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**The role of leisure engagement and satisfaction in the relationship between job stress and subjective well-being in New Zealand workers.**

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## Abstract

The job demands-resources (JD-R) model argues that job stress is the result of an imbalance between demands and resources, and can negatively impact subjective well-being (SWB). Engagement in leisure activity provides a context for building resources through meeting key psychological needs, and fulfilment of these needs is reflected in satisfaction with leisure. Therefore, the ability to cope with and recover from job stress is believed to be affected by engaging in enjoyable and need-fulfilling leisure activity. The present study investigates the relationship between three measures of leisure engagement (variety, frequency, quantity), leisure satisfaction and SWB; and whether the relationship between job stress and SWB is mediated by leisure engagement and leisure satisfaction. Workers ( $n = 187$ ) currently employed in New Zealand (NZ) were recruited through Facebook to complete an online survey. Results revealed that leisure variety and leisure frequency were positively related to SWB, but leisure quantity was not. Leisure satisfaction was positively associated with SWB, and job stress was negatively associated with SWB. The relationship between job stress and SWB was partially mediated by leisure frequency and satisfaction. Overall, the findings suggested that frequent engagement in satisfying leisure activities may be beneficial to counteract job stress and benefit employee SWB. The findings and limitations are discussed, as well as the implications for NZ organisations and workers.

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## 1. Introduction

Stress in New Zealand (NZ) workplaces is on the rise, especially in larger organisations with 50+ staff (BusinessNZ, 2017). This is a cause for concern as stress has the potential to result in negative physical and psychological consequences, including a detrimental effect on employee well-being (Sonnetag & Fritz, 2015). Employee well-being has been linked to positive work outcomes including increased work productivity, creativity and cooperation (De Neve, Diener, Tay, & Xuereb, 2013); increases in profitability for the organisation (Lyubomirsky, King, & Diener, 2005); and decreased turnover intentions (Brunetto, Teo, Shacklock, & Farr-Wharton, 2012). As such, it is of benefit for organisations to find ways to reduce workplace stress and subsequently enhance employee well-being, as well as to identify ways in which workers can achieve this themselves.

A growing body of evidence has revealed the importance of leisure engagement and leisure satisfaction in mitigating job stress and facilitating individual well-being (Brajša-Zganec, Merkas, Sverko, Maggino, & Nuvolati, 2011; Kuykendall, Boemerman, & Zhu, 2018; Kuykendall, Tay, & Ng, 2015). Newman, Tay, and Diener (2014) suggested that leisure provides an opportunity for building and replenishing personal resources by meeting key psychological needs like detachment from work, mastery, and meaning, which can in turn help to counteract the effects of job stress and lead to well-being. This is in line with demand-resource models (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001; Karasek, 1979), which describe job stress as a product of an imbalance between work demands and resources.

In NZ 77% of people aged 15 to 64 are in paid employment, working an average of 38 hours a week (Statistics New Zealand, 2018). Consequently, individuals have limited free time once work, personal care and unpaid labour (e.g. child minding, cleaning) are accounted for in their day (Goodin, Rice, Bittman, & Saunders, 2005), and it is within this free time that people can choose to engage in leisure activities. Figures by Sport New Zealand (2015) reveal that lack of time is by far the biggest reason individuals give for not participating in more sport and recreation. Therefore, understanding under what conditions leisure contributes to reducing job stress, and how leisure helps to facilitate well-being, can be considered important for maximising the benefit of leisure within the limited free time that workers may have.

The aim of the present study was two-fold: first, to focus on the relationships between dimensions of leisure engagement (variety, frequency, quantity), leisure satisfaction, and subjective well-being (SWB), to identify which type of leisure engagement is more strongly related to leisure satisfaction and SWB; and second, to investigate the role that the leisure engagement dimensions and leisure satisfaction play in the relationship between job stress and SWB. Specifically, the study will draw on demand-resource models to explore the potential of leisure to act as a resource by meeting key psychological needs not fulfilled in the workplace.

Limited research could be found on the strength of the relationships and interactions between job stress, SWB, leisure engagement dimensions and leisure satisfaction. As such, the present study extends the growing body of literature by further examining these relationships. Additionally, the target population was NZ workers, helping to address a gap in the literature and provide information that may assist NZ organisations and government in guiding worker well-being, with the intent to positively impact employee performance. Because culture, values and the context in which people live can influence how leisure impacts SWB (Diener, Lucas, & Oishi, 2018), it makes sense to study NZ workers to know more about NZ workers.

## 2. Leisure

### 2.1. Defining leisure

While the concept of leisure has been around for centuries there is yet to be universal agreement on a definition of leisure, and it is likely that it will continue to be debated (Parr & Lashua, 2004; Shaw, 1985). It is perhaps difficult to contextualise leisure due to it being made up of a number of dimensions, in particular views have differed in regard to emphasising the subjective or objective nature of leisure (Trenberth & Dewe, 2005). Ways that leisure has been subjectively defined include as a state of mind that is intrinsically motivated and rewarding, freely chosen, and enjoyable (Parr & Lashua, 2004). Objective definitions have regarded leisure as non-obligated time, or as an activity or set of activities (Argyle, 2013). For example, one widely used description of leisure is that it is the residual time left over once paid or unpaid work, personal care and obligations are accounted for (Haworth & Lewis, 2004).

When looking at leisure in relation to other factors (e.g. job stress or SWB), it may be important to capture not only the objective leisure engagement element, but also to include the subjective aspect of whether leisure is perceived as enjoyable to the individual. For instance Matsumoto, Sato, Asada, and Chiashi (2018) assert that without taking into account the psychological factors associated with leisure activities, the effect of leisure engagement on subjective happiness cannot be fully understood. Consequently for the present study leisure is split into two concepts used in the leisure literature: *leisure engagement* and *leisure satisfaction* (Kuykendall et al., 2018). Each of these are outlined below.

### 2.2. Leisure engagement

Leisure engagement, also called leisure participation (Ragheb & Tate, 1993), refers to the degree to which individuals participate in leisure activity and has been shown to be relatively stable over time (de Bloom, Rantanen, Tement, & Kinnunen, 2018). As outlined by Kuykendall et al. (2015), measurement of leisure engagement can be divided into three categories: variety (i.e. the number of different leisure activities engaged in), frequency (i.e. how often the activities are engaged in), and quantity (i.e. how much time is spent engaging in leisure activities). Measures of variety and frequency are activity-based, and are generally limited by the degree that any one category can contribute to the

total score. For example each category of leisure would contribute only one point to a measure of leisure variety, and leisure frequency would be limited by the number of options on the response scale. A high score on either of these measures reflects engagement in a number of leisure activities. On the other hand, leisure quantity is a time-based measure and does not necessarily reflect leisure diversity. For example, an individual who spends five hours on one activity (e.g. watching TV) would score the same as an individual who spends one hour on five different activities.

All three leisure engagement measures have been linked with various positive outcomes and have been used throughout the literature, often without any explanation as to why the researcher chose to use one engagement measure over the other. In relation to positive work outcomes de Bloom et al. (2018) found that leisure variety was linked to higher job performance as measured by self-reported performance on directly work-related tasks (task performance), behaviour above and beyond the job description (contextual performance), and creative thinking (adaptive performance). Lower job stress has been associated with leisure in studies using frequency measures of leisure engagement (Chen, 2016; Winwood, Bakker, & Winefield, 2007) and measures of leisure quantity have been linked to lower negative affect in workers. For instance Cho and Park (2018) demonstrated that a greater quantity of physical activity during the weekend was related to lower negative affect (e.g. feeling distressed or irritable) on Monday, while Mojza, Sonnentag, and Bornemann (2011) found that a greater quantity of volunteering during leisure-time in the evening was linked to lower negative affect the next day at work.

While the positive outcomes associated with leisure participation may be influenced by the engagement measure used (Kuykendall et al., 2015), they may also be impacted by how leisure is classified. There is currently no gold standard for classification of leisure activities and studies have varied in how categories are used. For instance Sonnentag (2001) used three categories of activity (social, low-effort and physical), whereas Kim, Heo, Dvorak, Ryu, and Han (2018) used six (outdoor, physical, hobbies and indoor, cultural and entertainment, home centred and social, and volunteer). Classification is made difficult due to differing perspectives on what constitutes a leisure activity depending on factors like culture, age, gender, and ability level (Khemthong, Packer, & Passmore, 2007; Liang, Yamashita, & Brown, 2013; Shaw, 1985).

### 2.3. Leisure satisfaction

Csikszentmihalyi and Lefevre (1989, p. 820) stated that "leisure is not as uniformly enjoyable as it is generally assumed to be". In their study they found that more positive experiences in people's lives came from work than from leisure. Csikszentmihalyi and Lefevre argued that leisure can be made more enjoyable and lead to a sense of mastery if individuals enter a state of *flow*. They noted that flow can occur when individuals match challenges with their skills, rather than filling their leisure time with activities that do not provide a challenge. Other researchers have also supported the idea of leisure satisfaction arising through fulfilling key psychological needs like mastery during engagement in leisure activities (Newman et al., 2014; Walker & Kono, 2018). In line with this thinking it is important to assess not only leisure engagement, but also the quality of leisure experiences. This can be achieved by including a measure of leisure satisfaction. Leisure satisfaction is defined as the extent to which individuals enjoy the leisure activities they engage in, and is measured through self-report questions like "my leisure activities have been enjoyable" (Kuykendall et al., 2017).

Leisure satisfaction has been linked to better coping when faced with various stressors (Iwasaki, 2017), and has demonstrated potential to facilitate stress-related growth (i.e. positive life changes following stressful life events; Chun, Lee, Kim, & Heo, 2012). Moreover, a number of studies have demonstrated a positive relationship between leisure satisfaction and SWB (Chick et al., 2016; Ito, Walker, Liu, & Mitas, 2017; Kuykendall et al., 2017). Interestingly in a study by Lu and Hu (2005), leisure satisfaction predicted SWB even when controlling for personality factors like extraversion.

### 3. Well-being

#### 3.1. Defining well-being

As Diener (1984) points out, throughout history happiness has been considered the ultimate goal and the basis for all human action, however for decades psychologists focused on researching human unhappiness and essentially ignored positive well-being. While traditional models of mental health concentrated on alleviating negative experiences, as the concept and application of positive psychology began to thrive it was realised that the absence of negative experiences does not necessarily result in enhanced well-being (Keyes, 2007; Seligman & Csikszentmihalyi, 2000). Instead, well-being can be supported through a focus on understanding and nurturing individuals' strengths, abilities, and environment, helping them to build resources and foster positive emotion (Carruthers & Hood, 2007). In researching well-being two conceptual approaches have been identified: the *objective* approach and the *subjective* approach (Western & Tomaszewski, 2016).

##### 3.1.1. Objective well-being

Objective well-being reflects the objective circumstances of individuals, and researchers have used this perspective to measure what are known as *social indicators*, described by Diener and Suh (1997, p. 192) as "societal measures that reflect people's objective circumstances in a given cultural or geographic unit". Within the social indicators literature, various societal domains have been studied such as income, employment and education. As outlined by the Organisation for Economic Co-operation and Development (2017, p. 21), social indicators are beneficial in order to determine "whether, when and how life is getting better for people", and to help inform public policy. However, while objective well-being can reveal information like household income, employment rates and level of education, it cannot uncover the meaning of these to an individual (Diener, Lucas, et al., 2018).

##### 3.1.2. Subjective well-being (SWB)

While objective wellbeing is based on tangible, quantitative indicators, SWB refers to individuals' internal, subjective evaluations of their lives (Diener & Suh, 1997). The

advantage of this is that it provides insight into which experiences are valued by individuals. There is little agreement on a singular definition of SWB, or even how SWB should be measured and which dimensions should be included (Dodge, Daly, Huyton, & Sanders, 2012; Linton, Dieppe, & Medina-Lara, 2016). This may in part be due to SWB being studied in a variety of fields, for example psychology, philosophy, and economics (Diener, Lucas, et al., 2018). However, it has been widely defined as an individual's cognitive (i.e. overall life satisfaction) and affective (positive and negative) appraisal of their life (Beiser, 1974; Diener, 1984; Haworth & Lewis, 2004; Ito et al., 2017). Taking the above definition into account, an individual would be deemed to have high SWB if they are satisfied with their life, often experience positive emotions such as happiness, and rarely experience negative emotions like anxiety or anger.

