The relaxed livestock farmer: The effect of coping strategies and leisure activities on farmer wellbeing and stress.

A thesis

submitted in fulfilment

of the requirements for the degree of

PSYCH594 Master of Science (Research) in Psychology

at

The University of Waikato

by

Cathleen Schriber-Hannah

THE UNIVERSITY OF
WAIKATO
Te Whare Wānanga o Waikato

2023

Abstract

Farmers experience higher levels of stress and low wellbeing compared to non-farmers. This can be attributed to experiencing general stressors, such as interpersonal disagreements, and farm-specific stressors, such as severe weather events. Previous research has found coping strategies reduce stress and improve wellbeing. However, it is not known how coping strategies and leisure activities affect the wellbeing and stress of farmers in Aotearoa New Zealand. The research questions explored what leisure activities farmers use to unwind, how leisure activities and coping strategies affected wellbeing, and whether coping strategies moderated the relationship between stressors, wellbeing, and stress. 131 participants completed a questionnaire measuring wellbeing, stress, coping, leisure, and farm stressors. A content analysis grouped leisure activities and barriers into meaningful groups. A paired samples t-test found farmers significantly prefer to engage in more leisure activities than they engaged in currently. A hierarchical regression found the coping strategies, behavioural disengagement (b = 2.18, t = -3.48, p < .01) and self-blame (b = -0.81, t = -2.01, p = .05), significantly and negatively predicted wellbeing. Finally, a moderation analysis found Social Coping moderated the relationships between farming finance and wellbeing (ΔR^2 = .06, F(3, 112) = 8.39, p < .01), isolation and wellbeing (ΔR^2 = .03, F(3, 112) = 4.12, p = .05), and social satisfaction and wellbeing (ΔR^2 = .05, F(3, 117) = 8.20, p < .01). Dysfunctional Coping moderated the relationship between time pressure and wellbeing (ΔR^2 = .05, F(3, 103) = 8.52, p < .01) and time pressure and stress (ΔR^2 = .05, F(3, 105) = 10.47, p < .01). In conclusion, improving coping strategies, particularly social coping, may increase wellbeing among farmers.

Keywords: Farmers, coping strategies, leisure, wellbeing, stress.

Acknowledgements

First of all, I would like to thank Nic, my husband, for supporting me through the highs and lows during the past year. He has been my rock and my voice of reason during the long days and nights working on and thinking about this thesis. He also reminded me to engage in my own leisure activities, which gave me time to reflect on my thesis and enjoy the little spare time I had.

I sincerely thank my supervisor, Prof. Nicola Starkey. She has supported me through some tough times and kept my thoughts clear, especially during data analysis. I appreciated how Nicola gave me the freedom to explore my passion and learn more about the research process.

I would also like to express my appreciation for the farming communities who gave me permission to share my research advertisement on their social media pages and local farming stores.

Finally, I would like to express my appreciation and gratitude to all the participants who filled out my survey. Without them, there would be no results to discuss.

Table of Contents

List of tables

List of figures

Page number

Introduction

Agriculture and forestry occupy a little over half of the total land area of Aotearoa New Zealand (Ministry for the Environment & Stats NZ, 2021). Dairy and dry stock farms populate a large portion of land used for agriculture (Stats NZ, 2021). The products made from dairy farms have export worth over 19 billion New Zealand dollars in 2021, which included milk powder, butter, cheese, ice cream, and other dairy products (Ministry for Primary Industries' Economic Intelligence Unit, 2022). Dry stock farms, which included beef, deer, and sheep, had an export worth over 10 billion New Zealand dollars in 2021 (Ministry for Primary Industries' Economic Intelligence Unit, 2022). Dry stock exports included meat, wool, hides, and other animal products.

Despite the economic worth of dairy and dry stock farms, farmers continue to experience lower levels of mental and physical health, as well as higher levels of stress compared to the general population (Brew et al., 2016; Yazd et al., 2019). Farmers also have a higher rate of successful suicides compared with other occupations in Aotearoa New Zealand (Beautrais, 2018; Goffin, 2014). Furthermore, farmers experience many barriers to improving and maintaining good mental health and wellbeing. For example, farmers seek and access physical and mental health treatment less often than non-farmers (Judd et al., 2006; Tómasson & Guðmundsson, 2009).

Accessing mental health treatment and support is influenced by many factors, some of which were unique to farmers. For example, many farmers live in small rural towns which act as a protective factor as well as a barrier to maintaining good mental health; the small rural community acts as a support group but also increased farmers' fear of being judged for decisions made on the farm (Judd et al., 2006).

With limited access to medical and mental health resources, coping strategies become important. Indeed, Goffin (2014) suggested improving farmers' ways of coping in Aotearoa New Zealand to improve wellbeing. Farmers engage in a range of coping strategies and leisure activities to buffer stress (Kuriger, 2016). However, it is not known how coping strategies and leisure activities affect the wellbeing and stress of farmers in Aotearoa New Zealand.

The literature review begins with a discussion about stress, followed by wellbeing and life satisfaction, coping strategies and leisure.

Literature review

Stress.

Stress has been of particular interest to researchers in the last 100 years. Historically, stress was considered a state of physiological imbalance (Selye, 1976). An imbalance in the body was associated with diseases, infections, and tumours (Selye, 1976). Experiencing stress could jeopardise the health of an individual if the individual did not have adequate methods to maintain homeostasis and physiological balance.

The contemporary understanding of stress is the response to a stimulus, or stressor, that exceeds the individual's ability to function well (American Psychiatric Association, 2013). A stressor is an aspect in an individual's environment, or internally, such as an emotion, that can reduce the individual's cognition, emotion, physiology, and behaviour to function normally (American Psychiatric Association, 2013).

The perception of a stressor and the experience of stress varies between individuals (Lazarus & Folkman, 1984; Schneiderman et al., 2005). For example, individuals can experience different levels of distress when exposed to the same stressor. The different experience of the stressor represents the subjective experience of stress (Cohen et al., 1983). The perception of stress is influenced by many individual factors, such as genetics, culture, environment, past experiences, and whether the stressor persists or was a single event (Schneiderman et al., 2005; Selye, 1976). The characteristics of the stressor can also affect how an individual responds, such as the unpredictability, uncontrollability, and overload of the stressor (Cohen et al., 1983). Measuring subjective experiences of stress could help predict how individuals will respond to a similar stressor in the future (Cohen et al., 1983).

Stress can be adaptive in short-term experiences such as changes the in the nervous, immune, endocrine, and cardiovascular systems (Carver & Vargas, 2010; Schneiderman et al., 2005). From an evolutionary perspective, the changes in the body could increase the survival of an individual when confronted with a threatening stimulus, such as a territorial fight (Schneiderman et al., 2005). However, acute stress can be harmful. For example, acute stress can be activated during non-life-threatening situations, such as public speaking, test taking, and meeting your partner's parents (Schneiderman et al., 2005). Acute stress could also increase the risk of a heart attack, heart arrhythmia, and sudden cardiac death,

particularly in those already experiencing symptoms of chronic stress (La Rovere et al., 2022).

Persisting daily stressors tend to reduce health and wellbeing more than single stressful events (Lazarus, 2006). However, a single event can cause lasting effects, such as in a chronic injury. Chronic stress is when an individual experienced symptoms of stress over a long duration (Kelly & Coons, 2019). Symptoms of chronic stress can manifest physically and psychologically. For example, headaches, irritability, raised blood pressure, memory and reasoning challenges, social withdrawal, poor work habits, and communication (Goffin, 2014).

Chronic stress is more harmful than acute stress and increases the likelihood of experiencing serious diseases such as hypertension, diabetes, heart disease, irritable bowel syndrome, insomnia, and immune disorders (Carver & Vargas, 2010; Kelly & Coons, 2019; Schneiderman et al., 2005; Selye, 1950; Taylor, 2015; Tripathy et al., 2019). Furthermore, arthritis, allergies, weight gain and fluid retention, changes in cancer cell growth and symptoms of mental illness were also associated with chronic stress (American Psychiatric Association, 2013; Schneiderman et al., 2005; Selye, 1950; Taylor, 2015). Stress was also found to increase the use of nicotine, alcohol, and other drugs as a coping strategy, which added to the health complications (Schneiderman et al., 2005).

Risk factors for developing chronic stress include low socioeconomic status, disability, chronic disease, and membership in a minority group (Feng et al., 2015; Haar, 2022; Noushad et al., 2021). Daily stressors may not appear significant; however, the stress slowly adds up over time and impairs everyday functioning (Haar, 2022).

Farming stress.

Farmers experience higher levels of stress compared with non-farmers (Yazd et al., 2019). Many factors contribute to farmers' stress, including common factors, such as interpersonal conflict, and farm-specific stressors, such as drought and livestock sickness (Deary et al., 1997; Roy et al., 2013; Yazd et al., 2019). The following sections outline specific stressors experienced by farmers.

Seasonal commitments. The basic goal of farming is to keep the livestock safe, healthy, and produce an income. Each farm type and species of livestock have different demands during the year (Berman et al., 2021; Deary et al., 1997; Dixon & Rimmer, 2021).

An important example is livestock nutrition. To achieve good nutrition, pasture needs to show growth which may require the use of fertiliser, lime, or plant growth hormone. The pasture also needs to be sectioned off to control the amount of pasture being fed to the livestock. Too much pasture and feed, such as grains, meal, and molasses, during the dry or winter season can cause the milking stock to become overweight and increase birth complications. On the other hand, it is recommended to increase the weight of dry stock reared for consumption during the winter in preparation for better meat prices in the early spring (Beef and Lamb New Zealand, 2021). Other seasonal responsibilities include the mating season, shearing season for sheep and alpacas, castration, dehorning, and tail docking lambs to reduce flystrike.

Pollution and global warming. Pollution and global warming are current global concerns. Unfortunately, much of the blame has been towards farmers (Kirk et al., 2020; Ministry for the Environment, 2022). Unfortunately, farmers experience more uncertainty and distress caused by global warming compared to non-farmers (Brew et al., 2016; Stain et al., 2008; Yazd et al., 2019). Global warming has been identified as one of the major stressors for farmers, alongside financial pressure (Yazd et al., 2019). The increase in droughts and other natural disasters can increase the stress and symptoms of depression and suicidal ideation of farmers (Ellis & Albrecht, 2017).

In addition, freshwater pollution is a second major environmental concern in Aotearoa New Zealand. Farmers were regularly and consistently blamed for freshwater pollution resulting in reduced concerns regarding other sources of pollution (Kirk et al., 2020). Farmers have been expected to maintain or improve the quality of the land due to the blame (Hansen, 2022). The pressure to address water pollution challenged the farming lifestyle by increasing farm monitoring and additional jobs, such as fencing off waterways and planting trees. Regardless of the negative representation of farms affecting the environment, many farmers already engage in farm and natural resource management (Batterham et al., 2022). For example, planting native plants and pest control (Batterham et al., 2022; Hansen, 2022).

Financial pressure. Financial pressure has been identified as the most important factor affecting distress experienced by farmers (Bultena et al., 1986; Deary et al., 1997; Goffin, 2014; Judd et al., 2006; Viseu et al., 2021; Yazd et al., 2019). Naturally, having a large dept increases experiences of distress (Kearney et al., 2014). Currently, farmers are experiencing high financial demand. For example, the price of fertiliser and fuel has risen 37

percent and 51 percent respectively between March 2021 and March 2022 (Stats NZ, 2022). In addition to functional costs, the fluctuating prices of dairy, meat, and wool can affect the experiences of stress due to the variability of the payout (Kearney et al., 2014). Even though there are predictions and forecasts for the price of milk solids and meat, the actual prices are affected by many factors, such as demand, quality, and politics.

Policies and yearly changes. Changes in governmental regulations, dairy companies' or meat works policies, and access to farming resources occur regularly and can disrupt the functioning of the farm (Deary et al., 1997). For example, Fonterra proposed to reach zero bobby calves by the 2023/2024 milking season (Kissun, 2022). The proposal developed from animal wellbeing concerns (Kissun, 2022). This proposal had some backlash due to the financial strain of rearing low-value calves (Stringleman, 2022). Furthermore, the financial strain and extra work can increase the stress of farmers, which may warrant concern for Fonterra's care about supplier wellbeing (Stringleman, 2022).

Personal and interpersonal experiences. Many factors affect how the farmer responds to stressors. For example, female farmers experienced higher levels of stress and mental illness compared to male farmers (Deary et al., 1997; Judd et al., 2006; Peel et al., 2015; Thomas et al., 2003). Experiences of stress were particularly greater in women who moved onto their partner's farm as opposed to the partner moving onto the woman's farm (Judd et al., 2006). In this situation, the woman felt they did not belong in the farming community (Judd et al., 2006). However, it was unknown if the higher experience of stress was due to female farmers being more open to disclosing experiences of stress compared with male farmers (Deary et al., 1997).

A second personal factor was the perceived loneliness and isolation of farming. Experiencing loneliness can increase symptoms of depression and anxiety (Erzen & Çikrikci, 2018; Maes et al., 2019). However, farmers tend to dismiss the importance of isolation on their wellbeing (Deary et al., 1997). This could be explained by other factors of stress being more important (Deary et al., 1997). For example, the health of the livestock was more important than the experience of loneliness.

A third interpersonal factor was the conflict between family and work roles. High workload and family role conflict can reduce wellbeing (Amstad et al., 2011). When work roles conflict with family roles, an individual's work time and demands put pressure on the individual's role in the family (Frone & Yardley, 1996; Netemeyer et al., 1996). For example,

an individual may withdraw from family commitments when experiencing occupational stress (Frone & Yardley, 1996). On the other hand, when family roles conflict with work roles, an individual's responsibilities and demands as a family member puts pressure on the individual's role at work (Frone & Yardley, 1996). For example, family and work role conflict may result in lowered work performance and work satisfaction (Frone & Yardley, 1996).

When experiencing conflict between family and work roles, general stress and burnout increase, while organisational commitment and family satisfaction decrease (Amstad et al., 2011; Miller et al., 2022). Family and work conflicts are particularly important for farmers due to the difficulty of separating work from nonwork-related responsibilities and activities. This is partly due to many farmers working and living on the farm (Hammersley et al., 2021). The lack of separation can lead to farmers working more hours which negatively impacted wellbeing (Kearney et al., 2014; Sabillón et al., 2022; Tómasson & Guðmundsson, 2009). Additionally, farmers experienced long workdays and fewer breaks compared with non-farmers (Deary et al., 1997; Kearney et al., 2014; Sabillón et al., 2022). The workload, complexity of the work task, and decision-making have been identified as factors that increase occupational stress on the farm (Judd et al., 2006; Kearney et al., 2014; Tómasson & Guðmundsson, 2009).

Farmers commonly felt unsatisfied with the balance between work and family commitments (Judd et al., 2006; Sabillón et al., 2022). Farm responsibilities do not stop during non-farming activities. The farmer may feel there is always work that needs attention on the farm. Furthermore, farmers tended to believe there was not enough time during the workday to complete farming tasks (Vayro et al., 2020). The disconnect from work responsibilities acts as a barrier to enjoying non-farming activities. Indeed, when farmers could not spend enough time with their families, the farmer experienced higher levels of stress (Kearney et al., 2014).

On the other hand, having autonomy was considered a strength on the farm. Farmers who experienced autonomy had better wellbeing than farmers who did not have autonomy (Hansen, 2022). Having autonomy meant the farmer could engage with and order daily tasks when the farmer saw fit, such as making silage and picking children up from school (Erdogan et al., 2012). Additionally, farm work can incorporate young family members, such as shifting livestock, feeding calves and lambs, and fencing. The ability to be flexible with work hours and farm jobs was associated with farming retention (Hansen, 2022).

Summary. Historically, stress represented a psychological imbalance (Selye, 1976). Now, stress is the inability of an individual to cope with an overwhelming event or an accumulation of micro stressors. Experiences of stress are subjective and affected by situational and personal factors. Despite some positive effects of acute stress, chronic stress is associated with dangerous health conditions, such as heart disease. Chronic stress was more commonly caused by daily stressors rather than a single stressful event.

Unfortunately, farmers experience higher stress levels compared with non-farmers. This could be the result of common, such as family and work role conflict, and farm-specific stressors, such as financial and political pressure. Additional factors were seasonal commitments, unpredictable events, changes in policy, and personal experiences. These factors overlap and interact. For example, a drought can increase financial pressure due to buying extra stock food. It is not well known how much stress is associated with these factors in Aotearoa New Zealand farmers.

Wellbeing and satisfaction.

Wellbeing and life satisfaction have been important subjects throughout history. Great philosophers, such as Aristotle, discussed the meaning and purpose of wellbeing (Kashdan et al., 2008). Aristotle proposed wellbeing as the pursuit of righteous, noble values, and behaviours, such as friendliness, truthfulness, and patience (Kashdan et al., 2008). In the 1600s and 1700s, wellbeing developed into the belief that pleasure was a motivator for happiness (Kashdan et al., 2008; Ryan & Deci, 2001).

Interest in researching wellbeing has increased in the last 30 years (Kashdan et al., 2008; Ryan & Deci, 2001). The World Health Organization (World Health Organization) proposed wellbeing as a positive mental state. Wellbeing included an individual's physical, mental, and social functions (World Health Organization, 2004). For example, the individual can cope with everyday stressors and be a productive member of their family and community. Wellbeing was also associated with happiness, sense of purpose, autonomy, and being mentally and physically functional (Ciarrochi et al., 2013; Kashdan et al., 2008). This definition suggested that wellbeing is not defined by an absence of disease nor by experiencing only a positive affect or good emotional state (Ryan & Deci, 2001).

There were two broad aspects of wellbeing. The first is eudaimonic wellbeing, which is the experience of psychological functionality, achievement, and fulfilment (Disabato et al., 2016; Kashdan et al., 2008; Taggart, 2015). Eudaimonic wellbeing covers meaning in life and

growth as well as functional social relationships (Kashdan et al., 2008; Taggart, 2015). Fortunately, there are specific areas farmers experience high wellbeing, despite the high levels of stress among farmers (Yazd et al., 2019). For example, farmers tend to experience a higher sense of place compared with non-farmers (Ellis & Albrecht, 2017; Stain et al., 2008). When the farmers felt a connection to the farmland, the land reflected their good wellbeing and sense of pride by appearing maintained (Ellis & Albrecht, 2017).

The second is hedonic wellbeing, which is the subjective experience of wellbeing, life satisfaction, pleasure, and absence of pain (Disabato et al., 2016; Kashdan et al., 2008; Taggart, 2015). Hedonic wellbeing has also been used interchangeably with life satisfaction compared with low life satisfaction (Erdogan et al., 2012; Sabillón et al., 2022). Satisfaction with life was associated with better job retention, lower mortality, fewer sleep complaints, and lower burnout (Erdogan et al., 2012). Furthermore, satisfaction with life can be divided into specific factors, such as social, family, relationship, and work satisfaction which enables the understanding of particular factors of life (Alfonso et al., 1996; Erdogan et al., 2012; Sabillón et al., 2022).

Social satisfaction. Social satisfaction is an individual's fulfilment of social life and social expectations. Despite the isolating nature of farming, farmers benefit from social interactions (Kuriger, 2016). For example, farmers utilise members in farming communities when experiencing distress (Judd et al., 2006). Relationships between friends, family, and work colleagues were identified as being important for social support and social satisfaction (Erdogan et al., 2012). Farmers utilise social interactions for advice regarding farming challenges, evaluating the seriousness of the farm challenge, and confirming whether others were experiencing something similar, among other reasons (Hammersley et al., 2021; Judd et al., 2006; Kuriger, 2016).

There are some drawbacks to socialising in the farming community. Some farmers experience pressure to socialise which can reduce wellbeing and life satisfaction (Judd et al., 2006). Additionally, small farming communities had unspoken social rules that the farmers needed to follow to be accepted in the farming community. For example, when socialising, farmers needed to remain positive when talking about farming experiences rather than expressing distress and dwelling on the problem (Judd et al., 2006). Therefore, socialising in farming communities can have a detrimental effect if the farmer could not express the struggle with a farming problem to other farming community members.

Relationship and family satisfaction. Relationship and family satisfaction refer to how an individual perceived their romantic relationships and family (Alfonso et al., 1996). Spending time with an intimate partner increased happiness more than spending time with friends, family, or colleagues (Bryson & MacKerron, 2017). Thus, more interactions with loved ones could improve wellbeing. Relationship and family satisfaction was important for farmers due to the support the partner or close family member can offer (Bryson & MacKerron, 2017; Judd et al., 2006; Kuriger, 2016). This may be due to the partner or family member having a better understanding of the farmer's situation and can provide emotional and practical support.

Work satisfaction. Work satisfaction refers to how an individual perceives their experience at work. Inherent in work satisfaction are income and finance. Sabillón et al. (2022) found that a positive financial outcome had the largest effect on work satisfaction, followed by time off, and socialising. Other work-related factors can affect work satisfaction. For example, hours of work during the week. Indeed, working over 40 hours a week significantly increased the occupational stress and burnout of farmers (Kearney et al., 2014; Sabillón et al., 2022).

Burnout is a specific kind of chronic stress related to functionality and productivity at work. Symptoms of burnout include achieving fewer personal accomplishments, exhaustion, and cynicism (Wekenborg et al., 2019). 11 percent of employees in Aotearoa New Zealand were estimated to experience work-related stress and burnout (Haar, 2022). Those at a higher risk of experiencing burnout were young employees, who worked at a large organisation, and employees who worked more than 55 hours a week (Haar, 2022). However, Haar (2022) did not report burnout specific to farmers.

Farmers tend to have higher work satisfaction than non-farmers (Sabillón et al., 2022). This may be due to many farmers being worker-owners of the farm. Self-employed individuals tended to have higher work satisfaction compared to those who were employed or worked in a job perceived as non-professional (Erdogan et al., 2012). In addition, productivity, happiness, and satisfaction at work were increased when individuals work from home (Bryson & MacKerron, 2017). However, it is unclear whether the wellbeing of farmers living and working on the farm differs from farmers living off the farm.

Barriers to wellbeing and satisfaction with life.

Farmers experience many barriers to accessing resources that improve wellbeing. Three main barriers were whom the farmers felt comfortable with, mental health stigma, and access to mental and physical health services (Judd et al., 2006).

When farmers experienced distress, they preferred to receive help from family and friends rather than a mental health professional (Judd et al., 2006). This may reflect concern about how non-farmers perceive and judge the farming roles and the need to keep social advice simple (Kearney et al., 2014; Sabillón et al., 2022). Talking with other farmers and members of the community helped to give insight into the problem encountered on the farm, and justified the decisions made to solve the problem (Kuriger, 2016). Additionally, when many farmers experienced a similar challenge, talking about the experience reassured the farmer they were not alone in experiencing the issue. This behaviour increased wellbeing by reducing the farmer's expectations and pressure on themselves (Kuriger, 2016). However, farmers did not respond positively when the conversation consisted of negative statements, such as moaning about a problem (Judd et al., 2006).

Farmers experience elevated levels of mental health stigma (Judd et al., 2006), which increased the farmer's preference to manage the situation themselves (Brew et al., 2016). Many farmers were worried if they were to seek help from a mental health professional, the knowledge of the farmer's struggle would not remain confidential (Brew et al., 2016). Furthermore, in small, tight communities, information about an individual can quickly spread through the community (Judd et al., 2006). The quick spread of information in the community increased the fear of being judged as an incompetent farmer.

