you - call for free on 0800 377 990 if you would like to book a session.

Participation is voluntary and you have the right to withdraw at any stage without penalty. You may ask for your raw data to be returned to you or destroyed at any point. However, once analysis of raw data starts on November 1st 2017, it will become increasingly difficult to remove the influence of your data on the results.

The results of the project may be published, but you are assured of the complete confidentiality of data gathered in this study: your identity will not be made public or released to Emerge Aotearoa at any stage. To ensure confidentiality, your completed online surveys can only be accessed by myself and my supervisor as it is on a password protected programme on a password protected computer. The data will be kept in this secure location for 5 years before being destroyed as per University policy. The final thesis is a public document and will be available through the UC Library.

Chelsea Robinson's project is being carried out under the supervision of Associate Professor Katharina Näswall, who can be contacted at [katharina.naswall@canterbury.ac.nz](mailto:katharina.naswall@canterbury.ac.nz). She will be pleased to discuss any concerns you may have about participation in the project. This project has been reviewed and approved by the University of Canterbury Human Ethics Committee, and participants should address any complaints to The Chair, Human Ethics Committee, University of Canterbury, Private Bag 4800, Christchurch ([human-ethics@canterbury.ac.nz](mailto:human-ethics@canterbury.ac.nz)).

## Appendix E

### Pre- and Post Intervention Questions

#### Pre-Intervention

- 1) What is your age? \_\_\_\_\_
- 2) What gender do you identify with?
  - Male
  - Female
  - Other
- 3) What hours do you usually work each week?
  - 35+ hours
  - Between 20 and 35 hours
  - Less than 20 hours
- 4) How long have you been employed as a support worker? \_\_\_\_\_
- 5) Have you ever used the mindfulness-based guided meditation Headspace app before?
  - Yes
  - No
- 6) Have you used other mindfulness or meditative practices before?  
(Please specify) \_\_\_\_\_

#### Post-Intervention

- 7) How was the Headspace app to use? How easy/useful/enjoyable was it?  
\_\_\_\_\_
- 8) Would you use Headspace or another mobile-based meditation again? Please list 3 reasons why/why not? \_\_\_\_\_

## Appendix F

### Mindful Attention Awareness Scale

Below is a collection of statements about your everyday experience.

Please indicate how frequently or infrequently you currently have each experience. 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.

- | <b>Almost never</b> |          |          |          |          |          | <b>Almost always</b> |
|---------------------|----------|----------|----------|----------|----------|----------------------|
| <b>1</b>            | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> | <b>6</b> |                      |
- \_\_\_\_\_ 1. I'm disapproving and judgmental about my own flaws and inadequacies.
- \_\_\_\_\_ 2. When I'm feeling down I tend to obsess and fixate on everything that's wrong.
- \_\_\_\_\_ 3. When things are going badly for me, I see the difficulties as part of life that everyone goes through.
- \_\_\_\_\_ 4. When I think about my inadequacies, it tends to make me feel more separate and cut off from the rest of the world.
- \_\_\_\_\_ 5. I try to be loving towards myself when I'm feeling emotional pain.
- \_\_\_\_\_ 6. When I fail at something important to me I become consumed by feelings of inadequacy.
- \_\_\_\_\_ 7. When I'm down and out, I remind myself that there are lots of other people in the world feeling like I am.
- \_\_\_\_\_ 8. When times are really difficult, I tend to be tough on myself.
- \_\_\_\_\_ 9. When something upsets me I try to keep my emotions in balance.
- \_\_\_\_\_ 10. When I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most people.
- \_\_\_\_\_ 11. I'm intolerant and impatient towards those aspects of my personality I don't like
- \_\_\_\_\_ 12. When I'm going through a very hard time, I give myself the caring and tenderness I need.
- \_\_\_\_\_ 13. When I'm feeling down, I tend to feel like most other people are probably happier than I am.
- \_\_\_\_\_ 14. When something painful happens I try to take a balanced view of the situation.
- \_\_\_\_\_ 15. I try to see my failings as part of the human condition.
- \_\_\_\_\_ 16. When I see aspects of myself that I don't like, I get down on myself.
- \_\_\_\_\_ 17. When I fail at something important to me I try to keep things in perspective

## Appendix G

### Perceived Stress Scale

The questions in this scale ask you about your feelings and thoughts during the last month. For each statement, please click the box that most accurately reflects your personal experience.