SWB has been the focus of much research over the past several decades (Beiser, 1974; Diener, Lucas, et al., 2018) and is noted as an important element for both individual and organisational success (Lyubomirsky et al., 2005; Oswald, Proto, & Sgroi, 2015). Not only has SWB been linked to improved physical and mental health (Diener & Chan, 2011; Diener, Lucas, et al., 2018), but it has also been linked to increased work productivity and performance (De Neve et al., 2013; De Neve & Oswald, 2012; Graham, Eggers, & Sukhtankar, 2004). Globally, there is a focus on how to facilitate and maintain SWB, in particular looking at what will result in long-term positive SWB rather than simply influencing immediate and often fleeting emotions (Diener, Suh, & Oishi, 1997).

While it was previously suggested that the average level of SWB is above the neutral point worldwide (Diener & Diener, 1996), data have since revealed that this is not the case when taking into account those facing adverse conditions (Diener, Diener, Choi, & Oishi, 2018). In their study Diener et al. (2018) found that those who had experienced several adverse events over the past year, such as assault, health problems, and financial issues, generally reported much lower SWB. However, Diener et al. suggested that even when faced with extremely bad circumstances, people will largely be above neutral in SWB if they can find rewarding activities to engage in. Such reward may be found during engagement in leisure activities (Csikszentmihalyi, 1975).

The measurement of SWB is commonly assessed via a multidimensional measure of life satisfaction and positive and negative affect, or via a subjective global evaluation, for example, response to the single-item question "how would you rate your life overall these days?" (Bae, Suh, Ryu, & Heo, 2017). While it has been suggested that multiple-item

measures provide more reliable information regarding the phenomenon being studied (Beiser, 1974); single-item measures of SWB have proven to be relatively reliable and valid (Cheung & Lucas, 2014; Lucas & Donnellan, 2012), and are often used for large-scale studies, for example by governments. Studies have demonstrated that life satisfaction is relatively stable over time, compared to positive and negative affect (Eid & Diener, 2004; Pavot & Diener, 2009). In addition, it has been found that positive and negative affect are not on a continuum, but are in fact independent elements (Bradburn & Caplovitz, 1965; Headey, Holmström, & Wearing, 1984).

### *3.1.3. Hedonic and eudaimonic well-being*

There has been continued debate on the distinction between hedonic and eudaimonic well-being (Disabato, Goodman, Kashdan, Short, & Jarden, 2016). Ryan and Deci (2001) suggested that there are two distinct philosophies which guide perspectives on SWB: *hedonism* and *eudaimonism*. Hedonic psychology looks at positive and negative affect in relation to life experiences, and is commonly viewed as the ratio of positive affect to negative affect (Deci & Ryan, 2008). The eudaimonic perspective is said to stem from the ideas of Aristotle and the concept of a "good life", in which SWB lies in individuals meeting their full potential (Diener & Suh, 1997). This perspective views feelings of pleasure and happiness as only a part of SWB that by themselves are not enough to give life meaning; rather, central to enhancing SWB is the ability to flourish (Keyes, 2007; Ryff & Singer, 2000; Seligman, 2011).

Disabato et al. (2016) outlined and examined the debate over whether SWB should refer to only hedonic well-being and a separate term, *psychological well-being* (PWB), should be used to refer to eudaimonic well-being. As a result of their findings and analysis of previous research, Disabato et al. concluded that conceptualising eudaimonia and hedonia as a single construct, rather than as distinct constructs, is more appropriate. As such, the present study looks at SWB as a whole, inclusive of hedonic and eudaimonic elements.



## 4. Stress

### 4.1. Defining stress

Stress is defined by the Oxford Dictionary as "a state of mental or emotional strain or tension resulting from adverse or demanding circumstances" (OED., 2018). Within the workplace, these adverse and demanding circumstances can vary depending on the type of job and an individual's perception (Demerouti & Bakker, 2011). For example while one person may consider their job to be highly complex and thus demanding, another person in the same role may instead view the complexity as a challenge (Bakker, Demerouti, & Sanz-Vergel, 2014). As such, a number of different work demands and pressures can be considered as stressors. As described by Sonnentag and Fritz (2015), some of the more researched job stressors include those relating to work tasks (e.g. time pressure, work overload and complexity), role stressors (e.g. role ambiguity and role conflict), and social stressors (e.g. harassment and abuse). Furthermore, while the majority of stressors occur as single events, long-lasting stressors can also be present.

### 4.2. Job stress

Unlike the global definition of stress, the definition of job stress takes into account more than just demanding circumstances. In addition to demands, personal factors and resources have been included; for instance, the World Health Organization (2018, para. 3) defines job stress as "the response people may have when presented with work demands and pressures that are not matched to their knowledge and abilities and which challenge their ability to cope."

The Job Demands-Resources (JD-R) model (Demerouti et al., 2001) and the Job Demands-Control (JD-C) model (Karasek, 1979) are recognized as two of the leading models of job stress (Schaufeli & Taris, 2014). Within these frameworks, job stress is viewed as a consequence of high job demands and a lack of adequate resources to cope with the demands. In the JD-C model a specific resource is specified, namely job control. Job control, also known as decision latitude, refers to an individual's potential to make job-related decisions and to decide how and when to perform their work tasks. According to the JD-C model, job stress is characterised by high demands and low control. Support was later added to the model as a potential buffer and additional resource (Karasek & Theorell, 1992).

While the JD-C model restricts itself to a specific job resource, the JD-R model has a much broader scope and assumes that any job demand and resource has the potential to contribute to or decrease job stress. This is seen as both a strength of the model because it can be used in a variety of contexts, and a weakness because it limits the generalizability (Schaufeli & Taris, 2014). According to Demerouti et al. (2001), job demands are defined in the JD-R model as the social, physical or organisational characteristics of the job that require sustained physiological and psychological effort, and which are associated with physical and mental costs like exhaustion. Resources are described as psychological aspects of the self or characteristics of the job that help to achieve work goals, reduce job demands, and stimulate personal growth (Schaufeli & Taris, 2014).

The JD-R model describes negative and positive pathways as a consequence of the job demand-resources relationship (Schaufeli & Bakker, 2004). As described by Bakker et al. (2014), when job stress is high as a result of a demand-resource imbalance, it can eventually lead to burnout (characterised by a negative attitude towards work and chronic exhaustion). Bakker et al. further described the negative impacts of burnout including depression, anxiety, increased sickness absence and a decrease in work performance. On the other hand when job stress is low it can lead to increased engagement and well-being, which in turn can increase work performance. Notably, the JD-R is a model which describes, but does not explain, the mechanisms behind job stress and its related outcomes. As such, complementary frameworks are required that can account for the observed relationships between specific demands, resources and outcomes (Schaufeli & Taris, 2014); for instance the effort-recovery model (Meijman & Mulder, 1998) which is further discussed below.

## 5. Leisure, SWB and Stress

### 5.1. Leisure engagement, leisure satisfaction and SWB

Sheldon and Lyubomirsky (2004) note three determinants of SWB: situational factors, genetics and intentional activities. They suggest that situational factors (e.g. health, living conditions) make up about 10% of a person's well-being; genetics make up 50%, and the remaining 40% is determined by intentional, goal-orientated activities such as those engaged in during leisure. There is still uncertainty as to whether situational factors create lasting change in SWB. For instance, a study by Brickman, Coates, and Janoff-Bulman (1978) indicated that increased happiness and well-being following a lottery win seemed to fade over time, whereas others have found that lottery winners have maintained a higher SWB than non-lottery winners (Gardner & Oswald, 2007). However, Sheldon and Lyubomirsky note that intentional activities, like those engaged in during leisure, have the potential to result in an enduring positive change. This supports the idea that leisure is a key part of helping to create a positive, happy life.

The belief that leisure experiences are an important contributor to well-being dates back to ancient times (Aristotle, ca. 350 BCE/1980). Interestingly, support for the leisure-SWB relationship has been shown across the lifespan (Holder, Coleman, & Sehn, 2009; Paggi, Jopp, & Hertzog, 2016; Ryu & Heo, 2018) and across different cultures (Brajsa-Zganec et al., 2011; Chick et al., 2016; Ito et al., 2017; E.-Y. Lee, Yi, Walker, & Spence, 2017; Liang et al., 2013; Tadesse, 2015), and the positive impact that leisure has on SWB has been supported via a range of methods, including cross-sectional, longitudinal and experimental studies (Kuykendall et al., 2015). Moreover, it has become understood that individuals can actively pursue activities and environments that are conducive to enhancing SWB. For instance, various leisure activities have been linked to SWB including physical activities such as exercise or playing sports (Bae et al., 2017; E.-Y. Lee et al., 2017; H.-W. Lee, Shin, Bunds, Kim, & Cho, 2014; Wiese, Tay, & Kuykendall, 2018); volunteering (Doerksen, Elavsky, Rebar, & Conroy, 2014; Mojza et al., 2011); passive activities like creating artwork (Reynolds, 2010; Titus & Sinacore, 2013); and social activities like visiting friends and family (Becchetti, Giachin Ricca, & Pelloni, 2012; Brajsa-Zganec et al., 2011). Notably, both active and passive activities have been shown to have positive effects on SWB (Sonnentag, 2001).

A recent meta-analysis by Kuykendall et al. (2015) demonstrated that the way leisure is measured can play a part in how it relates to SWB. Kuykendall et al. discussed leisure engagement (as measured by leisure diversity, frequency and quantity) and leisure satisfaction in relation to SWB. While Kuykendall et al. revealed a positive relationship between the different measures of leisure engagement and SWB, they also found that the leisure-SWB relationship was stronger when leisure was measured by the variety or frequency of activities participated in, rather than the leisure quantity. In an attempt to explain their findings, Kuykendall et al. pointed out that quantity of leisure may not be a good indicator of SWB because a leisure activity often contributing the most to leisure quantity is watching television, which has been associated with decreased SWB even when controlling for leisure time physical activity (Dempsey, Howard, Lynch, Owen, & Dunstan, 2014). Furthermore, Kuykendall et al. suggested that a variety of leisure activities may be beneficial in that it may allow for individuals to more easily substitute one activity for another if participation barriers are experienced (e.g. aging, injury). As suggested by de Bloom et al. (2018) engaging in a variety of leisure activity may also provide more opportunity for meeting key psychological needs (e.g. detachment, relaxation and autonomy). Notably, leisure frequency reflects leisure variety (Kuykendall et al., 2015) and so may influence SWB through the same mechanisms.

Kuykendall et al. (2015) also examined the relationship between leisure satisfaction and SWB. In particular they argued that leisure satisfaction influences SWB more than any measure of leisure engagement, and in fact acts as a mediator in the leisure engagement-SWB relationship, an idea supported by the findings of their meta-analysis. An explanation for this relationship may be found in the DRAMMA (detachment-recovery, autonomy, mastery, meaning, affiliation) model proposed by Newman et al. (2014). According to Newman et al. leisure satisfaction is the result of key psychological needs being met through leisure engagement, which in turn contributes to SWB; a notion that has been supported by recent research (Walker & Kono, 2018). On an intuitive level it makes sense that just engaging in leisure is not enough, rather it needs to be enjoyed and satisfy needs in order to enhance SWB.

The DRAMMA model is based on the *bottom-up* theory of SWB (Diener, 1984). The bottom-up approach has been commonly used throughout the literature in attempts to explain the leisure-SWB relationship (Kuykendall et al., 2018) and differs from the *top-down* approach, which views SWB as a consequence of stable personality features and

not the result of life events or activities (Diener, 1984). Instead, proponents of the bottom-up approach advocate that SWB is the result of individuals mentally summing up the positives and negatives from different areas of their life; an idea that has been supported by introspective studies (Schimmack, Diener, & Oishi, 2002). These different *life domains* include work, family, leisure, and health (Erdogan, Bauer, Truxillo, & Mansfield, 2012). In line with the bottom-up approach, satisfaction of the leisure domain is thought to contribute to the mental tally that makes up SWB (Newman et al., 2014). Notably, leisure satisfaction has been found to be important for workers' SWB irrespective of how much leisure is valued (Kuykendall et al., 2017). In addition, leisure satisfaction has been demonstrated to have a positive impact on SWB in different cultural contexts, both Western and East Asian (Chick et al., 2016; Ito et al., 2017; Kuykendall et al., 2015).