Rural towns tend to have fewer medical and mental health services compared to cities (Judd et al., 2006). Farmers can wait three weeks before being seen by a professional (Fraser et al., 2005; Shahtahmasebi, 2022). Furthermore, rural individuals did not consistently see the same healthcare professionals during appointments (Shahtahmasebi, 2022). These experiences can reduce farmers' help-seeking behaviours. Indeed, farmers did not want to seek help for general medical issues and were less inclined to seek help for mental and emotional struggles (Brew et al., 2016; Judd et al., 2006). In turn, farmers were less likely to visit the doctor and be diagnosed with a chronic illness compared to non-farmers (Brew et al., 2016).

Farmers also reported facing more structural barriers to accessing mental health resources compared with non-farmers (Brew et al., 2016). For example, farmers needed to travel further to access mental health services and resources. Travelling to an appointment requires resources, such as fuel, and took time away from farm duties (Brew et al., 2016). Additionally, farmers were wary of outsiders and non-farmers understanding the complex responsibilities and the community of farmers (Kearney et al., 2014). Therefore, the wariness of non-farmers can be a barrier to accessing mental health services and resources.

Summary. Currently, wellbeing is associated with happiness and good physical, mental, and social functions. There are two broad concepts of wellbeing, eudaimonic and hedonic wellbeing. eudaimonic wellbeing reflects functionality and achievement, and hedonic wellbeing is a subjective experience of wellbeing or satisfaction with life. Satisfaction with life also covers specific life factors, such as social, family, relationship, and work satisfaction, which can be measured independently to gain a better understating of the factors of life. Finally, there were three main barriers to achieving good wellbeing; whom farmers felt comfortable talking to about farming challenges, mental health stigma, and access to health services.

Coping strategies and leisure activities.

Since the 1960s, understanding coping strategies has been a major field of research (Folkman & Moskowitz, 2004). Early research on coping focused on pathology and unconscious processing, which developed into the adaptive functions of coping (Folkman & Moskowitz, 2004). However, there is no universally accepted definition of coping (Di Nota et al., 2021). In this study, coping strategies are actions, behaviours, and thoughts used to reduce the symptoms of stress and regulate emotions experienced by the individual (Compas et al., 2014; Di Nota et al., 2021; Lazarus & Folkman, 1984).

Coping strategies change over time or can occur at the same time (Lazarus & Folkman, 1984). For example, an individual can cope with a sick cow by administering medication and believing the sickness developed by the individual's lack of good decisions, then calling a veterinarian for advice. These changes in coping strategies can occur over an extended period or in a few seconds, such as navigating a confrontation. According to Lazarus and Folkman (1984), the change in coping strategies occurs in response to the reappraisal of the situation and the effectiveness of the coping strategy. Individual coping strategies can be more effective in different situations (Lazarus & Folkman, 1984). For

example, one coping strategy may effectively reduce the stress of an individual during an earthquake, while the same coping strategy may not be effective for another individual or event.

Coping strategies are influenced by experience, personal characteristics and the type of stressor (Carver et al., 1989; Louvet et al., 2007; Nielsen & Knardahl, 2014; Tripathy et al., 2019). For example, if an individual has successfully used planning as a coping strategy, the individual was more likely to plan in similar circumstances. On the other hand, if an individual engaged in a coping strategy that was not successful, the individual might be less likely to reuse the same coping strategy in the future. Additionally, if the individual could not access the coping strategy, the strategy could not be used (Carver et al., 1989; Tripathy et al., 2019). For example, an individual cannot engage in emotional support if there was no one available to provide support.

There were two broad groups of coping strategies: Adaptive coping, which has been called engagement, approach, active, and positive coping strategies, and dysfunctional coping, which has been called maladaptive, disengaged, and avoidant coping in previous research (Carver et al., 1989; Di Nota et al., 2021; Lazarus & Folkman, 1984; Moskowitz et al., 2009; Nielsen & Knardahl, 2014). Adaptive coping is an appropriate coping strategy that decreases stress in the short and long term (Chesney et al., 2006; Ewert et al., 2021; Nielsen & Knardahl, 2014; Snyder & Dinoff, 1999). Adaptive coping strategies consisted of positive reinterpretation, planning, and social support (table 1; Ewert et al., 2021; Kato, 2015; Moskowitz et al., 2009). These coping strategies were associated with high wellbeing, positive affect, positive physical health, low distress, anxiety, depression, and negative physical symptoms (Kato, 2015; Moskowitz et al., 2009).

Farmers tended to naturally engage in adaptive coping (Judd et al., 2006; Kuriger, 2016). This may be due to farmers having the responsibility to keep the farm productive (Kuriger, 2016). If the farmer did not resolve the problem on the farm, the problem may not resolve itself or cause more problems. For example, delaying medical treatment for a cow may result in the death of the cow or an animal cruelty investigation. Farmers in Aotearoa New Zealand utilised many coping strategies including planning, social support, hiring better staff, and looking after personal health (Kuriger, 2016).

Table 1: Definition of coping strategies and correlation with wellbeing and distress.

Coping strategy	Definition	Farm examples in response to a broken machine	Wellbeing *r*	Distress *r*
Active coping	Actions that directly address the stressor.	Assess and repair the machine.	.25	-.13
Planning	Creating steps to address the stressor.	Think about how to fix and who can repair the machine.	.21	-.09
Positive reinterpretation	Reinterpret the stressor as a positive factor.	Reinterpret the inconvenience as a break from daily responsibilities.	.32	-.12
Acceptance	Accept the stressor is real.	Acknowledge the machine has broken down.	.18	-.11
Humour	Interpret the stressor as light-hearted or funny (Martin & Ford, 2018).	Joke about the machine with others.	-.01	.10
Turning to religion	Utilising spiritual and religious beliefs to reduce the stress.	Believe the broken-down machine is part of god's plan.	.08	.10
Emotional support	Seek moral support or sympathy.	Talk to friends and family about the breakdown.	.24	-.01
Instrumental support	Seek advice about how to address the stressor.	Ask friends and family how to work around the breakdown.	.19	-.02
Self-distraction/ mental disengagement	Distract oneself from thinking about the stressor.	Attend to another farm task unrelated to the machine.	-.24	-.04
Denial	Refuse to believe the stressor happened.	Refuse to acknowledge and talk about the situation with others.	-.15	.18
Venting	Expression of the emotional effect of the stressor.	Curse into the air.	-.08	.30
Substance use	Use alcohol or drugs to reduce the emotional effect of the stressor.	Drink alcohol to relieve stress.	-.15	.15
Behavioural disengagement	Effort to address the stressor is reduced.	Leave the machine where it broke down until necessary.	-.31	.30
Self-blame	Blame self for the stressor.	Blame themself for forgetting to perform machine maintenance.	-.07	.43

Note: Definition of the coping strategies were by Carver (1997) and Carver et al. (1989), except for humour. Correlations with wellbeing and distress were reported by Kato (2015).

Alternatively, dysfunctional coping does not effectively regulate distress and is associated with low wellbeing, physical health, low affect, high distress, anxiety, depression, and negative physical symptoms (Kato, 2015; Moskowitz et al., 2009). This coping category tends to focus on coping away from the stressor or towards the self, such as self-blame (Ewert et al., 2021). Dysfunctional coping includes behavioural disengagement, self-

distraction, and substance use (table 1; Carver et al., 1989; Ewert et al., 2021; Kato, 2015; Moskowitz et al., 2009).

Fortunately, farmers recognised that dysfunctional coping strategies were an unproductive way to deal with farm stressors (Judd et al., 2006; Kuriger, 2016). For example, some farmers suppress emotions which increased feelings of frustration and stress as the emotions remained unresolved (Kuriger, 2016). However, dysfunctional coping can be adaptive in specific circumstances if used for a short period (Carver et al., 1989). For example, some farmers utilised alcohol to relax in a social context, in which alcohol was used as a vehicle for social support (Kuriger, 2016). If alcohol was used as the only means of coping, the long-term effect may result in more stress.

Another coping strategy that farmers in Aotearoa New Zealand used was engaging in unwinding and leisure activities (Kuriger, 2016). Unwinding and leisure referred to activities that were free from obligation and were enjoyable to the individual, such as sports, watching television, and socialising (Walker et al., 2019). Leisure occupies the time an individual has outside of daily responsibilities, such as work, family, and educational commitments (Parker, 2021). However, not all available time was considered leisure. For example, an unemployed individual would not be experiencing extended periods of leisure due to more time being available during the day. Indeed, the activity needs to be engaged with as a choice by the individual (Parker, 2021).

There were two perspectives of measuring leisure: An objective, or structural, perspective and a subjective perspective (Newman et al., 2014; Walker et al., 2019). The objective approach to leisure activities was based on the type of activity and how often an individual engaged in the activity (Parker, 2021; Walker et al., 2019). The subjective assessment of leisure activities refers to the individual reasons for participating in the leisure activities, such as values, attitudes, perception, satisfaction, and experience (Newman et al., 2014; Parker, 2021; Walker et al., 2019).

Kuykendall et al. (2015) found objective or structural measures of leisure had a stronger relationship with wellbeing. For example, the more frequently an individual engaged in leisure activities, the higher their wellbeing (Csikszentmihalyi & LeFevre, 1989; Kuykendall et al., 2015; Meier et al., 2016; Pressman et al., 2009; Stebbins, 2015). Additionally, the longer an individual committed to regular engagement in leisure activities, the better the wellbeing experienced over time (Kuykendall et al., 2015). Furthermore, there

is a sense of freedom when an individual can distance themselves from work, education, and family responsibilities (Walker et al., 2019).

Engaging in leisurely and enjoyable activities was associated with positive affect, life satisfaction, and lower levels of symptoms of depression and dementia (Kuykendall et al., 2015; Pressman et al., 2009; Stebbins, 2015; Wiese et al., 2018; Yang et al., 2022). This could be partly explained by leisure activities fulfilling the individual's needs that work and other commitments cannot fulfil (Stebbins, 2015). For example, leisure activities exposed individuals to a larger social group which resulted in a larger and more diverse social group compared with individuals who did not engage in leisure activities (Pressman et al., 2009).

Along with the positive effects on mental health and wellbeing, leisure also reduced the symptoms of stress (Iwasaki, 2003; Tripathy et al., 2019). Detaching oneself from stressful responsibilities may explain the reduction of stress (Bunea, 2020). Indeed, when farmers engaged in leisure activities, they returned to farm responsibilities with a clearer mind (Kuriger, 2016; Stebbins, 2015; Walker et al., 2019).

In general, individuals preferred to engage in calm and relaxing leisure activities compared to active and exciting activities (Mannell et al., 2014). Relaxation is an important reason to engage in leisure activities. However, leisure activities associated with relaxation were also associated with dullness and boredom (Mannell et al., 2014; Stebbins, 2015). Calm and relaxing leisure activities represent a casual form of leisure while active and exciting activities represent a serious form of leisure (Stebbins, 2015). Casual leisure has fewer expectations, such as rules, skills, and time constraints, for example, having a nap, watching television, and casual socialising. Casual leisure tends to be engaged in for pleasure and enjoyment, while serious leisure refers to hobbies and interests that require specific knowledge, skills, and experience, such as foraging for fungi or volunteering in the community (Stebbins, 1992; Walker et al., 2019). Many serious leisure activities cost the individual money and resources to take part in the activity, such as paying to join an orchestra (Stebbins, 1992).

Summary. Coping strategies are used to reduce the experience of stress. Coping strategies are influenced by situational and personal factors. However, some coping strategies may be more efficient in reducing stress compared with others, such as adaptive coping and dysfunctional coping. Farmers tended to engage in adaptive coping and recognised the negative effects of long-term use of dysfunctional coping. Additionally, leisure activities

were utilised by farmers. Leisure activities are activities an individual enjoys away from daily responsibilities. Many individuals preferred to relax when engaging in leisure activities; however, the activities can become boring.

Rational

Despite previous research recognising the positive effects of coping strategies and leisure, there is a lack of understanding about how farmers of Aotearoa New Zealand cope. Goffin (2014) proposed improving farmers' ability to cope with stressors to improve wellbeing and reduce general stress. This was due to the geographical isolation of farms creating barriers for farmers to access mental health services (Deary et al., 1997; Goffin, 2014; Hammersley et al., 2021). In addition, leisure activities can provide a break from farm responsibilities and stress which can help the farmer relax and take care of their mental and physical health (Kuriger, 2016; Kuykendall et al., 2015; Yoshi Iwasaki, 2000). However, in Aotearoa New Zealand, there is limited understanding of what leisure activities farmers use to relax and unwind.

A Master's thesis by Kuriger (2016) explored Aotearoa New Zealand farmers' coping strategies using qualitative methods where leisure activities were discussed. Due to the thesis interviewing 11 participants, the results could not be generalised to the wider population of farmers. With the intent of learning more about what leisure activities farmers use to unwind and relax, the first research questions were developed:

1. a. What leisure activities do farmers use to reduce stress?

1. b. Is there a difference between current and ideal engagement in leisure activities and their effect on wellbeing?

In Kuriger's (2016) Master's thesis, it was unclear how leisure activities and coping strategies affected the wellbeing and stress of farmers. Previous research has found specific leisure activities and coping strategies improve wellbeing, decrease wellbeing, or have little effect (Ewert et al., 2021; Kato, 2015; Moskowitz et al., 2009). For example, reinterpreting the stressor to a positive perspective can reduce the effect of the stressor and is associated with high wellbeing, while using alcohol tends to be associated with low wellbeing (Ewert et al., 2021; Kato, 2015; Moskowitz et al., 2009). However, the previous research did not distinguish the effects of leisure activities and coping strategies on the wellbeing of farmers. This informed the following research questions:

2. a. What leisure activities predict the wellbeing of farmers?

2. b. What coping strategies predict the wellbeing of farmers?

Previous research has found farmers experience higher stress and lower wellbeing compared with non-farmers (Jones-Bitton et al., 2020; Yazd et al., 2019). This could be explained by farmers experiencing common stressors, such as interpersonal conflict, and farm-specific stressors, such as weather events directly affecting the productivity of the farm (Deary et al., 1997; Hammersley et al., 2021; Yazd et al., 2019). Few previous research articles measured how coping strategies moderated the relationship between a general stressor and wellbeing or stress. One meta-analysis by Penley (2002) found stressors moderate the relationship between coping strategies and general health symptoms. However, Penley's (2002) meta-analysis did not focus on farmers; thus, the stressors measured did not reflect stressors experienced on the farm. Currently, there is no known investigation into how coping strategies affect the relationship between farm-specific stressors and farmers' wellbeing and stress.

This informed the final research questions:

3. a. How do coping strategies affect the strength of the relationship between other variables and wellbeing?

3. b. How do coping strategies affect the strength of the relationship between other variables and stress?

Summary of research questions.

Research question 1:

1. a. What leisure activities do farmers use to reduce stress?

1. b. Is there a difference between current and ideal engagement in leisure activities and their effect on wellbeing?

Research question 2:

2. a. What leisure activities predict the wellbeing of farmers?

2. b. What coping strategies predict the wellbeing of farmers?

Research question 3:

3. a. How do coping strategies affect the strength of the relationship between other variables and wellbeing?

3. b. How do coping strategies affect the strength of the relationship between other variables and stress?

Methods

Participants.

The target population were livestock farmers. The participant's data was included in the analysis if the participant indicated they farmed livestock such as cattle, sheep, goats, and deer. Responses were excluded if the participant indicated that they did not work on the farm.

Of the 131 participants, 47 identified as male and 83 identified as female, while one participant did not disclose their gender. The mean age was 42 years (*SD* = 14) with a range of 18 to 77. Most participants identified as European (87.8 percent) followed by Māori (6.1 percent) and most participants were married (77.1 percent) and lived with their partner (52.7 percent). Further details are reported in table 2**.**

More participants did not own a farm (61.1 percent) than those that owned a farm (38.9 percent) and more participants lived on the farm (91.6 percent) than lived off the farm (8.4 percent). Participants had worked on the farm between one year and 52 years (*M* = 19, *SD* = 14) with most participants located in the Waikato (30.5 percent), followed by Canterbury (22.1 percent). Dairy cows were the most common livestock (64.9 percent), followed by beef (30.5 percent). In addition, 30.5 percent of farms were mixed farms. This meant the farmers reared more than one species of livestock, such as cattle and sheep, or the same species for different purposes, such as dairy cows and cattle reared for beef. Further details are reported in table 3.

Table 2. Demographic characteristics of the participants.

Characteristics	Total sample (N = 131)	
	N	%
Gender		
Male	47	36.2
Female	83	63.4
Ethnicity		
European	115	87.8
Māori	8	6.1
Pacific	2	1.5
Asian	3	2.3
Other	5	3.8
New Zealander/Kiwi	6	4.6
Age (M = 41.6, SD = 13.9)		
18-25	18	13.7
26-35	31	23.7
36-45	34	26
46-55	25	19.1
56-65	15	11.5
≥66	8	6.1
Marital status		
Married	101	77.1
Separated	7	5.3
Single	22	16.8
Unknown	1	0.8
Living with		
Alone	16	12.2
Family	53	40.5
Partner	69	52.7
Other	4	3.1
COVID plan		
Yes	101	77.1
No	30	22.9

Note. Some percentages may not equate to 100, as some participants identified with multiple answers.

Table 3. Farming characteristics of the participants.

	Total sample (N = 131)	
Characteristics	N	%
Owns the farm		
Yes	51	38.9
No	80	61.1
Years farming (M = 19.4, SD = 13.8)		
≤5	25	19.1
6-10	17	13.0
11-15	20	15.3
16-20	19	14.5
21-25	15	11.5
26-30	9	6.9
31-35	5	3.8
36-40	8	6.1
≥41	13	9.9
Lives on the farm		
Yes	120	91.6
No	11	8.4
Type of farm		
Dairy cows	85	64.9
Dairy goats	4	3.1
Beef	40	30.5
Sheep	32	24.4
Deer	11	9.2
Other	8	6.1
Mixed farms	40	30.5
Region		
Northland	7	5.3
Auckland	2	1.2
Waikato	40	30.5
Bay of Plenty	7	5.3
Gisborne	0	0
Taranaki	9	6.9
Hawk's Bay	5	3.8
Manawatu/ Wanganui	9	6.9
Wellington	2	1.5
Nelson/ Tasman	3	2.3
Marlborough	2	1.5
West Coast	2	1.5
Canterbury	29	22.1
Otago	7	5.3
Southland	7	5.3
Number of people working on the farm (M = 3.2, SD = 2.7)		
≤1	37	28.2
2	28	21.4
3	27	20.6
4	18	13.7
5	7	5.3
6	5	3.8
≥7	9	6.9

Note. Some percentages may equal above 100 due to participants selecting more than one answer.

Measures.

The questionnaire consisted of 7 scales, which took approximately 30 minutes to complete. There were three sections. The first consisted of demographic questions, including age, gender, ethnicity, type of farm, and how long the participant has been farming. The second section consisted of validated scales measuring wellbeing, perceived stress, farm-specific stressors, satisfaction with life, and the conflict between family and work roles. The third section asked about various unwinding activities and how often the participant engaged and would like to engage in the unwinding activities.

Coping strategies. The Brief Coping Orientation to Problems Experienced (Brief COPE; Carver, 2007) was used to measure coping strategies. There were 28 items, in which the participant indicated their response on a four-point Likert-type scale. In this scale, participants were asked to rate each item on how they responded to a stressful event. For example, "I turn to work or other activities to take my mind off things" and "I criticize myself". Zero represented never engaged in the behaviour, and three represented engaging in the behaviour a lot. The scale measures 14 types of coping strategies listed in table 1. Each subscale has two items with a minimum score of zero and a maximum of six. The Brief COPE has been extensively used and has previously been found to have good reliability and validity. The Cronbach's alpha ranged from .55 (venting) to .91 (substance use), with a median of .68 (Kato, 2015).

Wellbeing. The Warwick Edinburgh Mental Wellbeing Scale (WEMWBS; Taggart, 2015) was used to measure the general wellbeing of individuals. This scale consists of 14 items rated on a five-point Likert-type scale ranging from one (none of the time) to five (all the time). An example of the scale's items was "I've been feeling useful". To calculate the scale score, the scores of all the items were added together. The highest score is 70, while the lowest score was 14. Higher scores indicate high wellbeing, while low scores indicate low wellbeing. Previous research found the Cronbach alpha to be .89 and test-retest reliability was found to be .83 (Tennant et al., 2007).

Satisfaction with factors of life. The Extended Satisfaction with Life Scale (Alfonso et al., 1996) was selected to measure general life satisfaction, social satisfaction, family satisfaction, relationship satisfaction, and job satisfaction. Five additional subscales were not administered (sexual satisfaction, self-satisfaction, school satisfaction, and physical satisfaction) because they were not relevant to the research questions, and to limit the

participant burden. There were five items for each scale, except for job satisfaction which had ten items. Participants were asked to rate their satisfaction with various areas of their life on a seven-point Likert-type scale, where one represented strongly disagree and seven represented strongly agree. An example of an item was “I am satisfied with my life”. The means for each subscale were used in the analysis. The highest score that can be obtained for each subscale is seven and the lowest score is one. High scores indicated high satisfaction with life. The subscales cannot be summed together to form a single scale score, as each scale reflected a factor of life satisfaction. Cronbach’s alpha ranged from .88 (job satisfaction) to .96 (social, relationship, and family satisfaction; Alfonso et al., 1996).

Farm-specific stressors. The Edinburgh Farm Specific Stress Inventory (Deary et al., 1997) was chosen to measure farm-specific stressors. The participant indicated the severity of stress on a five-point Likert-type scale, with one representing no stress and five representing severe stress. The 27 items were divided into six subscales: Finance, isolation, time pressure, farming bureaucracy, uncontrollable natural forces, and personal hazards. Item four was changed due to the item being irrelevant to Aotearoa New Zealand farmers. The item was changed from “changes to CAP” (common agricultural policy of the European Union) to “meeting the requirements of my dairy company/producer board/buyer” which was used in Firth’s (2007) research. Other items include “feeling isolated on the farm” and “long hours of work”. Finance, isolation, and time pressure had four items each, and farming bureaucracy, uncontrollable natural forces, and personal hazards had five items each. The means of the subscale were used in the analysis, in which a higher score indicated high perceived stress while a low score indicated low levels of stress. Cronbach’s alpha ranged from .67 (personal hazards) to .82 (farming bureaucracy; Deary et al., 1997).

General stress. The Perceived Stress Scale (Cohen et al., 1983) was chosen to measure global stress. The PSS measured the stress that the participant experienced in the month before filling out the questionnaire. There were 14 items with a five-point Likert-type scale for the response. Zero represented experiencing symptoms of stress none of the time and four represented experiencing the symptoms very often in four weeks. For example, “in the last month, how often have you been upset because of something that happened unexpectedly”. To get the scale score, seven items were reverse coded (4,5,6,7,9, 10, and 13) and then all items were summed together for a maximum score of 56 and a minimum score of zero. A high score represented high experiences of perceived stress and a low score

represented a low level of perceived stress. The Cronbach's alpha was .85 (Cohen et al., 1983).

The conflict between family and work roles. The work-family conflict (WFC) and family-work conflict scale (FWC; Netemeyer et al., 1996) was chosen to measure how much work stress affected family life and vice versa. The relationship between family and work roles are complex for farmers, especially if the farmer lives on the farm with family. The participants were asked to indicate how much they agreed with 10 statements on a seven-point Likert-type scale. One represented strongly disagree and seven represented strongly agree. There were two subscales with five items each. The first measured WFC and the second measured FWC. The subscale scores were calculated by summing the items (a maximum of 35 points and a minimum of five points). A high score represented high conflict while a low score represented a low conflict between work and family. The Cronbach alpha for WFC was .88 and for FWC was .86 (Netemeyer et al., 1996).

