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Farming Struggles and Triumphs:
Investigating the impact of a unique working environment
on farming family well-being.

Thesis submitted by
Connar Jo MCSHANE BPsych (Hons)
in December 2011

For the degree of Doctor of Philosophy
in the Department of Psychology,
School of Arts & Social Sciences
James Cook University

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Declaration of Ethics

The research presented and reported in this thesis was conducted within the guidelines for research ethics outlined in the National Statement on Ethics Conduct in Research Involving Humans (1999), the Joint NHMRC/AVCC Statement and Guidelines on Research Practice (1997), the James Cook University Policy on Experimentation Ethics. Standard Practices and Guidelines (2001), and the James Cook University Statement and Guidelines on Research Practice (2001). The proposed research methodology received clearance from the James Cook University Experimentation Ethics Review Committee (approval number H3094).

Connar McShane

Date

Statement of the Contribution of Others

I recognise the financial contribution of the Australian Federal Government provided through an Australian Postgraduate Award.

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Abstract

This research aimed to investigate the impact of the unique work lifestyle of farming on the well-being of Australian farming families. Past organisational research suggests that role conflict and interference have a significant impact on well-being (Carlson et al., 2000; Danes et al., 2000; Greenhaus & Beutell, 1985). Previous research by the current author suggested that the work-home environment of farming families is unique and therefore warranted further investigation due to the potential link between the working environment and the poor mental health status of farming families of Australia (McShane & Quirk, 2009; Page & Fragar, 2002). Due to the limited availability of contextually-specific scales of stress, coping, and inter-role conflict for Australian farming families, this research sought to identify the work and lifestyle determinants of well-being through the development of farming family specific scales of stress, coping, and the work-home interface. The theoretical framework for the development of the scales followed the procedure outlined by Streiner and Norman (1989) and consisted of 6 separate studies, involving a total of 474 participants.

The first study involved interviews with 53 farming family members across Queensland and New South Wales. Interview data was analysed using Grounded Theory and Content Analysis. From this process additional themes of commitment to farming, identification with farming, adaptive and maladaptive characteristics of intergenerational farming, and farming family values were generated from the interview content alongside stress, coping, and work-home interface themes. Generated items (519 items) were prepared for the Item Reduction study which included 13 potential farming family scales pertaining to stress, coping, role interference and completion, intergenerational farming, and buffering characteristics. This study asked farming family members (N=65) to rate items for importance and relevance to the individual,

with calculated means and frequencies used to reduce the item set. Items were then formatted for an Expert Review Panel (N=11) who assessed the reduced item set (246 items; n=6 scales). Expert Panel feedback, face validity, and internal consistency were used to further reduce the total item pool to 100 items. A pilot study (N=14) identified additional items for removal and finalised the item set (95 items) for the validity (N=278) and reliability (N=53) studies. The items were distributed across 5 scales and assessed against criteria for factor analysis, criterion validity, discriminant validity, internal consistency, and test-retest reliability. The resulting scales included the Farming Family (FF) Role Impact Scale (18 items), the FF Stressor Scale (29 items), the FF Cope Scale (25 items), the FF Buffer Scale (12 items), and the Intergenerational Farming Impact Scale (11 items). The scales adequately satisfied validation and reliability criteria including exploratory factor analysis (loadings $>.3$), internal consistency (Cronbach alpha $>.8$), and test-retest reliability ($\rho >.6$ for 4/5 scales).

Scales of well-being indicated that though farming families reported low levels of psychological distress and moderate levels of life satisfaction, the population was at risk of burnout. Cluster analytical and structural equation modelling techniques were used to identify those factors which contributed to well-being. Overall, results suggested that stressors were the leading contributor to poor well-being and role interference played a key role in psychological distress and work burnout. However the negative impacts of role interference and farming lifestyle stressors were tempered by positive coping styles and the sense of purpose, commitment and value associated with farming. Recommendations were made for policy and health promotion developers to consider the connection to farming as an asset to improve well-being and sustainability of the farming communities and industry.

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List of Abbreviations

ABARE – Australian Bureau of Agricultural and Resource Economics
ABS – Australian Bureau of Statistics
AIHW – Australian Institute for Health and Welfare
ANRI – Australian Natural Resources Index
CHD – Coronary Heart Disease
CRRMH – Centre for Rural and Remote Mental Health (New South Wales Division)
CRRMHQ – Centre for Rural and Remote Mental Health Queensland
CSDH – Commission of Social Determinants of Health
DMHAP – Drought Mental Health Assistance Package
FF – Farming Family
FSS – Farm Stress Survey
FWI – Family-Work Interference
GP – General Practitioner
HWI – Home-Work Interference
IF – Intergenerational Farming
K-10 – Kessler-10 (Scale of psychological distress)
MBI_GS – Maslach Burnout Inventory_General Survey
MBI-EE – Maslach Burnout Inventory_Emotional Exhaustion
MBI-PE – Maslach Burnout Inventory_Professional Efficacy
MBI-CY – Maslach Burnout Inventory_Cynicism
MHFD – Mental Health First Aid
NRHA – National Rural Health Alliance
SLS – Satisfaction with Life Scale
WFCS – Work Family Conflict Scale
WFI – Work-Family Interference
WHI – Work-Home Interference
WHO – World Health Organisation

Introduction

In 2008 at the Australian 2020 Summit, the primary industries of farming and agriculture were identified as being an important asset for the Australian economy (Fischer & Burke, 2008). The Australian agricultural and grazing industry has supported the national economy through exports and through the direct and indirect employment of hundreds of thousands of workers (Australian Bureau of Agricultural Resource Economics, 2006). However due to increasing competitiveness in domestic and international markets as well as the adversities faced in producing goods, the sustainability of farming as an industry in Australia has come into question (ABARE, 2006). This issue may partly explain the noted decline in the number of farming families in Australia (decline of 22% from 1986-2001), with fewer young people choosing farming as a career option (Australian Bureau of Statistics, 2003). As a result, the farming population is ageing, with many people continuing to work on the farm past expected retirement age. The ageing of this population is a concern for increased risk of injury in the farming workplace and impacts on succession planning for the next generation of farmers (Australian Natural Resources Index, 2002). The ageing issue presents potential problems due to increased strain on familial relationships and well-being due to the prolonged working life and possible financial challenges associated with retirement and farm succession.

Nonetheless, research has shown that in general farmers report better mental health than their urban counterparts (Gregoire, 2002; Judd, Jackson, Fraser, Robins, & Komiti, 2006). Farmers are reported to have protective characteristics such as higher levels of conscientiousness and lower levels of neuroticism and openness to experience compared to non-farming rural residents (Judd et al., 2006b). Farmers are also reported to be resilient and have a unique set of coping skills and resources that allow them to

cope effectively with the challenges of their lifestyle (Larson & Dearmont, 2002). However, despite there being fewer reported cases of depression amongst farmers than individuals in urban areas, suicide rates in male farmers are twice that of the national average, with 92 suicides thought to be completed each year (Page & Fragar, 2002). Limited access to health professionals and resources such as doctors, psychologists and hospitals in more regional and remote areas (Rygh & Hjortdahl, 2007), increasing stressors, and financial restrictions that are often a part of the farming lifestyle may be placing the mental health of farmers and farming families at risk (Gray & Lawrence, 1996; King, Lane, MacDougall, & Greenhill, 2009). The identification of determinants that support the health and well-being of farmers and farming families has yet to be established. McShane and Quirk (2009) have proposed that the farming work environment may be a major determinant of well-being due to the unique components and complex interaction of the work and home environment.