Overall, researchers tend to agree that engaging in leisure activity can contribute to SWB, albeit the relationship is a complex one. Taking the above discussion into account, it is important to include both leisure engagement and leisure satisfaction measures when investigating the leisure-SWB relationship. Consequently, the following hypotheses were formed:

*Hypothesis 1:* The three dimensions of leisure engagement (a) leisure variety, (b) leisure frequency and (c) leisure quantity will be positively associated with SWB

*Hypothesis 2:* Leisure satisfaction will be positively associated with SWB

*Hypothesis 3:* Leisure variety and frequency will be stronger predictors of SWB than leisure quantity

## **5.2. Meeting psychological needs through leisure**

The inherent demands of work cost effort, and contribute to depleting resources (Rook & Zijlstra, 2006). In line with the JD-R model it can be seen as important to find ways to build and replenish resources so as to better cope with job demands, and to reduce the likelihood of negative outcomes relating to job stress. Following on from the initial JD-R model (Demerouti et al., 2001), an extended version was proposed which included *personal resources* rather than only job resources (Demerouti & Bakker, 2011). Personal resources refer to characteristics of the self and include resources such as extraversion,

hope, and optimism (Schaufeli & Taris, 2014). One type of personal resource identified by Schaufeli and Taris (2014) is need satisfaction. As Ryan and Deci (2000) proposed in their self-determination theory (SDT), when basic psychological needs like autonomy, competence and relatedness are met it can lead to increased motivation, engagement and personal growth, a finding which has been supported in a more recent study by Trépanier, Forest, Fernet, and Austin (2015). Schaufeli and Taris pointed out that when key psychological needs are not satisfied in the workplace, individuals may seek to satisfy these needs elsewhere.

Leisure has the potential to meet psychological needs not met by other life domains, such as work (Kuykendall et al., 2018). Expanding on previous need theories like SDT and other prominent theories including Maslow's (1954) hierarchy of needs, Ryff and Keyes (1995) dimensions of psychological wellbeing, and flow theory (Csikszentmihalyi, 1975), Newman et al. (2014) proposed an integrative model (DRAMMA) that covers the key psychological mechanisms identified in a variety of theoretical perspectives. The DRAMMA model outlines five psychological needs that have the potential to be met through leisure engagement and are reflected by satisfaction of the leisure domain, namely: detachment-recovery, autonomy, mastery, meaning and affiliation. As discussed below, satisfaction of these needs can help individuals to better cope with work demands through replenishing their personal resources and supporting SWB.

### *5.2.1. Detachment-recovery*

Psychological detachment from work is a key factor in the recovery process (Newman et al., 2014). According to the effort-recovery model (Meijman & Mulder, 1998), work demands deplete psychological and physiological resources, and in order to replenish these resources some form of recovery is required. When individuals are constantly confronted with work demands and no chance for adequate recovery, their resources continue to deplete resulting in negative effects such as high perceived job stress and impaired SWB (Sonnentag, 2001). On the other hand research has demonstrated that workers' conscious and deliberate engagement in recovery activities during leisure, ideally on a daily basis, can help to prevent and overcome high levels of job stress and enhance both SWB and work productivity (Binnewies, Sonnentag, & Mojza, 2010;

Sheldon & Lyubomirsky, 2004; Sonnentag, Venz, & Casper, 2017; Winwood et al., 2007).

Leisure is a valuable context for restoration of workers' mental and physical resources. Participating in leisure activities offers a chance to have time away from work to recover and return to a mental baseline, provided the time is not spent thinking about and engaging in job-related activities (Etzion, Eden, & Lapidot, 1998; Meijman & Mulder, 1998; Sonnentag, 2012). Notably however, the positive effects of recovery have been found to be short-lived once employees are back at work, leading researchers to suggest that regular engagement in activities that encourage detachment from work is important (Kühnel & Sonnentag, 2011; Rook & Zijlstra, 2006; Westman & Eden, 1997).

Various leisure activities have been suggested to support detachment and recovery. For example, engaging in physical activity may help workers with sedentary roles by drawing on different resources than are used in their job (Wiese et al., 2018). In addition, research has found volunteering to be effective in helping individuals to detach from work, reducing negative affect and increasing active listening at work the following day (Mojza et al., 2011). Interestingly most studies have supported active leisure (e.g. exercise) as facilitating detachment and recovery, but findings are mixed for passive (e.g. low-effort) activities (Sonnentag et al., 2017). Rook and Zijlstra (2006) suggested that low-effort activities may be better for recovery from physical fatigue rather than psychological fatigue, as passive activities may not be mentally engaging enough to help people disengage and detach from work. More recently de Bloom et al. (2018) suggested that a greater diversity of leisure activities provides more possibilities for experiencing recovery.

### 5.2.2. *Autonomy*

As described by Newman et al. (2014), autonomy refers to the ability of individuals to freely choose and willingly engage in their activities. An example of autonomy at work, also referred to as decision latitude, is the ability to decide when and how to complete work tasks (Sanne, Torp, Mykletun, & Dahl, 2005). A lack of autonomy at work means workers are unable to regulate their work speed and effort, and may result in increased job stress (Zijlstra & Sonnentag, 2006). A number of models highlight autonomy as a key psychological need essential for enhancing SWB (e.g., Maslow, 1954; Ryan & Deci,

2000; Ryff & Keyes, 1995; Sonnentag & Fritz, 2007) and as a resource that can help to reduce job stress (Karasek, 1979). In general, autonomy is thought to have its impact due to the desire for individuals to feel in control of their lives, and for their choices to reflect their own values rather than being pressured by others (Kuykendall et al., 2018). As a domain, leisure tends to provide more scope for autonomy than domains like work and household activities (Graef, Csikszentmihalyi, & McManama Gianinno, 1983; Iso-Ahola & Mannell, 2004); moreover, autonomy is considered by some to be a central aspect of leisure (Argyle, 2013; Carruthers & Hood, 2007; Kelly, 1972). Leisure is therefore an ideal context for experiencing autonomy, and may be especially beneficial for reducing job stress and supporting SWB when autonomy is not experienced in the workplace.

### 5.2.3. *Mastery*

Mastery is defined as conquering challenges, gaining skills and bettering oneself (Newman et al., 2014). Csikszentmihalyi's (1975) widely known flow theory champions the notion that a match between skill and challenge results in a sense of total absorption. The outcome of this is mastery, because as skills increase through continuous engagement, challenge also needs to increase, resulting in ongoing personal growth and development. Additionally, being in flow has been found to increase positive affect (Pinquart & Silbereisen, 2010), and engagement in challenging leisure activities has been linked with increased SWB (Bryce & Haworth, 2002; Sonnentag & Fritz, 2007; Tsaor, Cheng, & Lin, 2015; Wiese et al., 2018). Iso-Ahola and Mannell (2004) suggested that by choosing to participate in challenging leisure which fosters problem-solving, individuals may then be able to see stressful events at work as challenges rather than threats and consequently experience less job stress. Leisure provides a valuable setting for achieving mastery, in particular those activities that involve learning new skills, for example learning to play an instrument or speak a different language (Kuykendall et al., 2015).

### 5.2.4. *Meaning*

Meaning is achieved through activities or experiences by which a person feels a sense of gain or value, and can vary between individuals and cultures (Iwasaki, 2008). Participating in leisure activities which provide a sense of meaning, for instance



volunteering or engaging in prayer, can help to increase self-esteem, positive emotion, and personal growth, in turn helping to build resilience which can be drawn on to cope with stress (Denovan & Macaskill, 2017; Newman et al., 2014). Meaningfulness has been viewed as a key element of SWB, and it has been suggested that engaging in personally meaningful activities has a greater impact on SWB than participating in a larger number of activities with less meaning (Eakman, Carlson, & Clark, 2010). In other words, engaging in leisure activities just for the sake of it may be less helpful than participating in activities that are valued by the individual. For example religious activity is considered by some to be meaningful and has been linked to SWB (Diener, Tay, & Myers, 2011), however, going to church and praying may not help to improve SWB for someone who does not value these activities.

#### 5.2.5. *Affiliation*

It has been proposed that activities with others promote higher SWB than activities conducted alone, as they meet the psychological need for affiliation (Newman et al., 2014). The notion that affiliation is important for SWB has been supported by numerous theories including Maslow's (1954) hierarchy of needs, self-determination theory (Ryan & Deci, 2000) and the leisure and well-being model (Carruthers & Hood, 2007). Given the social nature of leisure, it can facilitate the development of relationships and strengthen beliefs about the social support available (Denovan & Macaskill, 2017; Iso-Ahola & Mannell, 2004). For instance, Major (2001) found that social affiliation is considered a benefit by those participating in running as a leisure activity. In addition, psychological benefits can depend on who people affiliate with. Affiliating with friends during leisure activities has been shown to increase immediate SWB, while spending leisure time with one's spouse increases more global SWB (Larson, Mannell, & Zuzanek, 1986).

In line with the JD-R model, research has suggested that fulfilling the key psychological needs of detachment-recovery, autonomy, mastery, meaning and affiliation leisure can help to reduce job stress by increasing personal resources and the ability to cope with work demands (Newman et al., 2014; Schaufeli & Taris, 2014). A decrease in job stress can in turn lead to an increase in SWB. Additionally there is extensive support for the

idea that SWB can be enhanced through a bottom-up process, specifically by satisfying the aforementioned needs (Newman et al., 2014). In order to reduce job stress and enhance SWB, it could be argued that workers must find a way to meet their psychological needs in a sustainable way. Engaging in leisure activity has been recognised as a valuable context for need satisfaction, and leisure satisfaction reflects the fulfillment of these needs (Kuykendall et al., 2015; Newman et al., 2014; Walker & Kono, 2018).

As such, the following hypotheses were proposed:

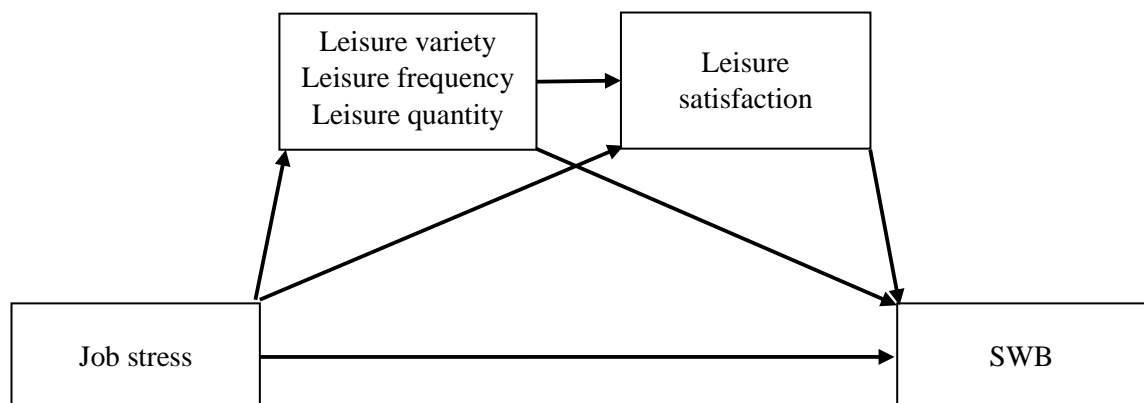
*Hypothesis 4:* Job stress will be negatively associated with SWB

*Hypothesis 5:* The relationship between job stress and SWB will be mediated by leisure variety and leisure satisfaction

*Hypothesis 6:* The relationship between job stress and SWB will be mediated by leisure frequency and leisure satisfaction

*Hypothesis 7:* The relationship between job stress and SWB will be mediated by leisure quantity and leisure satisfaction

The research model presented in Figure 1 shows the predicted relationships between the study variables.



*Figure 1.* Conceptual model showing the relationship between job stress and SWB

## 6. Method

### 6.1. Research Design

Over the past few decades survey response rates have been on the decline, resulting in concerns about the quality of the data gathered (Dusek, Yurova, & Ruppel, 2015). Due to the popularity and widespread use of Facebook, researchers have begun using it as a medium for participant recruitment and shown it to be a viable data collection method (Pedersen & Kurz, 2016; Rife, Cate, Kosinski, & Stillwell, 2016; Thornton et al., 2016). Hence, the present study employed a snowball sampling method, using Facebook as the means for participant recruitment.

An online survey link was distributed to participants through Facebook, capturing data at a single point in time in a cross-sectional, between subjects design. The sample was one of convenience due to the use of the author's Facebook network initially, subsequently relying on snowballing to increase participation numbers.

### 6.2. Participants

Demographic information is outlined in Table 1. Of the 232 individuals who entered the online survey, 24 did not qualify as they were not currently employed in NZ. Data from an additional 21 individuals were excluded due to the participants not responding to any questions on the SWB scale. The final sample comprised 187 NZ workers aged between 16 to 81 years ( $M = 36.8$ ;  $SD = 12.3$ ). The majority were female ( $n = 152$ ; 81.3%), which is not considered to be representative of the NZ workforce. According to Statistics New Zealand (2018), the NZ workforce is made up of 47% females. Furthermore, most who completed the survey were of NZ European ethnicity ( $n = 155$ ; 82.9%).