Unwinding and leisure activities. The unwinding and leisure activities were measured using two scales. The first scale measured how often an individual participated in an activity in the past four weeks, while the second scale measured how often the individual would ideally participate in the activity. The scales had a list of 14 activities as well as an 'other' option in which the participant could write the activity in a separate text box. The 14 leisure activities were watching television, listening to or playing music, reading, socialising with friends, socialising with family, cooking or eating food, drinking alcohol, exercising, meditation, mindfulness, hunting, fishing, travelling or going for a drive, hobbies, and 'other'. The activities listed were informed by Kuriger's (2016) Master's thesis which explored the coping strategies of Aotearoa New Zealand farmers using a qualitative research design. Furthermore, this scale was developed and used because other leisure scales did not reflect the leisure activities found in Kuriger's (2016) Master's thesis which focused specifically on farmers. Each activity was rated on a seven-point Likert-type scale to indicate the participant's engagement or ideal engagement in the activity. Zero represented never and seven represented multiple times a day.

Procedure

This study was approved by the Human Research Ethics Committee (HREC(Health)2022#16; Appendix 1).

The questionnaire was distributed online and on paper. The online data was collected through a website, Qualtrics. The link to the questionnaire was distributed through social media groups, posters in rural retail stores around the Waikato and Bay of Plenty, dairy company newsletters, and farming magazines. The paper version was distributed through rural retail and farming family and friends, albeit my family was advised not to complete the survey. The target population of this research were farmers; therefore, farming-based social media and retail were used to disperse the questionnaire.

Both the online and paper version of the questionnaire included information about the study (appendix 2), followed by a consent form, and then the questionnaire. In Qualtrics, the participant gave consent by checking a series of relevant statements and the paper version required the participant to tick the relevant statements and a signature to indicate they read and understood the information provided (appendix 2). The questionnaire had three sections (demographic, scales, and measuring engagement in leisure), in which the questionnaire was estimated to be completed in 30 minutes (appendix 3). The data from the paper version was entered into Qualtrics and the paper version was destroyed. Then the data was downloaded for Qualtrics, scored, and analysed.

The participants had the opportunity to win a small monetary reward (a 50-dollar voucher for every 100 participants) for participating in the study.

Statistical analysis.

The data were analysed using the Statistical Package for Social Science (SPSS) version 28.

Initially, 145 participants responded to the questionnaire between June and November 2022. However, 14 participants were removed due to data with less than three completed assessable scales and not meeting the criteria of working on the farm. Thus, the data of 131 participants were analysed in this study.

The first set of analyses consisted of descriptive statistics for the scales and subscales to check for the distribution of the data. This included mean, standard deviation, number of participants, and max and minimum scores. Next, an oblimin factor analysis was conducted to confirm the items of the scales and subscales loaded correctly together for the Brief COPE, Extended Satisfaction with Life Scale, Edinburgh Farm Specific Stress Inventory, and the Work and Family Conflict scale. The WEMWBS, Perceived Stress Scale, and leisure

activities were not analysed with a factor analysis as they are a single scale, or each item was a single scale. Additionally, the Brief COPE was not analysed with a factor analysis due to the intention to use the original coping strategies in the analysis. Finally, Pearson's correlations were calculated to measure the correlation between the scales and subscales.

For research question one, what leisure activities farmers use to reduce stress and the difference between the current and ideal engagement of leisure activities, descriptive statistics were conducted to understand the frequency and use of the activities. A content analysis was conducted to group leisure activities and comments into meaningful categories. Furthermore, to understand the difference between current engagement and ideal engagement in leisure activities, a paired samples t-test was conducted. Finally, a Person's correlation was run to measure the strength and direction of the association between leisure activities and wellbeing.

For research question two, what leisure and coping strategies predicted wellbeing, a Pearson's correlation were conducted between wellbeing, leisure activities, coping strategies, and three demographic factors (gender, farm experience in years, and farm type). This was to measure whether the factors had a high association, which may imply multicollinearity (Sadahiro & Wang, 2018), or an association below .10, which meant the factor could not be used in the regression. Then, two hierarchical regressions were conducted to measure how much the variables explained wellbeing. The first hierarchical regression measured the effects of leisure activities on wellbeing, and the second measured the effect of coping strategies on wellbeing.

The first step included the demographic variables to control for the effects on wellbeing. Gender was used in the model due to the previous research finding individuals who identify as female had lower wellbeing and higher stress compared to those who identify as male (Jones-Bitton et al., 2020; Walker & Walker, 1988). Farm experience in years was also controlled for due to previous research found young and inexperienced farmers have lower wellbeing and higher stress compared with older and more experienced farmers (Batterham et al., 2022; Gunn et al., 2021; Peel et al., 2016; Richards et al., 2013). However, there were mixed findings regarding stress experienced by older farmers due to the shift in farm culture, roles, and more use of computer technologies (Hammersley et al., 2021). Finally, farm type was controlled for due to previous research stating mixed farms experience higher stress than single animal or product farms (Deary et al., 1997; Lunner Kolstrup et al., 2013; Thomas et al., 2003; Walker & Walker, 1988). The second step consisted of leisure

activities (research question 2.a.) and coping strategies (for research question 2.b.) that significantly correlated with wellbeing.

For question three, how do coping strategies affect the relationship between other variables (satisfaction with life, social satisfaction, family satisfaction, relationship satisfaction, job satisfaction, farming finance, farming isolation, time pressure, farming bureaucracy, uncontrollable natural forces, personal hazards, FWC, and WFC) and wellbeing and stress, an oblimin rotation factor analysis was conducted on the Brief COPE subscales proposed by Carver (2007). The factor analysis grouped the coping strategies into meaningful categories. Then Pearson's correlations were conducted between coping strategies, wellbeing, stress, and the remaining subscales. The correlation analysis was performed to test for multicollinearity (Sadahiro & Wang, 2018). Finally, 13 moderation analyses were conducted for each category of coping strategies for wellbeing or perceived stress as the outcome variable. The moderation analysis was conducted using an SPSS plugin called PROCESS (Hayes, 2022). The subscales of the Edinburgh Farm Specific Stress Inventory, Work and Family conflict scale, and the Extended Satisfaction with Life Scale were the predictors for Wellbeing (research question 3.a.) and Perceived Stress (research question 3.b.). The categories of the coping strategies were the moderator variables.

Results

Introduction.

This section begins with descriptive statistics of the scales and subscales: Brief COPE, WEMWBS, Extended Satisfaction with Life Scale, Edinburgh Farm Specific Stress Inventory, Perceived Stress Scale, Work and Family Conflict scale, and unwinding and leisure activities (table 4). All scales and subscales were normally distributed, except for Relationship Satisfaction, which was negatively skewed. In addition, four coping strategies, Religion, Denial, Substance Use, and Behavioural Disengagement, were positively skewed. This meant, there was many participants had a low engagement in these four coping strategies.

Table 4. Descriptive statistics of scales and subscales.

	Mean (*SD*)	*n*	Max-min
Wellbeing	43.70 (9.95)	131	14-68
Perceived stress	26.15 (7.86)	106	4-49
Extended Satisfaction with Life Scale			
Life satisfaction	4.65 (1.35)	119	1-7
Social satisfaction	3.52 (1.74)	118	1-7
Family satisfaction	5.02 (1.50	119	1-7
Job satisfaction	5.23 (1.26)	117	1-7
Relationship satisfaction	*5.44 (1.57)*	101	1-7
Edinburgh Farm Specific Stress Inventory			
Farming bureaucracy	3.26 (0.76)	113	1.4-50
Finance	2.88 (1.11)	113	1-5
Isolation	2.42 (0.84)	113	1-5
Natural forces	2.44 (0.63)	113	1-4
Personal hazards	2.70 (0.84)	113	1-4.60
Time pressure	3.23 (0.91)	113	1.25-5
Work-family conflict	24.15 (6.65)	104	5-35
Family-work conflict	15.17 (5.91)	104	5-29
Brief COPE			
Active coping	3.78 (1.57)	130	0-6
Planning	3.91 (1.50)	131	0-6
Positive reframing	3.22 (1.59)	130	0-6
Acceptance	3.49 (1.57)	131	0-6
Humour	2.44 (1.76)	131	0-6
Religion	**0.56 (1.35)**	131	0-6
Emotional support	2.35 (1.65)	131	0-6
Instrumental support	2.47 (1.64)	130	0-6
Self-distraction	3.32 (1.47)	131	0-6
Denial	**0.66 (1.10)**	131	0-5
Venting	2.22 (1.51)	131	0-6
Substance use	**0.87 (1.50)**	131	0-6
Behavioural disengagement	**1.17 (1.37)**	130	0-6
Self-blame	3.00 (1.89)	131	0-6

Note: Bold = Positively skewed > 1.00; Italics = Negatively skewed > 1.00.

Next, an oblimin factor analysis was conducted to confirm the questionnaire items loaded on the sub-scale proposed by previous research. Factor analyses were carried out for the Extended Satisfaction with Life Scale (Alfonso et al., 1996), Edinburgh Farm Specific Stress Inventory (Deary et al., 1997), and the Work and Family Conflict scale (Netemeyer et al., 1996). A factor analysis was not performed on the WEMWBS (Taggart, 2015) and Perceived Stress Scale (Cohen et al., 1983) as they are a single scale. Furthermore, a factor analysis of the Brief COPE was not conducted due to this study using the original subscales proposed by Carver (2007) and previous research found the items did not load on the appropriate scales (Carver, 2007). The Extended Satisfaction with Life Scale (appendix 4), and the Work and Family Conflict scale (appendix 6) had the items load as expected.

Regarding the Edinburgh Farm Specific Stress Inventory (appendix 5), all the items loaded on the correct subscale; however, there were three items that loaded on multiple subscales. Both 'personal illness during busy times' and 'no farm help or loss of help when needed' loaded higher on the natural forces compared with the personal hazard's subscale. The original subscale these items belonged in proposed by Deary (1997) was personal hazards; thus, the items were scored as part of the original subscale. The third item, 'Significant production loss due to disease/pests/weeds', loaded highest on the farm bureaucracy subscale compared with the finance and the natural forces subscales. This item originally loaded on the natural force's subscale; thus, in the study, the item was removed.

Finally, a Pearson's correlation was conducted between the scales and subscales (table 5). Wellbeing correlated with all scales and subscales, except for Personal Hazards. In addition, Perceived Stress correlated with all scales and subscales.

Table 5. Pearson's correlation between the coping strategy categories, wellbeing, perceived Stress, Edinburgh Farm Specific Stress Inventory, work and family conflicts, and the Extended Satisfaction with Live subscales.

	Wellbeing	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16
1. Perceived stress	**-.80**																
Coping categories																	
2. Adaptive Coping	**.45**	**-.27**															
3. Dysfunctional Coping	**-.48**	**.60**	-.14														
4. Social Coping	**.34**	-.09	**.32**	.00													
Edinburgh Farm Specific Stress Inventory																	
5. Bureaucracy	**-.27**	**.27**	.03	.09	.06												
6. Finance	**-.33**	**.45**	-.06	**.27**	.04	**.38**											
7. Isolation	**-.43**	**.40**	**-.28**	**.31**	-.12	.17	**.40**										
8. Natural forces	**-.26**	**.40**	.06	**.22**	.17	**.55**	**.42**	**.28**									
9. Personal hazards	-.18	**.42**	.02	**.27**	.12	**.41**	**.42**	**.29**	**.54**								
10. Time pressure	**-.42**	**.53**	**-.22**	**.33**	-.04	**.40**	**.41**	**.45**	**.50**	**.51**							
11. Work-family conflict	**-.41**	**.43**	-.10	**.25**	-.06	.07	**.24**	**.33**	.16	**.32**	**.44**						
12. Family-work conflict	**-.24**	**.27**	-.07	.16	.04	.16	.14	**.26**	.08	.08	.06	.19					
Extended Satisfaction with Life Scale																	
13. Life satisfaction	**.71**	**-59**	**.41**	**-.29**	**.33**	-.12	**-.33**	**-.42**	-.05	.05	**-.27**	-.19	**-.25**				
14. Social satisfaction	**.55**	**-.48**	**.41**	**-.29**	**.21**	-.11	**-.28**	**-.50**	-.17	-.20	**-.35**	**-.27**	-.16	.59			
15. Family satisfaction	**.49**	**-.34**	.17	**-.24**	**.28**	-.08	-.02	**-.22**	-.05	.03	-.09	-.05	**-.28**	**.56**	**.37**		
16. Job satisfaction	**.45**	**-.40**	**.28**	-.08	**.26**	.06	-.14	**-.26**	.11	-.03	**-.29**	**-.35**	-.01	**.45**	**.35**	**.22**	
17. Relationship satisfaction	**.34**	**-.30**	**.20**	**-.20**	.06	.04	-.08	**-.24**	-.01	.03	-.08	.08	**-.21**	**.47**	**.33**	**.54**	.19

Note. Correlations in bold signify significance at the .05 level. Gender: 1 = Male, 2 = Female. Farm type: 1 = single livestock type, 2 = mixed livestock. The participant number ranged from 131 to 94.

Leisure activities farmers engage in to unwind.

15 leisure activities rated on a Likert-type scale in the questionnaire. Zero represented never engaging in the activity for leisure and six represented engaging in the activity many times a day for leisure. For current engagement in leisure activities, watching television was the most common, followed by cooking/eating food, then listening/playing music (table 6). For the ideal engagement in leisure activities, listening/playing music was the most common, followed by cooking/eating food, and then watching television. The least common current leisure activities were fishing, meditation, and hunting. For the ideal leisure activities, the least common were hunting, fishing, and meditation. Many of the leisure activities were positively skewed, meaning more individuals had a low engagement in the leisure activity. These activities were hobbies, other leisure activities, mindfulness, hunting, meditation, and fishing. These activities also tended to have a positive kurtosis, meaning the engagement in the activities appeared significantly more likely to have a similar engagement at each level of engagement in the population.

Table 6. Descriptive statistics and paired samples t-test of the leisure activities participants rated in the questionnaire.

	Current engagement			Ideal engagement					
	Mean (*SD*)	*n*	Min-max	Mean (*SD*)	*n*	Min-max	*t* (*n*)	*p*	Cohen's d
Watching television	3.77 (1.58)	103	0-6	3.54 (1.56)	97	0-6	2.28 (96)	.03	.23
Cooking/eating food	3.64 (1.81)	103	0-6	3.69 (1.55)	97	0-6	-1.19 (96)	.24	-.12
Listening/playing music	3.06 (1.90)	103	0-6	3.87 (1.60)	97	0-6	-6.12 (96)	.01	-.62
Socialising with family	2.34 (1.79)	103	0-6	2.72 (1.62)	97	0-6	-2.78 (96)	.01	-.28
Reading	2.29 (1.89)	103	0-6	3.04 (1.81)	97	0-6	-5.79 (96)	.01	-.59
Exercise	1.94 (1.99)	103	0-6	2.61 (1.81)	97	0-6	-4.02 (96)	.01	-.41
Drinking alcohol	1.46 (1.61)	103	0-5	1.48 (1.54)	97	0-6	0.29 (96)	.77	.03
Hobbies	1.18 (1.29)	102	0-6	2.36 (1.61)	90	0-6	-8.31 (88)	.01	-.88
Socialising with friends	1.11 (0.94)	103	0-5	2.03 (1.21)	97	0-5	-8.24 (96)	.01	-.84
Travelling	0.95 (0.99)	103	0-4	1.54 (1.05)	97	0-5	-6.15 (96)	.01	-.62
Other	0.71 (1.35)	93	0-6	1.06 (1.67)	70	0-6	-2.19 (67)	.03	-.26
Mindfulness	0.54 (1.13)	102	0-5	1.16 (1.65)	96	0-5	-5.06 (94)	.01	-.52
Hunting	0.20 (0.58)	103	0-3	0.43 (0.86)	97	0-5	-4.06 (96)	.01	-.41
Meditation	0.18 (0.65)	103	0-4	0.75 (1.36)	97	0-5	-4.56 (96)	.01	-.46
Fishing	0.18 (0.54)	101	0-3	0.68 (1.03)	97	0-5	-6.08 (94)	.01	-.62

Current leisure activities.

'Other' leisure activities mentioned by the participants were grouped into seven categories: Art, outdoors, sport, casual leisure, social, animal-related, and other leisure activities. There were 64 leisure activities mentioned that the participants engaged in, and 63 activities that the participants wished to engage in.

Arts. Art-based leisure activities were mentioned 20 times. Within the art category were crafts, performance arts, and 'other'. The crafts, mentioned 11 times, included knitting, sewing, wool spinning and scrapbooking. Performance arts, mentioned five times, included playing instruments, dancing, painting, and improvisational theatre. Finally, the 'other' art group was mentioned four times, which included cooking, baking, and building.

Outdoors. Outdoor leisure activities were mentioned 25 times. The most common activity was gardening (10), followed by fishing (5). Other outdoor activities were hunting, walking, cycling, and pest control. Comments related to the outdoor activities, particularly fishing, stated engagement was lower than the participant wanted due to the activity being weather dependent.

Sports. Sports as a leisure activity was mentioned 13 times. The most common sport mentioned was golf (5). Other sports were stockcars, exercising, netball, and motorbike riding.

Casual leisure. Casual leisure activities were mentioned 19 times. Casual leisure consisted of activities in which the participant tended to be inactive. The most common casual leisure activity mentioned was reading (7), followed by computer and video games (4). Other casual leisure activities were scrolling the internet, writing, watching movies, listening to music or audiobooks, and napping.

Social leisure. Leisure activities involving social interactions were mentioned 10 times. The most common social leisure activity was social drinking (3). Other social leisure activities were talking or playing with family members, playing card games, attending trivia nights, and attending Young Farmer's club.

Animal-related leisure activities. Animal-related leisure activities were mentioned 10 times. The most common animal-related leisure activity was riding or feeding horses (5). Other animal-related leisure activities were spending time with the calves, pets, or the dog, training puppies, and observing the livestock.

Other. The other leisure activities consisted of leisure activities that did not fit into the previous leisure groups. The other leisure activities were mentioned eight times and included learning new ideas, learning new skills, spending money, working on the farm, and participating in the Fire and Emergency New Zealand organisation.

Ideal leisure.

Ideal leisure was the activities that the participants wanted to engage in. The list of ideal leisure consisted of the same groupings: Art, outdoors, sport, casual leisure, social, animal-related, and other leisure activities.

Arts. Art-based leisure activities were mentioned 20 times. There are three categories of art-based leisure activities. The categories were crafts, performance, and 'other'. Crafts, mentioned nine times, included sewing, knitting, crocheting, and card making. Performance arts were mentioned eight times and consisted of painting, photography, playing music, dancing, pottery, and improvisational theatre. Finally, 'other' artistic leisure activities were mentioned three times and included baking, cake decorating, and preserving fruits and vegetables.

Outdoors. Outdoor leisure activities were mentioned 23 times. The most common activity was gardening (10), followed by walking (5) and fishing (4). Other outdoor leisure activities were going to the beach, hunting, and cycling.

Sports. Sports were mentioned 13 times. The most common sport mentioned was golf (4), followed by motorbike riding (2). Other sports were stock cars, race cars, netball, archery, and team sports.

Casual leisure. Casual leisure activities were mentioned 16 times. The most common casual leisure activity was reading (8). Other casual leisure activities were having a massage, computer and video games, watching movies, and drinking tea.

Social leisure. Social leisure activities were mentioned nine times. The most common was socialising with friends (3). Other social leisure activities were social drinking, socialising with family, calling international family members, attending trivia nights, and attending Young Farmer's club. One participant mentioned how they need to travel 30 minutes to visit a friend. It was unclear whether the time it took to visit the friend was a positive or negative factor.

Animal-related leisure activities. Animal-related leisure activities were mentioned 11 times. The most common was horse riding and feeding (7). Other animal-related leisure activities were spending time with pets, training puppies, and observing livestock.

Other ideal leisure activities. Other leisure activities consisted of leisure activities that did not fit into any other categories. Other ideal leisure activities were mentioned 14 times. These ideal leisure activities included op-shopping, water aerobics, travelling, dining out, making cheese, sex, gambling, construction, time away from the phone, and engaging in Fire and Emergency New Zealand organisation. Two participants mentioned they would ideally do 'nothing' as a leisure activity. It was not mentioned whether wanting to engage in no leisure activities meant the participants were satisfied with their current engagement in leisure activities, or other reasons.

Further comments.

In addition to suggesting leisure activities, 24 additional comments were categorised into four categories: Barriers to leisure activities, positive reasoning to engage in leisure activities, work as leisure, and 'other'.

Barriers to engaging in leisure activities. 12 comments were categorised into four sub-categories of barriers to engaging in leisure activities. The first was weather conditions. Both comments referred to weather affecting the opportunities for the participant to go fishing. For example, one participant stated, "I would go fishing more if the weather was nice". The second sub-category was time constraints, in which there were three comments. The participants referred to working reducing the opportunities to engage in leisure activities. For example, "I work too much to be able to find the time to ride my horses". The third sub-category was physical and mental barriers, in which there were three comments. The participants referred to how physically and mentally demanding farming can be. For example, "for me, I have the time to do my activities, but given workload, I'm too mentally loaded to be able to relax". Another participant stated that an injury prevented them from enjoying leisure activities: "Used to be team sport, but now injured". The final sub-category was 'other' barriers which included two barriers that did not fit into the previous sub-categories. The first was the participant felt they were undeserving of leisure activities: "Sometimes can feel like I don't deserve to be doing them". The second was acknowledged how the farming lifestyle can act as a barrier to leisure activities: "Unwinding is difficult when you live and work at home".

Positive reasoning to engage in leisure activities. There were seven comments made about the enjoyment and importance of leisure activities. A common theme in this section was how leisure activities gave the participant time away from farming responsibilities. For example, “they are important as they take away the emphasis on the farm, which is a constant”. Another theme was how the leisure activities allowed the participants to spend time off the farm. An example concerning cycling is “gets me away from the farm and very relaxing”. Finally, one participant recognised how leisure activities brought farmers together and provided a space where farmers could discuss farming experiences: “Great way to get off the farm and talk to other farmers having the same problem”.

Work as a leisure activity. Four comments referred to farm work as a leisure activity. One participant stated, “a lot of my work feels like a positive relaxing thing to do”. However, the specific farming jobs were not mentioned. Another participant expressed their passion for a particular responsibility on the farm. The participant implied that their passion for working with calves was considered a leisure activity: “Calves are my work and my passion”. The final two comments referred to walking around the farm checking on the livestock: “Taking time to walk around the calving cows or our yearlings I find very relaxing when they come up for a pat and reminds me why we are doing this job”.

Other comments. There were three other comments there did not belong in the previous categories. Two participants stated that they “need to do more”, referring to leisure activities. This might suggest that the two participants recognise the importance and enjoyment of leisure activities. One participant suggested increasing the practice of compassion on the farm: “I wonder if we need to encourage compassion as an exercise”.

The difference between current and ideal engagement in leisure activities.

A series of paired-samples t-tests were conducted to compare the participant’s current engagement in leisure activities with ideal engagement in leisure activities (table 6).

Out of the 15 leisure activities listed in the questionnaire, 11 leisure activities (listening to/playing music, socialising with family, reading, exercising, hobbies, socialising with friends, travelling, mindfulness, hunting, meditation, and fishing) had significant differences between current and ideal engagement in leisure activities ($p < .01$; table 6). The ideal engagement in leisure activities condition had a higher engagement compared with the current engagement in leisure activities. The Cohen’s d was conducted to measure the size effect between the two conditions. It was found hobbies ($d = -.88$) and socialising with

friends (*d* = -.84) had a large effect size, listening to/playing music (*d* = -.62), reading (*d* = -.59), travelling (*d* = -.62), mindfulness (*d* = -.52), and fishing (*d* = -.62) had a medium effect, and socialising with family (*d* = -.28), exercising (*d* = -.41), hunting (*d* = -.41), and meditation (*d* = -.46) had a small effect size.