The conflict between the work and home domains for people in the workforce in general has been researched extensively, with researchers frequently noting the significant effect of role conflict on the mental health, physical health, and life satisfaction of workers (Carlson, Kacmar, & Williams, 2000; Kopelman, Greenhaus, & Connolly, 1983; Fletcher, 1991). The significance of this effect is likely to be amplified in the context of the unique work-home interface and stressors of farming, as there is limited recovery time from work domains and more risks to physical health from the work demands and work environment. Therefore, investigation into those factors which affect the well-being of farming families was considered important and necessary due to the limited research conducted in the area, especially in relation to the impact of the work-home interaction on mental health and well-being.

This thesis consists of 12 Chapters, with Chapters 1-4 presenting a critical review of the literature on farming lifestyle and health, the theoretical foundations of work-home interface research, and biopsychosocial determinants of health (e.g. stressors and coping). The literature review resulted in aims and hypotheses which are addressed through the studies outlined in Chapters 5-9. Chapter 10 presents profiles and models of determinants of well-being and mental health in farming families, and Chapters 11-12 discuss the findings and implications of the outcomes of each of the six studies from across the thesis. The main discussion of findings is restricted until these final chapters in order to reduce repetition and produce a more comprehensive account of the findings.

For the purpose of this research, the participants were identified as a member of a farming family if the family were growers (grow plants), graziers (graze livestock, such as cattle or sheep, for market), or farmers (operate a farm or cultivate land). The criteria additionally included that the participant was currently involved in the farm in some way, for example through labour, management, or administrative or financial duties. Therefore the size of the farm, how many days the individual worked the farm, whether the individual lived on farm, or if the individual had an off-farm job were not central characteristics in the definition of a farming family member. If the individual perceived themselves to be an active member of a farming family then it was likely that the individual held similar values, perceptions of farming, identity with farming, stressors, and role conflicts to other farming families due to the collective nature and sense of community relevant to those in the farming population (Lyons, Mickelson, Sullivan, & Coyne, 1998).

Research Questions

The focus of the literature review was driven by the following research questions:

1. Why do some farming families choose to stay in the industry despite a growing number of challenges?

This was investigated through gaining an understanding of rural life by examining rural life historically and considering lifestyle characteristics and personality tendencies that might influence farming families' commitment to farming. Furthermore, programs and initiatives that have been established to assist farming/rural communities with challenges or health problems will be discussed to gain an encompassing view of health and well-being for Australian farming families.

2. What impact does the farming business structure have on farming family well-being?

To gain an understanding of this effect, what was known about the impact of work-family conflict was investigated, including examining known models of the interaction between work and home roles, directions and sources of conflict, and specifically examining the family business environment and the farming family business environment.

3. What types of stressors are impacting upon farming families today? How are these stressors affecting well-being?

The importance of identifying stressors was examined through exploring the impact that stressors have on health. This was followed by an investigation of the specific impact of work stressors on well-being, an identification of key farming stressors, and an outline of potential determinants of farming family well-being.

4. How do farming families cope with challenges? Are these strategies effective in buffering stressors?

This was understood by identifying and discussing which coping strategies are thought to be most appropriate for individuals when coping with stress, and the coping resources or strategies used by farming families.

Chapter 1: Contextual Understanding of Rural Communities

The aim of this chapter is to provide an understanding of those factors which have contributed to the current lifestyle and health status of farming communities. This section will describe the progression of rural life throughout the 20th century, provide a demographic snapshot of the farming population in Australia, and the current health status of rural (indirectly farming) Australians. Following this, the chapter will review factors which attempt to address the issues that affect the health and lifestyle of farming communities. These sections include a discussion of the issue of sustainability of rural communities as well as a review of current government programs and initiatives aimed at improving the health status of farming families. Overall, the chapter aims to provide an understanding of the historical and current farming context in Australia.

1.1 Historical Context of Rural Life

In the early 1900s, rural life was community-centred, involving strong community commitment which could be demonstrated through a high level of social interaction between members (McQuilton, 2001). In regional Victoria, the leading contributors to economic activity in rural communities were generally the farming and mining industries. The mining boom eventually slowed during 1910-1920, partly as a result of the pressure from the farming community who were opposed to the pollution caused by the mining. This resulted in a population shift to urban centres which negatively affected the rural economies. Other pressures which were placed upon farming families over this period included minimal advice and assistance by governments, for example in the eradication of pests (e.g. noxious weeds, rabbits,

sparrows). Pests were a financial threat to farming populations due to the damage to crops and livestock. The governments' solution to pests was to place the responsibility of destroying the pests in landholders' hands (McQuilton, 2001). This shifting of responsibility may have been a contributor to the farming identity that emphasises control, autonomy, and accountability. Public perceptions of rural communities did not change with time to account for the direction that the industry took. Instead the public focused on the high quality of rural life that existed previously to the increasing financial challenges of farming (Davidson & Brodie, 2005; Pritchard & McManus, 2000). In some cases, a push by governments in the 1920s for people to join the 'ideal lifestyle' often resulted in families being encouraged to produce unviable crops/produce types that ultimately lead to individual downfall, for example through debt and loss of the farm (Cameron in Davidson & Brodie, 2005). The discrepancy between ideal lifestyle and reality may therefore have lead current farming families to feel resentment and distrust of government bodies or to have perceived the government bodies to have little understanding regarding the reality of farming life (Gunn, 2008; Alpass et al., 2004).

Throughout the 20th century two images of the stereotypical agricultural producers were eventually formed. The first image reflected the small "cocky" farmer who was a simple, uneducated person who constantly complained, demanded government handouts and would not survive if not for government subsidies. The second image was that of the wealthy grazier, who inherited their wealth, were never required to complete a physically hard day's labour like the small farmer, and often placed the property under the management of others (Lawrence & Gray in Pritchard & McManus, 2000). However, the reality was quite different from these traditional views of farming and grazier families with multiple new agricultural industries being

established in the late 1900s as farmers and graziers needed to diversify due to economic hardships (Lawrence in Pritchard & McManus, 2000). By the mid 1990s, economic and personal financial downturn also meant a decline in farm ownership with many external forces now influencing farm production. Farmers and graziers' well-being and control of future viability of the farm decreased further due to the current decline in the industry's influence on political parties and policy changes. There was also an increasingly negative view of farmers and graziers as environmental 'bandits' who played a central role in the destruction of native ecosystems and animals (Cocklin in Cocklin & Dibden, 2005).

Davidson and Brodie (2005) argue that rural life is in a continuous decline. While agricultural industries in the early 1900s supplied the nation's economy with up to 25% of its outputs, current agricultural industries only employ approximately 4% of the workforce and only stimulate approximately 4% of the economic outputs (Davidson & Brodie, 2005). Nonetheless, according to a report by the Australian Bureau of Agricultural Resources and Economics (ABARE), the Australian agricultural industry generates 12% of the gross domestic product, produces and supplies 93% of the domestic food supply and represents 11.7% of the total export earnings for Australia (NFF, 2010; ABARE, 2006). Changes in technology and farming practices, increased crop resilience, environmental hazards (e.g. prolonged drought, soil erosion/degradation) and an unprotected market have been contributors to the decline of approximately 30% in the number of farming families since 1986 (ABS, 2003, 2006). The decline in the number of farming families (i.e. those who operate a farming business) may not only be a result of external factors but internal factors as well. For instance, the decline in the number of farming families may also be a result of increased stress levels due to the increased competition, environmental hazards, and costs of

inputs. The increased stress levels associated with business tension may then contribute to heightened family tension which possibly creates a more difficult lifestyle for farming families (Amarapurkar & Danes, 2005). This decrease is complimented by population migration statistics, with the population growth rates for metropolitan versus non-metropolitan areas (from 1986 to 1996) being 15.4% and 13.1% respectively. This difference is accentuated when these areas are further disassembled, with coastal (non-metropolitan) areas, capital cities, and other metropolitan areas reporting increases of 22.8%, 13.7%, and 28.4% respectively. This is in direct contrast to inland and remote Australia trends, with increases of 6.5% and 7.5% reported respectively. Recent reports by the Australian Bureau of Statistics have also indicated that population decline occurred in rural Australia between 2009 and 2010 (ABS, 2011). As these trends of population growth also reflect the employment change and migration in these geographical areas (Garnaut, Connell, Lindsay, & Rodriguez, 2001), it is also suggested that rural communities are likely to be suffering economically.