Table 1

*Demographic information of participating workers (N = 187)*

	<i>N</i>	%		<i>N</i>	%
Gender			Work hours		
Male	35	18.7	1-15	20	10.7
Female	152	81.3	16-29	48	25.7
Ethnicity			30-45	98	52.4
NZ European	155	82.9	46+	21	11.2
Māori	5	2.7	Work type		
Pacific	5	2.7	Full-time	107	57.2
Asian	4	2.1	Part-time	61	32.6
Other	18	9.6	Casual	10	5.3
Study Hours			Missing	9	4.9
I don't study	102	54.5	Work activity		
1-15	40	21.4	Mostly sitting	98	52.4
16-29	26	13.9	Sitting and standing equally	41	21.9
30-45	15	8.0	Mostly standing	24	12.8
46+	3	1.6	Continuous walking	16	8.6
			Heavy manual labour	7	3.7
			Missing	1	0.5

### 6.3. Measures and Materials

#### 6.3.1. Demographic and occupation details

Participants were asked to complete questions relating to their age, gender, and ethnicity. Education level was not captured due to levels of education generally not revealing strong links with self-reported well-being (Diener, Lucas, et al., 2018). In addition, several questions were asked to determine participants' work and study situations. These included participants' work arrangement (e.g. full-time, part-time), work hours, study hours, and level of physical activity at work. The single item activity question is a reliable measure of occupational physical activity (Yore et al., 2005). Participants were asked to describe their "usual level of physical activity while on the job", selecting from the responses categories: mostly sitting, sitting and standing equally, mostly standing, continuous walking, and heavy manual labour (Ekenga, Parks, Wilson, & Sandler, 2015).

### 6.3.2. Job stress

Job stress was measured using the English version of the Demand–Control–Support Questionnaire (DCSQ), as adapted by Sanne et al. (2005). The DCSQ version used in the present study is based on the Swedish DCSQ, which is a shortened version of the extensively used Job Content Questionnaire (JCQ; Karasek et al., 1998). The DCSQ is an established self-report tool for assessing job stress. The alpha coefficient for the present study was .72.

The DCSQ is made up of 16 questions that cover three dimensions: psychological demands (5 questions;  $\alpha = .68$ ), decision latitude (5 questions;  $\alpha = .75$ ) and social support (6 questions;  $\alpha = .86$ ). Items measuring psychological demands refer to perceived workload (e.g. "I have sufficient time for all of my work tasks"); those measuring decision latitude reflect the sense of control or autonomy felt regarding making decisions at work (e.g. "I have the possibility to decide for myself what should be done in my work"); and the social support items relate to the support felt from colleagues and superiors (e.g. "my co-workers are there for me"). Participants were asked to select from four response categories ranging from one (*strongly disagree*) to four (*strongly agree*). Items on each subscale were summed (items four and eight were reversed scored) and averaged to give a total mean score. Higher scores reflected greater demand, decision latitude and support.

The results from the principal components analysis (PCA) with varimax rotation are presented in Appendix A. Using the criterion of Kaiser's eigenvalue  $> 1$ , the factorial pattern in the present sample reflected the three-factor solution of the DCSQ and explained 54% of the total variance. Eigenvalues for the psychological demands, decision latitude, and social support subscales were 2.37, 2.90, and 3.41, respectively. Loadings ranged from 0.54 to 0.70 for the demands factor, 0.46 to 0.81 for the latitude factor, and 0.69 to 0.91 for the support factor.

Job stress was calculated using the quotient approach in order to provide a continuous variable (Courvoisier & Perneger, 2010). This involved dividing the subscale score for demand by the score for decision latitude. The subtraction approach to job stress was also calculated (subtracting the decision latitude score from the demand score), but did not reveal differences in the statistical analysis and thus the quotient scores were used. Scores from the support subscale were not used in the data analysis.

### 6.3.3. *Leisure variety, frequency and quantity*

The leisure activity categories used for the present study were those outlined in the adapted Victoria Longitudinal Study (VLS) activity questionnaire (Jopp & Hertzog, 2010); however, the travel category was excluded as it was considered to be ambiguous in terms of purpose and meaning. Thus, the 10 leisure activity categories used were: physical activities, religious activities, games, watching TV, crafts, private social, public social, developmental activities, experiential activities, and technology use.

To assess leisure frequency, participants were asked to indicate on a 6-point scale how often in the past month they had engaged in each of the leisure categories: 0 = *never*, 1 = *once a month*, 2 = *2-3 times a month*, 3 = *once a week*, 4 = *2-3 times a week*, and 5 = *4+ times a week*. Subsequently, leisure variety was assessed by the number of different leisure categories participants had engaged in at least once per month, as specified by their answers to the leisure frequency questions. It was thought that by asking participants to indicate their leisure habits over the past month, rather than the past day or week, it would likely capture a wider variety of leisure engagement.

To measure leisure quantity, participants were asked to estimate their total time in hours and minutes spent engaging in each of the 10 leisure activity categories over the past month. The overall quantity was calculated by totaling the hours and minutes entered for each leisure activity category, dividing the minutes by 60, and adding it to the hours data.

### 6.3.4. *Leisure satisfaction*

Leisure satisfaction was measured using the Leisure Satisfaction Scale (LSS) developed by Kuykendall et al. (2017). The LSS consists of five items, requiring participants to rate their level of agreement with four positive leisure statements, such as "my leisure activities have been enjoyable"; and one negative leisure statement, "my leisure activities have been unfulfilling", which was reverse scored. Responses were given on a 7-point scale, ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The LSS has demonstrated good validity and reliability (Kuykendall et al., 2017), and for the present study an alpha coefficient of .85 was obtained.

### 6.3.5. Subjective well-being

There is a number of SWB measures available, covering a wide variety of dimensions, however there is yet to be a gold standard (Linton et al., 2016). Furthermore, due to its subjective nature, data on SWB are generally collected via self-report (Diener et al., 1997). In selecting a measure for the present study, the researcher considered four criteria: (1) that the scale was brief, so as not to place an undue burden on the participants; (2) that the scale measured overall SWB, rather than only the affective or cognitive component; (3) that the scale had satisfactory psychometric properties; and (4) that the scale was suitable for the target population.

The present study utilised the BBC Subjective Well-being scale (BBC-SWB; Kinderman, Schwannauer, Pontin, & Tai, 2011); a self-report measure shown to be a reliable and valid measure of general SWB assessed online (Pontin, Schwannauer, Tai, & Kinderman, 2013). The internal consistency for the scale has ranged between Cronbach's alpha .945 and .944 (Kinderman et al., 2011; Pontin et al., 2013). The alpha coefficient for the current study was .946.

The BBC-SWB is made up of 24 items, which measure physical (e.g. "are you satisfied with your physical health?";  $\alpha = .82$ ), psychological (e.g. "do you feel you have a purpose in life?";  $\alpha = .94$ ) and relational (e.g. "are you satisfied with your personal and family life?";  $\alpha = .82$ ) aspects of wellbeing. Participants completing the scale were instructed that the scale attempts to measure "how happy you feel generally in most parts of your life". In addition, participants were asked to indicate to what extent they agree with each of the statements, selecting from five response options: 0 = *not at all*, 1 = *a little*, 3 = *moderately*, 4 = *very much*, and 5 = *extremely*. The item assessing feelings of depression and anxiety was reversed scored.

A PCA with varimax rotation was conducted, using the criterion of Kaiser's eigenvalue > 1. The factorial pattern in the present sample loaded on the same factors as previously identified by Kinderman et al. (2011), and explained 59% of the total variance. Eigenvalues for psychological well-being, relationships, and physical health and well-being subscales were 6.46, 3.89, and 3.76, respectively. Loadings ranged from 0.41 to 0.78 for the psychological factor, 0.41 to 0.82 for the relationships factor, and 0.41 to 0.78 for the physical health factor. For the present study, the overall SWB score was used for

analysis rather than the three subscale scores, as this better aligned with the research hypotheses.

#### **6.4. Procedure**

Once ethical approval from Massey University was gained, an electronic survey was developed and uploaded to Qualtrics. The survey link was then posted on the author's Facebook page with a brief description of the survey and a request to share the survey to help with gaining participation numbers, in effect "snowballing" participant recruitment. When participants clicked on the survey link they were directed to a page with information about the study, including the purpose, their right to anonymity, and the intended use of the information. They were advised that they have the right to withdraw their consent at any stage during the process of completing the survey. Consent was obtained once participants indicated that they had read and understood the information sheet, which outlined that completing the survey implies consent.

The link remained active for three weeks, and participants were given the opportunity at the end of the survey to enter their email address if they wished to receive a summary of the results upon completion of the study. To ensure anonymity, participants' email addresses were not linked to their survey responses.

#### **6.5. Data Analysis**

Statistical Package for the Social Sciences (SPSS) version 25.0 (IBM Corp, 2017) was used for data analysis. The initial step once the data collection was completed, was to screen the data for problems like non-completion and inappropriate responses. A missing values analysis revealed four cases with >10% missing data (10.3%, 15.5%, 17.2% and 27.6%) on the SWB and job stress scales. The cases were kept in the dataset, and the scale scores were computed as item means for the SWB, job stress, leisure satisfaction and leisure frequency scales. For leisure quantity, items were left blank when participants reported that they did not participate in a particular leisure activity over the past month. Three participants did not enter any response for leisure quantity, but provided data for the other leisure scales. The data from these participants were included in the analysis, using pairwise exclusion of missing data as recommended by Pallant (2007).



The data were checked for normality and outliers. Pearson's correlations were conducted with transformed and non-transformed data; no different patterns of findings were identified, therefore the results report the findings of the non-transformed data. The 5% trimmed mean revealed that for all of the variables, except leisure quantity, there were no extreme values having a strong influence on the mean. Two outliers were identified in a histogram of the leisure quantity data. Upon further investigation it was obvious that the two data points were calculation errors by the participants, as the leisure quantity hours entered (878 and 1778 hours) exceeded the number of hours in a month (i.e. 24 hours a day x 30 days in a month = 720 hours). As suggested by Field (2013), the two outliers were changed to the next highest score in the data set plus one unit (hour).

To assess whether the DCSQ and BBC-SWB scales reflected 3-factor models, a PCA with varimax rotation was performed. Internal consistency was determined for all scales, and subscales where relevant, using Cronbach's alpha coefficient. Descriptive statistics were then calculated for the demographic data and the study variables.

A two-tailed independent *t*-test was conducted to compare the effects of gender on each of the study variables, and a one-way between subjects ANOVA was conducted to compare the effect of the other demographic variables, except for age, on the key study variables (i.e. ethnicity, work hours, study hours, and occupational physical activity). Due to the difference in group sizes, the Hochberg's GT2 test was used for post hoc analysis when a difference in means was indicated by the ANOVA (Field, 2013). Age was included in the correlation and regression analyses.

Ahead of the more complex regression analysis, the zero-order correlations among the study variables were examined using Pearson correlation coefficient. A hierarchical linear regression analysis was then conducted, with  $p < .05$  considered statistically significant. To ensure that the individual importance of each predictor variable could be observed, multicollinearity was assessed. Using the correlation matrix it was revealed that leisure variety and leisure frequency were strongly correlated ( $r = .737$ ). According to Field (2013), correlations above .80 are a cause for concern, hence both leisure variety and leisure frequency were included in the model. In addition, the assumption of independent errors was met; the Durbin-Watson test value (2.04) demonstrated that the residuals were uncorrelated. No more than 5% ( $n = 7$ ) of the cases had standardized residuals above 2, and no more than 1% ( $n = 0$ ) had absolute values above 2.5, indicating that the regression model fitted the data well (Field, 2013).

Three mediation analyses were run to assess for mediating effects each of the leisure engagement dimensions (leisure variety, leisure frequency and leisure quantity) and leisure satisfaction on the relationship between job stress and SWB. The mediation analyses were conducted in SPSS using the PROCESS macro developed by Andrew Hayes (2013). It has been argued (Field, 2013; Pardo & Román, 2013) that using methods based on bootstrap techniques (e.g. PROCESS) are preferable for mediation analysis, compared to causal step methods commonly used in the past like Baron and Kenny's method. Baron and Kenny (1986) described a mediating variable as one which: (a) has a significant relationship with the independent variable (i.e. leisure variety/leisure frequency/leisure quantity); (b) has a significant relationship with the dependent variable (i.e. SWB); and (c) when controlled for, results in the relationship between the independent and dependent being no longer significant. However, Pardo and Román (2013) point out that criterion (a) does not necessarily have to be met in order to assess for mediation, because the relationship between the independent and dependent variable could be altered by other moderating or suppressing variables. In addition, Baron and Kenny's method may lack statistical power compared to other methods (Hayes, 2013; Pardo & Román, 2013) and it does not include a test of indirect effects, although Baron and Kenny advocated the use of the Sobel test. Bootstrap techniques allow for estimation of the indirect effect and confidence intervals (CI) for the mediation model. In the present study, the CI for the indirect effects was a bias-corrected and accelerated (BCa) bootstrapped CI based on 5000 samples.