- 1. How often have you been upset because of something that happened unexpectedly?**  
Never = 1    Not often = 2    Sometimes = 3    Often = 4    Very Often = 5
- 2. How often have you felt that you were unable to control the important things in your life?**  
Never = 1    Not often = 2    Sometimes = 3    Often = 4    Very Often = 5
- 3. How often have you felt nervous and “stressed”?**  
Never = 1    Not often = 2    Sometimes = 3    Often = 4    Very Often = 5
- 4. How often have you felt confident about your ability to handle your personal problems?**  
Never = 1    Not often = 2    Sometimes = 3    Often = 4    Very Often = 5
- 5. How often have you felt that things were going your way?**  
Never = 1    Not often = 2    Sometimes = 3    Often = 4    Very Often = 5
- 6. How often have you found that you could not cope with all the things that you had to do?**  
Never = 1    Not often = 2    Sometimes = 3    Often = 4    Very Often = 5
- 7. How often have you been able to control irritations in your life?**  
Never = 1    Not often = 2    Sometimes = 3    Often = 4    Very Often = 5
- 8. How often have you felt that you were on top of things?**  
Never = 1    Not often = 2    Sometimes = 3    Often = 4    Very Often = 5
- 9. How often have you been angered because of things that were outside of your control?**  
Never = 1    Not often = 2    Sometimes = 3    Often = 4    Very Often = 5
- 10. How often have you felt difficulties were piling up so high that you could not overcome them?**  
Never = 1    Not often = 2    Sometimes = 3    Often = 4    Very Often = 5

## Appendix H

### Professional Quality of Life – Secondary Traumatic Stress Subscale

When you support people you have direct contact with their lives.

As you may have found, your compassion for those you support can affect you in positive and negative ways.

Below are some questions about your experiences, both positive and negative, as a support worker. Consider each of the following questions about you and your current work situation. Select the answer that honestly reflects how frequently you experienced these things in the last month.

- 1. I am preoccupied with more than one person I support.**  
Never = 1    Not often = 2    Sometimes = 3    Often = 4    Very Often = 5
- 2. I jump or am startled by unexpected sounds.**  
Never = 1    Not often = 2    Sometimes = 3    Often = 4    Very Often = 5
- 3. I find it difficult to separate my personal life from my life as a support worker.**  
Never = 1    Not often = 2    Sometimes = 3    Often = 4    Very Often = 5
- 4. I think that I might have been affected by the traumatic stress of those I support.**  
Never = 1    Not often = 2    Sometimes = 3    Often = 4    Very Often = 5
- 5. Because of my support working, I have felt "on edge" about various things.**  
Never = 1    Not often = 2    Sometimes = 3    Often = 4    Very Often = 5
- 6. I feel depressed because of the traumatic experiences of the people I support.**  
Never = 1    Not often = 2    Sometimes = 3    Often = 4    Very Often = 5
- 7. I feel as though I am experiencing the trauma of someone I have supported.**  
Never = 1    Not often = 2    Sometimes = 3    Often = 4    Very Often = 5
- 8. I avoid certain activities or situations because they remind me of frightening experiences of the people I support.**  
Never = 1    Not often = 2    Sometimes = 3    Often = 4    Very Often = 5
- 9. As a result of my support working, I have intrusive, frightening thoughts.**  
Never = 1    Not often = 2    Sometimes = 3    Often = 4    Very Often = 5
- 10. I can't recall important parts of my work with trauma victims.**  
Never = 1    Not often = 2    Sometimes = 3    Often = 4    Very Often = 5

## Appendix I

### Self-Compassion Scale – Short Form

These questions ask you about how you typically act towards yourself in difficult times. Please read each statement carefully before answering and indicate how often you behave in the stated way.