1.2 Snapshot of the Current Farming Population

According to the Australian Bureau of Statistics, the number of farming family operated businesses has declined from 145 000 in 1986 to 112 753 in 2001 (22% decrease), and an accelerated 9% decrease between 2001 and 2006, resulting in approximately 102 616 (30% total decrease) farming families still farming in Australia (ABS, 2003, 2006). The greatest decrease (13.1%) in the number of farming families occurred in Queensland (ABS, 2006). These trends could be indicative of the population migration trend (Garnaut et al., 2001) but may also reflect the decrease in young people entering the farming business, resulting in an ageing farming population (increase from 2001 to 2006 of 15-18% of farmers over 65yrs; median age of 51 years) (ABS, 2006).

This trend presents potential health risks for this population. For instance, a report on ageing farmers in Australia stated that approximately 40% of on-farm fatalities and over 50% of non-intentional injury-related deaths occurred in the 55 yrs and over age group. These fatalities and injuries usually involved machinery such as tractors and farm vehicles (Morton, Fragar, & Pollock, 2006).

According to the National Farmers Federation, the proportion of farmers per state were 31.2% from New South Wales, 24.6% Victoria, 20.8% Queensland, 10.7% South Australia, 9.3% Western Australia, 2.9% Tasmania, 0.4% Northern Territory, and 0.02% Australian Capital Territory (NFF, 2010). The majority of farms or agricultural businesses in Australia in 2009 produced sheep, beef, grain, dairy, and horticulture (predominantly grape, vegetable, and fruit tree growing), with sheep, beef, and grain combinations contributing to approximately 70% of farming produce types (beef/cattle farming 34%) (ABS, 2010).

The majority of farming families consist of a couple with children (50.6%) under 15 years of age (34.6%) however there are a greater proportion of farming families without children (45.5%) in comparison to Australian families in general (37.2%) (ABS, 2006). Though the majority of the farmers were male, in 2001 there were approximately 52 500 women farmers, around one-third of the total farmer population (ABS, 2003). Over half of the Australian farming family population (54%) earned between \$400-\$1199 per week (compared to 48% of all families), with a higher proportion of farming families reporting a nil or negative income (3%) compared to all families (1%) (ABS, 2003). An examination of the source of income in broadacre and dairy farms indicated that approximately half of the farm's income was sourced from an off-farm job (41.9% of 95 720 farming families), predominantly by women (37.3% of the 41.9% of the sample who indicated sourcing income in an off-farm job). Most

farmers were self-employed (85%) and worked in excess of 49 hours per week (59%) (ABS, 2003). There was a higher proportion of farmers with a non-school qualification of a certificate (<59yrs, 47-63% versus 37-41%) or advanced diploma (across all age groups, 16-27% versus 14-20%) over 19 years of age in comparison to the general population. The general population (>19yrs, 23-44%) presented a higher proportion of bachelor degree or above qualifications in comparison with farmers from farming families (>19yrs, 19-29%) (ABS, 2006).

1.3 Access to Health Care and Health Status of Rural Communities

The Australian Institute for Health and Welfare (2008) reported that people within regional and remote areas were less likely to report good or excellent health than their major city counterparts. Life expectancy decreases and mortality rates increase as remoteness increases, although in very remote areas these trends are skewed by the poorer health status of Indigenous Australians (AIHW, 2003). It appears that though people in regional and remote areas reported rates of conditions such as heart disease similar to their major city counterparts, people in regional and remote areas were more likely to report experiencing injury, be overweight or obese, and drink harmful levels of alcohol in the short-term than their major city counterparts (AIHW, 2008). In contrast, although people in regional and remote areas presented similar self-reported levels of depression and anxiety as the major cities, men from outer regional and remote areas reported higher levels of psychological distress than men from major cities. Completed suicide rates of people from regional and remote areas also contributed to 6% of all 'excess' deaths (i.e. number of deaths which have exceeded the major city death rates) and elevated the mortality levels. For non-Indigenous people living in regional areas, excess deaths were mostly a result of injury for men under 45 years, circulatory diseases

and neoplasm were the major causes of death for those over 45 years, and injury was a major cause of 'excess' death in those over 45 years in remote areas (AIHW, 2003). The higher death rates in regional and remote areas were most likely attributable to the rates of ischaemic heart disease, other circulatory diseases, chronic obstructive pulmonary disease, motor vehicle accidents (mainly men), diabetes (mainly women), suicide (mainly men), other accidents, prostate cancer, colorectal cancer, and lung cancer (AIHW, 2003).

This picture of generally poorer health status for rural individuals is contributed to by a combination of environmental circumstances, lifestyle risk factors, and accessibility to health care services. Residents in rural communities do not have the same opportunities to access health care as do those in metropolitan areas due to fewer doctors, nurses, allied health practitioners (pharmacists, mental health practitioners, etc), and facilities (i.e. hospitals). This results in added cost for rural individuals who must sometimes travel large distances to access health care which in some cases can turn into temporary relocation whilst undergoing treatment (Foster in Taylor, Foster, & Fleming, 2008). Restricted access to health care services may contribute to the poorer health status of rural communities as the cost, time, and energy expended to access treatment may not foster or support treatment seeking behaviour. Another contributing factor may be differing conceptualisations of health and well-being which are influenced by cultural, contextual, geographic, and lifestyle factors. For example individuals from rural communities may conceptualise health and well-being in a person as an individual who has "high productivity, strong role performance and stoicism" (Taylor in Taylor, Foster, & Fleming, 2008, p. 7). This action-oriented view of health may also contribute to a lower likelihood of treatment seeking behaviour. Whilst maintaining productivity and role performance are central to farming families' perception of health, the value

placed on productivity and fulfilling roles may increase the likelihood of ignoring the symptoms of chronic stress or role conflict as these factors may not be valued as important components of health. As a potential outcome, the suppression or ignoring of the symptoms of chronic stress and role conflict may develop into major issues such as family/farm partnership breakdown, depression, or suicide.

1.4 Improving the Sustainability of Farming Communities

Regardless of the negative stereotypes of the ‘cocky’ farmer and ‘rich’ grazier, the original idealistic stereotype of the easy-going ‘country life’ of the farming lifestyle is still evident in Australia (Davidson & Brodie, 2005; Pritchard & McManus, 2000). As that idealistic stereotype is not concordant with reality, this misperception could have negative economical and psychological impacts on farming families. That is, alongside external policies and international trade pressures, the collective internal conflict (idealistic lifestyle vs. reality) within rural communities could also contribute to the decline in the number of farming families and the prosperity of rural industries (Tonts in Pritchard & McManus, 2000; Doyle in Davidson & Brodie, 2005). Internal conflicts represented by increasing anxiety for the future of local economies and potential progression and productivity of industries may contribute to the migration to urban centres for fear of losing economic stability and productivity (Doyle in Davidson & Brodie, 2005). As a reflection of this, there are fewer young people entering the industry resulting in an ageing working population of farmers.