## 7. Results

### 7.1. Demographic variables

A two-tailed independent *t*-test was conducted to compare the effects of gender on each of the study variables (Table 2). On average, males experienced greater leisure satisfaction than females, and females experienced higher levels of job stress than males. There was no significant effect of gender on the other study variables; however when the leisure activity categories were looked at individually, frequency scores for the "games" leisure category were higher for males than females.

A one-way between subjects ANOVA was conducted to compare the effect of study hours on each of the study variables. There was a significant effect of study hours on job stress,  $F(4, 181) = 2.82, p < .05$ . Post hoc comparisons indicated that the mean score for the 30-45 study hours per week group ( $M = 1.17, SD = 0.56$ ) was significantly higher than the no study ( $M = 0.93, SD = 0.22$ ), and the 1-15 study hours group ( $M = 0.92, SD = 0.24$ ). There was no significant effect of ethnicity, work hours or occupational physical activity level on any of the study variables.

Table 2  
*Variables by gender*

Gender	Mean		SD		<i>t</i> -value
	Male	Female	Male	Female	
Age	35.32	37.15	13.41	12.13	0.75
SWB	3.58	3.34	0.68	0.65	4.14
Job Stress	0.83	0.99	0.16	0.31	2.87**
Leisure satisfaction	5.64	5.10	0.84	1.09	-2.73**
Leisure variety	7.29	7.34	1.15	1.34	0.20
Leisure frequency	2.57	2.48	0.46	0.54	-0.89
Leisure quantity	143.56	139.62	78.74	83.61	-0.25
Leisure activity category					
Physical	3.49	3.53	1.54	1.46	0.15
Religious	0.31	0.63	1.11	1.30	1.48
Games	3.09	2.15	1.98	1.87	-2.64**
TV	4.26	4.34	1.34	1.22	0.34
Crafts	1.06	1.00	1.47	1.40	-0.22
Social-private	3.00	2.98	1.28	1.13	-0.09
Social-public	0.94	0.97	1.31	1.16	0.11
Developmental	1.94	1.95	1.86	1.64	0.04
Experiential	2.80	2.39	1.61	1.92	-1.32
Technology	4.80	4.88	0.58	0.51	0.77

Note: \*\* $p < .01$

## 7.2. Descriptive statistics

Descriptive statistics for each of the study variables are presented in Table 3.

Table 3

*Descriptive statistics, including score range, for the study variables*

Variable	Mean	SD	Range Min-Max
Age	36.84	12.34	16 - 81
SWB	3.38	0.66	1.25 - 4.79
Leisure variety	7.33	1.30	4.00 - 10.00
Leisure frequency	2.50	0.53	1.20 - 4.00
Leisure quantity	140.35	82.53	17.00 - 460.00
Leisure satisfaction	5.20	1.07	2.20 - 7.00
Job stress	0.96	0.29	0.35 - 2.74

The results for leisure variety revealed that the majority (57.2%) of respondents participated in either seven ( $n = 57$ ) or eight ( $n = 50$ ) leisure activity categories over the past month. The frequency of participation in the different leisure activity categories is shown in Figure 2. Technology use (e.g. non-work related computer use, social media, photography) was the leisure activity most frequently engaged in, with 91% ( $n = 171$ ) of participants indicating that they have used technology for leisure 4+ times a week over the past month. Additionally, technology was the only leisure category which all participants engaged in at least 2-3 times over the past month (i.e. no participants selected the responses "never" or "once a month"). Watching TV was also frequently engaged in, with 68% ( $n = 127$ ) reporting watching TV for leisure 4+ times a week. Religious activity (e.g. attend church, engage in prayer or meditation) was the least frequently engaged in, with 80% ( $n = 149$ ) of participants indicating that they never took part in religious activities over the past month. Furthermore, over half of the respondents ( $n = 103$ , 55%) did not engage in any craft activities (e.g. woodwork, decorating, sewing).

As seen in Figure 3, the data for leisure quantity somewhat reflected that of leisure frequency. On average, participants spent more time on leisure involving technology ( $M = 42.85$ ,  $SD = 68.99$ ) than any other leisure category. This did not include watching TV, which was the leisure category that had the second highest average leisure quantity ( $M$

= 35.35, SD = 45.47). The least amount of leisure time was spent on religious activities (M = 0.96, SD = 3.11).

The data revealed that time spent on leisure varied widely between individuals. Participants' scores ranged between 17 hours to 460 hours of leisure activity per month (M = 140.35, SD = 82.53).

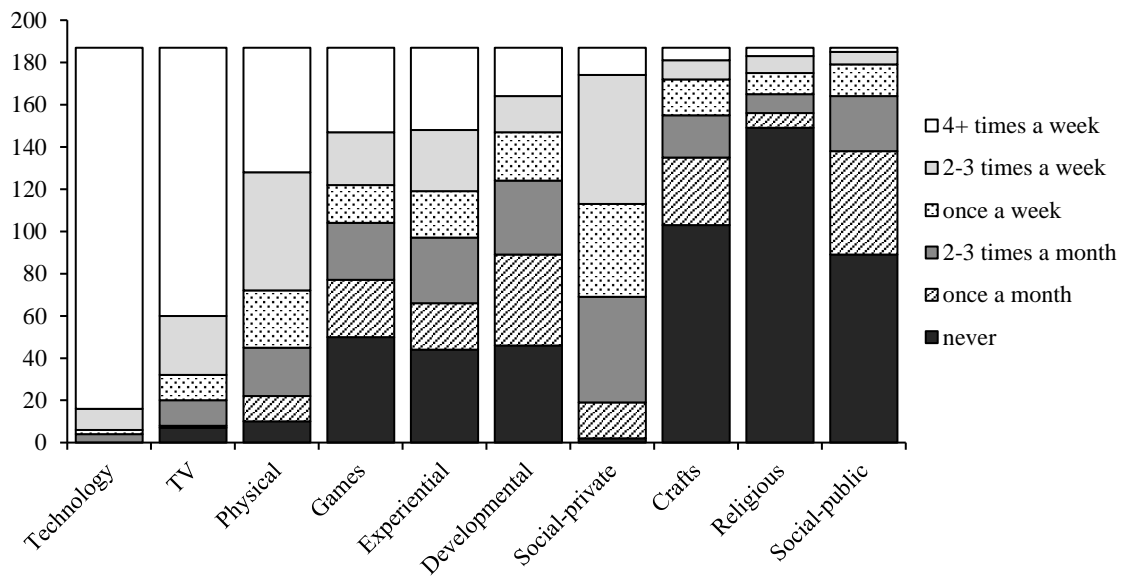


Figure 2. Frequency of different leisure activities engaged in over the past month

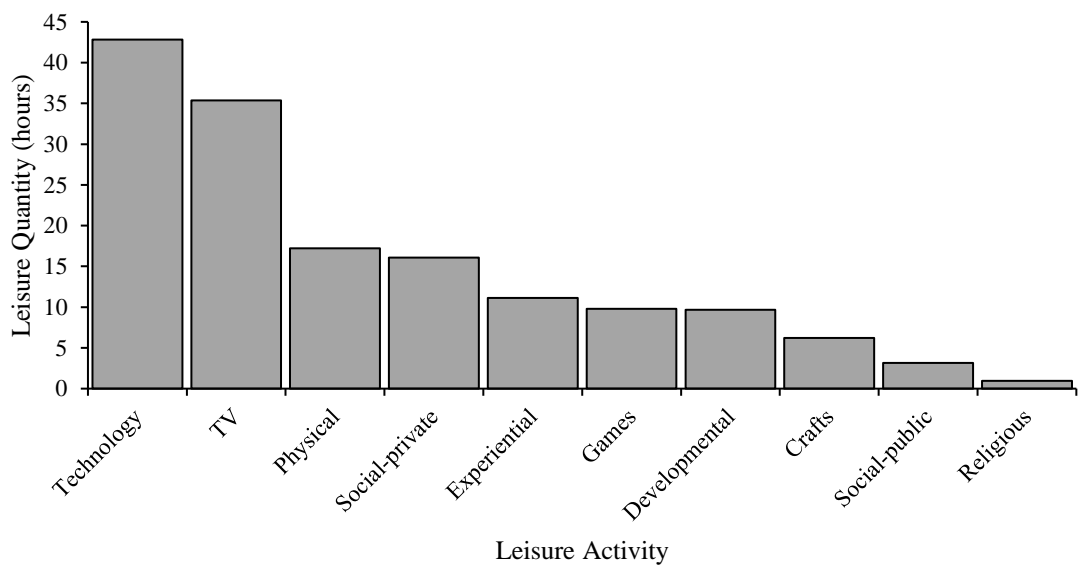


Figure 3. Average time spent on each leisure activity over the past month

### **7.3. Participation in leisure activities**

Pearson's correlations were used to assess the bivariate relationships between age, SWB, leisure engagement, leisure satisfaction, job stress, and participation in each of the 10 leisure activity categories. As shown in Table 4, physical activity (e.g. running, tennis, hiking) and private social activity (e.g. going out with friends, visiting friends/relatives) were significantly related to SWB, leisure satisfaction and job stress. Physical activity was demonstrated to have a stronger association with each of the above compared to private social activity. Age was significantly linked with public social activity (e.g. volunteer, attend organised social events) and experiential activity (e.g. gardening, reading for leisure), but not with physical or private social activity.

Multiple regression analyses were conducted to assess how well each of the leisure activity categories predicted changes in leisure satisfaction and in SWB. As demonstrated in Table 5, the results revealed that physical activity, watching TV, and private social activity were significant positive predictors of leisure satisfaction, whereas physical activity was the only leisure activity which was a significant positive predictor of SWB. The results showed that 26.9% of the variance in leisure satisfaction was accounted for by frequency of engagement in the 10 leisure activity categories, and 16.8% of the variance in SWB could be explained by frequency of engagement in the leisure activity categories.

Table 4

*Pearson's correlations of study variables*

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Age																
2. SWB	.081															
3. Leisure variety	.185**	.141*														
4. Leisure frequency	.306***	.164*	.737***													
5. Leisure quantity	.017	.088	.221**	.377***												
6. Leisure satisfaction	.044	.371***	.134*	.288***	.314***											
7. Job stress	-.319***	-.383***	-.098	-.173**	.029	-.148*										
8. Physical	.049	.379***	.203**	.375***	.198**	.432***	-.190**									
9. Religious	.129*	.022	.388***	.370***	.010	.007	.104	.001								
10. Games	.114	-.040	.220**	.395***	.143*	.008	.007	-.186**	.031							
11. TV	.102	-.015	.167*	.195**	.251***	.101	-.026	-.056	-.056	-.102						
12. Crafts	.113	.031	.494***	.540***	.151*	.099	-.055	.125*	.144*	.210**	.050					
13. Social-private	.044	.236**	.193**	.345***	.190**	.310***	-.147*	.261***	.079	.104	-.052	.089				
14. Social-public	.156*	.072	.455***	.365***	.150*	.076	-.097	.107	.089	.027	.045	.133*	.149*			
15. Developmental	.101	.013	.261***	.361***	.129*	-.046	-.086	.054	.096	-.027	.005	-.091	-.042	.029		
16. Experiential	.257***	-.020	.283***	.516***	.098	.127*	-.097	.102	.080	.054	.035	.238**	-.074	-.026	.112	
17. Technology	-.023	-.022	.083	.169*	.123*	-.030	-.111	.088	-.050	.046	-.014	.112	-.102	.009	-.002	.100

Note: \*p < .05 (one-tailed), \*\*p < .01 (one-tailed), \*\*\*p < .001 (one-tailed)

Table 5

*Multiple regression analysis of the frequency of engaging in each leisure category as predictors of leisure satisfaction and SWB*

Predictors	B	Std. Error	$\beta$	<i>t</i> -value	
Criterion variable: leisure satisfaction					
(Constant)	3.503	.758		4.62	
Physical	.290	.052	.399***	5.63	
Religious	-.006	.056	-.007	-0.11	
Games	.041	.039	.074	1.06	
TV	.118	.056	.138*	2.10	
Crafts	-.013	.054	-.017	-0.24	
Social-private	.191	.064	.207**	2.98	
Social-public	.002	.060	.002	0.04	
Developmental	-.045	.042	-.071	-1.08	
Experiential	.064	.039	.111	1.63	
Technology	-.114	.136	-.055	-0.84	
<i>F</i> -value					6.46***
<i>R</i> <sup>2</sup>					.269
Criterion variable: SWB					
(Constant)	2.775	.498		5.57	
Physical	.160	.034	.358***	4.74	
Religious	.007	.037	.014	0.20	
Games	.008	.025	.022	0.30	
TV	.009	.037	.017	0.24	
Crafts	-.010	.035	-.022	-0.29	
Social-private	.076	.042	.134	1.80	
Social-public	.008	.039	.014	0.20	
Developmental	.000	.028	.001	0.01	
Experiential	-.014	.026	-.040	-0.56	
Technology	-.043	.089	-.034	-0.48	
<i>F</i> -value					3.57***
<i>R</i> <sup>2</sup>					.168

Note: \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

## 7.4. Hypothesis testing

### 7.4.1. Correlations among variables

Pearson's correlations were used to assess the bivariate relationships between the study variables and to test hypotheses 1, 2 and 4. Due to the directionality of the hypotheses, a one-tailed correlation was utilised. As seen in Table 4, age was significantly correlated with leisure variety, leisure frequency and job stress. SWB was significantly correlated with all of the variables apart from age and leisure quantity. Notably, the correlation



between SWB and leisure variety was weak but significant, as was that between SWB and leisure frequency. That both variety and frequency of leisure were related to SWB is unsurprising given that leisure variety and leisure frequency revealed a strong and significant correlation with each other. Leisure satisfaction was associated with higher SWB, as well as with more leisure variety, frequency, and quantity. Job stress was associated with lower SWB, leisure satisfaction, and less leisure frequency.