Two leisure activities were significant at .05, watching television and 'other' leisure activities. Watching television had a higher engagement in the current engagement condition compared with the ideal engagement condition. A Cohen's d found a small effect size (*d* = .23). The 'other' leisure activity was higher in the ideal engagement condition compared to the current engagement condition with a small effect size (*d* = -.26). Finally, two leisure activities did not have a significant difference between current engagement and ideal engagement in leisure activities, cooking/eating food and drinking alcohol. Naturally, no effect size was found (*d* = -.12 and *d* = .03 respectively).

To identify whether leisure activity was associated with wellbeing, a series of Person's correlations were conducted (tables 7 and 8). Regarding current engagement in leisure activities, only reading (*r* = .21), socialising with family (*r* = .27), and hobbies (*r* = .20) had a significant and positive, albeit small, association with wellbeing. However, only socialising with family had a small and significant association with wellbeing for ideal leisure activities. Additionally, two ideal leisure activities had a significant and positive, albeit small, association with wellbeing: Socialising with family (*r* = .20) and eating/cooking food (*r* = .20). Interestingly, meditation (*r* = -.23), in the ideal engagement condition, had a significant, negative, and small association with wellbeing.

Table 7. Pearson's correlation between current engagement in leisure activities, wellbeing, gender, farm experience in years, and farm type.

	Wellbeing	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17
1. Gender	**-.19**																	
2. Farm experience in years	.01	**-.23**																
3. Farm Type	.02	-.14	**.18**															
4. Watching television	.08	.04	.19	.07														
5. Listening / playing music	.18	.17	**-.21**	-.03	.09													
6. Reading	**.21**	.00	**.37**	**.22**	.17	.09												
7. Socialise with family	**.27**	-.01	.17	.04	.04	.13	**.34**											
8. Socialise with friends	.17	-.07	.19	.07	-.02	**.26**	.15	**.41**										
9. Eat / cook food	.17	.19	-.06	**-.20**	**.26**	**.23**	.08	**.33**	.18									
10. Drink alcohol	-.02	-.15	.07	.17	.07	.04	-.04	.07	**.22**	-.01								
11. Exercise	.17	.07	.07	-.08	.16	.09	.08	**.25**	.00	**.21**	.09							
12. Meditation	.03	.00	.01	-.01	.08	.19	-.10	-.04	.08	.00	-.09	-.07						
13. Mindfulness	.13	-.09	.16	-.09	.19	.02	.14	.10	.17	.01	-.13	**.25**	**.29**					
14. Hunting	.15	**-.22**	**.20**	.11	.09	.05	-.02	.05	.07	-.06	.19	-.06	-.02	-.11				
15. Fishing	.03	**-.27**	.19	-.09	-.04	-.03	-.12	-.01	**.20**	.10	.18	-.09	.12	-.05	**.48**			
16. Traveling	.14	**-.25**	-.01	-.06	-.06	**.29**	**.22**	**.27**	.06	.01	-.02	.06	.03	.03	**.20**	.09		
17. Hobbies	**.20**	-.01	-.03	.03	-.03	**.26**	**.22**	**.27**	.18	.18	-.09	.01	**.20**	.11	-.05	.03	.11	
18. Other leisure	-.06	.07	-.10	-.09	-.03	.02	-.02	-.02	-.07	-.05	-.08	-.03	**.21**	-.04	-.09	-.14	.06	**.23**

Note. Significant correlations in bold ($p \leq .05$). Gender: 1 = Male, 2 = Female. Farm type: 1 = Single species of livestock, 2 = Mixed livestock. Number of participants range from 131 to 92 (correlation between fishing and other leisure activities).

Table 8. Pearson's correlation between Ideal engagement in leisure activities, wellbeing, gender, farm experience in years, and farm type.

	Wellbeing	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17
1. Gender	**-.19**																	
2. Farm experience in years	.01	**-.23**																
3. Farm type	.02	-.14	**.18**															
4. Watching television	.14	-.03	.16	.04														
5. Listening / playing music	.01	.18	-.19	.00	-.10													
6. Reading	.07	**.21**	**.30**	**.23**	-.01	.17												
7. Socialise with family	**.20**	-.13	.14	.12	.01	.09	**.29**											
8. Socialise with friends	-.07	-.01	.07	.04	-.07	**.37**	**.25**	**.46**										
9. Eat / cook food	**.20**	.07	-.07	-.17	**.22**	**.29**	.09	**.24**	.14									
10. Drink alcohol	.05	-.17	.10	**.22**	.19	-.06	-.08	.17	.13	.14								
11. Exercise	-.07	.05	-.06	-.03	-.10	.15	.14	.13	.13	.12	-.13							
12. Meditation	**-.23**	.03	.05	-.09	-.12	.12	.19	.07	**.28**	-.07	**-.22**	**.24**						
13. Mindfulness	-.10	.04	.08	-.03	-.19	.14	**.34**	.14	.12	-.05	**-.24**	**.33**	**.66**					
14. Hunting	.03	**-.20**	.13	.08	.13	.00	-.14	.14	.16	-.05	**.30**	**-.21**	-.06	-.11				
15. Fishing	-.15	-.17	.11	-.07	.04	.11	-.04	.11	**.38**	-.08	.17	.04	.16	.02	**.55**			
16. Traveling	.06	**-.21**	.09	.02	.01	.15	.00	**.28**	**.29**	.11	.19	.05	.17	.07	**.43**	**.39**		
17. Hobbies	.09	.17	.15	.10	-.04	.21	**.39**	**.23**	.11	.17	**-.24**	.17	.13	**.23**	.02	.04	**.21**	
18. Other leisure	-.03	.09	.12	.13	-.14	.01	**.25**	.21	**.27**	.05	.03	.06	.11	.13	-.13	.06	.04	**.29**

Note. Bold correlations are significant at the .05 level. Gender: 1 = Male, 2 = Female. Farm type: 1 = single livestock type, 2 = mixed livestock. Number of participants ranged from 131 to 69 (correlation between gender and other leisure activities).

Leisure activities that predict wellbeing.

To understand which leisure activities predicted wellbeing, a hierarchical regression was conducted with three leisure activities the participants currently engaged in. The chosen leisure activities were based on the significant correlation with wellbeing (table 7); reading, socialising with family, and hobbies.

The first step controlled for gender, farming experience in years, and farm type (single species of either milk harvesting or dry stock, or mixed farming; table 9). Of the three demographic factors, the female gender significantly predicted lower wellbeing compared to the male gender. Both farm experience and type were not significant. Overall, the results of the first step of the hierarchical regression were significant (R^2 = .05, F(101) = 2.85, p = .04).

Table 9. Results for current leisure activities determining wellbeing in a hierarchical regression.

			95% CI		
	b	*t*	*LL*	*UL*	*p*
Step 1					
Gender	-5.63	-2.84	-9.56	-1.69	.01
Farming experience in years	< 0.01	0.04	-0.14	0.14	.97
Farm type	-.71	-0.34	-4.87	3.45	.74
Step 2					
Gender	-6.04	-3.15	-9.84	-2.24	.01
Farming experience in years	-0.06	-0.77	-0.20	0.09	.44
Farm type	-1.37	-0.67	-5.43	2.69	.50
Reading	0.86	1.58	-0.22	1.95	.12
Socialising with Family	0.85	1.65	-0.18	1.97	.10
Hobbies	0.85	1.17	-0.59	2.30	.24

Note: CI = confidence interval; LL = lower limit; UL = upper limit.
Gender: 1 = male, 2 = female; Farm type: 1 = single type of farm, 2 = mixed farming.

The second step was also significant (ΔR^2 = .10, F = 3.51, p < .01). The second step included three leisure activities that participants were currently engaged in. This step explained significantly more variance compared to the first step; however, the individuals leisure activities (reading, socialising with family, and hobbies) did not significantly predict wellbeing.

Coping strategies that predict wellbeing.

To understand which coping strategies predicted wellbeing, a correlation was initially run followed by a hierarchical regression. There were 10 out of 14 coping strategies from Brief COPE that significantly correlated with wellbeing (table 10).

Table 10. Pearson's correlation between wellbeing, gender, farming experience in years, farm type and coping strategies.

	Wellbeing	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
1. Gender	**-.19**																
2. Farm experience in years	.01	**-.23**															
3. Farm type	.02	-.14	**.18**														
4. Active coping	**.48**	-.08	.06	-.05													
5. Planning	**.46**	-.10	**.19**	.01	**.69**												
6. Positive reframing	**.40**	-.04	.15	-.10	**.58**	**.56**											
7. Acceptance	.14	-.08	.05	-.01	**.37**	**.38**	**.21**										
8. Humour	.03	.00	-.03	.02	**.21**	.12	**.19**	**.27**									
9. Religion	.03	-.04	**.19**	-.11	.12	**.23**	.16	.08	-.01								
10. Emotional support	**.29**	-.03	-.06	.03	**.30**	.12	**.28**	.16	**.20**	.08							
11. Instrumental support	**.30**	.02	-.05	.11	**.33**	**.21**	**.31**	.07	.11	.10	**.64**						
12. Self-distraction	-.10	**.20**	**-.24**	.06	.05	.03	.09	**.29**	**.37**	.00	**.21**	.14					
13. Denial	**-.37**	.12	-.06	-.01	**-.18**	**-.29**	.00	**-.22**	.02	-.01	-.09	-.05	.15				
14. Venting	**-.25**	**.17**	-.02	-.11	-.10	-.16	-.14	.10	.17	.07	**.21**	.16	**.24**	.08			
15. Substance use	**-.44**	.16	-.12	-.08	**-.23**	**-.30**	**-.32**	.02	-.01	-.07	**-.25**	**-.29**	.05	**.25**	**.26**		
16. Behavioural disengagement	**-.62**	.17	**-.18**	-.07	**-.44**	**-.44**	**-.37**	-.17	.00	-.07	**-.25**	**-.25**	.07	**.47**	**.23**	**.50**	
17. Self-blame	**-.38**	.16	-.12	.02	-.04	-.14	-.07	.10	**.20***	.01	.06	.09	**.31**	**.34**	**.39**	**.38**	**.37**

Note. Correlations in bold signify significance at the .05 level. Gender: 1 = Male, 2 = Female. Farm type: 1 = single livestock type, 2 = mixed livestock. Number of participants ranged from 131 to 129.

The coping strategies that significantly correlated with wellbeing were active coping, planning, positive reinterpretation, emotional support, instrumental support, denial, venting, substance use, behavioural disengagement, and self-blame. These coping strategies were used in the hierarchical regression.

The result of the hierarchical regression follows. Overall, the first step was not significant (R^2 = .05, F(128) = 2.06, p = .11). The first step consisted of gender, farming experience in years, and farm type, whether single or mixed farming (table 11). Of the demographic factors, the female gender significantly predicted lower wellbeing compared to the male gender.

Table 11. Results for coping strategies determining wellbeing in a hierarchical regression.

			95% CI		
	b	*t*	*LL*	*UL*	*p*
Step 1					
Gender	-4.52	2.49	-8.11	-0.92	.01
Farming experience in years	-0.04	-0.56	-0.17	0.09	.58
Farm Type	-0.41	-0.22	-4.12	3.31	.83
Step 2					
Gender	-2.26	-1.68	-4.92	0.41	.10
Farming experience in years	-0.09	-1.84	-0.19	0.01	.07
Farm Type	-0.03	-0.02	-2.83	2.77	.98
Behavioural disengagement	-2.18	-3.48	-3.42	-0.94	< .01
Self-blame	-0.81	-2.01	-1.60	-0.01	.05
Active coping	0.72	1.15	-0.51	1.91	.25
Planning	0.74	1.16	-0.53	2.01	.25
Positive reinterpretation	0.67	1.25	-0.39	1.72	.21
Emotional support	0.73	1.42	-0.28	1.73	.16
Instrumental support	0.50	0.97	-0.52	1.51	.33
Denial	-0.61	-0.90	-1.95	0.73	.37
Venting	-0.23	-0.49	-1.18	0.71	.63
Substance use	-0.28	-0.53	-1.31	0.75	.59

Note: CI = confidence interval; LL = lower limit; UL = upper limit.
Gender: 1 = male, 2 = female; Farm type: 1 = single type of farm, 2 = mixed farming.

However, step two was significant (ΔR^2 = .50, F = 10.70, p < .01). This step included the coping strategies (table 11). High levels of behavioural disengagement and self-blame were the only significant coping strategies that predicted wellbeing, albeit negatively. The following coping strategies were not significant: Active coping, planning, positive reinterpretation, emotional support, instrumental support, denial, venting, and substance use.

Despite only two coping strategies explaining the variance in wellbeing, the second step explained significantly more variance compared to step one.

Due to the low participant numbers compared to predictor variables (12 to 20 participants per predictor (Gotelli & Ellison, 2004)), the hierarchical regression needs to be interpreted with caution.

Moderation effect of coping strategies on wellbeing.

First, an oblimin rotation factor analysis was conducted to group the coping strategy subscales into meaningful groups to reduce the number of variables (table 12). A Kaiser-Meyer Olkin measure was conducted to measure the sample adequacy which suggested the sample was good (*KMO* = .75). A fixed number of factors were extracted because the eigenvalue scree plot levelled out at three components. Thus, there were three factors extracted.

Table 12. Oblimin rotation factor analysis of the coping strategies.

	Adaptive Coping	Dysfunctional Coping	Social Coping
Planning	0.82		
Active coping	0.77		
Acceptance	0.75		
Positive reframing	0.60		
Turning to religion	0.23		
Self-Blame		0.76	
Venting		0.61	
Self-distraction		0.58	
Behavioural disengagement		0.53	
Substance use		0.51	0.47
Humour	0.43	0.50	
Denial		0.45	
Instrumental support			-0.87
Emotional support			-0.85
Eigenvalues	3.65	2.32	1.43
Percentage of total variance	26.06	16.58	10.18

Note. Extract fixed number of three due to eigenvalue scree plot levelling out after three factors extracted.

The first factor had an eigenvalue of 3.65 and represented 26.06 percent of the variance. Five coping strategies loaded on this factor: Planning, active coping, acceptance, positive reframing, and turning to religion. The coping strategies in this factor reflect positive coping strategies; thus, this factor was named Adaptive Coping. However, turning to religion

had a factor loading of .23, which was below .30; thus, has a questionable loading strength. Another factor, humour, is loaded on both factors one and two, with a higher loading on factor two. Thus, humour was considered as an item on factor two.

The second factor had an eigenvalue of 2.32 and represented 16.58 percent of the variance. Seven coping strategies loaded on this factor, including self-blame, venting, self-distraction, behavioural disengagement, substance use, humour, and denial. Due to the coping strategies that loaded on this factor reflecting dysfunctional coping strategies, factor two was named Dysfunctional Coping. Substance use also loaded on factor three. However, the loading was lower for factor three; this, substance use was grouped with the dysfunctional category.

The final factor had an eigenvalue of 1.43 and represented 10.18 percent of the variance. Two factors loaded on factor three: Instrumental support and social support. Due to the two coping strategies represented seeking social support, this factor was named Social Support.

Second, a Pearson's correlation was conducted to measure the association between wellbeing, perceived stress, Adaptive Coping, Dysfunctional Coping, Social Coping, and the other variables (Table 5). Wellbeing had a significant association with the three coping groups, while perceived stress only had a significant association with Adaptive Coping and Dysfunctional Coping.

Finally, moderation analysis was conducted to measure whether other variables (the Edinburgh Farming Stress Inventory (finance, isolation, time pressure, farming bureaucracy, natural forces, and personal hazards), work-family conflict, family-work conflict, life satisfaction, social satisfaction, family satisfaction, job satisfaction, and relationship satisfaction) increased or decreased the relationship between coping strategies and wellbeing. A multiple regression was conducted to measure how much each variable (other variables, coping strategy, and the interaction between the other variables and coping strategy) explained wellbeing. Then the moderation effect was measured with Hayes' (2022) SPSS plugin, PROCESS, in model one, simple moderation.

The following reports the relationship between other variables and wellbeing, moderated by Adaptive Coping. All moderating models were not significant**.** This means adaptive coping did not improve or reduce the relationship between other variables and wellbeing. The other variables were the subscales of the Edinburgh Farm Specific Stress

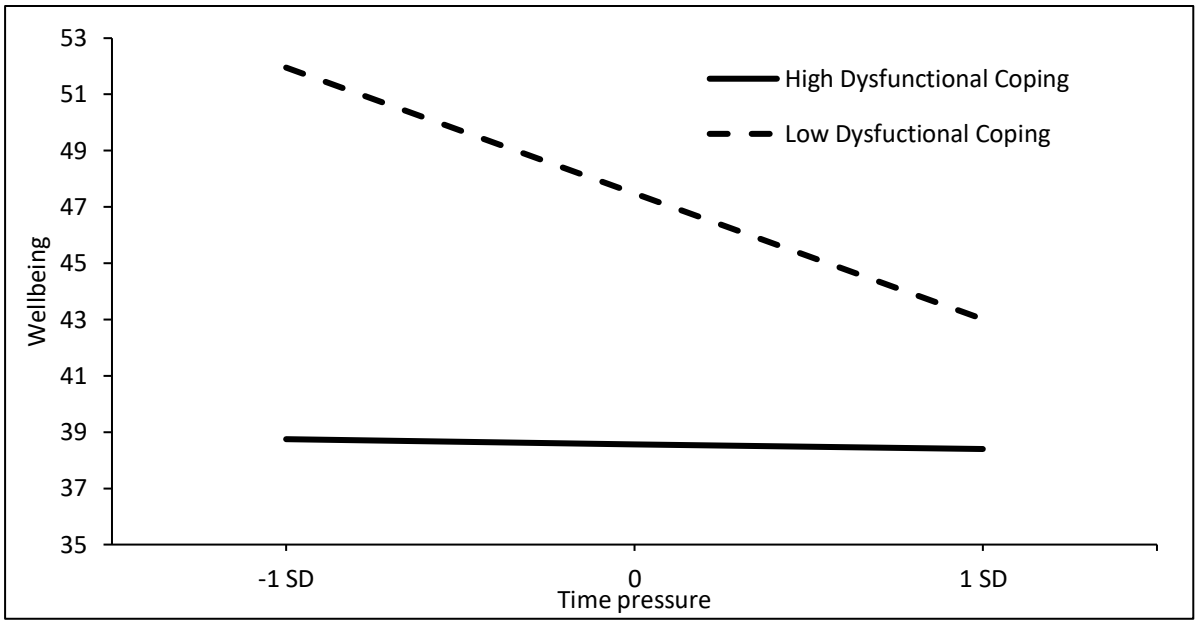
Inventory (bureaucracy (ΔR^2 < .01, F(3, 111) < .01, P = .93, 95% CI [-0.41, 0.38]), finance (ΔR^2 < .01, F(3, 111) = 0.12, p = .73, 95% CI [-0.21, 0.29]), isolation (ΔR^2 = .02, F(3, 111) = 2.64, p = .11, 95% CI [-0.06, 0.65]), natural forces (ΔR^2 < .01, F(3, 111) = 0.61, p = .44, 95% CI [-0.66, 0.29]), personal hazards (ΔR^2 = .01, F(3, 111) = 0.87, p = .35, 95% CI [-0.56, 0.20]), and time pressure (ΔR^2 < .01, F(3, 111) = 0.01, p = .94, 95% CI [-0.35, 0.32])), conflict between work and family (ΔR^2 < .01, F(3, 102) = 0.46, p = .50, 95% CI [-0.04, 0.08]), conflict between family and work (ΔR^2 < .01, F(3, 102) = 0.30, p = .59, 95% CI [-0.08, 0.05]), life satisfaction (ΔR^2 = .01, F(3, 116) = 3.17, p = .08, 95% CI [-0.31, 0.06]), social satisfaction (ΔR^2 = .02, F(3, 116) = 2.55, p = .11, 95% CI [-0.34, 0.04]), job satisfaction (ΔR^2 = .01, F(3, 115) = 2.13, p = .15, 95% CI [-0.38, 0.06]), family satisfaction (ΔR^2 < .01, F(3, 117) = 0.58, p = .45, 95% CI [-0.28, 0.12]), and relationship satisfaction (ΔR^2 = .01, F(3, 99) = 0.69, p = .41, 95% CI [-0.33, 0.14]).

A moderation analysis was run to measure the relationship between other variables and wellbeing, moderated by Dysfunctional Coping**.** All moderating models were not significant, except for time pressure. The non-significant moderating variables were subscales from the Edinburgh Farm Specific Stress Inventory (bureaucracy (ΔR^2 = .01, F(3, 112) = 2.30, p = .13, 95% CI [-0.08, 0.58]), finance (ΔR^2 = .01, F(3, 112) = 1.94, p = .17, 95% CI [-0.07, 0.38]), isolation (ΔR^2 < .01, F(3, 112) = 0.40, p = .53, 95% CI [-0.38, 0.20]), natural forces (ΔR^2 = .02, F(3, 112) = 2.51, p = .12, 95% CI [-0.09, 0.79]), and personal hazards (ΔR^2 < .01, F(3, 112) = 0.35, p = .56, 95% CI [-0.23, 0.43])), conflict between work and family (ΔR^2 = .01, F(3, 103) = 1.66, p = .20, 95% CI [-0.05, 0.01]), conflict between family and work (ΔR^2 < .01, F(3, 103) = 0.05, p = .82, 95% CI [-0.05, 0.04]), life satisfaction (ΔR^2 < .01, F(3, 118) = 0.13, p = .72, 95% CI [-0.16, 0.11]), social satisfaction (ΔR^2 = .01, F(3, 117) = 1.57, p = .21, 95% CI [-0.20, 0.05]), job satisfaction (ΔR^2 = .01, F(3, 116) = 1.69, p = .20, 95% CI [-0.06, 0.27]), family satisfaction (ΔR^2 < .01, F(3, 118) = 0.21, p = .65, 95% CI [-0.12, 0.19]), and relationship satisfaction (ΔR^2 = .01, F(3, 100) = 0.90, p = .35, 95% CI [-0.22, 0.08]).

There was one model that was significantly moderated by Dysfunctional Coping: Time pressure and wellbeing (ΔR^2 = .05, F(3, 103) = 8.52, p < .01, 95% CI [0.13, 0.66]). The standard slope of the effect of Dysfunctional Coping on the relationship between time pressure and wellbeing was significant when time pressure was one standard deviation below the mean (b = -5.00, p < .01) and at the mean (b = -2.60, p < .01). However, Dysfunctional Coping did not significantly moderate the relationship between time pressure and wellbeing

at one standard deviation above the mean (b = -0.20, p = .87). In simple terms, when an individual had a low engagement in Dysfunctional Coping, wellbeing decreased when there was higher time pressure. However, wellbeing remained low when the individual engaged in high levels of Dysfunctional Coping (figure 1).