Despite the steady decline in the number of farming families, some families still remain in the farming industry regardless of growing challenges. This may be due to the importance of the identity of being a part of a farming family. Such an identity may arise from the concept of the heroism associated with battling a hard land or difficult

environment. This heroic identity seems to represent the public's view of the pioneers of rural Australia (McCann in Davidson & Brodie, 2005). From a psychological standpoint it could be suggested that people remain on the farms due to the personal qualities, values, and coping resources they have as well as the sentimental value that farming individuals have towards the farm and land. For instance, rural individuals are reported to be resilient in nature (Caldwell & Boyd, 2009; Leipert & Reutter, 2005; Hegney et al., 2007) and their attachment to the property has been thought to be similar to the connection to land of Indigenous peoples (Hegney et al., 2007). From a practical standpoint, some communities are managing to survive and halt the decline of the number of farming family businesses through diversification and adaptation. It has also been suggested that farms have only remained viable despite growing adversity as a result of the women of the farm, as they supply unpaid labour and, in many cases, additional off-farm income (Lawrence in Pritchard & McManus, 2000). Nonetheless, in order for the industry and local economies to continue to be viable, it has been suggested that the federal government should be more proactive and have an involved role in counteracting the decline of rural and farming populations (Tonts in Pritchard & McManus, 2000).

Achieving sustainability within rural and farming communities can be considered as progress towards a preferred future, where social, economic, and environmental issues are in balance and equity exists for present and future societies, communities, and families (Cocklin & Dibden, 2005). Specifically, focus could be placed on increasing the availability of technology (e.g. equipment to reduce labour and risk of injury or greater access to communication technology) on farms and properties, with the caveat that changes in technology can have both positive and negative outcomes for sustainability (Cocklin in Cocklin & Dibden, 2005). The impact of

technological change may be positive for improvements in production and environmentally-friendly practices, yet negative in relation to cost-effectiveness and the over-emphasis on increased production rather than environmental sustainability. Furthermore, in relation to government roles in improving sustainability, consistency is required (Tonts in Cocklin & Dibden, 2005). Though governments have policies addressing sustainability, these policies can be in conflict with each other, and with most policies aimed at biophysical sustainability, the lack of consideration of the interaction between social, economic, and ecological systems ultimately undermines the effectiveness of the policy and the achievement of sustainability. For policies to be effective, more proactive stances need to be made, such as addressing the infrastructure (e.g. banks, schools, hospitals, social and sporting clubs, retail services, which usually decline with population decreases) of rural communities and building awareness, understanding, and knowledge of the challenges ahead such as local economic downturn and population migration. These changes would not only allow for individuals to prepare for the hardships ahead but for policy makers to have a greater understanding of what is faced by rural communities (Dibden in Cocklin & Dibden, 2005).

Cocklin and Alston (2002) argue for increased capital as a solution to the decline in rural communities. Cocklin and Alston (2002) discussed five different forms of capital; natural, human, social, institutional, and produced capital (Figure 1). Natural capital is the accumulation of natural resources, services for ecosystems, and the quality of the beauty of nature. Human capital refers to the quality of knowledge, skills, and general abilities of individuals in a community. The characteristics of human capital are assessed by the individual's quality of mental and physical health, their capacity to contribute to the community, and their level of social interaction. Social capital entails productive networks, values, levels of trust, shared vision and purpose, and commitment

to action by the community. Institutional capital is centred on three sectors, the public sector (includes federal, state, and local government), the private sector (non-government organisations that produce goods and services for profit as well as market services), and the third sector (non-government/non-profit organisations). Lastly, produced capital refers to capital that is a result of harvested or manufactured products, the built environment (includes roads, housing, communication, water, energy, etc), and financial resources. However, using assessment of capitals as an indicator of sustainability in rural communities is a complex suggestion, with issues of trade-offs (where should the focus be and what areas or capitals are going to be sacrificed?), measurement of capitals, and constantly changing communities. Nonetheless, Cocklin and Alston (2002) concluded that social capital and human ability and action as elements of human capital are essential to ensure sustainability. This is further supported in findings by Beddington et al. (2008) who investigated mental capital and its implications towards economic competitiveness and prosperity. Mental capital can be considered a subset of human capital as it encompasses an individual's ability to be adaptive, learn and develop skills and strategies (cognitive component) as well as being resilient and able to emotionally manage adversity (emotional component). Beddington et al. (2008) argued if governments do not invest in environments that are conducive to building mental capital then community sustainability is at risk. This is likely to occur as low mental capital is argued to result in disengagement from educational systems, behavioural problems, poor mental health, and reduced employment opportunities (Beddington et al., 2008).

As farming communities are a subset of rural communities, it can be argued that improving the sustainability of farming families and farming communities also includes social, human, and mental capital as essential elements. This requires consideration of

farming family mental and physical health (links to human and mental capital) and well-being (links to social and mental capital in relation to improved community-connectedness). The importance of community sustainability for farming family well-being emphasises the precarious balance between different capitals that is required to maintain the health and well-being of farming families and farming communities.

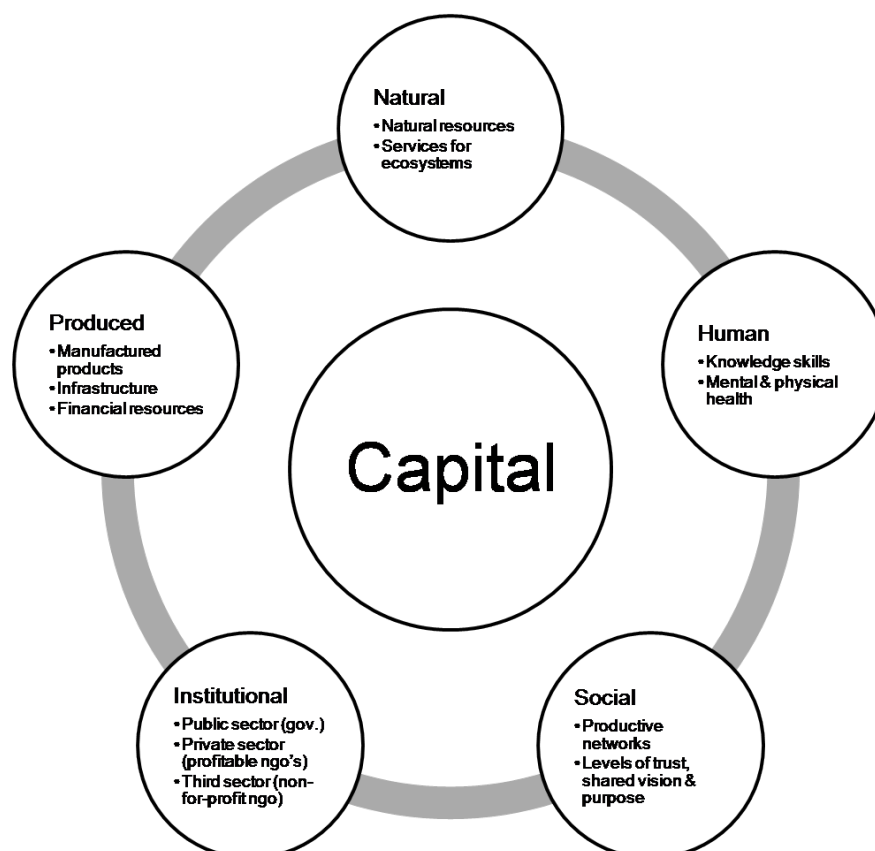


Figure 1. Five types of capital to improve the sustainability of rural communities.