The results of the correlation analysis supported hypothesis 1a, that leisure variety would be positively associated with SWB, and hypothesis 1b, that leisure frequency would be positively associated with SWB. However hypothesis 1c, that leisure quantity would be positively associated with SWB, was not supported. Both hypothesis 2, that leisure satisfaction would be positively associated with SWB, and hypothesis 4 that job stress would be negatively associated with SWB, were accepted.

#### *7.4.2. Hierarchical regression analyses*

Hierarchical linear regression analysis was conducted to assess how well the variables predicted changes in SWB, and to test hypothesis 3. Firstly, age and gender were entered into the model as control variables. As demonstrated in Table 6, the results revealed that neither age nor gender were significant predictors of SWB ( $p > .05$ ). Next, job stress and then leisure satisfaction were added based on previous literature revealing job stress (Erdogan et al., 2012) and leisure satisfaction (Kuykendall et al., 2015) to be predictors of SWB. Lastly, the three leisure engagement variables were entered. The results showed that job stress accounted for an additional 12.4% of the variance in SWB, leisure satisfaction accounted for an additional 9.8% of the variance, and the leisure engagement measures only accounted for an additional 0.7% of the variance; both job stress and the leisure satisfaction added a significant change to the value of  $R^2$  ( $p < .001$ ). The total of 25.7% leaves a large amount of variation in SWB unexplained. In addition, the adjusted  $R^2$  of the final model differed slightly from the  $R^2$ , indicating that when used with whole population, rather than this sample, the model would account for around 3.1% less variance in SWB.

The  $t$ -values revealed job stress ( $t(179) = -4.79$ ,  $p < .001$ ) to be a marginally better predictor of SWB than leisure satisfaction ( $t(179) = 4.46$ ,  $p < .001$ ). Additionally, the  $t$ -values demonstrated that leisure variety ( $t(179) = 1.19$ ,  $p > .05$ ) was a stronger predictor

of SWB than leisure frequency ( $t(179) = -.540, p > .05$ ), and both were stronger predictors than leisure quantity ( $t(179) = -.094, p > .05$ ). However, overall the predictive ability of leisure variety, frequency and quantity was not significant. Consequently hypothesis 3, that leisure variety and frequency would be stronger predictors of SWB than leisure quantity, was not supported.

Table 6

*Hierarchical regression analysis of age, gender, job stress, leisure satisfaction and leisure engagement as predictors of SWB*

Predictors	B	Std. Error	$\beta$	$t$ -value	$R^2$	$\Delta R^2$
Step 1					.028	.028
(Constant)	3.16	.157		20.123		
Age	.005	.004	.089	1.203		
Gender	.248	.125	.147*	1.985		
Step 2					.152	.124***
(Constant)	4.26	.263		16.220		
Age	-.002	.004	-.037	-.504		
Gender	.104	.121	.061	.859		
Job stress	-.862	.170	-.382***	-5.063		
Step 3					.250	.098***
(Constant)	3.19	.334		9.54		
Age	-.002	.004	-.044	-.627		
Gender	.008	.116	.005	.071		
Job stress	-.789	.161	-.348***	-4.87		
Leisure satisfaction	.198	.041	.321***	4.78		
Step 4					.257	.007
(Constant)	2.94	.398		7.39		
Age	-.002	.004	-.046	-.631		
Gender	.017	.117	.010	.149		
Job stress	-.781	.163	-.346***	-4.79		
Leisure satisfaction	.200	.045	.324***	4.46		
Leisure variety	.060	.050	.118	1.19		
Leisure frequency	-.074	.138	-.060	-.540		
Leisure quantity	-5.57	.001	-.007	-.094		

Note: \* $p < .05$ , \*\*\* $p < .001$

### 7.4.3. Mediation analysis

Mediation analyses were run to test hypotheses 5-7. Table 7 displays a summary of the linear regression models used to examine the direct effect of job stress on SWB, and mediation (indirect effect) by the leisure engagement dimensions (leisure variety, frequency and quantity) and leisure satisfaction.

Model 1 tested leisure variety and leisure satisfaction as mediators of the relationship between job stress and SWB. The total effect of job stress on SWB was significant ( $b = -.864, p < .001$ ), and the direct effect was also significant ( $b = -.745, p < .001$ ). While there was a decrease between the total effect value and the direct effect value, indicating potential mediation, the indirect effect was non-significant for job stress on SWB through leisure variety and satisfaction ( $b = -.008, \text{BCa CI } [-.032, .004]$ ). Therefore hypothesis 5, that the relationship between job stress and SWB would be mediated by leisure variety and satisfaction, was not supported.

Model 2 tested leisure frequency and leisure satisfaction as mediators of the relationship between job stress and SWB. The total effect of job stress on SWB was significant ( $b = -.864, p < .001$ ), and the direct effect was also significant ( $b = -.752, p < .001$ ). Additionally, there was a weak but significant indirect effect of job stress on SWB through leisure frequency and satisfaction ( $b = -.034, \text{BCa CI } [-.073, -.005]$ ). As such hypothesis 6, that the relationship between job stress and SWB would be mediated by leisure frequency and satisfaction, was supported.

Model 3 tested leisure quantity and leisure satisfaction as mediators of the relationship between job stress and SWB. The total effect of job stress on SWB was significant ( $b = -.863, p < .001$ ) and the direct effect was also significant ( $b = -.758, p < .001$ ). While there was a significant indirect effect of job stress on SWB through leisure satisfaction ( $b = -.111, \text{BCa CI } [-.250, -.014]$ ), there was no significant indirect effect through both leisure quantity and satisfaction. Therefore hypothesis 7, that the relationship between job stress and SWB would be mediated by leisure quantity and satisfaction, was not supported.

Table 7

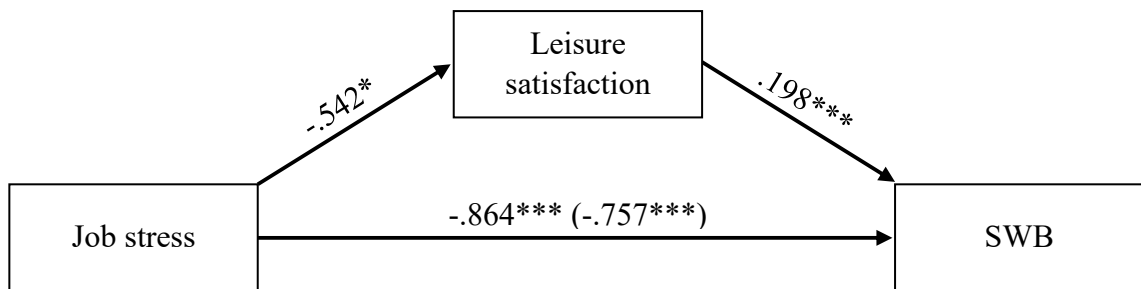
*Results of path coefficients, standard errors, and bootstrap tests for the effect of job stress on SWB through leisure variety, frequency, quantity, and leisure satisfaction*

Effect	Path	B	SE	BCa 95% CI	
				Lower	Upper
Model 1 (leisure variety)					
<i>Direct effect</i>					
	Job stress→ SWB	-.745***	.147		
<i>Indirect effect</i>					
	Job stress→ Variety→ SWB	-.015	.021	-.066	.021
	Job stress→ Satisfaction→ SWB	-.097	.062	-.236	.007
	Job stress→ Variety→ Satisfaction→ SWB	-.008	.009	-.032	.004
	Total indirect effect	-.120	.067	-.264	-.001
	Total effect	-.864***	.153		
Model 2 (leisure frequency)					
<i>Direct effect</i>					
	Job stress→ SWB	-.752***	.148		
<i>Indirect effect</i>					
	Job stress→ Frequency→ SWB	-.006	.027	-.061	.053
	Job stress→ Satisfaction→ SWB	-.073	.062	-.207	.028
	Job stress→ Frequency→ Satisfaction→ SWB	-.034	.018	-.073	-.005
	Total indirect effect	-.112	.067	-.258	.005
	Total effect	-.864***	.153		
Model 3 (leisure quantity)					
<i>Direct effect</i>					
	Job stress→ SWB	-.758***	.147		
<i>Indirect effect</i>					
	Job stress→ Quantity→ SWB	-.0002	.011	-.028	.021
	Job stress→ Satisfaction→ SWB	-.111	.060	-.250	-.014
	Job stress→ Quantity→ Satisfaction→ SWB	.007	.016	-.026	.041
	Total indirect effect	-.105	.065	-.251	.002
	Total effect	-.863***	.153		

Note: Bootstrap = 5000, BCa = Biased-Corrected and Accelerated bootstrapping, 95% CI that include zero indicate that the effect is not significant at the 0.05 level. \*\*\* $p < .001$

### 7.5. Additional analysis

An additional mediation analysis was run to investigate the relationship between job stress and SWB as mediated by leisure satisfaction. As seen in Figure 4, the unstandardized coefficients for each pathway were significant. Job stress was a significant predictor of leisure satisfaction ( $b = -.542$ ,  $p < .05$ ), and leisure satisfaction was a significant predictor of SWB ( $b = .198$ ,  $p < .001$ ). The total effect of job stress on SWB was significant ( $b = -.864$ ,  $p < .001$ ) and the direct effect was also significant ( $b = -.757$ ,  $p < .001$ ). There was a significant indirect effect of job stress on SWB through leisure satisfaction ( $b = -.108$ , BCa CI  $[-.252, -.001]$ ), which suggested that job stress has a negative relationship with leisure satisfaction, and this reduction in leisure satisfaction is subsequently related to decreases an individual's SWB.



*Figure 4.* Unstandardized regression coefficients for the relationship between job stress and SWB as mediated by leisure satisfaction. Direct effect in the parenthesis. \* $p < .05$ , \*\*\* $p < .001$

## **8. Discussion**

Leisure is considered a key part of life, and a core ingredient for SWB (Newman et al., 2014). The present study extended the growing body of literature by examining the relationship between leisure, job stress, and SWB in NZ workers; in particular focusing on three dimensions of leisure engagement (variety, frequency and quantity) and leisure satisfaction. There were two aims of the current study, first to focus on the relationships between dimensions of leisure engagement, leisure satisfaction, and SWB, to identify which type of leisure engagement is more strongly related to leisure satisfaction and SWB; and second, to investigate the role that the leisure engagement dimensions and leisure satisfaction play in the relationship between job stress and SWB.

Results revealed that leisure variety and leisure frequency were positively related to SWB, but leisure quantity was not. In addition, when age and gender were controlled for all three leisure engagement measures were not significant predictors of SWB. Although age and gender were not significant in the regressions, women reported more job stress and less leisure satisfaction than men, so gender differences in the relationships between leisure, stress and SWB are worth further study. Overall, leisure satisfaction was positively associated with SWB and job stress was negatively associated with SWB. The relationship between job stress and SWB was partially mediated by leisure frequency and leisure satisfaction.