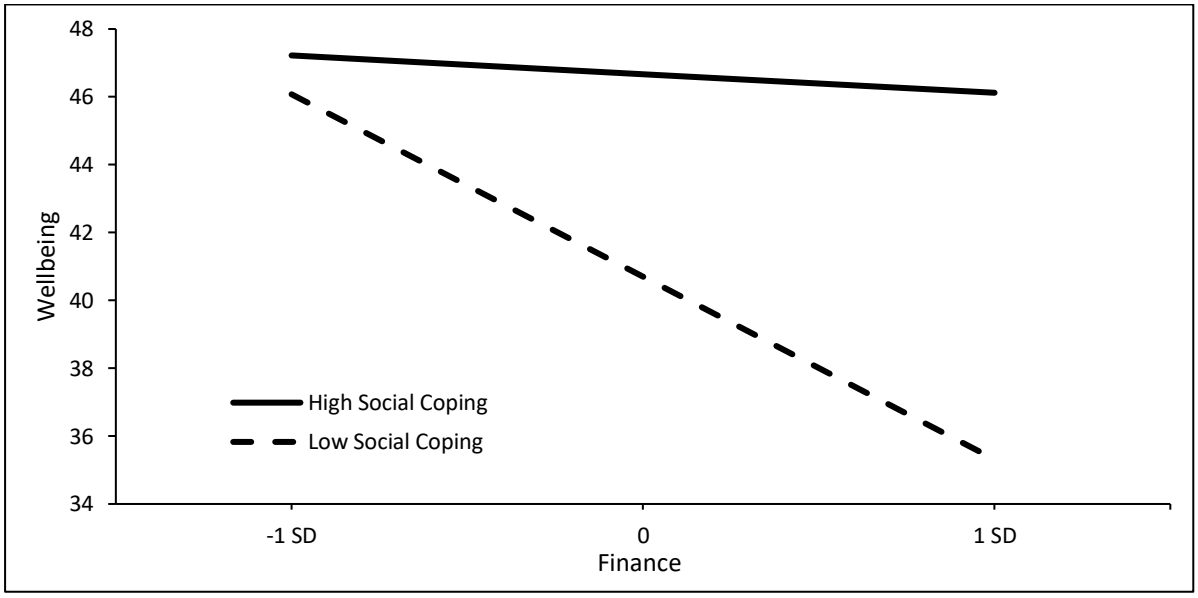
Figure 1. Moderation effect between time pressure and wellbeing, moderated by Dysfunctional Coping.



Finally, a moderation analysis was run to measure the relationship between other variables and wellbeing, moderated by Social Coping**.** 10 moderation models were not significant. The 10 variables were subscales for the Edinburgh Farm Specific Stress Inventory (bureaucracy (ΔR^2 = .01, F(3, 112) = 1.66, p = .20, 95% CI [-0.24, 1.12]), natural forces (ΔR^2 < .01, F(3, 112) = 0.12, p = .73, 95% CI [-0.68, 0.96]), personal hazards (ΔR^2 = .01, F(3, 112) = 1.06, p = .30, 95% CI [-0.32, 1.02]), and time pressure (ΔR^2 = .02, F(3, 112) = 2.21, p = .14, 95% CI [-0.14, 0.96])), the conflict between work and family (ΔR^2 < .01, F(3, 103) = 0.16, p = .69, 95% CI [-0.11, 0.07]), the conflict between family and work (ΔR^2 < .01, F(3, 103) = 0.31, p = .58, 95% CI [-0.08, 0.14]), life satisfaction (ΔR^2 = .02, F(3, 118) = 3.58, p = .06, 95% CI [-0.61, 0.01]), job satisfaction (ΔR^2 < .01, F(3, 116) = 0.68, p = .41, 95% CI [-0.55, 0.23]), family satisfaction (ΔR^2 = .02, F(3, 118) = 3.18, p = .08, 95% CI [-0.67, 0.04]), and relationship satisfaction (ΔR^2 = .01, F(3, 100) = 1.15, p = .29, 95% CI [-0.70, 0.21]).

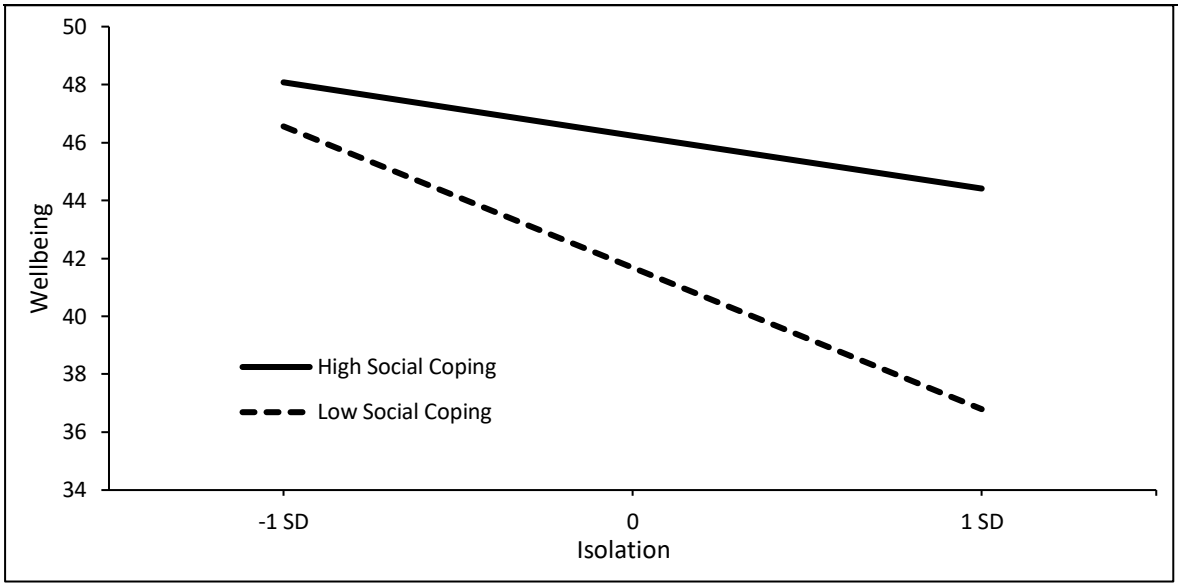
Three significant relationships with wellbeing were moderated by Social Coping. The first was finance, a subscale from the Edinburgh Farm Specific Stress Inventory (ΔR^2 = .06, $F(3, 112) = 8.39$, $p < .01$, 95% CI [0.23, 1.23]). The standard slope of the effect of Social Coping on the relationship between finance and wellbeing was significant when Social Coping was one standard deviation below the mean (b = -4.83, $p < .01$) and at the mean (b = -2.66, $p < .01$). However, the moderation relationship was not significant when Social Coping was and one standard deviation above the mean (b = -0.50, p = .66). This meant when engaging in low social coping, wellbeing decreased as financial stress increased. However, wellbeing remained at a similar level when an individual engaged in high Social Coping (figure 2).

Figure 2. Moderation effect between financial stress and wellbeing, moderated by Social Coping.



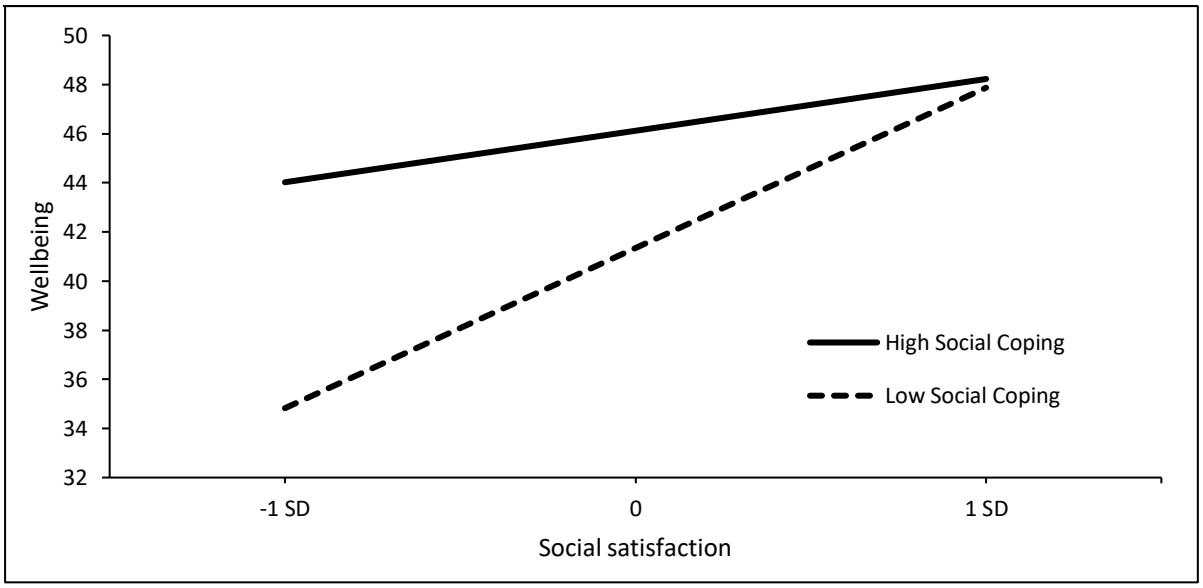
The second moderation relationship that was significantly moderated by Social Coping was isolation, a subscale from the Edinburgh Farm Specific Stress Inventory (ΔR^2 = .03, $F(3, 112) = 4.12$, p = .05, 95% CI [0.01, 1.20]). The standard slope of the effect of Social Coping on the relationship between isolation and wellbeing was significant when Social Coping was one standard deviation below the mean (b = -5.79, $p < .01$) and at the mean (b = -3.98, $p < .01$). However, the moderation effect was not significant when isolation was one standard deviation above the mean (b = -2.17, p = .16). In other words, when an individual engaged in low levels of Social Coping, wellbeing decreased as feelings of isolation increased (figure 3). However, when Social Coping was high, wellbeing did not significantly decrease when isolation increased.

Figure 3. Moderation effect between isolation and wellbeing, moderated by Social Coping.



The final relationship that was significantly moderated by Social Coping was social satisfaction (ΔR^2 = .05, F(3, 117) = 8.20, p < .01, 95% CI [-0.72, -0.13]). The standard slope of the effect of Social Coping on wellbeing was significant at one standard deviation below the mean (β = 3.77, p < .01) and at the mean (b = 2.49, p = .01). However, the moderation effect was not significant one standard deviation above the mean (b = 1.21, p = .07). This meant when Social Coping was low, wellbeing decreased as social satisfaction decreased (figure 4). However, when Social Coping was high, wellbeing did not significantly change at all levels of social satisfaction.

Figure 4. Moderation effect between social satisfaction and wellbeing, moderated by Social Coping.



In Summary, there were four significant relationships moderated by coping strategies. The first was time pressure and wellbeing, moderated by Dysfunctional Coping. In this

moderation relationship, Dysfunctional Coping reduced wellbeing as time pressure increased. The second significant relationship was between finance and wellbeing, moderated by Social Coping. In this moderation relationship, low Social Coping decreased wellbeing as financial stress increased. The third significant relationship was between isolation and wellbeing, moderated by Social Coping. In the moderation relationship, when engaged in low Social Coping, wellbeing decreased as isolation stress increased. Finally, the relationship between social satisfaction and wellbeing, moderated by Social Coping, was significant. This meant wellbeing increased when social satisfaction increased at low levels of Social Coping.

Moderation effect of coping strategies on stress.

The moderation analysis was conducted with Adaptive Coping, Dysfunctional Coping, and Social Coping (table 12). To determine whether other variables increase or decrease the relationship between coping strategies and perceived stress. The following reports the relationship between other variables and perceived stress, moderated by adaptive coping.

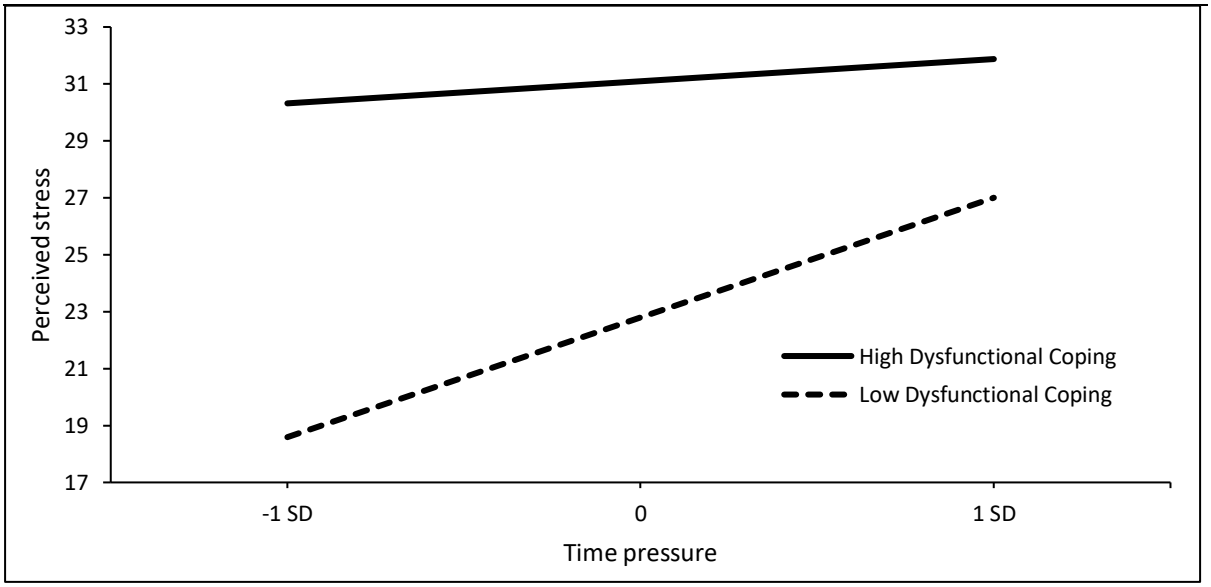
All moderation models were not significant: The Edinburgh Farm Specific Stress Inventory (bureaucracy (ΔR^2 = .02, F(3, 104) = 1.87, p = .17, 95% CI [-0.11, 0.60]), finance (ΔR^2 < .01, F(3, 104) = 0.01, p = .92, 95% CI [-0.18, 0.23]), isolation (ΔR^2 =.01, F(3, 104) = 1.11, p = .29, 95% CI [-0.55, 0.17]), natural forces (ΔR^2 < .01, F(3, 104) = 0.04, p = .85, 95% CI [-0.43, 0.48]), personal hazards (ΔR^2 < .01, F(3, 104) = 0.05, p = .82, 95% CI [-0.29, 0.36]), and time pressure (ΔR^2 = .01, F(3, 104) = 1.89, p = .17, 95% CI [-0.09, 0.49])), conflict between work and family (ΔR^2 < .01, F(3, 102) = 0.38, p = .54, 95% CI [-0.03, 0.07]), conflict between family and work (ΔR^2 < .01, F(3, 102) = 0.01, p = .92, 95% CI [-0.06, 0.05]), life satisfaction (ΔR^2 < .01, F(3, 104) = 0.02, p = .88, 95% CI [-0.20, 0.23]), social satisfaction (ΔR^2 < .01, F(3, 103) < 0.01, p = .96, 95% CI [-0.17, 0.18]), job satisfaction (ΔR^2 < .01, F(3, 102) = 0.17, p = .68, 95% CI [-0.24, 0.37]), family satisfaction (ΔR^2 < .01, F(3, 104) = 0.29, p = .59, 95% CI [-0.15, 0.26]), and relationship satisfaction (ΔR^2 = .01, F(3, 93) = 0.65, p = .42, 95% CI [-0.13, 0.30]).

A moderation analysis was conducted to measure the relationship between other variables and perceived stress, moderated by Dysfunctional Coping. Only time pressure was significantly moderated by Dysfunctional Coping. The moderation models with the non-significant moderation effect were subscales from the Edinburgh Farm Specific Stress Inventory (bureaucracy (ΔR^2 =.01, F(3, 105) = 2.17, p = .14, 95% CI [-0.43, 0.06]), finance

($\Delta R^2 <$ .01, $F(3, 105) < 0.01$, $p = 1.00$, 95% CI [-0.16, 0.17]), isolation (ΔR^2 < .01, $F(3, 105) = 0.02$, $p = .90$, 95% CI [-0.21, 0.24]), natural forces ($\Delta R^2 < .01$, $F(3, 105) = 0.32$, $p = .58$, 95% CI [-0.43, 0.24]), and personal hazards ($\Delta R^2 < .01$, $F(3, 105) = 0.84$, $p = .36$, 95% CI [-0.35, 0.13])), conflict between work and family ($\Delta R^2 = .01$, $F(3, 103) = 0.97$, $p = .33$, 95% CI [-0.04 ,0.01]), conflict between family and work ($\Delta R^2 < .01$, $F(3, 103) = 0.08$, $p = .77$, 95% CI [-0.03, 0.04]), life satisfaction ($\Delta R^2 < .01$, $F(3, 105) < 0.01$, $p = .95$, 95% CI [-0.12, 0.13]), social satisfaction ($\Delta R^2 < .01$, $F(3, 104) = 0.40$, $p = .53$, 95% CI [-0.07, 0.14]), job satisfaction ($\Delta R^2 < .01$, $F(3, 103) < 0.01$, $p = .95$, 95% CI [-0.13, 0.14]), family satisfaction ($\Delta R^2 < .01$, $F(3, 105) = 0.08$, $p = .77$, 95% CI [-0.15, 0.15]), and relationship satisfaction ($\Delta R^2 < .01$, $F(3, 94) = 0.04$, $p = .85$, 95% CI [-0.11, 0.13]).

The moderation model with the significant moderation effect was time pressure ($\Delta R^2 = .05$, $F(3, 105) = 10.47$, $p < .01$, 95% CI [-0.51, -0.12]). The standard slope of the effect of Dysfunctional Coping on the time pressure and perceived stress was significant at one standard deviation below the mean ($b = 4.84$, $p < .01$) and at the mean ($b = 2.87$, $p < .01$). However, at one standard deviation above the mean, the slope was not significant ($b = 0.90$, $p = .33$). This meant when time pressure was high, stress increased as an individual engaged in Dysfunctional Coping (Figure 5). However, when an individual engaged in high levels of Dysfunctional Coping, perceived stress was high and not significantly different between low and high time pressure.

Figure 5. Moderation effect between time pressure and perceived stress, moderated by Dysfunctional coping.



Finally, a moderation analysis was conducted to measure the relationship between other variables and perceived stress, moderated by Social Coping. All moderation models were not significant: Edinburgh Farm Specific Stress Inventory (bureaucracy (ΔR^2 = .01, F(3, 105) = 0.87, p = .35, 95% CI [-0.87, 0.31]), finance (ΔR^2 = .02, F(3, 105) = 2.43, p = .12, 95% CI [-0.75, 0.09]), isolation (ΔR^2 = .01, F(3, 105) = 0.85, p = .36, 95% CI [-0.82, 0.30]), natural forces (ΔR^2 < .01, F(3, 105) = 0.27, p = .61, 95% CI [-0.95, 0.56]), personal hazards (ΔR^2 = .02, F(3, 105) = 2.89, p = .09, 95% CI [-1.01, 0.08]), and time pressure (ΔR^2 < .01, F(3, 105) = 0.05, p = .82, 95% CI [-0.51, 0.41])), conflict between work and family (ΔR^2 < .01, F(3, 103) < 0.01, p = .99, 95% CI [-0.07, 0.07]), conflict between family and work (ΔR^2 < .01, F(3, 103) = 0.11, p = .74, 95% CI [-0.11, 0.08]), life satisfaction (ΔR^2 =.02, F(3, 105) = 2.89, p = .09, 95% CI [-0.05, 0.64]), social satisfaction (ΔR^2 = .01, F(3, 104) = 1.04, p = .31, 95% CI [-0.14, 0.44]), job satisfaction (ΔR^2 = .01, F(3, 103) = 1.08, p = .30, 95% CI [-0.21, 0.67]), family satisfaction (ΔR^2 = .02, F(3, 94) = 2.26, p = .14, 95% CI [-0.09, 0.63]), and relationship satisfaction (ΔR^2 < .01, F(3, 105) = 0.37, p = .55, 95% CI [-0.28, 0.54]).

In summary, all moderation relationships with perceived stress were not significant, except for time pressure and perceived stress moderated by Dysfunctional Coping. When engaged in low levels of Dysfunctional Coping, perceived stress increased as time pressure increased. At high levels of Dysfunctional Coping, perceived stress was high despite the level of time pressure.

Discussion

Despite much research focusing on the negative mental health outcomes of farmers, there has been little research reporting how farmers in Aotearoa New Zealand cope with farm stressors. The overall aim of this research was to explore how leisure activities and coping strategies affect the wellbeing and stress of farmers. This aim was addressed with six research questions: 1. a. What leisure activities do farmers use to reduce stress? 1. b. Is there a difference between current and ideal engagement in leisure activities and their effect on wellbeing? 2. a. What leisure activities predict the wellbeing of farmers? 2. b. What coping strategies predict the wellbeing of farmers? 3. a. How do coping strategies affect the strength of the relationship between other variables and wellbeing? 3. b. How do coping strategies affect the strength of the relationship between other variables and stress?

Overall, farmers engaged in a wide range of leisure activities. The participants also indicated they preferred to engage in leisure activities more often than what they do currently, except for watching television. This result reflects the barriers mentioned by the participants. The hierarchical regression found leisure activities did not explain wellbeing, while behavioural disengagement and self-blame were the only two coping strategies with a significant, albeit negative, effect. Finally, five relationships were significantly moderated by coping strategies. The relationships were time pressure and wellbeing moderated by Dysfunctional Coping, financial stress and wellbeing moderated by Social Coping, isolation and wellbeing moderated by Social Coping, social satisfaction and wellbeing moderated by Social Coping, and time pressure and perceived stress moderated by Dysfunctional Coping.

Leisure activities farmers use to unwind. The participants indicated they would ideally engage in more leisure activities, except for watching television, eating/cooking food, and drinking alcohol. However, there were barriers to accessing leisure activities including weather conditions, time constraints, and physical and mental fatigue. Additional barriers were being injured and believing they did not deserve to participate in leisure activities. There was no further indication of what it means to deserve to participate in leisure activities.

Time constraints was an important barrier to accessing leisure activities. Previous research has found farmers tend to work long hours with few breaks (Deary et al., 1997; Kearney et al., 2014; Sabillón et al., 2022). Furthermore, working fewer hours on the farm does not reduce worry and thinking about farming responsibilities (Barnet & Gareis, 2000; Erdogan et al., 2012). Thus, unwinding can be challenging for farmers. Indeed, the

demanding lifestyle and preoccupation with farm duties can become a barrier to reoccurring leisure activities, such as team sports, as farming duties can be unpredictable. For example, a cow may need assistance during a difficult birth at an unpredictable time during the day and night. Despite this, some participants expressed the importance of engaging in leisure activities to reduce stress and improve wellbeing.

Watching television was the only leisure activity the participants wanted to engage with less. This may be due to the ease and accessibility of watching television. For example, watching television does not require specialist knowledge or rules to engage in the activity (Stebbins, 1992; Walker et al., 2019). Most farmers have a television or screen they can watch programs on, including online streaming platforms, which means the farmer does not need to make additional arrangements to engage in watching television. Additionally, watching television does not require a lot of commitment, physical energy, or focus, which may suit farmers due to the physically and mentally demanding jobs. Additionally, the intent to watch less television might reflect how the activity becomes dull and boring when watching television regularly (Stebbins, 2015).

Other leisure activities were mentioned by participants and were grouped into seven categories: Art, outdoors, sport, casual leisure, social, animal-related, and other leisure activities. Each of these activities gave the participant time away from responsibilities and occupational stress (Kuykendall et al., 2015; Yoshi Iwasaki, 2000). Engaging in leisure activities can provide a place away from the workspace to reflect on the work (Meier et al., 2016). Furthermore, leisure activities may act as a way for farmers to access social support (Yoshi Iwasaki, 2000). Accessing social support through leisure activities could form friendships and lasting social connections (Yoshi Iwasaki, 2000). In turn, farmers' wellbeing may improve due to increased social support.