1.5 Current Government Policies and Initiatives for Increased Health Status of Farming Families

As stated in the previous section, the key to improved sustainability of rural and farming communities is the good mental and physical health and well-being of the population. The majority of rural health programs listed on the federal government's website are primarily aimed at improving health care service delivery, providing

incentives for a rural health workforce, and reducing the burden on rural health workers (Department of Health and Ageing, 2008). For example the National Rural Health Alliance (NRHA) has supported a number of programs, conferences, and summits that focus on improvement in health delivery services, aid in recovery from natural disasters, and assist in establishing and maintaining networks to improve connectedness and health delivery within rural and remote areas (NRHA, 2010). There have been some state sponsored organisations which have specifically focused on improving the mental health status of rural Australians. These organisations include the Centre for Rural and Remote Mental Health in NSW (CRRMH), the Centre for Rural and Remote Mental Health Queensland (CRRMHQ), Country Health in South Australia, and Victoria's Sustainable Farming Families program.

The aim of the CRRMH is to “improve the mental health of rural and remote communities through academic leadership, collaboration and achievements in research, education, service development and information services” (CRRMH, 2011). One particular program coordinated by CRRMH was the New South Wales (NSW) Drought Mental Health Assistance Package (DMHAP) in 2006, which sought to assist rural communities in coping with prolonged stress as a result of drought. This was a collaborative program including multiple organisations and the delivery of 50 Mental Health First Aid workshops, 15 Service Network meetings, 17 community events, and the development of a mental health resource kit (NSW Department of Health, 2008). A Mental Health First Aid workshop is a training program that educates people in the identification of mental health symptoms and appropriate responses to support and referral. It was hypothesised that such training would lead to increased presentations to a general practitioner (GP) as people were more able to identify symptoms, resulting in a higher rate of diagnosis and more people receiving the appropriate help and care. As a

result, people would have an increase in mental health literacy and a reduction in stigma towards mental health. To date, the program has been community-based, with community members training other community members to identify those who need help within their community (MHFA, 2007). The Service Network meetings involved community members and service providers who discussed establishing or integrating agriculture and mental health networks into existing networks in order to guide the development of future programs and interventions (NSW Department of Health, 2008). The community events, entitled “Tackling Tough Times Gatherings” were aimed at educating and informing the community on mental health issues, reducing the stigma associated with mental health, and identifying available services. The development by the DMHAP project officers of an information kit which included fact sheets on various mental health disorders, service providers, healthy living tips, items for children, and a promotional gift was delivered to communities across New South Wales. Overall, the strengths of the DMHAP project were recognised through its multi-agency approach, involving multiple levels of government and clear communication and coordination between professionals and government and non-government organisations. Due to the success of the project, funding was renewed by the NSW state government in its bid to tackle mental health issues in rural communities.

The Centre for Rural and Remote Mental Health Queensland (CRRMHQ) is similar in focus to the CRRMH of New South Wales, as CRRMHQ also aims to ensure that people living in rural and remote areas are well-informed about mental health and have appropriate access to services for mental health and well-being (CRRMHQ, 2011). Projects directed by CRRMHQ specific to farming families fall under the “Climate Change and Mental Health” research focus. For example, the ‘Me and My Community’ project is focused on developing community leadership and building skills to address

mental health and well-being issues for young rural people and rural women working in the farming sector within Queensland (Saal & Bowers, 2010). The training program included 74 women and young rural people and involved three steps: Day 1 considered the individual and how they react to change, discussing problem-solving and networking skills. Day 2 focused more on the family unit, helping individuals realise the benefits of utilising the specific talents of family members and how each member affects each other. Day 3 progressed towards focusing on the community by understanding available services and networks within the community, and developing a greater understanding of mental health. This process allowed for a greater sense of community-connectedness to be developed by the participants (Saal & Bowers, 2010). The project was undergoing third party evaluation during 2010-2011, but immediate results presented positive outcomes. Participants reported increased knowledge and skills relating to mental health, particularly finding the mental health training and development of networks and trusting relationships valuable (Saal & Bowers, 2010).

In South Australia, the state government supports the Country Health organisation which aims to “ensure healthier, longer and better lives for all South Australians through a comprehensive and sustainable health system” (Country Health SA, 2009). Programs and resources that are specific to farming mental health centred around the impact of drought on farming family well-being. These programs and resources include a Rural Community Counselling Service, the Men and Community Program, the Managing the Pressures of Farming resource, and a Drought Hotline. The Men and Community Program was a ‘men only’ program, emphasising men looking out for the health and safety of each other, rather than specifically focusing on individual needs (Toon, 2010). It was hypothesised that by using this approach, the stigma that rural men may hold towards mental health problems was minimised, allowing the

program to deliver an effective message. The program, which involved attendance at four meetings over four weeks, informed the attendees about key issues and skills, such as powerlessness, grief, basic helping skills, and strategies to protect mental health. These meetings also encouraged discussion from attendees, allowing the meeting to not simply be a lecture but empowering the attendees to become involved in their education. As a representative of the program, Toon (2010) presented findings at a symposium in Sydney in 2010, indicating that the program was achieving more success than predicted, with high attendance rates and a participant claiming that “If I’d done this (program) 5 years ago it would have saved me 6 months in hospital!” (p.29).

The Sustainable Farm Families was a program developed in Victoria in 2008. The initiative aimed to examine what factors affected farming family’s health (physical and mental), how to improve their health status, and how to make positive changes to lifestyle and workplace safety factors (Brumby, Wilson, & Willder, 2008). Brumby, Willder, & Martin (2009) recognised a need to develop a health prevention program for these communities due to the higher rates of chronic disease, workplace injury, and mental health issues (such as the prevalence of suicide) that existed within farming communities. The program aimed to highlight the connection between healthy farm families and increases in productivity and quality of life on the farm (Brumby et al., 2009). Sustainable Farm Families was implemented as an educational workshop that allowed farm families to discuss with peers their health issues, to gain information on the consequences of poor health and health habits, and to create plans to implement behaviour change. This workshop highlighted the ultimate goal of attitude change towards health and safety behaviours. Specifically the workshop involved an educational process and a physical assessment process in order to monitor change in health status and understanding of health. The program was conducted over a 3 year

period, with the first year consisting of a two-day workshop and years 2 and 3 consisting of a 1-day workshop. Workshops involved physical assessment (with the assistance of a General Practitioner) and discussion on health topics relevant to both genders. Findings from the program evaluation showed a significant increase in knowledge of health issues, which was retained over the 3 year period, as well as a significant positive change in participant's state of health (as assessed by blood pressure, cholesterol levels, Body Mass Index), with all participants stating they would recommend the program to other farm families (Brumby et al., 2009). The study also found that of the participants involved, 60% of men and 71% of women needed a referral to a medical or allied health practitioner in the initial stages of the program.

An evaluation of the program for the Victorian Department of Primary Industries found that all participants viewed the program positively, with the majority (73%) returning for the workshop in subsequent years (Storey, 2009). Participants reported that the workshop had provided participants with the skills to employ healthy habits and behaviours, increased confidence to maintain health and well-being, and connected them to health services. As an outcome of the program, many farm family participants had made changes to lifestyle, including increased cardiovascular exercise (54%), dietary (53%), lifestyle balance (increases in holidays, leisure time, family time) (19%), and having regular health checks (14%) (Storey, 2009). The report found that Sustainable Farm Families project worked well due to the workshop content, the professionals involved, the learning methods, the individual treatment, and the variety within the program. However, problems Storey (2009) thought to be associated with the program were the burden on administration, the control over content restricting individual expert opinion, participant burden, difficulties for potential participants to find time for the two-day workshop, repetitiveness of content, and issues surrounding

funding (Storey, 2009). Overall the report commended the program, citing its effectiveness, necessity and the positive reception it had received from both farm families and professionals. However, Storey (2009) also made recommendations surrounding the implementation, recruitment methodology, support/training for health professionals, and suggestions for expanding the project.