Overall, the findings suggested that frequent engagement in satisfying leisure activities may be helpful to counteract job stress and benefit employee SWB. This is in line with the JD-R model (Demerouti et al., 2001), specifically the notion that leisure can help to satisfy key psychological needs, and that the satisfaction of these needs acts as a personal resource which in turn helps individuals to better cope with job stress and contributes to enhanced SWB (Newman et al., 2014; Schaufeli & Taris, 2014).

### **8.1. Leisure activity categories**

NZ is a country full of options for leisure, from exhibitions and recreational activities to adventure activities like skiing. In addition, the relatively small country size means access to a large number and variety of activities is possible. Even so, findings from the present study revealed that NZ workers tended to spend a large amount of their leisure time engaged in technology-based activities. The results demonstrated that individuals most

frequently spent their leisure time engaging in technology use (e.g. computer use not for work, social media) as well as watching TV. On average workers spent 43 hours per month engaging in technology use for leisure, and 35 hours per month watching TV. This is not surprising given that a report by Hootsuite (2018) revealed that time spent on social media is extensive throughout the forty countries they had data for, specifically individuals in NZ were found to spend almost two hours a day on social media. Watching TV has also been demonstrated to make up a large portion of leisure time in multiple countries (Brajša-Zganec et al., 2011; Kuykendall et al., 2015; Organisation for Economic Co-operation and Development, 2009), as well as in NZ (Statistics New Zealand, 2010). The leisure activity that participants least engaged in was religious activity (e.g. attending church, engaging in prayer or meditation), with the majority (80%) of participants reporting no engagement in religious activities over the past month. A possible explanation for the lack of leisure time spent on religious activity could be that according to the 2013 census (Statistics New Zealand, 2013), almost half of people in NZ report having no religion and the number is increasing.

It is important to examine gender while researching leisure participation (Henderson, Hodges, & Kivel, 2002). The present study revealed a significant difference between male and female scores in the games leisure category (e.g. word games, crosswords, computer games). The inclusion of computer games in this category may potentially explain the gender difference, as research has consistently shown that males (both young and adult) play computer/video games more than females (Statistics New Zealand, 2010; Terlecki et al., 2011). Differences in age were linked with public social activity (e.g. volunteering, attending organised social events) and experiential activity (e.g. gardening, reading for leisure). However, categories were broad so there could be several explanations for these results. Some activities like volunteering are more likely to be engaged in by people aged 45+ (Statistics New Zealand, 2016), whereas other activities like reading for leisure are engaged in fairly consistently by all age groups (NZ Book Council, 2018). As such, it was difficult to account for the findings.

Physical activity (e.g. running, tennis, hiking) and private social activity (e.g. going out with friends, visiting friends/relatives) were found to be significantly positively related to SWB and leisure satisfaction, and negatively to job stress. This is consistent with previous research on the benefits of employee physical and social activity during leisure time (Brajša-Zganec et al., 2011; Hansen, Blangsted, Hansen, Sjøgaard, & Sjøgaard, 2010;

Wiese et al., 2018; Winwood et al., 2007). Physical activity can help workers to disengage from work related thoughts and recover from job stress by mentally engaging them with the task at hand, and by drawing on resources different to those used during the working day (Wiese et al., 2018). Likewise, social activity can help workers through strengthening their beliefs about the social supports they have available (Iso-Ahola & Mannell, 2004). Kuykendall et al. (2015) noted that social and physical activities may positively effect SWB through impacting not only satisfaction with leisure, but also individuals' satisfaction with their relationships and health, respectively. Given that physical activity has positive benefits for workers, it is encouraging that the majority of participants (76%) engaged in physical activity at least once per week, a statistic similar to the 74% engagement reflected by the 2013/14 Sport New Zealand (2015) survey.

Interestingly, watching TV predicted leisure satisfaction but not SWB. Watching TV has previously been found to negatively impact life satisfaction (Frey, Benesch, & Stutzer, 2007), physical and mental well-being (Dempsey et al., 2014), and to provide limited satisfaction of psychological needs (Kuykendall et al., 2015). Therefore it was surprising that watching TV predicted leisure satisfaction in the current study.

## **8.2. Leisure variety, frequency, quantity and SWB**

The first research hypothesis, that the three dimensions of leisure engagement (variety, frequency and quantity) would be positively associated with SWB was partially supported. The results demonstrated a weak but significant positive relationship between leisure variety and SWB, and between leisure frequency and SWB. However, when control variables were included neither leisure variety nor frequency significantly predicted increases in SWB (thus rejecting hypothesis three). No significant relationship was found between leisure quantity and SWB. Both leisure variety and leisure frequency are measures of leisure activity, whereas leisure quantity is a time-based measure. High scores on leisure variety and leisure frequency reflected breadth of leisure engagement, whereas leisure quantity reflected the time participants spent engaging in leisure regardless of whether the time was spent on one or multiple leisure categories.

The results were consistent with Kuykendall et al. (2015), who found in their meta-analysis that measures of leisure variety and leisure frequency were more strongly related to SWB than measures of leisure quantity. One possible explanation is that high leisure



quantity scores can be the product of engagement in a single activity, and as Kuykendall et al. pointed out, this single activity is usually watching TV, an activity previously argued to be limited in the degree to which it satisfies needs and helps to enhance SWB (Dempsey et al., 2014; Frey et al., 2007). Watching TV and technology-use were both large contributors to participants' overall leisure time in the current study, and while watching TV was associated with leisure satisfaction neither activity type demonstrated a significant relationship with SWB. Another explanation for the positive relationship between leisure variety and SWB may be the meeting of psychological needs. In theory, engaging in a variety of leisure activity has the potential to satisfy a wider range of psychological needs (e.g. autonomy, meaning, mastery), enhancing SWB through a bottom-up process (de Bloom et al., 2018; Newman et al., 2014). Specifically, the bottom-up approach suggests SWB is the sum of satisfaction in different life domains (Diener, 1984) of which leisure is one. Furthermore, leisure variety provides individuals with greater adaptability to temporary or enduring life changes (Kuykendall et al., 2015), allowing individuals to substitute leisure activities when barriers to participation arise, such as ageing or physical injuries. Leisure frequency scores reflect leisure variety, and may also be related to SWB through these mechanisms. Additionally, leisure frequency reflects repeated engagement in need satisfying activities.

### **8.3. Leisure satisfaction and SWB**

Increased leisure satisfaction was positively related to increased SWB. The findings were consistent with recent studies on the leisure satisfaction-SWB relationship (Chick et al., 2016; Ito et al., 2017; Kuykendall et al., 2017). Whereas leisure engagement has the potential to meet a wide range of psychological needs, leisure satisfaction generally reflects whether those needs have actually been met (Kuykendall et al., 2017). The findings make intuitive sense when considering the bottom-up model of SWB. In addition, the results revealed that on average males experienced greater leisure satisfaction than females. A potential explanation could be the societal expectations of gender roles, leading women to spend more time looking after children and doing housework than men and as a result having less time for leisure (Craig & Mullan, 2013). This idea is reflected in the most recent NZ time use survey (Statistics New Zealand, 2010), which demonstrated disparities in time use between males and females. Interestingly, although there were differences in leisure satisfaction, data from the present

study revealed no significant gender differences in SWB scores. This could be due to women finding satisfaction in other life domains which in turn make up for their lack of satisfaction in the leisure domain. Notably, previous literature has generally found only small gender differences in SWB (Diener, Lucas, et al., 2018).

#### **8.4. Job stress and SWB**

Job stress had a significant negative relationship with SWB. It makes intuitive sense that as job stress increases individual SWB will deteriorate, and these findings are consistent with the literature (Erdogan et al., 2012; Schaufeli & Taris, 2014; Tsaur et al., 2015). Workers who were studying 30+ hours per week experienced significantly greater job stress than those studying 15 or less hours per week. The participants ranged in age from 16 to 81 and therefore likely to include a mix of work-study circumstances, e.g. full-time students who are working part-time, or full-time workers who are studying part-time. The results also revealed that on average females experienced more job stress than males, which may be explained by a greater number of female than male participants engaged in 30+ hours of study per week, however previous research has also demonstrated higher levels of job stress in females than males (Michael, Anastasios, Helen, Catherine, & Christine, 2009)

Interestingly, job stress had a significant but weak negative relationship with leisure frequency and leisure satisfaction, but not with leisure variety or leisure quantity. A possible explanation may be that as job stress increases individuals may reduce the frequency of some activities, while maintaining their overall leisure variety and quantity. As revealed in a meta-analysis by Fransson et al. (2012), when experiencing heightened job stress individuals may seek out more passive leisure activities and reduce their frequency of engagement in more active leisure. For example Sonnentag and Jelden (2009) found in their study on a group of police officers, that those experiencing high job stress were less likely to engage in sport activities after work even when they considered sport activities to be a helpful form of recovery.

#### **8.5. Leisure as a mediating factor**

The relationship between job stress and SWB was not mediated by leisure variety and leisure satisfaction (Model 1), or by leisure quantity and leisure satisfaction (Model 3).

However, the relationship between job stress and SWB was partially mediated by leisure frequency and leisure satisfaction (Model 2). While previous research has found links between the individual pathways, the present study is unique in that both leisure engagement dimensions and leisure satisfaction were included as mediators. By adding leisure satisfaction it helped to account for the quality of leisure, rather than purely looking at leisure engagement. In line with demand-resource models (Demerouti et al., 2001; Karasek, 1979) frequent engagement in satisfying leisure was demonstrated to help reduce job stress and benefit SWB, acting as a resource by meeting key psychological needs (Kuykendall et al., 2018; Newman et al., 2014).

### **8.6. Implications for NZ organisations and workers**

Understanding and promoting SWB is a worldwide phenomenon. Governments are using measures of SWB to inform public policies (Diener, 2018) and the delivery of public services (Haworth, 2016). Likewise, reducing job stress has become a major focus around the world. For example, in an attempt to reduce work-related stress France has recently implemented a new law which obligates companies of more than 50 employees to designate hours when workers are not required to send or receive work emails (BBC News, 2016, 31 December). A growing number of organisations are beginning to realise the importance of understanding what contributes to employee stress and SWB, and the impact this can have on work productivity and performance (Wiese et al., 2018). While organisations commonly implement interventions and policies which target the domains of health and work satisfaction, the leisure domain is targeted far less frequently (Kuykendall et al., 2015). However, the importance of the leisure domain should not be overlooked because it provides an opportunity to fulfil multiple psychological needs that may not be met in other life domains (Newman et al., 2014). Moreover, younger generations of employees now tend to seek out jobs that provide adequate time for leisure (Twenge, Campbell, Hoffman, & Lance, 2010).

The findings from the present study confirmed earlier research showing that engaging in satisfying leisure is linked with worker SWB (Kuykendall et al., 2015) and reduced job stress (de Bloom et al., 2018). In particular, frequent engagement in physical and social activities was found to be beneficial. The increase in positive emotions and decrease in negative emotions achieved through leisure may in turn benefit employee performance

and productivity (de Bloom et al., 2018; De Neve et al., 2013). In light of these findings, organisations can assist workers by promoting and facilitating frequent and satisfying leisure engagement and integrating these ideas into the mission, values and vision of the organisation (Blake, Zhou, & Batt, 2013). Some ways to achieve this could be through first identifying the barriers that employees face (i.e. work-leisure conflict) and understanding what drives individual leisure dissatisfaction. As Kuykendall et al. (2015) found, the links between leisure and SWB among employees depended on both contextual and individual factors and as such interventions should remain flexible and responsive to the needs of employees. Possible interventions that could be implemented included employee education (e.g. information on the types and availability of leisure, physical and mental benefits), flexible hours, group social activities (e.g. social lunchtime sport or social gatherings after work), or discounted memberships to leisure facilities and events. To assist with leisure being a source of recovery and disengagement from work, organisations should take steps towards ensuring employees can have their leisure time free from work pressures such as work-related emails and phone calls. Contemporary organisations have begun implement processes to make this happen. For instance, email servers at Volkswagen are turned off at the end of a shift and turned back on prior to the start of the next shift so that no emails can be sent or received during non-work time (BBC News, 2012, 8 March).

One of the main reasons workers give for not engaging in more leisure activities is a lack of time (Iso-Ahola & Mannell, 2004). If workers feel limited in their free time it makes sense to use this time effectively to gain maximum satisfaction and benefit. By understanding that frequent engagement in leisure activities which have the potential to satisfy a variety of needs is important, employees can help themselves by targeting broadly need-fulfilling activities (e.g. social and physical leisure activities) rather than spending their free time on arguably less beneficial activities like watching TV.