- 1. When I fail at something important to me I become consumed by feelings of inadequacy.**  
Never = 1    Not often = 2    Sometimes = 3    Often = 4    Very Often = 5
- 2. I try to be understanding and patient towards those aspects of my personality I don't like.**  
Never = 1    Not often = 2    Sometimes = 3    Often = 4    Very Often = 5
- 3. When something painful happens I try to take a balanced view of the situation.**  
Never = 1    Not often = 2    Sometimes = 3    Often = 4    Very Often = 5
- 4. When I'm feeling down, I tend to feel like most other people are probably happier than I am.**  
Never = 1    Not often = 2    Sometimes = 3    Often = 4    Very Often = 5
- 5. I try to see my failings as part of the human condition.**  
Never = 1    Not often = 2    Sometimes = 3    Often = 4    Very Often = 5
- 6. When I'm going through a very hard time, I give myself the caring and tenderness I need.**  
Never = 1    Not often = 2    Sometimes = 3    Often = 4    Very Often = 5
- 7. When something upsets me I try to keep my emotions in balance.**  
Never = 1    Not often = 2    Sometimes = 3    Often = 4    Very Often = 5
- 8. When I fail at something that's important to me, I tend to feel alone in my failure.**  
Never = 1    Not often = 2    Sometimes = 3    Often = 4    Very Often = 5
- 9. When I'm feeling down I tend to obsess and fixate on everything that's wrong.**  
Never = 1    Not often = 2    Sometimes = 3    Often = 4    Very Often = 5
- 10. When I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most people.**  
Never = 1    Not often = 2    Sometimes = 3    Often = 4    Very Often = 5
- 11. I'm disapproving and judgmental about my own flaws and inadequacies.**  
Never = 1    Not often = 2    Sometimes = 3    Often = 4    Very Often = 5
- 12. I'm intolerant and impatient towards those aspects of my personality I don't like.**  
Never = 1    Not often = 2    Sometimes = 3    Often = 4    Very Often = 5

## Appendix J

### Positive and Negative Affect Schedule

These questions ask you to reflect on how you have felt over the past week. Please select the answer that honestly reflects how frequently you experienced these emotions in the last week.

	<b>Very slightly or not at all</b>				<b>Extremely</b>
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
_____	1. Interested				
_____	2. Distressed				
_____	3. Excited				
_____	4. Upset				
_____	5. Strong				
_____	6. Guilty				
_____	7. Scared				
_____	8. Hostile				
_____	9. Enthusiastic				
_____	10. Proud				
_____	11. Irritable				
_____	12. Alert				
_____	13. Ashamed				
_____	14. Inspired				
_____	15. Nervous				
_____	16. Determined				
_____	17. Attentive				
_____	18. Jittery				
_____	19. Active				
_____	20. Afraid				

## Appendix K

### Employee Resilience Scale

These questions ask you about your work-place behaviour. Please indicate how often you behave in the stated manner.

**Never**

**Always**

**1**

**2**

**3**

**4**

**5**

**6**

**7**

- \_\_\_\_\_ 1. I effectively collaborate with others to handle unexpected challenges at work.
- \_\_\_\_\_ 2. I successfully manage a high workload for long periods of time.
- \_\_\_\_\_ 3. I resolve crises competently at work.
- \_\_\_\_\_ 4. I learn from mistakes at work and improve the way I do my job.
- \_\_\_\_\_ 5. I re-evaluate my performance and continually improve the way I do my work.
- \_\_\_\_\_ 6. I effectively respond to feedback at work, even criticism.
- \_\_\_\_\_ 7. I seek assistance to work when I need specific resources.
- \_\_\_\_\_ 8. I approach managers when I need their support.
- \_\_\_\_\_ 9. I use change at work as an opportunity for growth.