So as is clear from the programs outlined above, there is awareness by researchers, organisations, and government bodies of the needs of farming families in relation to risks to their physical and mental health and well-being from being engaged in farming. Despite this, the number of programs, resources, and research projects dedicated specifically to this topic is limited, and there appears to be an imbalance between these and the extent of this population's needs around support for their mental health and well-being. Most of these programs, with the exception of the Sustainable Farming Families program, are very domain specific, addressing the farmer rather than the family and are often reactions to specific environmental or weather events, such as drought. This specificity suggests that it is mainly under these circumstances that support should be provided for farming families. However, the factors addressed in these programs are often not limited to particular events or contexts but are present for farmers and farming families the majority of the time. To counter this specificity, future research should focus more broadly on the mental health and well-being of farming families. Specifically, it is necessary to consider how farming, as a way of life and a complex work-home environment, affects mental health and well-being. This recommendation supports the core aim of the current research project.

1.6. Conclusion

This chapter provided an overview of farming life in Australia, highlighting the factors which have contributed to the development of current farming life and health, and the factors which need to be considered to address the issues negatively impacting farming family and farming community health and well-being. Two key concepts can be taken from this chapter. First, combating poor health and well-being requires a holistic approach and the recognition that there are multiple factors that contribute to the well-being of Australian farming families and farming communities, such as the working environment, wider community and lifestyle factors. The health and well-being of farming families and farming communities affects a wider population (rural communities) and therefore the sustainability of rural Australia is influenced by the health and well-being of its farming constituents. Second, gaining an understanding of the programs and initiatives currently available both emphasises the gap in relation to holistic approaches to farming family health and provides a framework for recommendations regarding outcomes of this research. The following chapters review work, the working environment, and the interactions between work and home from both a general theoretical perspective and more specifically from the perspective of the implications for the farming family. This will provide an understanding of the impact of the working environment on productivity, family life, and well-being.

Chapter 2: Work-Home Interface

With more people entering the workforce (increases of 58.1% to 61.9% of the eligible population between 1997-2007) (ABS, 2008), the work environment and the way it interacts with other facets of people's lives has become a key determinant of personal and family satisfaction, quality of life, and physical and psychological health. The effects of the struggle to balance work, home, and other personal responsibilities have been amplified with the increase of single-parent and dual income families (ABS, 1998, 2007; Nomaguchi, 2009). Research has indicated that the increased conflict that occurs within dual-income and single-parents workers is predominantly due to the increased perception of time pressures at work and less time dedicated to leisure activities. This decline in leisure time has been associated with the worker's need to contribute to domestic chores and responsibilities that were neglected due to work-time pressures (Nomaguchi, 2009; Pocock, Skinner, & Ichii, 2009). Additionally, the experience of conflict has been reported to occur even when one partner is working significantly fewer hours than the other (Lu et al., 2009; Karimi, 2009). As a consequence of these growing trends, the impact of work on mental health and well-being has become a widely studied field.

This chapter provides insight into the interaction of the work and home environments. From a generic work-home interface perspective (where the domains of work and home are separate), the chapter will outline models of role conflict, discuss those factors which contribute to increased conflict and examine the directions of conflict and the impact of conflict on health and well-being. This will be followed by a review of the family business' work-home environment and how this environment relates to the generic work-home interface. The chapter will conclude with an overview

of the farming family business, where the domains of home and work are structurally closer compared to the previous two work-home interfaces, and relevance of the aforementioned literature to farming families.

2.1 Models of Work-Home Interface

One of the earliest papers that examined organisational stress in terms of conflict between work roles and home roles developed the now widely used term of role conflict. Role conflict is defined as “the simultaneous occurrence of two (or more) sets of pressures such that compliance with one would make more difficult compliance with the other” (Kahn, Quinn, Snoek, & Rosenthal, 1964, p.19). Models of role conflict are often examined as a conflict between roles within the work and home domains. The home domain was alternatively referred to as the family domain (Carlson et al., 2000) or as the life domain, which is a more inclusive concept that incorporates potential conflicts for those without family responsibilities (Pocock et al., 2009). Original models of the work-home interface were uni-directional, with researchers only examining the impact of the work domain upon the home domain. This was likely a reflection of the time where a traditional family structure was dominant, with men being the main income earner and women predominantly responsible for maintaining the home and family environment.

An example of a simple uni-directional model was Greenhaus and Beutell’s (1985) model of work-home interference. Work-home interference was a term that implied that the work domain conflicted with the home domain on three levels: time; strain; and behaviour (Figure 2). This model of role compatibility implied that within both the home and work domains the individual had duties that required time for completion, came with their own level of strain and effort, and that different behaviours

were needed to successfully perform the roles and responsibilities. The time, strain and behaviours required for one domain were assumed to be incompatible with the demands of the other domain, thus resulting in role conflict (Greenhaus & Beutell, 1985). This three-level, uni-directional model became widely accepted, however with changes in the work force over time (ABS, 1998, 2007), different models began to emerge that considered role-conflict bi-directionally. For instance, the increase of the number of women in the workforce resulted in more demands from the increased number of roles and responsibilities for women and escalated the potential for conflict to occur from either the work or home domains. Frone, Russell, and Cooper (1992) examined the work-home interface and developed a model which considered role conflict as resulting from not only work roles interfering with home roles but also from home roles interfering with work roles. Frone et al. (1992) reported that role conflict indirectly and directly affected the relationship between level of involvement within the specific domain and family and work stressors. This research has shown that potential outcomes of such role conflict include distress and depression (Frone et al., 1992).

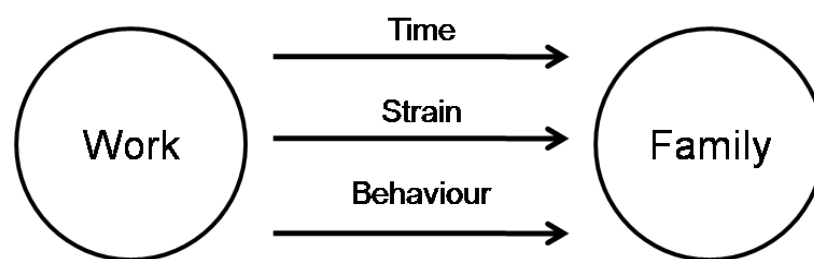


Figure 2. Three level uni-directional model of work-family conflict (adapted from Greenhaus & Beutell, 1985).