Leisure activities and coping strategies that predict wellbeing. The hierarchical regression measured whether coping strategies and leisure activities predicted wellbeing while controlling for gender, years of farm experience, and farm type. Gender, behavioural disengagement, and self-blame were found to affect wellbeing, albeit negatively. Identifying as female negatively explained wellbeing compared to identifying as male. This could be due to gender being identified as a major factor in mental health and wellbeing in farming populations (Deary et al., 1997; Judd et al., 2006; Lunner Kolstrup et al., 2013; Peel et al.,

2015; Thomas et al., 2003), and general populations (American Psychiatric Association, 2013; Astrup et al., 2020).

Factors, such as perceived isolation, low social support, and navigating a masculine occupation, can decrease the wellbeing of female farmers (Bryant, 2020; Cloutier-Fisher & Kobayashi, 2009; Judd et al., 2006). For example, farming women can experience higher farming standards, imposed by family, friends, and the community, compared to men. For example, female farmers feel they need to work harder to receive the same approval and acceptance in the farming community that male farmers receive (Annes et al., 2021). Additionally, women may experience extra stress from performing farming responsibilities and traditional female duties, such as cooking, cleaning, and looking after children (Annes et al., 2021).

Regarding coping strategies, both behavioural disengagement and self-blame were associated negatively with wellbeing. This association was expected due to previous research finding a similar association (Ewert et al., 2021; Kato, 2015). It is not common for farmers to disengage with farming challenges and stressors, as farmers recognise disengaging does not improve the situation (Kuriger, 2016). The disengagement from addressing a stressor can lead to more stress and future challenges.

Self-blame was when an individual assumed all responsibility for the stressor (Carver et al., 1989). The participants in this study tended to blame themselves when experiencing stress. This may reflect how farmers feel responsible for stressors on the farm (Judd et al., 2006; Lunner Kolstrup et al., 2013; Roy et al., 2017). Blaming oneself is not a healthy way to perceive farming responsibilities as it can result in long workdays and hesitation to seek help (Judd et al., 2006; Roy et al., 2017). Therefore, self-blame may explain low levels of wellbeing among stoic farmers.

Finally, despite participants commenting on the importance of leisure activities, none of the leisure activities predicted wellbeing despite previous research reporting significant improvements in wellbeing and stress (Bunea, 2020; Iwasaki, 2003; Tripathy et al., 2019). This may be explained by the participants in this study having low accessing to leisure activities. Previous research has found more engagement in leisure activities increase wellbeing (Kuykendall et al., 2015). Therefore, the participants in this research may not have participated enough in leisure activities to measure a significant effect. Furthermore, the leisure activities had one item per activity. Categorising similar activities, such as hunting

and fishing, may increase validity and the understanding of types of leisure activities rather than individual activities.

The moderation effect of coping strategies. Despite most moderation analyses being non-significant, three relationships were moderated by Social Coping. These relationships were isolation with wellbeing, financial stress with wellbeing, and social satisfaction with wellbeing. In previous research, interacting with others increased wellbeing and happiness (Bryson & MacKerron, 2017). This may support the importance of social support for farmers in farming communities. Social support for farmers and rural communities has been recognised as an important factor for the mental wellbeing of farmers and rural communities (Goffin, 2014; Greenhill et al., 2009). Maintaining social connections is also an important factor for supportive rural communities, which has been found to improve wellbeing among male farmers (Kutek et al., 2011).

High Social Coping did not affect wellbeing at any level of isolation and social satisfaction. This means when an individual experienced high or low perceived isolation or social support, the individual's wellbeing remained high. High access to social support may act as a buffer for wellbeing (Becot & Inwood, 2020). Perceiving the quality of social support may explain some of the buffering effects. Previous research has found that high-quality friendships are associated with high wellbeing, compared with low-quality friendships (Birditt et al., 2020; Bruine de Bruin et al., 2020). Additionally, having too many friends can reduce wellbeing due to the time and energy needed to maintain the large quantity of friends (Bruine de Bruin et al., 2020). Thus, if an individual perceived their social support as high-quality and valuable, the individual may experience good wellbeing despite their isolation and social satisfaction.

On the other hand, farmers who engaged in low Social Coping experienced significantly lower wellbeing when experiencing high isolation compared to low isolation. When isolation was high, wellbeing was low, which may suggest isolation acting as a barrier to social support and coping (Hammersley et al., 2021). The lack of social support has been recognised as a risk factor for the mental health of farmers (Cloutier-Fisher & Kobayashi, 2009; Yazd et al., 2019). One of the outcomes of isolation was the loss of perspective (Hammersley et al., 2021). For example, the farmer was unable to discuss farming challenges and receive advice or sympathy. The inability to gain insight from other farmers can intensify

the farm problem (Hammersley et al., 2021). Thus, the results support the importance of available social support for farmers in times of need (Goffin, 2014).

Similarly, low Social Coping resulted in significantly higher wellbeing when social satisfaction was high, compared to low social satisfaction. This may be explained by the ease of access to social support. Previous research has found isolation is associated with social satisfaction (Tan et al., 2021; van den Berg et al., 2021). Thus, when an individual experiences little isolation, the social needs of an individual could be met easier compared with high isolation, resulting in high social satisfaction. For example, in a cohesive community, despite the size, individuals may not feel isolated and have high social satisfaction (van den Berg et al., 2021).

Financial pressure has been regarded as the most concerning stressor among farmers (Deary et al., 1997; Judd et al., 2006; Viseu et al., 2021; Yazd et al., 2019). Fortunately, in this study, high Social Coping was found to buffer wellbeing at all levels of financial stress, in a similar way that was found in the analysis with isolation. When Social Coping was high, wellbeing remained high at all levels of perceived financial pressure. Previous research has also found a positive association between social support and good finance (Astrup et al., 2020; Deegan & Dunne, 2022). The opportunity to discuss financial challenges with other farmers and families may partly explain the good level of wellbeing (Deegan & Dunne, 2022). When farmers discuss financial challenges, the farmer can gain other perspectives regarding financial decisions and may gain financial or physical help from their family and farming community. In addition, by discussing farming challenges, the farmer can gauge whether their experience was common in their farming community and gain suggestions for alternative ways to access financial help (Judd et al., 2006; Kearney et al., 2014; Kuriger, 2016). The realisation of the financial experience being community wide can reduce stress and improve wellbeing by reducing the expectation of the farmer to overcome the stressor by themselves.

On the other hand, farmers who experienced low Social Coping and support experienced significantly lower wellbeing when financial stress was high compared to when financial stress was low. When farmers do not engage in social coping and support, they may start to believe that the financial challenge is solely their responsibility and are alone in the experience. This is a particularly important factor due to the fluctuating market process of meat and dairy (Deegan & Dunne, 2022). Indeed, when farmers do not interact with other

members of the community, their thoughts can distort and the financial stressor can appear more severe than reality (Hammersley et al., 2021). In addition, when farmers do not discuss financial challenges with others, they may miss opportunities or knowledge about accessing financial support through other members of the community or governmental agencies. Thus, the findings in this study suggest the importance of social support and systems to buffer the effect of financial challenges on the farm (Deegan & Dunne, 2022).

Social Coping did not influence the relationships between the stressors and perceived stress. Previous research has found mixed effects of social support on stress. Some have found Social Coping reduce stress (Deegan & Dunne, 2022; Gunn et al., 2021), while a meta-analysis found there was no effect of Social Coping on stress (Kato, 2015). Thus, this research supports the latter, in which Social Support does not affect stress.

Interestingly, two relationships were moderated by Dysfunctional Coping: Time pressure with wellbeing and time pressure with perceived stress. In both analyses, when an individual engaged in high Dysfunctional Coping, perceived stress remained high at all levels of time pressure. Time pressure refers to long hours of work, limited time, and few opportunities to spend time away from farm responsibilities (Deary et al., 1997). Previous research has found time pressure negatively affected wellbeing (Kearney et al., 2014; Sabillón et al., 2022; Tómasson & Guðmundsson, 2009). This is important for farmers, as farmers seem to perceive that they have a limited time to finish farm jobs and responsibilities (Vayro et al., 2020). Thus, farmers tend to commit themselves to work rather than taking time away from the farm responsibilities to think clearly about how to address the stressor. The commitment to the job and Dysfunctional Coping may have a positive outcome at first. However, as the farmer persists at the job without a break, their wellbeing reduces and stress increases (Carver et al., 1989).

Time pressure may also lead farmers to take shortcuts and disregard safety measures (Clay et al., 2015). These responses to time pressure have led to injuries and burnout (Clay et al., 2015). Many farmers do not have a backup plan, such as someone to run the farm if the farmer was injured. Furthermore, time pressure can also lead to bad decision-making (Clay et al., 2015). The decision could increase time pressure if the decision created more issues, such as breaking equipment when trying to complete a task faster. These factors may help explain how Dysfunctional Coping reduces wellbeing and increases stress at every level of time pressure.

On the other hand, when the farmers engaged in low levels of Dysfunctional Coping, wellbeing was significantly higher, and stress was significantly lower compared with high time pressure. This might suggest farmers benefit from engaging in low levels of dysfunctional coping when experiencing time pressure. Thus, the results support the negative effects of Dysfunctional Coping among farmers when under time pressure (Ewert et al., 2021; Kato, 2015).

Finally, despite previous research emphasising the importance of Adaptive Coping (Judd et al., 2006; Kato, 2015; Nielsen & Knardahl, 2014; Wekenborg et al., 2019), there were no relationships significantly moderated by Adaptive Coping. This may be due to farmers engaging in Adaptive Coping as the default response to farm stressors (Judd et al., 2006). In other words, when farmers were experiencing distress, the farmer may engage in Adaptive Coping alongside other forms of coping. Thus, the level of Adaptive Coping may not be clearly distinguished between high and low use of Adaptive Coping.

Strengths and Limitations.

A strength is the exploratory nature of the study regarding farmers in Aotearoa New Zealand engaging in leisure activities and coping strategies. This research contributes to the current body of knowledge regarding coping strategies. The results support Goffin's (2014) recommendation to improve the coping strategies to increase wellbeing and reduce stress of farmers. In this case, access to social support may be more important for improving wellbeing compared to increasing Adaptive and decreasing Dysfunctional Coping.

Another strength was the mixed methods regarding leisure activities. The participants rated 15 leisure activities on a scale measuring engagement and had the opportunity to suggest other leisure activities that were not listed in the questionnaire and comment on the leisure activities. This approach allowed a wider range of leisure activities to be documented and gave insight into what farmers valued about leisure activities and barriers to accessing leisure activities.

There were several limitations. The first major limitation was the sample size. Although the data from 131 participants were analysed, not all the participants finished the questionnaire. This meant, the later scales did not have as much data as the beginning of the questionnaire. Indeed, the final section of the questionnaire had 97 data points. The decrease in participants may represent a response burden. Factors that attribute to the response burden are questionnaire length and time to complete, formatting and order of the questionnaire, and

cognitive load (Atkinson et al., 2019; Carver, 1997; Rolstad et al., 2011). Reordering the scales in the questionnaire or omitting less important scales, such as life satisfaction, may have reduced participant burden. Furthermore, the data collection occurred over a busy time in the farming calendar, between June and November (late winter and spring, when the livestock usually give birth), which may explain some of the attrition.

The low participant engagement decreases the generalisability of the results. This was particularly important for the regression analysis in research question 2. The participant size directly affects the size of the confidence intervals; thus, a small sample equates to a wider confidence interval, meaning the results may be less meaningful (Bonett & Wright, 2011). Gotelli and Ellison (2004) suggested having 10 to 20 participants per predictor. In research question 2. b., there were 13 predictors and 128 participants. Thus, the results need to be interpreted with caution.

Another major limitation was collecting data through a convenience sample (Cohen, 2021). Due to recruiting participants primarily through advertisements and social media, the participants were not randomly selected. This means the participant sample may not represent the population of livestock farmers in Aotearoa New Zealand. Furthermore, a large majority of data was collected through an internet questionnaire; thus, the data may over-represent farmers that are computer literate, while under-representing farmers without access to a computer. Future research may use random sampling to explore a particular group of farmers.

Regarding the questionnaire content, the Brief COPE (Carver, 1997) may not have been a good reflection of the farmer's coping strategies, despite Brief COPE being widely used. The two items per scale may not give a good measure for a coping strategy and may not have reflected common coping strategies of farmers in Aotearoa New Zealand. Furthermore, it was unclear what coping strategies farmers used in response to a particular stressor, such as interpersonal conflict or a broken-down tractor. Therefore, future research could measure coping strategies in response to specific farm stressors or during different times of the year, as in a longitudinal design.

Another factor that could be explored in future research is investigating the positive attributes working with family members bring to farming. In this study, the negative effects of the family and work roles were measured. Thus, it was unknown whether working with family on the farm increased an individual's wellbeing and reduced stress, particularly

working with the farmer's children, and using farmwork as a vehicle to build stronger relationships with family members.

Lastly, other factors may better explain wellbeing and perceived stress in farmers. For example, what season the farmer was in during the data collection or the perspective of climate change and drought. Despite using the Edinburgh Farm Specific Stress Inventory (Deary et al., 1997), it was unclear what factors of the farm-specific stress the participants were experiencing at the time of data collection. For example, in the research there was no specific information about an individual's dept status collected; thus, it was unknown how debt was attributed to financial stress. These confounding factors might give a better understanding of farmers' wellbeing and how unwinding affects the farmer in different seasons. One participant stated they would like to go fishing more often, but due to the data collection occurring over winter and spring, the participant could not go fishing often due to the weather and farm commitments. From this perspective, future research could measure the level of farm-specific stress during different times of the year.

Implications.

The first theoretical implications include adding to the current coping strategy and leisure activity literature. In addition, this research adds to the current understating of farmers' wellbeing. For instance, farmers engaged in a range of coping strategies and leisure activities and preferred to engage in more leisure activities while watching television less often. This finding reflected organisational barriers farmers experience, such as time constraints and fatigue.

The second theoretical implication was documenting the activities that farmers engage in to relax. Farmers engaged in a range of leisure activities beyond what Kuriger (2016) documented which was partly due to the small participant size in Kuriger's (2016) research. However, this study was intended to expand on Kuriger's (2016) results regarding coping and leisure activities in Aotearoa New Zealand farmers.

The first practical implications include continuing the dialogue about the mental health of farmers due to the mental health stigma persisting in the farming community (Judd et al., 2006). Furthermore, a large proportion of previous research regarding farmers' mental health has focused on detrimental factors of mental health, such as suicide in farming communities (Beautrais, 2018; Bossard et al., 2016; Hagen et al., 2019). This research reports

neutral or positive factors of farmers' mental health, which may encourage positive discussion about mental health, leisure, coping, and social support in the future.

The second practical implication was emphasising the importance of social coping and support in the farming community. Social support in farming communities and engaging in leisure activities can increase the opportunity to access social support. These results recommend reducing barriers to accessing leisure activities and increasing social support. Accessing social support has been a common recommendation for farming communities (Goffin, 2014), which, this research supports.

Conclusion.

In conclusion, farmers engaged in a wide variety of leisure activities. The participants also indicated they would engage in more leisure activities if they had the opportunity. Interestingly, participants wanted to watch less television. This was discussed in terms of ease of access to television or a digital screen coupled with physical and mental fatigue. Engaging in leisure activities could improve an individual's access to social support as the individual meets a broad range of people participating in the leisure activity. However, barriers to engaging in leisure activities included weather, time, and fatigue.

The hierarchical regression analysis found the female gender, behavioural disengagement, and self-blame significantly affected wellbeing. These coping strategies had a negative association with wellbeing. Behavioural disengagement was not a common coping strategy utilised among the farming participants. Self-blame was discussed in terms of farmers assuming responsibility for the stressor. This belief and behaviour may contribute to farmers working long hours on the farm and reduced help-seeking behaviours.

Finally, the three significant moderation relationships reinforce the importance of farmers' access to social support. Social Coping and support may act as a buffer for wellbeing, which is particularly important for farmers who experience isolation. In addition, Dysfunctional Coping moderated the relationship between time pressure and wellbeing, and between time pressure and perceived stress. This result was associated with farmers' perception of not having enough time on the farm to finish farming tasks.

The main limitation of this study was the participant sample. It was suggested a larger sample with better sampling techniques may improve the generalisability and reliability of the results. Implications include adding to current leisure, coping strategies, and farming

literature, documenting the leisure activities of farmers, increasing dialogue about the mental health of farmers, and improving social support in rural communities.

References

Alfonso, V. C., Allison, D. B., Rader, D. E., & Gorman, B. S. (1996). The extended satisfaction with life scale: Development and psychometric properties. *Social indicators research*, *38*(3), 275-301. https://doi.org/10.1007/BF00292049

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders: DSM-5* (5th ed.. ed.). Arlington, Va.: American Psychiatric Association.

Amstad, F. T., Meier, L. L., Fasel, U., Elfering, A., & Semmer, N. K. (2011). A meta-analysis of work-family conflict and various outcomes with a special emphasis on cross-domain versus matching-domain relations. *Journal of occupational health psychology*, *16*(2), 151-169. https://doi.org/10.1037/a0022170

Annes, A., Wright, W., & Larkins, M. (2021). 'A woman in charge of a farm': French women farmers challenge hegemonic femininity. *Sociologia ruralis*, *61*(1), 26-51. https://doi.org/10.1111/soru.12308

Astrup, G. L., Hofsø, K., Bjordal, K., & Rustøen, T. (2020). Cancer patients' diagnosis and symptoms and their family caregivers' self-efficacy and social support are associated with different caregiver reactions. *European journal of cancer care*, *29*(6), 1-10. https://doi.org/10.1111/ecc.13311

Atkinson, T. M., Schwartz, C. E., Goldstein, L., Garcia, I., Storfer, D. F., Li, Y., Zhang, J., Bochner, B. H., & Rapkin, B. D. (2019). Perceptions of response burden associated with completion of patient-reported outcome assessments in oncology. *Value in health*, *22*(2), 225-230. https://doi.org/10.1016/j.jval.2018.07.875

Barnet, R. C., & Gareis, K. C. (2000). Reduced-hours job-role quality and life satisfaction among married women physicians with children. *Psychology of women quarterly*, *24*(4), 358-364. https://doi.org/10.1111/j.1471-6402.2000.tb00218.x

Batterham, P. J., Brown, K., Calear, A. L., Lindenmayer, D., Hingee, K., & Poyser, C. (2022). The FarmWell study: Examining relationships between farm environment, financial status and the mental health and wellbeing of farmers. *Psychiatry Research Communications*, *2*(2), 1-6. https://doi.org/10.1016/j.psycom.2022.100036

Beautrais, A. L. (2018). Farm suicides in New Zealand, 2007–2015: A review of coroners' records. *Australian and New Zealand journal of psychiatry*, *52*(1), 78-86. https://doi.org/10.1177/0004867417704058

Becot, F. A., & Inwood, S. M. (2020). The case for integrating household social needs and social policy into the international family farm research agenda. *Journal of rural studies*, *77*, 185-198. https://doi.org/10.1016/j.jrurstud.2020.05.005

Beef and Lamb New Zealand. (2021). *Compendium of New Zealand: Farm Facts 2021*. Beef and Lamb New Zealand. https://beeflambnz.com/sites/default/files/data/files/Compendium%202021_digital.pdf

Berman, J. D., Ramirez, M. R., Bell, J. E., Bilotta, R., Gerr, F., & Fethke, N. B. (2021). The association between drought conditions and increased occupational psychosocial stress among U.S. farmers: An occupational cohort study. *The Science of the total environment*, *798*, 1-8. https://doi.org/10.1016/j.scitotenv.2021.149245

Birditt, K. S., Sherman, C. W., Polenick, C. A., Becker, L., Webster, N. J., Ajrouch, K. J., & Antonucci, T. C. (2020). So close and yet so irritating: Negative relations and implications for well-being by age and closeness. *The journals of gerontology. Series B, Psychological sciences and social sciences*, *75*(2), 327-337. https://doi.org/10.1093/geronb/gby038

Bonett, D. G., & Wright, T. A. (2011). Sample size requirements for multiple regression interval estimation. *Journal of organizational behavior*, *32*(6), 822-830. https://doi.org/10.1002/job.717

Bossard, C., Santin, G., & Guseva Canu, I. (2016). Suicide among farmers in France: Occupational factors and recent trends. *Journal of agromedicine*, *21*(4), 310-315. https://doi.org/10.1080/1059924X.2016.1211052

Brew, B., Inder, K., Allen, J., Thomas, M., & Kelly, B. (2016). The health and wellbeing of Australian farmers: A longitudinal cohort study. *BMC public health*, *16*(1), 1-11. https://doi.org/10.1186/s12889-016-3664-y

Bruine de Bruin, W., Parker, A. M., & Strough, J. (2020). Age differences in reported social networks and well-being. *Psychology and aging*, *35*(2), 159-168. https://doi.org/10.1037/pag0000415

Bryant, L. (2020). Farming, gender and mental health. In C. E. Sachs, L. Jensen, P. Castellanos, & K. Sexsmith (Eds.), *Routledge handbook of gender and agriculture* (pp. 421–434). Routledge. https://doi.org/10.4324/9780429199752

Bryson, A., & MacKerron, G. (2017). Are you happy while you work? *The economic journal 127*, 106-125. https://doi.org/10.1111/ecoj.12269

Bultena, G., Lasley, P., & Geller, J. (1986). The farm crisis: Patterns and impacts of financial distress among Iowa farm families. *Rural sociology*, *51*(4), 436-448.

Bunea, E. (2020). "Grace under pressure": How CEOs use serious leisure to cope with the demands of their job. *Frontiers in psychology*, *11*, 1-17. https://doi.org/10.3389/fpsyg.2020.01453

Carver, C. S. (1997). You want to measure coping but your protocol's too long: Consider the brief COPE. *International journal of behavioral medicine*, *4*(1), 92-100.

Carver, C. S. (2007). Stress, coping, and health. In H. S. Friedman & R. C. Silver (Eds.), *Foundations of health psychology* (pp. 117-144). Oxford University Press.

Carver, C. S., Scheier, M. F., & Kumari Weintraub, J. (1989). Assessing coping strategies: A theoretically based approach. *Journal of personality and social psychology*, *56*(2), 267-283. https://doi.org/10.1037/0022-3514.56.2.267

Carver, C. S., & Vargas, S. (2010). Coping and health. In A. Steptoe (Ed.), *Handbook of behavioral medicine: Methods and applications* (pp. 197-208). Springer. https://doi.org/10.1007/978-0-387-09488-5

Chesney, M. A., Neilands, T. B., Chambers, D. B., Taylor, J. M., & Folkman, S. (2006). A validity and reliability study of the coping self-efficacy scale. *British journal of health psychology*, *11*(3), 421-437. https://doi.org/10.1348/135910705X53155

Ciarrochi, J., Kashdan, T. B., & Harris, R. (2013). The foundations of flourishing. In T. B. Kashdan & J. Ciarrochi (Eds.), *Mindfulness, acceptance, and positive psychology: The seven foundations of well-being* (pp. 1-29). Context Press.

Clay, L., Hay-Smith, E. J. C., Treharne, G. J., & Milosavljevic, S. (2015). Unrealistic optimism, fatalism, and risk-taking in New Zealand farmers' descriptions of quad-bike incidents: A directed qualitative content analysis. *Journal of agromedicine*, *20*(1), 11-20. https://doi.org/10.1080/1059924X.2014.976727

Cloutier-Fisher, D., & Kobayashi, K. M. (2009). Examining social isolation by gender and geography: Conceptual and operational challenges using population health data in Canada. *Gender, place and culture: A journal of feminist geography*, *16*(2), 181-199. https://doi.org/10.1080/09663690902795787

Cohen. (2021). *Psychological testing and assessment: An introduction to tests and measurement* (10th ed.). McGraw-Hill US Higher Ed ISE.