### **8.7. Limitations and future research**

The present study has several limitation. Due to the cross-sectional nature of the study no conclusions can be drawn about causality between the study variables as the data reveal only a snapshot in time. Specifically, while it was found that leisure frequency, leisure satisfaction, and job stress predicted SWB, it cannot be said that targeting these element

in workers will enhance their overall SWB. This can only be concluded through further research which examines these relationships in worker populations using a longitudinal design and by conducting experimental interventions. In addition, given that self-report scales were used for all of the study variables, common method bias may influence the results. This issue could be addressed in future research by employing a multi-method design which may include both self-report measures as well as reports from external sources (e.g. friends or colleagues). Including measures from external sources would also help to mitigate the presence of social desirability bias, where workers may distort their responses to present themselves favourably.

Due to the study being conducted as an online survey with recruitment via Facebook, sampling bias may occur. In particular there was a higher ratio of female ( $n = 152$ , 81%) to male ( $n = 35$ , 19%) participants, therefore caution should be used regarding any gender disparities found in the data. It was also expected that participants would be those who are familiar with and somewhat competent in the use of social media which may have inflated the data for technology use as a leisure time activity. Furthermore it meant that no participants could select the response "never" for technology use.

There is a number of variables that may have impacted the relationships found in the present study, hence future research should include additional variables to explore what effect they have. Western and Tomaszewski (2016) found that skilled managers, professionals and white-collar workers had less leisure time than other occupations, additionally Filho (2010) found that some individuals mix leisure and work, in essence getting paid to do what they consider a hobby. As such, including a measure of occupation and the degree to which there is work-leisure crossover may be useful. Another set of variables which could impact the relationships between job stress, leisure and SWB may include cultural views and definitions. For instance, the extent to which leisure activities satisfy an individual may be in part due to how much the activities are culturally valued. As Chick et al. (2016) suggested, culture matters in the respect that leisure activities which are culturally agreed-upon as important are likely to be more satisfying those seen as less important. Similarly, Diener, Lucas, et al. (2018) have suggested that the way SWB is defined varies across cultures, which may influence SWB findings. Lastly, while it has been said that leisure satisfaction is a reflection of key psychological needs being met (Kuykendall et al., 2015; Newman et al., 2014), and there has been research to support some of these links (Walker & Kono, 2018), it would be of benefit to establish

the association between the needs identified in the DRAMMA model and leisure satisfaction.

### **8.8. Conclusion**

Engaging in leisure activity has been recognised as a valuable context for satisfaction of key psychological needs (e.g. recovery and detachment, mastery, affiliation), and providing personal resources to cope with the daily demands of work. Often however individuals engage in leisure that is not of high-quality, in that it is limited in the degree to which it can satisfy multiple needs. Given the time constraints workers often feel it can be considered important to understand how best to utilise the leisure time they have. As the results of the present study revealed, it is not necessarily the amount of time that is important, but rather the frequency of leisure engagement. Furthermore the value of leisure satisfaction, and thus the quality of leisure, was identified. In conclusion, frequent engagement in need satisfying leisure activities may be an effective and sustainable way to build resources to cope with job stress and to enhance SWB. Ultimately, this will not only benefit workers themselves, but also organisations through a happier and more productive workforce (De Neve et al., 2013).

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## Appendices

### Appendix A - Factor analysis of DCSQ scale using PCA and varimax rotation

Items	F1	F2	F3
Psychological demands subscale			
Item 1: work fast			0.62
Item 2: work intensively			0.70
Item 3: work effort			0.64
Item 4: overtime work			0.67
Item 5: conflicting demands			0.54
Decision latitude subscale			
Item 6: learning new things		0.57	
Item 7: being creative		0.59	
Item 8: variety of work		0.67	
Item 9: how to do the work		0.81	
Item 10: what to do at work		0.78	
Item 11: pleasant atmosphere		0.46	
Social support at work subscale			
Item 12: spirit of unity	0.75		
Item 13: colleagues support	0.91		
Item 14: helpful colleagues	0.75		
Item 15: relationship with superiors	0.69		
Item 16: relationship with colleagues	0.85		
Eigenvalue	3.41	2.90	2.37
Explained variance	21%	18%	15%
Cronbach's alpha	0.86	0.75	0.68

Note: Only items with factor loading  $\geq 0.4$  are shown



## Appendix B – Ethics notification



Date: 28 June 2018

Dear Rebecca Sinclair

Re: Ethics Notification - **4000019787 - New Application: The impact of leisure on New Zealand worker well-being**

Thank you for your notification which you have assessed as Low Risk.

Your project has been recorded in our system which is reported in the Annual Report of the Massey University Human Ethics Committee.

The low risk notification for this project is valid for a maximum of three years.

If situations subsequently occur which cause you to reconsider your ethical analysis, please contact a Research Ethics Administrator.

Please note that travel undertaken by students must be approved by the supervisor and the relevant Pro Vice-Chancellor and be in accordance with the Policy and Procedures for Course-Related Student Travel Overseas. In addition, the supervisor must advise the University's Insurance Officer.

**A reminder to include the following statement on all public documents:**

*"This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researcher(s) named in this document are responsible for the ethical conduct of this research.*

*If you have any concerns about the conduct of this research that you want to raise with someone other than the researcher(s), please contact Professor Craig Johnson, Director - Ethics, telephone 06 3569099 ext 85271, email [humanethics@massey.ac.nz](mailto:humanethics@massey.ac.nz)."*

Please note, if a sponsoring organisation, funding authority or a journal in which you wish to publish requires evidence of committee approval (with an approval number), you will have to complete the application form again, answering "yes" to the publication question to provide more information for one of the University's Human Ethics Committees. You should also note that such an approval can only be provided prior to the commencement of the research.

Yours sincerely

Professor Craig Johnson  
Chair, Human Ethics Chairs' Committee and Director (Research Ethics)

## Appendix C – Information sheet

Thank you for your interest in taking part in this survey for my Masters in Psychology at Massey University. The purpose of this study is to understand the relationship that leisure variety, frequency and quantity have on wellbeing in New Zealand workers.

This survey will ask you questions about your occupation, as well as questions relating to your participation in leisure activities and your overall wellbeing. It will take approximately 10 minutes to complete.

Your responses will be anonymous and confidential; additionally, the survey is completely voluntary and you can withdraw at any time.

At the end of the survey there will be a chance to type in your email address if you would like a summary of the research findings upon completion of the study. Your email address will not be linked to your survey responses.

If you would like more information please contact my supervisor or I, via the contact details below:

### Contact information

#### Researcher

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*This research project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researcher(s) named above are responsible for the ethical conduct of this research.*

*If you have any concerns about the conduct of this research that you wish to raise with someone other than the researcher(s), please contact Prof Craig Johnson, Director (Research Ethics), telephone 06 356 9099, extn 85271, email [humanethics@massey.ac.nz](mailto:humanethics@massey.ac.nz).*

### Appendix D – Demand-control-support questionnaire

For each of the following statements, please indicate your level of agreement

	Strongly disagree	Disagree	Agree	Strongly agree
My job requires me to work very fast	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My job requires me to work very hard	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My job requires too great a work effort	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have sufficient time for all of my work tasks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conflicting demands often occur in my work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have the opportunity to learn new things in my work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My job requires creativity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My job requires doing the same tasks over and over again	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have the possibility to decide for myself how to carry out my work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have the possibility to decide for myself what should be done in my work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
There is a quiet and pleasant atmosphere at my place of work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
There is good collegiality at work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My co-workers are there for me (support me)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
People at work understand that I may have a "bad" day	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I get along well with my supervisors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I get along well with my co-workers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### Appendix E – Leisure engagement questionnaire

Reflecting on the ***past month***, how often and for how long did you engage in the following kinds of **leisure activities** (activities you engaged in during your free time when you were not engaged in activities you had to do such as work and/or household responsibilities)?

How often over the past month did you engage in **physical activities**?

*(physical activities include: exercise - e.g. gym, run, bike; recreational - e.g. tennis, golf; and outdoor - e.g. sail, fish, hiking)*

- never
- once a month
- 2-3 times a month
- once a week
- 2-3 times a week
- 4+ times a week

What is your estimated ***total time*** over the past month spent on **physical activities**?

Hours \_\_\_\_\_

Minutes \_\_\_\_\_

How often over the past month did you engage in **religious activities**?

*(e.g. attend church, engage in prayer or meditation)*

- never
- once a month
- 2-3 times a month
- once a week
- 2-3 times a week
- 4+ times a week

What is your estimated ***total time*** over the past month spent on **religious activities**?

Hours \_\_\_\_\_

Minutes \_\_\_\_\_

How often over the past month did you engage in **games**?

*(e.g. word games & jigsaws, crosswords, card games, computer games)*

- never
- once a month
- 2-3 times a month
- once a week
- 2-3 times a week
- 4+ times a week

What is your estimated **total time** over the past month spent on **games**?

Hours \_\_\_\_\_

Minutes \_\_\_\_\_

---

How often over the past month did you engage in **watching TV**?

(e.g. watch news, Netflix)

- never
- once a month
- 2-3 times a month
- once a week
- 2-3 times a week
- 4+ times a week

What is your estimated **total time** over the past month spent on **watching TV**?

Hours \_\_\_\_\_

Minutes \_\_\_\_\_

---

How often over the past month did you engage in **crafts**?

(e.g. woodwork, decorating, sewing)

- never
- once a month
- 2-3 times a month
- once a week
- 2-3 times a week
- 4+ times a week

What is your estimated **total time** over the past month spent on **crafts**?

Hours \_\_\_\_\_

Minutes \_\_\_\_\_

---

How often over the past month did you engage in **private social activities**?

(e.g. go out with friends, visit friends/relatives)

- never
- once a month
- 2-3 times a month
- once a week
- 2-3 times a week
- 4+ times a week

What is your estimated ***total time*** over the past month spent on **private social activities**?

Hours \_\_\_\_\_

Minutes \_\_\_\_\_

---

How often over the past month did you engage in **public social activities**?  
(*e.g. volunteer, attend organised social events*)

- never
- once a month
- 2-3 times a month
- once a week
- 2-3 times a week
- 4+ times a week

What is your estimated ***total time*** over the past month spent on **public social activities**?

Hours \_\_\_\_\_

Minutes \_\_\_\_\_

---

How often over the past month did you engage in **developmental**?  
(*e.g. woodwork, decorating, sewing*)

- never
- once a month
- 2-3 times a month
- once a week
- 2-3 times a week
- 4+ times a week

What is your estimated ***total time*** over the past month spent on **developmental**?

Hours \_\_\_\_\_

Minutes \_\_\_\_\_

---

How often over the past month did you engage in **experiential**?  
(e.g. *woodwork, decorating, sewing*)

- never
- once a month
- 2-3 times a month
- once a week
- 2-3 times a week
- 4+ times a week

What is your estimated ***total time*** over the past month spent on **experiential**?

Hours \_\_\_\_\_

Minutes \_\_\_\_\_

---

How often over the past month did you engage in **technology use**?  
(e.g. *woodwork, decorating, sewing*)

- never
- once a month
- 2-3 times a month
- once a week
- 2-3 times a week
- 4+ times a week

What is your estimated ***total time*** over the past month spent on **technology use**?

Hours \_\_\_\_\_

Minutes \_\_\_\_\_





### Appendix G – BBC subjective well-being scale

The questions below attempt to measure how happy you feel generally in most parts of your life.

For each of the following statements, please indicate to what extent you agree.

	Not at all	A little	Moderately	Very much	Extremely
Are you satisfied with your physical health?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are you satisfied with the quality of your sleep?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are you satisfied with your ability to perform your daily living activities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are you satisfied with your ability to work?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you feel depressed or anxious?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you feel that you are able to enjoy life?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you feel you have a purpose in life?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you feel in control over your life?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you feel optimistic about the future?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you feel satisfied with yourself as a person?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are you satisfied about your looks and appearance?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you feel able to live your life the way you want?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are you confident in your own opinions and beliefs?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you feel able to do the things you choose to do?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Not at all	A little	Moderately	Very much	Extremely
Do you feel able to grow and develop as a person?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are you satisfied with yourself and your achievements?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are you satisfied with your personal and family life?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are you satisfied with your friendships and personal relationships?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are you comfortable about the way in which you relate to and connect with others?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are you satisfied with your sex life?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you feel able to ask someone for help with a problem if you needed to?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are you satisfied that you have enough money to meet your needs?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are you satisfied with your opportunity for exercise and leisure activities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are you satisfied with your access to health services?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>