Though Frone et al.'s (1992) model was supported by early research, particularly the bi-directional assumption (Netemeyer, Boles, & McMurrian, 1996), it was Carlson et al. (2000) who eventually produced a bi-directional model. Carlson et

al.'s (2000) new model was 6-dimensional as it also incorporated the established three dimensions of Greenhaus and Beutell's (1985) model (Figure 3). This model examined both work-family and family-work conflict under the subcategories of time-based, strain-based, and behaviour-based work-family interference (WFI) as well as time-based, strain-based, and behaviour-based family-work interference (FWI). Time-based WFI suggested that time spent at work interferes with time needed to complete duties in the family domain. Strain-based WFI suggested that the strain of fulfilling duties at work interferes with the completion of family duties. Behaviour-based WFI suggested that the behaviours required to fulfil duties at work are incompatible and interfere with the completion of family duties. Time-based FWI suggested that the time spent with family interferes with time needed to complete duties in the work domain. Strain-based FWI suggested that the strain of fulfilling the family duties interferes with the completion of duties at work. Behaviour-based FWI suggested that the behaviours required to fulfil family duties are incompatible and interfere with the completion of duties at work (Carlson et al., 2000). Support for this model has been found by subsequent research, emphasising the valency of a bi-directional, multi-level model (Mesmer-Magnus & Viswesveran, 2005; Byron, 2005).

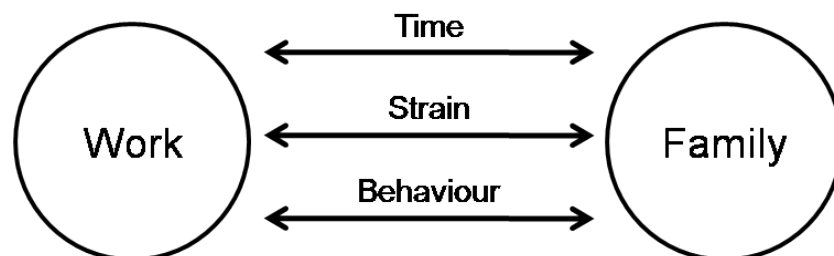


Figure 3. Three level bi-directional model of work-family conflict (adapted from Carlson et al., 2000).

As stated earlier, some researchers preferred to consider inter-domain conflict as work-life conflict. Research by Pocock et al. (2009) has taken a more comprehensive approach to examining work-life interference, focusing on Bronfenbrenner's (1979) ecological systems theory. Specifically, Pocock et al., (2009) perceived work-life interference to be a result of the conflict between personal characteristics (e.g. age, gender), workplace/job characteristics (e.g. work hours, industry, work demand), household characteristics (e.g. care responsibilities), spatial characteristics (e.g. traffic, rural/urban location), and community characteristics (e.g. support services). Pocock et al. (2009) also incorporated a demand-resource model within the ecological systems theory, to explicitly demonstrate how the characteristics of ecological systems impacted on workers' lives (Figure 4).

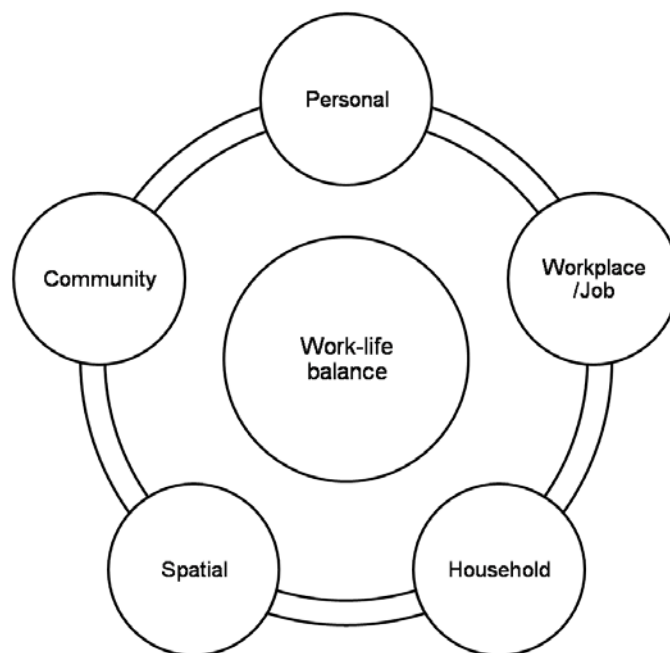


Figure 4. Sources of conflict that may affect work-life balance (adapted from Pocock et al., 2009).

A demand-resource model illustrates the extent to which a particular context can be both demanding and create resources simultaneously, specifically in relation to psychological, social and structural characteristics (Pocock et al., 2009). For example, a

young male who has good physical health (personal characteristics), working in a labouring position (workplace characteristics) in a rural community (spatial characteristics) would likely experience good work-life balance due to limited household responsibilities and feelings of connectedness with the surrounding community. Alternatively, a young male with good physical health working in a labouring position in an urban setting may experience less work-life balance due to traffic density and a lower perception of support from community.

One theory which attempts to explain inter-domain conflict and interference is Spillover theory. Grzywacz, Almeida, and McDonald (2002) operationalised spillover as the extent to which one domain either positively or negatively impacts upon another. Negative spillover refers to work-family conflict, role interference, the co-occurrence of stressors from both domains, and the negative attitudes and moods that are associated with one domain and expressed in the other. These factors subsequently contribute to conflict and dissatisfaction within the work-family environment (Grzywacz et al., 2002). Some research has found that negative work spillover is not necessarily dictated by the amount of time spent in the domain (Grzywacz et al., 2002; Wallace, 1997). This time-based assumption has been a powerful explanatory factor for most of the aforementioned models of work-family conflict and interference (Greenhaus & Beutell, 1985; Carlson et al., 2000). What was indicated as a possible determinant of the experience of negative spillover was the high workload involved (Wallace, 1997). High workload as a determinant of conflict is supported by other research that suggests a high level of involvement and experience in the occupation may contribute to the experience of negative spillover (Fox & Dwyer, 1999). This experience of negative spillover is similar to Fletcher's (1991) concept of domestic psychological transference, where

spillover from work can result in the spouse experiencing the stress and anxiety of their partner's work demands.

Positive spillover is the extent to which roles in one domain can positively impact upon another role in another domain. Positive spillover is suggested to occur through impacts upon mood, values, skills, or behaviour, and as a result is thought to have benefits for mental health (Edwards & Rothbard, 2000; Gryzwacz, 2000). Positive spillover is also independent of negative spillover or work-family conflict, as an individual is capable of simultaneously experiencing work-family conflict and positive spillover (Wayne, Musisica, & Fleeson, 2004). Hammer, Cullen, Neal, Sinclair, and Shafiro (2005) found that positive spillover had a greater positive impact on depression than work-family conflict (negative impact). Additionally, spouses were more likely to experience positive spillover from their partner's work than the worker themselves.

Recent research has argued that uni-directional and bi-directional models of work-family conflict were not as effective at explaining life and work dissatisfaction as Segmentation theory (Michel & Hargis, 2008). Segmentation theory proposes that decreased life, home, or work satisfaction are not a result of one domain conflicting or interfering with the other. Conversely, it is thought that domain specific factors influence the level of satisfaction only within that domain and no other. That is, work role pressures influence work satisfaction, and home role pressures influence home satisfaction, and at no point does one domain influence the other (Michel & Hargis, 2008) (Figure 5).

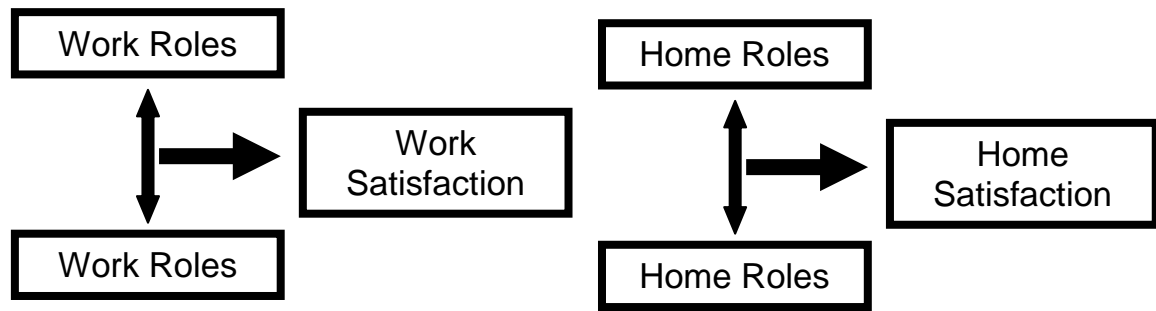


Figure 5. Intra-domain conflict according to Segmentation theory.