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of health and social behavior*, *24*(4), 385-396. https://doi.org/10.2307/2136404

Compas, B. E., Jaser, S. S., Dunbar, J. P., Watson, K. H., Bettis, A. H., Gruhn, M. A., & Williams, E. K. (2014). Coping and emotion regulation from childhood to early adulthood: Points of convergence and divergence. *Australian journal of psychology*, *66*(2), 71-81. https://doi.org/10.1111/ajpy.12043

Csikszentmihalyi, M., & LeFevre, J. (1989). Optimal experience in work and leisure. *Journal of personality and social psychology*, *56*(5), 815-822. https://doi.org/10.1037/0022-3514.56.5.815

Deary, I. J., Willock, J., & McGregor, M. (1997). Stress in farming. *Stress Medicine*, *13*, 131-136.

Deegan, A., & Dunne, S. (2022). An investigation into the relationship between social support, stress, and psychological well-being in farmers. *Journal of community psychology*, *50*(7), 3054-3069. https://doi.org/10.1002/jcop.22814

Di Nota, P. M., Kasurak, E., Bahji, A., Groll, D., & Anderson, G. S. (2021). Coping among public safety personnel: A systematic review and meta–analysis. *Stress and health*, *37*(4), 613-630. https://doi.org/10.1002/smi.3039

Disabato, D. J., Goodman, F. R., Kashdan, T. B., Short, J. L., & Jarden, A. (2016). Different types of well-being? A cross-cultural examination of hedonic and eudaimonic well-being. *Psychological assessment*, *28*(5), 471-482. https://doi.org/10.1037/pas0000209

Dixon, P. B., & Rimmer, M. T. (2021). Coping with seasonality in a quarterly CGE model: COVID-19 and U.S. agriculture. *The Australian journal of agricultural and resource economics*, *65*(4), 802-821. https://doi.org/10.1111/1467-8489.12442

Ellis, N. R., & Albrecht, G. A. (2017). Climate change threats to family farmers' sense of place and mental wellbeing: A case study from the Western Australian wheatbelt. *Social science & medicine (1982)*, *175*, 161-168. https://doi.org/10.1016/j.socscimed.2017.01.009

Erdogan, B., Bauer, T. N., Truxillo, D. M., & Mansfield, L. R. (2012). Whistle while you work: A review of the life satisfaction literature. *Journal of management*, *38*(4), 1038-1083. https://doi.org/10.1177/0149206311429379

Erzen, E., & Çikrikci, Ö. (2018). The effect of loneliness on depression: A meta-analysis. *International journal of social psychiatry*, *64*(5), 427-435. https://doi.org/10.1177/0020764018776349

Ewert, C., Vater, A., & Schröder-Abé, M. (2021). Self-compassion and coping: A meta-analysis. *Mindfulness*, *12*(5), 1063-1077. https://doi.org/10.1007/s12671-020-01563-8

Feng, D., Ji, L., & Xu, L. (2015). Effect of subjective economic status on psychological distress among farmers and non-farmers of rural China. *The Australian journal of rural health*, *23*(4), 215-220. https://doi.org/10.1111/ajr.12187

Firth, H. M., Williams, S. M., Herbison, G. P., & McGee, R. O. (2007). Stress in New Zealand farmers. *Stress and health*, *23*(1), 51-58. https://doi.org/10.1002/smi.1119

Folkman, S., & Moskowitz, J. T. (2004). Coping: Pitfalls and promise. *Annual review of psychology*, *55*(1), 745-774. https://doi.org/10.1146/annurev.psych.55.090902.141456

Fraser, C. E., Smith, K. B., Judd, F., Humphreys, J. S., Fragar, L. J., & Henderson, A. (2005). Farming and mental health problems and mental illness. *International journal of social psychiatry*, *51*(4), 340-349. https://doi.org/10.1177/0020764005060844

Frone, M. R., & Yardley, J. K. (1996). Workplace family-supportive programmes: Predictors of employed parents' importance ratings. *Journal of occupational and organizational psychology*, *69*(4), 351-366. https://doi.org/10.1111/j.2044-8325.1996.tb00621.x

Goffin, A. (2014). *Farmers' mental health: A review of the literature report prepared for the Farmers' Mental Wellbeing Stakeholder Group by the Accident Compensation Corporation.* . ACC Policy Team Retrieved from https://www.acc.co.nz/assets/research/dcaf5b4e0d/farmer-mental-health-review.pdf

Gotelli, N. J., & Ellison, A. M. (2004). *A primer of ecological statistics* (Vol. 1). Sinauer Associates Sunderland.

Greenhill, J., King, D., Lane, A., & MacDougall, C. (2009). Understanding resilience in south Australian farm families. *Rural society*, *19*(4), 318-325. https://doi.org/10.5172/rsj.351.19.4.318

Gunn, K. M., Barrett, A., Hughes-Barton, D., Turnbull, D., Short, C. E., Brumby, S., Skaczkowski, G., & Dollman, J. (2021). What farmers want from mental health and wellbeing-focused websites and online interventions. *Journal of rural studies*, *86*, 298-308. https://doi.org/10.1016/j.jrurstud.2021.06.016

Haar, J. (2022). Burnt to a crisp? Understanding drivers of burnout amongst New Zealand workers. *Evidence-based HRM: A Global Forum for Empirical Scholarship*, *10*(2), 174-188. https://doi.org/10.1108/EBHRM-07-2021-0132

Hagen, B. N. M., Albright, A., Sargeant, J., Winder, C. B., Harper, S. L., O'Sullivan, T. L., & Jones-Bitton, A. (2019). Research trends in farmers' mental health: A scoping review of mental health outcomes and interventions among farming populations worldwide. *PloS one*, *14*(12), 1-20. https://doi.org/10.1371/journal.pone.0225661

Hammersley, C., Richardson, N., Meredith, D., Carroll, P., & McNamara, J. (2021). "That's me I am the farmer of the land": Exploring identities, masculinities, and health among male farmers' in Ireland. *American journal of men's health*, *15*(4), 1-20. https://doi.org/10.1177/15579883211035241

Hansen, B. G. (2022). Stay in dairy? Exploring the relationship between farmer wellbeing and farm exit intentions. *Journal of rural studies*, *92*, 306-315. https://doi.org/10.1016/j.jrurstud.2022.04.004

Hayes, A. F. (2022). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach* (3rd ed.). The Guilford Press.

Iwasaki, Y. (2003). The impact of leisure coping beliefs and strategies on adaptive outcomes. *Leisure studies*, *22*(2), 93-108. https://doi.org/10.1080/026143603200058777

Jones-Bitton, A., Best, C., MacTavish, J., Fleming, S., & Hoy, S. (2020). Stress, anxiety, depression, and resilience in Canadian farmers. *Social Psychiatry and Psychiatric Epidemiology*, *55*(2), 229-236. https://doi.org/10.1007/s00127-019-01738-2

Judd, F., Jackson, H., Fraser, C., Murray, G., Robins, G., & Komiti, A. (2006). Understanding suicide in Australian farmers. *Social Psychiatry and Psychiatric Epidemiology*, *41*(1), 1-10. https://doi.org/10.1007/s00127-005-0007-1

Kashdan, T. B., Biswas-Diener, R., & King, L. A. (2008). Reconsidering happiness: The costs of distinguishing between hedonics and eudaimonia. *The journal of positive psychology*, *3*(4), 219-233. https://doi.org/10.1080/17439760802303044

Kato, T. (2015). Frequently used coping scales: A meta-analysis. *Stress and health*, *31*(4), 315-323. https://doi.org/10.1002/smi.2557

Kearney, G. D., Rafferty, A. P., Hendricks, L. R., Allen, D. L., & Tutor-Marcom, R. (2014). A cross-sectional study of stressors among farmers in eastern North Carolina. *N C Med J.*, *75*(6), 384-392.

Kelly, J. F., & Coons, H. L. (2019). *Stress won't go away? Maybe you are suffering from chronic stress*. American Psychological Association Retrieved 19 August from https://www.apa.org/topics/stress/chronic#:~:text=But%20chronic%20stress%2C%20which%20is,and%20a%20weakened%20immune%20system.

Kirk, N., Robson-Williams, M., Fenemor, A., & Heath, N. (2020). Exploring the barriers to freshwater policy implementation in New Zealand. *Australian journal of water resources*, *24*(2), 91-104. https://doi.org/10.1080/13241583.2020.1800332

Kissun, S. (2022). *Bobbies must enter a value stream - co-op*. Dairy News Retrieved 5 September from https://www.ruralnewsgroup.co.nz/dairy-news/dairy-farm-health/bobbies-must-enter-a-value-stream-co-op

Kuriger, C. R. (2016). *Coping strategies that New Zealand dairy farmers use to combat stress.* [Master's thesis, University of Waikato]. University of Waikato Research Commons. New Zealand.

Kutek, S. M., Turnbull, D., & Fairweather-Schmidt, A. K. (2011). Rural men's subjective well-being and the role of social support and sense of community: Evidence for the potential benefit of enhancing informal networks. *The Australian journal of rural health, 19*(1), 20-26. https://doi.org/10.1111/j.1440-1584.2010.01172.x

Kuykendall, L., Tay, L., & Ng, V. (2015). Leisure engagement and subjective well-being: A meta-analysis. *Psychological bulletin*, *141*(2), 364-403. https://doi.org/10.1037/a0038508

La Rovere, M. T., Gorini, A., & Schwartz, P. J. (2022). Stress, the autonomic nervous system, and sudden death. *Autonomic neuroscience*, *237*, 1-8. https://doi.org/10.1016/j.autneu.2021.102921

Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. Springer.

Lazarus, R. S. P. (2006). *Stress and emotion: A new synthesis*. Springer Publishing Company.

Louvet, B., Gaudreau, P., Menaut, A., Genty, J., & Deneuve, P. (2007). Longitudinal patterns of stability and change in coping across three competitions: A latent class growth analysis. *Journal of sport & exercise psychology*, *29*(1), 100-117. https://doi.org/10.1123/jsep.29.1.100

Lunner Kolstrup, C., Kallioniemi, M., Lundqvist, P., Kymäläinen, H.-R., Stallones, L., & Brumby, S. (2013). International perspectives on psychosocial working conditions, mental health, and stress of dairy farm operators. *Journal of agromedicine*, *18*(3), 244-255. https://doi.org/10.1080/1059924X.2013.796903

Maes, M., Nelemans, S. A., Danneel, S., Fernández-Castilla, B., Van den Noortgate, W., Goossens, L., & Vanhalst, J. (2019). Loneliness and social anxiety across childhood and adolescence: Multilevel meta-analyses of cross-sectional and longitudinal associations. *Developmental psychology*, *55*(7), 1548-1565. https://doi.org/10.1037/dev0000719

Mannell, B., Walker, G. J., & Ito, E. (2014). Ideal affect, actual affect, and affect discrepancy during leisure and paid work. *Journal of leisure research*, *46*(1), 13-37. https://doi.org/10.1080/00222216.2014.11950311

Martin, R. A., & Ford, T. (2018). *The psychology of humor: An integrative approach* (2nd ed.). Academic Press, an imprint of Elsevier.

Meier, L. L., Cho, E., & Dumani, S. (2016). The effect of positive work reflection during leisure time on affective well-being: Results from three diary studies. *Journal of organizational behavior*, *37*(2), 255-278. https://doi.org/10.1002/job.2039

Miller, B. K., Wan, M., Carlson, D., Kacmar, K. M., & Thompson, M. (2022). Antecedents and outcomes of work-family conflict: A mega-meta path analysis. *PloS one*, *17*(2), e0263631-e0263631. https://doi.org/10.1371/journal.pone.0263631

Ministry for Primary Industries' Economic Intelligence Unit. (2022). *Figures and forecasts current as at 15 June 2022.* https://www.mpi.govt.nz/science/open-data-and-forecasting/situation-and-outlook-for-primary-industries-data/

Ministry for the Environment. (2022). *Te Rārangi Haurehu Kati Mahana a Aotearoa: New Zealand's greenhouse gas inventory 1990-2020*. Wellington, New Zealand.: Ministry for the Environment Retrieved from https://environment.govt.nz/assets/publications/GhG-Inventory/New-Zealand-Greenhouse-Gas-Inventory-1990-2020-Chapters-1-15.pdf

Ministry for the Environment, & Stats NZ. (2021). *Our land 2021: New Zealand's environmental reporting series*. M. f. t. Environment. https://environment.govt.nz/assets/Publications/our-land-2021.pdf

Moskowitz, J. T., Hult, J. R., Bussolari, C., & Acree, M. (2009). What works in coping with HIV? A meta-analysis with implications for coping with serious illness. *Psychological bulletin*, *135*(1), 121-141. https://doi.org/10.1037/a0014210

Netemeyer, R. G., Boles, J. S., & McMurrian, R. (1996). Development and validation of work-family conflict and family-work conflict scales. *Journal of applied psychology*, *81*(4), 400-410. https://doi.org/10.1037/0021-9010.81.4.400

Newman, D. B., Tay, L., & Diener, E. (2014). Leisure and subjective well-being: A model of psychological mechanisms as mediating factors. *Journal of happiness studies*, *15*(3), 555-578. https://doi.org/10.1007/s10902-013-9435-x

Nielsen, M. B., & Knardahl, S. (2014). Coping strategies: A prospective study of patterns, stability, and relationships with psychological distress. *Scandinavian journal of psychology*, *55*(2), 142-150. https://doi.org/10.1111/sjop.12103

Noushad, S., Ahmed, S., Ansari, B., Mustafa, U.-H., Saleem, Y., & Hazrat, H. (2021). Physiological biomarkers of chronic stress: A systematic review. *International journal of health sciences*, *15*(5), 46-59.

Parker, S. (2021). *The sociology of leisure*. Taylor & Francis Group.

Peel, D., Berry, H. L., & Schirmer, J. (2015). Perceived profitability and well-being in Australian dryland farmers and irrigators. *The Australian journal of rural health*, *23*(4), 207-214. https://doi.org/10.1111/ajr.12176

Peel, D., Berry, H. L., & Schirmer, J. (2016). Farm exit intention and wellbeing: A study of Australian farmers. *Journal of rural studies*, *47*, 41-51. https://doi.org/10.1016/j.jrurstud.2016.07.006

Penley, J. A., Tomaka, J., & Wiebe, J. S. (2002). The association of coping to physical and psychological health outcomes: A meta-analytic review. *Journal of behavioral medicine*, *25*(6), 551-603. https://doi.org/10.1023/A:1020641400589

Pressman, S. D., Matthews, K. A., Cohen, S., Martire, L. M., Scheier, M., Baum, A., & Schulz, R. (2009). Association of enjoyable leisure activities with psychological and physical well-being. *Psychosomatic medicine*, *71*(7), 725–732.

Richards, E., Signal, T., & Taylor, N. (2013). A different cut? Comparing attitudes toward animals and propensity for aggression within two primary industry cohorts-farmers and meatworkers. *Society & animals*, *21*(4), 395-413. https://doi.org/10.1163/15685306-12341284

Rolstad, S. P., Adler, J. P., & Rydén, A. P. (2011). Response burden and questionnaire length: Is shorter better? A review and meta-analysis. *Value in health*, *14*(8), 1101-1108. https://doi.org/10.1016/j.jval.2011.06.003

Roy, P., Tremblay, G., Oliffe, J. L., Jbilou, J., & Robertson, S. (2013). Male farmers with mental health disorders: A scoping review. *The Australian journal of rural health, 21*(1), 3-7. https://doi.org/10.1111/ajr.12008

Roy, P., Tremblay, G., Robertson, S., & Houle, J. (2017). "Do it all by myself": A salutogenic approach of masculine health practice among farming men coping with stress. *American journal of men's health, 11*(5), 1536-1546. https://doi.org/10.1177/1557988315619677

Ryan, R. M., & Deci, E. L. (2001). On happiness and human potentials: A review of research on hedonic and eudaimonic well-being. *Annual review of psychology, 52*(1), 141-166. https://doi.org/10.1146/annurev.psych.52.1.141

Sabillón, B. H., Gerster-Bentaya, M., & Knierim, A. (2022). Measuring farmers' well-being: Influence of farm-level factors on satisfaction with work and quality of life. *Journal of agricultural economics, 73*(2), 452-471. https://doi.org/10.1111/1477-9552.12457

Sadahiro, Y., & Wang, Y. (2018). Configuration of sample points for the reduction of multicollinearity in regression models with distance variables. *The Annals of regional science, 61*(2), 295-317. https://doi.org/10.1007/s00168-018-0868-3

Schneiderman, N., Ironson, G., & Siegel, S. D. (2005). Stress and health: Psychological, behavioral, and biological determinants. *Annual review of clinical psychology, 1*(1), 607-628. https://doi.org/10.1146/annurev.clinpsy.1.102803.144141

Selye, H. (1950). Stress and the general adaptation syndrome. *Br Med J, 1*(4667), 1383-1392. https://doi.org/10.1136/bmj.1.4667.1383

Selye, H. (1976). *The stress of life* (Rev. ed.). McGraw-Hill.

Shahtahmasebi, Z. (2022). *Rural isolation: Shouting into the void*. New Zealand Doctor Retrieved 30 July from https://www.nzdoctor.co.nz/article/rural-isolation-shouting-void

Snyder, C. R., & Dinoff, B. L. (1999). Coping: Where have you been? . In C. R. Snyder (Ed.), *Coping the psychology of what works* (pp. 3-19). Oxford University Press.

Stain, H. J., Kelly, B., Lewin, T. J., Higginbotham, N., Beard, J. R., & Hourihan, F. (2008). Social networks and mental health among a farming population. *Social Psychiatry*

and Psychiatric Epidemiology, *43*(10), 843-849. https://doi.org/10.1007/s00127-008-0374-5

Stats NZ. (2021). *Farm numbers and size*. Stats NZ. Retrieved 4 September from https://www.stats.govt.nz/indicators/farm-numbers-and-size#:~:text=Between%202016%20and%202019%3A,13%2C561%2C175%20hectares%20(3.1%20percent).

Stats NZ. (2022). *Business price indexes: March 2022 quarter – farm expenses price index* https://www.stats.govt.nz/information-releases/business-price-indexes-march-2022-quarter/

Stebbins, R. A. (1992). *Amateurs, professionals and serious leisure*. McGill-Queen's University Press.

Stebbins, R. A. (2015). *Leisure and positive psychology linking activities with positiveness* (1st ed.). Palgrave Macmillan UK. https://doi.org/10.1007/978-1-137-56994-3

Stringleman, H. (2022). *Fonterra vows no calf left behind*. Farmers Weekly. Retrieved 4 September from https://www.farmersweekly.co.nz/fonterra-vows-no-calf-left-behind/

Taggart, F., Stewart-Brown, S., & Parkinson, J. (2015). *Warwick-Edinburgh mental well-being scale (WEMWBS)*. NHS Health Scotland.

Tan, M., Barkus, E., & Favelle, S. (2021). The cross-lagged relationship between loneliness, social support, and psychotic-like experiences in young adults. *Cognitive neuropsychiatry*, *26*(6), 379-393. https://doi.org/10.1080/13546805.2021.1960156

Taylor, S. E. (2015). *Health psychology* (10 ed., Vol. 10). McGraw-Hill Education.

Tennant, R., Hiller, L., Fishwick, R., Platt, S., Joseph, S., Weich, S., Parkinson, J., Secker, J., & Stewart-Brown, S. (2007). The Warwick-Edinburgh Mental Well-being Scale (WEMWBS): Development and UK validation. *Health and quality of life outcomes*, *5*(1), 63-63. https://doi.org/10.1186/1477-7525-5-63

Thomas, H. V., Lewis, G., Thomas, D. R., Salmon, R. L., Chalmers, R. M., Coleman, T. J., Kench, S. M., Morgan-Capner, P., Meadows, D., Sillis, M., & Softley, P. (2003). Mental health of British farmers. *Occupational and environmental medicine*, *60*(3), 181-186. https://doi.org/10.1136/oem.60.3.181

Tómasson, K., & Guðmundsson, G. (2009). Mental health and wellbeing in Icelandic farmers. *Laeknabladid*, *95*, 763–769.

Tripathy, C., Tripathy, S., Gupta, B., & Kar, S. (2019). Stress, coping, and immunologic relevance: An empirical literature review. *Journal of Medical Sciences*, *39*(3), 107-113. https://doi.org/10.4103/jmedsci.jmedsci_138_18

van den Berg, P., Sanders, J., Maussen, S., & Kemperman, A. (2021). Collective self-build for senior friendly communities: Studying the effects on social cohesion, social satisfaction and loneliness. *Housing studies*, *ahead-of-print*(ahead-of-print), 1-19. https://doi.org/10.1080/02673037.2021.1941793

Vayro, C., Brownlow, C., Ireland, M., & March, S. (2020). 'Farming is not just an occupation [but] a whole lifestyle': A qualitative examination of lifestyle and cultural factors affecting mental health help-seeking in Australian farmers. *Sociologia ruralis*, *60*(1), 151-173.

Viseu, J. N. R., de Jesus, S. N., Leal, A. R. C., Pinto, P. S. L. G. d. S., Ayala-Nunes, L., & Matavelli, R. D. (2021). Coping and social support as moderators: Relationship between financial threat and negative psychological outcomes. *Current psychology* *40*(5), 2229-2241. https://doi.org/10.1007/s12144-019-0157-z

Walker, G. J., Kleiber, D. A., & Mannell, R. C. (2019). *A social psychology of leisure*. Sagamore-Venture Publishing LLC.

Walker, J. L., & Walker, L. J. S. (1988). Self-reported stress symptoms in farmers. *Journal of clinical psychology*, *44*(1), 10-16.

Wekenborg, M. K., von Dawans, B., Hill, L. K., Thayer, J. F., Penz, M., & Kirschbaum, C. (2019). Examining reactivity patterns in burnout and other indicators of chronic stress. *Psychoneuroendocrinology*, *106*, 195-205. https://doi.org/10.1016/j.psyneuen.2019.04.002

Wiese, C. W., Kuykendall, L., & Tay, L. (2018). Get active? A meta-analysis of leisure-time physical activity and subjective well-being. *The journal of positive psychology*, *13*(1), 57-66. https://doi.org/10.1080/17439760.2017.1374436

World Health Organization. (2004). *Promoting mental health: Concepts, emerging evidence, and practice.*

Yang, X., Xu, X. Y., Guo, L., Zhang, Y., Wang, S. S., & Li, Y. (2022). Effect of leisure activities on cognitive aging in older adults: A systematic review and meta-analysis. *Frontiers in psychology*, *13*, 1-14. https://doi.org/10.3389/fpsyg.2022.1080740

Yazd, S. D., Wheeler, S. A., & Zuo, A. (2019). Key risk factors affecting farmers' mental health: A systematic review. *International journal of environmental research and public health*, *16*(23), 1-23. https://doi.org/10.3390/ijerph16234849

Yoshi Iwasaki, R. C. M. (2000). Hierarchical dimensions of leisure stress coping. *Leisure sciences*, *22*(3), 163-181. https://doi.org/10.1080/01490409950121843

Appendices

Appendix 1. Human Research Ethics Committee approval letter.

The University of Waikato
Private Bag 3105
Gate 1, Knighton Road
Hamilton, New Zealand

Human Research Ethics Committee
Roger Moltzen
Telephone: +64021658119
Email:humanethics@waikato.ac.nz

THE UNIVERSITY OF WAIKATO
Te Whare Wānanga o Waikato

1 June 2022

Cathleen Schriber-Hannah
School of Psychology
DALPSS
By email: ces25@students.waikato.ac.nz

Dear Cathleen

HREC(Health)2022#16: The relaxed farmer: The wisdom of unwinding

Thank you for your responses to the Committee feedback.