## Appendix L

Table 2

*Treatment Group - Reliability analysis and repeated measures ANOVA for all psychometric scales at Time 1, Time 2, Time 3 and Time 4*

Scale	Time 1			Time 2			Time 3			Time 4			ANOVA		
	M	SD	$\alpha$	F	p	$\eta^2$									
A-MBI - EE	12.00	2.63	0.78	13.25	3.06	0.76	11.00	2.88	0.79	7.38	3.89	0.89	12.07	0.00	0.63
A-MBI - DEP	16.25	1.75	0.90	16.00	2.68	0.73	15.00	3.16	0.80	13.00	5.35	0.81	4.95	0.03	0.41
A-MBI - PA	4.63	2.97	0.61	4.75	3.11	0.83	4.75	3.24	0.65	6.00	3.51	0.84	2.68	0.11	0.20
PSS	32.75	2.05	0.87	29.25	1.98	0.92	28.25	3.01	0.76	28.63	2.50	0.79	6.10	0.00	0.47
STS	23.50	7.31	0.88	18.25	4.27	0.76	15.88	4.02	0.79	18.25	4.89	0.82	3.47	0.08	0.33
SCS-SF	39.00	5.26	0.90	38.5	4.31	0.90	38.75	4.13	0.92	40.13	3.36	0.95	0.64	0.60	0.08
PANAS (+)	27.63	8.00	0.92	30.00	6.00	0.83	31.38	5.32	0.88	30.88	6.31	0.83	1.55	0.23	0.18
PANAS (-)	18.25	6.98	0.83	17.38	6.30	0.76	15.63	4.24	0.82	16.88	4.49	0.85	0.40	0.76	0.05
EmpRes	48.75	11.60	0.95	52.75	5.85	0.92	54.13	4.22	0.84	56.00	4.47	0.90	2.14	0.17	0.23
MAAS	51.75	20.45	0.96	63.75	20.33	0.97	66.00	18.60	0.97	63.75	18.14	0.97	3.25	0.04	0.32

Table 3

*Wait-list Control Group - Reliability analysis and repeated measures ANOVA for all psychometric scales at Time 1, Time 2, Time 3 and Time 4*

Scale	Time 1			Time 2			Time 3			Time 4			ANOVA		
	M	SD	$\alpha$	F	p	$\eta^2$									
A-MBI - EE	13.50	2.38	0.78	10.75	2.63	0.76	12.00	1.83	0.79	13.00	3.37	0.89	4.22	0.04	0.59
A-MBI - DEP	16.50	1.29	0.90	15.50	3.11	0.73	13.50	2.65	0.80	11.75	4.50	0.81	4.02	0.05	0.57
A-MBI - PA	2.50	1.91	0.61	5.25	3.20	0.83	5.50	3.87	0.65	7.75	4.27	0.84	10.41	0.00	0.78
PSS	32.75	2.05	0.87	29.25	1.98	0.92	28.25	3.01	0.76	28.63	2.50	0.79	2.09	0.17	0.41
STS	23.25	5.25	0.88	19.00	4.97	0.76	16.75	5.19	0.79	15.75	3.59	0.82	2.44	0.13	0.45
SCS-SF	39.00	3.16	0.90	38.00	6.58	0.90	37.75	1.50	0.92	41.25	2.06	0.95	1.06	0.41	0.26
PANAS (+)	27.00	7.71	0.92	28.75	5.44	0.83	31.75	7.23	0.88	37.50	2.89	0.83	4.77	0.00	0.61
PANAS (-)	21.75	5.38	0.83	14.25	3.30	0.76	17.75	5.56	0.82	15.75	4.27	0.85	3.51	0.06	0.54
EmpRes	46.75	11.09	0.95	50.75	3.30	0.92	56.25	4.92	0.84	58.75	5.97	0.90	2.28	0.15	0.43
MAAS	45.75	13.50	0.96	65.50	17.84	0.97	68.25	16.88	0.97	71.00	16.75	0.97	12.16	0.00	0.80