We are now pleased to provide formal approval for your project.

Please contact the Committee by email (humanethics@waikato.ac.nz) if you wish to make changes to your project as it unfolds, quoting your application number with your future correspondence. Any minor changes or additions to the approved research activities can be handled outside the monthly application cycle.

We wish you all the best with your research.

Regards,

Emeritus Professor Roger Moltzen MNZM
Chairperson
University of Waikato Human Research Ethics Committee

Appendix 2. Participant information sheet and consent form.

The relaxed farmer: The wisdom of unwinding.

Thank you for considering participating in my research.
I am Cathleen Schriber-Hannah. I have grown up working on my parents' farm in Te Aroha and occasionally work on the farm since moving to Hamilton to study psychology. I am a student in the Master of Psychology program at the University of Waikato and my master's thesis explores how farmers unwind and relax.
I want to find out about the range of activities farmers do to unwind and relax and how these activities affect the wellbeing and stress of farmers. This information can be used to suggest ways to increase wellbeing among farmers and inform resources in rural areas.

Participants
Please fill out the questionnaire if you are over 18-years-old and work on an animal farm, such as dairy or dry stock, cattle, sheep, goat, deer, and so forth.

The questionnaire
This questionnaire begins with questions about yourself and the farm. Don't worry, these answers will not identify who you are, all the data collected is anonymous. The second part involves some multiple-choice questionnaires that measure coping strategies, wellbeing, life satisfaction and stress. The final section is a short multiple-choice questionnaire about how often you engage in specific unwinding activities. The whole questionnaire should take around 30 minutes.

What will happen to the data?
Your data will be stored anonymously and safely at the University of Waikato. Once the data has been analysed, the findings will be reported in my Masters thesis, presentations, and published in an academic journal. I plan to submit a short article for publication in a farming magazine.
The study has been approved by the Human Research Ethics Committee (HREC(Health)2022#16*)*. If you have any questions or concerns about the ethical conduct of this research, please contact the Secretary of the Committee by email: humanethics@waikato.ac.nz, or by post: Human Research Ethics Committee (Health), University of Waikato, Te Whare Wananga o Waikato, Private Bag 3105, Hamilton 3240.

Benefits and risks
There are no known risks of participating in this research. However, some questions may be uncomfortable to answer. If you feel you need to talk about the research with someone during or after participating in the research, there is a list of mental health services and contact details at the end of the questionnaire, you are also welcome to contact me or my supervisor (our details are at the end of this section).
The benefits of this research involve the wider community; thus, it is unlikely you will benefit directly from participating in the research.
This research aims to identify positive unwinding strategies and may inform future resources and opportunities for more farmers to engage in the activities.

Participation in the research
If you would like a summary of the findings, please complete the section at the end of this information section. You can withdraw from the research by contacting myself within a week after

sending in your filled questionnaire. You can also decline to answer questions. Only myself and my supervisor have access to the data. The data is anonymous, which means we cannot identify you and your data.

Researchers contact details
If you have any questions about the research and questionnaire, please contact myself, Cathleen Schriber-Hannah by email at ces25@students.waikato.ac.nz or my supervisor, Professor Nicola Starkey, on 07 8379230 or email nstarkey@waikato.ac.nz

Please tick each to indicate you have read and consent to the following:

- ☐ I have read and I understand the information about the questionnaire provided above
- ☐ Questions about my participation in this study have been answered satisfactorily
- ☐ I understand that my participation in this study is confidential and that no material, which could identify me personally, will be used in any reports on this study.
- ☐ I know who to contact if I have any questions about the study in general.
- ☐ I understand that taking part in this study is voluntary (my choice) and that I may withdraw from the study by contacting the research within a week of sending in my questionnaire.

Declaration by participant:

I hereby consent to take part in this study. Participant's name: _____

Signature: _____ Date: _____

Would you like a copy of the results?

○ Yes ○ No

Would you like to enter the draw to win a $50 voucher?

○ Yes ○ No

If you checked 'yes' for either question above, please enter your email here:

_____

Appendix 3. Questionnaire.

Wisdom of Farmers Questionnaire

We would like to start by finding out a bit about you and your situation.

What is your age in years?_____

What gender do you most identify as?

☐ Male ☐ Female ☐ Transgender female
☐ Transgender male ☐ Gender variant /non-conforming ☐ Prefer not to say

☐ Other (6) _____

What ethnicity/ies do you identify as?

☐ European ☐ Māori ☐ Pacific peoples

☐ Asian ☐ Other (please specify): _____

What is your current marital status?

☐ Married, civil union, de facto ☐ Separated/divorced/widowed
☐ Never married (single) ☐ Unknown

Who do you live with?

☐ Alone ☐ Living with family ☐ Living with partner

☐ Living with others: _____

If you live with family, how are the family members related to you?

☐ Parents ☐ Grandparents ☐ Siblings

☐ Children ☐ Other _____

How many years have you been farming? _____

Do you own the farm? ☐ Yes ☐ No

Do you live on the farm? ☐ Yes ☐ No

What kind of farm do you work on?

☐ Dairy cows ☐ Beef ☐ Sheep
☐ Goats ☐ Deer ☐ Pig

☐ Other (Please state): _____

On the dairy farm, what is your position?

- ☐ Herd/flock/mob Manager
- ☐ Farm Manager
- ☐ Farm Assistant
- ☐ General Farmhand
- ☐ Casual Worker
- ☐ Stockperson
- ☐ Machinery Operator (E.G., Tractor Driver)
- ☐ Gestation and breeder
- ☐ Sharemilker
- ☐ Contract Milker
- ☐ Relief Milker
- ☐ Sheep Shearer
- ☐ Lamb Rearer
- ☐ I do not work on the farm
- ☐ Other (Please specify): _____

How many people work on the farm with you? _____

How many of the people who work on the farm with you are family members? _____

In what region is your farm?

- ☐ Northland
- ☐ Auckland
- ☐ Waikato
- ☐ Bay of Plenty
- ☐ Gisborne
- ☐ Taranaki
- ☐ Hawke's Bay
- ☐ Manawatu/Wanganui
- ☐ Wellington
- ☐ Nelson/Tasman
- ☐ Marlborough
- ☐ West coast
- ☐ Canterbury
- ☐ Otago
- ☐ Southland

Do you have a plan if you contract COVID? ☐ Yes ☐ No

We are interested in how people respond when they confront difficult or stressful events in their lives. There are lots of ways to try to deal with stress. This questionnaire asks you to indicate what **you** generally do and feel when **you** experience stressful events. Obviously, different events bring out somewhat different responses, but think about what you **usually** do when you are under a lot of stress.

	I haven't been doing this at all	I've been doing this a little bit	I've been doing this a medium amount	I've been doing this a lot
I turn to work or other activities to take my mind off things.	0	1	2	3
I concentrate my efforts on doing something about the situation I'm in.	0	1	2	3
I say to myself "this isn't real".	0	1	2	3
I use alcohol or other drugs to make myself feel better.	0	1	2	3
I get emotional support from others.	0	1	2	3
I give up trying to deal with it.	0	1	2	3
I take action to try to make the situation better.	0	1	2	3
I refuse to believe that it has happened.	0	1	2	3
I say things to let my unpleasant feelings escape.	0	1	2	3
I get help and advice from other people.	0	1	2	3

I use alcohol or other drugs to help me get through it.	0	1	2	3
I try to see it in a different light, to make it seem more positive.	0	1	2	3
I criticize myself.	0	1	2	3
I try to come up with a strategy about what to do.	0	1	2	3
I get comfort and understanding from someone.	0	1	2	3
I give up the attempt to cope.	0	1	2	3
I look for something good in what is happening.	0	1	2	3
I make jokes about it.	0	1	2	3
I do something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.	0	1	2	3
I've been accepting the reality of the fact that it has happened.	0	1	2	3
I've been expressing my negative feelings.	0	1	2	3
I try to find comfort in my religion or spiritual beliefs.	0	1	2	3
I try to get advice or help from other people about what to do.	0	1	2	3
I learn to live with it.	0	1	2	3
I think hard about what steps to take.	0	1	2	3
I blame myself for things that happened.	0	1	2	3
I pray or meditate.	0	1	2	3
I make fun of the situation.	0	1	2	3

Below are some statements about feelings and thoughts. Please select the statement that best describes your experience over the **last 4 weeks.** There is no wrong answer.

	None of the time	Rarely	Some of the time	Often	All of the time
I've been feeling optimistic about the future	1	2	3	4	5
I've been feeling useful	1	2	3	4	5
I've been feeling relaxed	1	2	3	4	5
I've been feeling interested in other people	1	2	3	4	5
I've had energy to spare	1	2	3	4	5
I've been dealing with problems well	1	2	3	4	5
I've been thinking clearly	1	2	3	4	5
I've been feeling good about myself	1	2	3	4	5
I've been feeling close to other people	1	2	3	4	5
I've been feeling confident	1	2	3	4	5
I've been able to make up my own mind about things	1	2	3	4	5
I've been feeling loved	1	2	3	4	5
I've been interested in new things	1	2	3	4	5
I've been feeling cheerful	1	2	3	4	5

This questionnaire has statements with which you may agree or disagree. Use the scale below to show your agreement with each item. Please be open and honest in your answers, there are no wrong answers.

	Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree
In most ways my life is close to my ideal	1	2	3	4	5	6	7
The conditions of my life are excellent.	1	2	3	4	5	6	7
I am satisfied with my life.	1	2	3	4	5	6	7
So far, I have gotten the important things I want from life.	1	2	3	4	5	6	7
I am generally pleased with the life I lead.	1	2	3	4	5	6	7
In most ways my social life is close to my ideal.	1	2	3	4	5	6	7
The conditions of my social life are excellent	1	2	3	4	5	6	7
I am satisfied with my social life.	1	2	3	4	5	6	7
So far I have gotten the important things I want from my social life.	1	2	3	4	5	6	7
I am generally pleased with the social life I lead.	1	2	3	4	5	6	7

The questions below pertain to your current **immediate** family not your **extended** family.

	Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree
In most ways my family life is close to my ideal.	1	2	3	4	5	6	7
The conditions of my family life are excellent.	1	2	3	4	5	6	7
I am satisfied with my family life.	1	2	3	4	5	6	7
So far I have gotten the important things I want from my family life.	1	2	3	4	5	6	7
I am generally pleased with the quality of my family life.	1	2	3	4	5	6	7

The questions below pertain to your current job.

	Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree
The chance for advancement on my job is good.	1	2	3	4	5	6	7
I like the company/farming policies and practices.	1	2	3	4	5	6	7
I like or respect my co-workers.	1	2	3	4	5	6	7
I am pleased with the praise I get for doing a good job.	1	2	3	4	5	6	7
I am given enough freedom to use my own judgment.	1	2	3	4	5	6	7

I like the way my job provides for steady employment.	1	2	3	4	5	6	7
My boss handles his or her employees well.	1	2	3	4	5	6	7
I am happy with the competence of my supervisor.	1	2	3	4	5	6	7
The working conditions of my job are excellent.	1	2	3	4	5	6	7
Overall, I am satisfied with my job.	1	2	3	4	5	6	7

Are you now in a romantic relationship?

- ☐ Yes: Please answer the questions below based on your **current** relationship.
- ☐ No, but have been in the past: Please answer the questions below based on your **past** relationship.
- ☐ No, and have not been in the past: You many skip the next five statements.

	Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree
In most ways my relationship/marriage is close to my ideal.	1	2	3	4	5	6	7
The conditions of my relationship/marriage are excellent.	1	2	3	4	5	6	7
I am satisfied with my relationship/marriage.	1	2	3	4	5	6	7
So far, I have gotten the important things I want from my relationship/marriage.	1	2	3	4	5	6	7
I am generally pleased with the quality of my relationship/ marriage.	1	2	3	4	5	6	7

Each of the events and situations below represents a potential source of farming-related stress. How severe is the stress caused by this/each event?

	None	Low	Moderate	Severe	Very severe
Adjusting to new government regulations and policies	1	2	3	4	5
Keeping up with new technology and procedures	1	2	3	4	5
Filling in government forms	1	2	3	4	5
Meeting the requirements of my dairy company/producer board/buyer	1	2	3	4	5
Complying with environmental regulations	1	2	3	4	5
Debt load	1	2	3	4	5
Not enough ready cash	1	2	3	4	5
Concerns about the continuing viability of the farm	1	2	3	4	5
Worrying about owing money	1	2	3	4	5
Feeling isolated on the farm	1	2	3	4	5
Having to travel long distances for services, shopping and health care	1	2	3	4	5
Not seeing enough people	1	2	3	4	5
Lack of close neighbours	1	2	3	4	5
Significant production loss due to disease/pests/weeds	1	2	3	4	5

Bad weather	1	2	3	4	5
Machinery breakdown at busy times	1	2	3	4	5
Unplanned interruptions	1	2	3	4	5
Unpredictability of the weather	1	2	3	4	5
Personal illness during busy times	1	2	3	4	5
Farming-related accidents	1	2	3	4	5
No farm help or loss of help when needed	1	2	3	4	5
Hazardous materials on the farm (dust/chemicals/powders)	1	2	3	4	5
Risk of injury on the farm	1	2	3	4	5
Increased work load at peak times	1	2	3	4	5
Long hours of work	1	2	3	4	5
Few holidays away from the farm	1	2	3	4	5
Too much to do and too little time to do it	1	2	3	4	5

The questions in this scale ask you about your feelings and thoughts **during the last month**. In each case, you will be asked to indicate **how often** you felt or thought a certain way. Although some of the questions are similar, there are differences between them, and you should treat each one as a separate question. The best approach is to answer each question fairly quickly. That is, don't try to count up the number of times you felt a particular way, but rather indicate the alternative that seems like a reasonable estimate.

	Never	Almost never	Sometimes	Fairly often	Very often
In the last month, how often have you been upset because of something that happened unexpectedly?	0	1	2	3	4
In the last month, how often have you felt that you were unable to control the important things in your life?	0	1	2	3	4
In the last month, how often have you felt nervous and "stressed"?	0	1	2	3	4
In the last month, how often have you dealt successfully with irritating life hassles?	0	1	2	3	4
In the last month, how often have you felt that you were effectively coping with important changes were occurring in your life?	0	1	2	3	4
In the last month, how often have you felt confident about your ability to handle your personal problems?	0	1	2	3	4
In the last month, how often have you felt that things were going your way?	0	1	2	3	4
In the last month, how often have you found that you could not cope with all the things that you had to do?	0	1	2	3	4
In the last month, how often have you been able to control irritations in your life?	0	1	2	3	4
In the last month, how often have you felt that you were on top of things?	0	1	2	3	4
In the last month, how often have you been angered because of things that happened that were outside of your control?	0	1	2	3	4
In the last month, how often have you found yourself thinking about things that you have to accomplish?	0	1	2	3	4
In the last month, how often have you been able to control the way you spend your time?	0	1	2	3	4

In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	0	1	2	3	4

Mark one on each line to show how much you agree or disagree with the statement

	Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree
The demands of my work interfere with my home and family life.	1	2	3	4	5	6	7
The amount of time my job takes up makes it difficult to fulfil family responsibilities.	1	2	3	4	5	6	7
Things I want to do at home do not get done because of the demands my job puts on me.	1	2	3	4	5	6	7
My job produces strain that makes it difficult to fulfil family duties.	1	2	3	4	5	6	7
Due to work-related duties, I have to make changes to my plans for family activities.	1	2	3	4	5	6	7
The demands of my family or spouse/partner interfere with work-related activities.	1	2	3	4	5	6	7
I have to put off doing things at work because of demands on my time at home.	1	2	3	4	5	6	7
Things I want to do at work don't get done because of the demands of my family or spouse/partner.	1	2	3	4	5	6	7
My home life interferes with my responsibilities at work such as getting to work on time, accomplishing daily tasks, and working overtime.	1	2	3	4	5	6	7
Family-related strain interferes with my ability to perform job-related duties.	1	2	3	4	5	6	7

This questionnaire requires you to indicate how often you engaged in each of these activities to unwind and relax rather than doing the activity because you must or if you do not enjoy it. For example, you could exercise to unwind, in this case you indicate how often you exercised, or if you exercise but do not particularly enjoy it, in this case the activity is not done to unwind or relax, so the answer will be a low number even though you may exercise daily.
How often did you engage in these activities over the last **4 weeks** to **unwind and relax?**

	Never	1-3 times in four weeks	4-5 times in four weeks	2-3 times a week	Most days	Everyday	Multiple times a day
Watching TV	0	1	2	3	4	5	6
Listening to/playing music	0	1	2	3	4	5	6
Reading	0	1	2	3	4	5	6
Socialising with Family	0	1	2	3	4	5	6
Socialising with friends	0	1	2	3	4	5	6

Cooking/Eating food	0	1	2	3	4	5	6
Drinking alcohol	0	1	2	3	4	5	6
Exercise	0	1	2	3	4	5	6
Meditation	0	1	2	3	4	5	6
Mindfulness	0	1	2	3	4	5	6
Hunting	0	1	2	3	4	5	6
Fishing	0	1	2	3	4	5	6
Travel/going for a drive	0	1	2	3	4	5	6
Hobbies	0	1	2	3	4	5	6
Other	0	1	2	3	4	5	6

Please state your hobby or other unwinding activity here:

Do you have anything to add about your unwinding activities?

In this questionnaire you are asked how often you would **ideally** engage in each activity to unwind and relax whether you already engage in the activity or not.
Please indicate your **ideal** way to **unwind and relax** by selecting how often you would ideally engage in each activity.

	Never	1-3 times a month	4-5 times a month	2-3 times a week	Most days	Everyday	Multiple times a day
Watching TV	0	1	2	3	4	5	6
Listening to/playing music	0	1	2	3	4	5	6
Reading	0	1	2	3	4	5	6
Socialising with Family	0	1	2	3	4	5	6
Socialising with friends	0	1	2	3	4	5	6
Cooking/Eating food	0	1	2	3	4	5	6
Drinking alcohol	0	1	2	3	4	5	6
Exercise	0	1	2	3	4	5	6
Meditation	0	1	2	3	4	5	6
Mindfulness	0	1	2	3	4	5	6
Hunting	0	1	2	3	4	5	6
Fishing	0	1	2	3	4	5	6
Travel/going for a drive	0	1	2	3	4	5	6
Hobbies	0	1	2	3	4	5	6
Other	0	1	2	3	4	5	6

Please state your hobby or other unwinding activity here:

Do you have anything to add about your unwinding activities?

Thank you very much for participating in this questionnaire.

If you have any questions, feel free to get in touch with me, Cathleen Schriber-Hannah: ces25@students.waikato.ac.nz or my supervisor, Professor Nicola Starkey: email nstarkey@waikato.ac.nz or phone 07 8379230

Following is a list of mental health services if you are experiencing distress:

In an emergency, call 111
Rural support: 0800 787 254
Farmstrong: info@farmstrong.co.nz
Rural Women New Zealand: 0800 256 467
Federated Farmers: 0800 327 646
Lifeline: 0800 543 354
Need to talk?: phone or text 1737
Men's health trust: www.menshealthnz.org.nz
Manline: 06 358 1211 www.manline.co.nz
Suicide prevention: 0508 828 865 (0508 TAUTOKO)
Supporting Families in Mental Illness: www.supportingfamilies.org.nz

Appendix 4. The results of an oblimin rotation factor analysis of the Extended Satisfaction with Life Scale.

	Factor loadings				
	1	2	3	4	5
I am satisfied with my family life.	.89				
The conditions of my family life are excellent.	.88				
So far I have gotten the important things I want from my family life.	.88				
In most ways my family life is close to my ideal.	.84				
I am generally pleased with the quality of my family life.	.81				
My boss handles his or her employees well.		.90			
Overall, I am satisfied with my job.		.87			
I am giving enough freedom to use my own judgement.		.85			
I am happy with the competence of my supervisor.		.84			
I am pleased with the praise I get for doing a good job.		.78			
The working conditions of my job are excellent.		.75			
I like the company/farming policies and practices.		.68			
The chance for advancement on my job is good.		.64			
I like the way my job provides for a steady employment.		.61			
I like or respect my co-workers.		.58			
I am satisfied with my social life.			.97		
In most ways my social life Is close to my ideal.			.95		
I am generally pleased with the social life I lead.			.94		
The conditions of my social life are excellent.			.92		
So far I have gotten the important things I want from my social life.			.83		
I am generally pleased with the quality of my relationship/marriage.				.94	
The conditions of my relationship/marriage are excellent.				.94	
I am satisfied with my relationship/marriage.				.93	
In most ways my relationship/marriage is close to my ideal.				.93	
So far, I have gotten the important things I want from my relationship/marriage.				.85	
I am satisfied with my life.					.84
The conditions of my life are excellent.					.81
I am generally pleased with the life I lead.					.78
So far, I have gotten the important things I want from my life.					.72
In most ways my life is close to my ideal.					.70

Note. Factor 1 = Family satisfaction, 2 = Job satisfaction, 3 = Social satisfaction, 4 = Relationship satisfaction, 5 = General life satisfaction.

Appendix 5. The results of an oblimin rotation factor analysis of the Edinburgh Farm Specific Stress Inventory.

	Factor loadings					
	1	2	3	4	5	6
Unplanned interruptions.	.76					
Machinery breakdown at busy times.	.73					
Unpredictability of the weather.	.62					
Bad weather.	.59					
Personal illness during busy times.	.47			.46		
No farm help or loss of help when needed.	.37	.31		.36		
Not seeing enough people.		.87				
Lack of close neighbours.		.82				
Feeling isolated on the farm.		.78				
Having to travel long distances for services, shopping, and health care.		.63				
Debt load.			.93			
Not enough ready cash.			.90			
Worrying about owing money.			.86			
Concerns about the continuing viability of the farm.			.55			
Risk of injury on the farm.				.91		
Hazardous materials on the farm (dust/chemicals/powders).				.76		
Farming-related accidents.				.67		
Long hours of work.					.87	
Increased workload at peak times.					.83	
Few holidays away from the farm.					.63	
Too much to do and too little time to do it.					.53	
Adjusting to new government regulations and policies.						.89
Filling in government forms.						.85
Complying with environmental regulations.						.72
Meeting the requirements of my dairy company/producer/buyer.						.57
Keeping up with new technologies and procedures.						.47
Significant production loss due to disease/pests/weeds.	.26		.29			.35

Note. Factor 1 = Natural forces, 2 = Isolation, 3 = Finance, 4 = Personal hazards, 5 = Time pressure, 6 = Farming bureaucracy.

Appendix 6. The results of an oblimin rotation factor analysis of the Work and Family Conflict scale.

	Factor loadings	
	1	2
The amount of time my job takes up makes it difficult to fulfil family responsibilities.	.91	
My job produces strain that makes it difficult to fulfil family duties.	.87	
Things I want to do at home do not get done because of the demands my job puts on me.	.84	
The demands of my work interfere with my home and family life.	.81	
Due to work-related duties, I have to make changes to my plans for family activities.	.78	
Things I want to do at work don't get done because of the demands of my family or spouse/partner.		.91
family-related strain interferes with my ability to preform job-related duties.		.78
I have to put off doing things at work because of demands on my time at home.		.75
My home life interferes with my responsibilities a work such as getting to work on time, accomplishing daily tasks, and working overtime.		.72
The demands of my family or spouse/partner interfere with work-related activities.		.69

Note. Factor 1 = Work-family conflict, 2 = Family-work conflict.