Support for this theory was derived from previous research that discussed the effects of segmentation and integration of roles (Rothbard, Phillips, & Dumas, 2005). For instance, Rothbard et al.'s (2005) research compared workers satisfaction and commitment to work in relation to policies which segmented work and home roles (e.g. flexitime) to those policies which blurred the boundaries between these two domains (e.g. onsite childcare). Rothbard et al. (2005) found that those who had a more segmented work environment reported more satisfaction and commitment to the organisation. Additionally, the theory of domain segmentation is consistent with findings by Frone, Russell, and Cooper (1994) who also suggested that it was more likely that work and family satisfaction were positively related due to common causes and not because one directly affected the other. Michel and Hargis (2008) conducted a meta-analysis to compare the explanatory power of a work-family conflict model and a segmentation model in explaining the effects of work and family demands on work and family satisfaction. Results indicated that the segmentation model explained more variance than work-family conflict models. However, to separate these domains so definitively and have the expectation that individual's will leave their cognitions, emotions and behaviours pertaining to a specific domain within that single domain is idealistic. Findings by Pocock et al. (2009) who surveyed workers from across Australia indicated that many workers frequently experience work to life interference.

Additionally, interference was demonstrated to occur from either direction, though work-life interference was more frequently reported than life to work interference (Pocock et al., 2009). The discrepant findings between the competing theories of Spillover and Segmentation theory suggests that perhaps both have some explanatory power and the conceptualisation of inter-role conflict should not be restricted to one theory. That is, role interference may occur from any direction and from within any domain.

2.2 Characteristics of Work-Home Interference

Research on inter-role conflict has predominantly focused on work interfering with home, family, and life domains (Greenhaus & Beutell, 1985; Major, Klein, & Ehrhart, 2002; Van Hooff, Geurts, Kompier, & Taris, 2006). This suggests that researchers have identified work to home interference rather than intra-domain conflict or home-work interference as a leading concern for the effects of conflict on well-being. Work-home interference (WHI) results from the pressure of a number of activities or issues in the workplace that ultimately affect the completion of duties in the home domain (Van Hooff et al., 2006). Van Hoof et al. (2006) examined the effect of length of time at work on the experience of WHI, with time operationalised as hours worked overtime. Results indicated that the experience of daily WHI as a result of working overtime and the related fatigue and sleep complaints accumulated so that individuals reported a constant experience of WHI. Working overtime often resulted in an individual having less time to dedicate to domestic chores and low-effort leisure activities. The less time available for low-effort leisure activities produced a greater experience of the daily manifestation of WHI (Van Hooff et al., 2006). There is strong support within the literature of the amount of time spent at work having a direct effect

on the experience of WHI and an indirect effect on psychological distress (Major et al., 2002). Specifically, O’Driscoll, Ilgen, and Hildreth (1992) recognised that it was perceived time more than actual time that had a significant impact on the experience of conflict and level of satisfaction. For instance, greater perceived time spent at work was associated with an increase in perceived work interference with home life. However, similar effects were not established for the direction of home-work interference as O’Driscoll et al. (1992) found that more time spent in off-job activities contributed to decreased perceived inter-domain conflict and psychological strain.

Nonetheless, the relationship between perceived or actual time at work and its effect on the experience of conflict, psychological strain, and job satisfaction is not always as definitive as these studies would suggest. For instance, Fox and Dwyer’s (1999) study with a sample of female nurses showed that when satisfaction in the family domain took precedence, both high job involvement and an increase of work-stress did not necessarily convert to an increase of time at work, an increase in strain to cope with the work-stressors, or the presentation of work-home conflict (Figure 6).

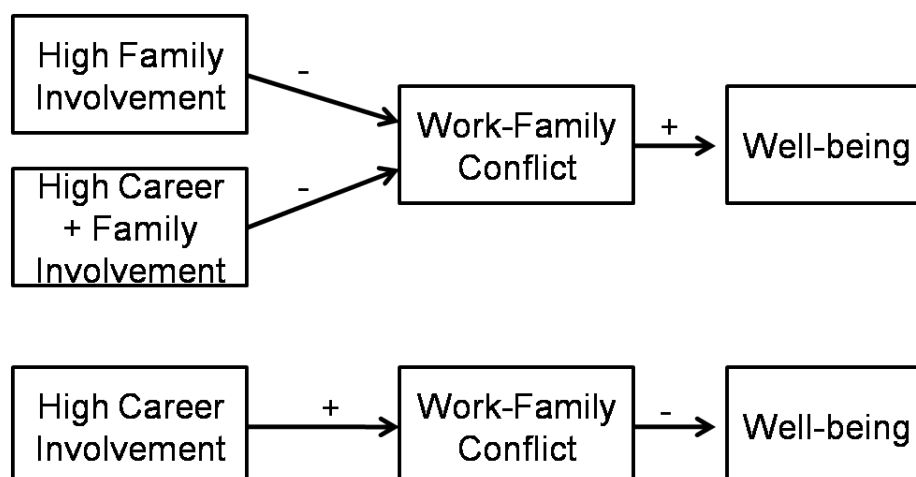


Figure 6. Influence of level of career and family psychological involvement on level of work-family conflict.

These findings suggest that though time demands are the leading precursors for the experience of role conflict and subsequently poor well-being, the negative impact of this relationship is dependent upon other factors. That is, though Fox and Dwyer (1999) suggested that this trend was likely due to their participants having successfully separated the work and home roles (Fox & Dwyer, 1999), it may also be a result of the value that the participants place upon each domain. For instance, the high value of home and family satisfaction may deter the individual from spending more time at work despite also having high work efficacy and involvement (Figure 6).

Research has shown that an important moderator for role conflict is career involvement, which can be defined as the degree of psychological investment an individual has in their career, the extent to which they perceive their jobs are valued, and the amount of energy that is committed to pursuing their career. Career involvement can have a strong influence on the experience of work to family conflict, the impact of that conflict, and the likelihood of withdrawal from professions (Fox & Dwyer, 1999; Greenhaus, Parasuraman, & Collins, 2001; Parasuraman & Purohit, Godshalk, & Beutell, 1996; Greenberger & O'Neil, 1993). As previously noted in Fox and Dwyer's (1999) study, a high value on family satisfaction protected individuals against the experience of work-home conflict, regardless of their level of career involvement. Similar findings have been presented by Greenhaus et al. (2001), who reported that if the family domain was threatened by interference from the work domain and the individual had low career involvement, then the individual is likely to withdraw from the profession to prevent the continued experience of work-home interference. Alternatively, Greenhaus et al. (2001) findings also suggested that if the individual had high career involvement the individual would persevere through the work-home interference and remain in the profession (Figure 6). Increased job/career involvement

can also result in increased family to work conflict (Parasuraman et al., 1996) and increased strain for men. Research has suggested that men are more likely than women to report a significant association between high levels of work commitment and a higher incidence of depression (Greenberger & O'Neil, 1993). Therefore though a high level of work or career involvement can have a negative impact on well-being through an increase in work-family conflict, an increase in family involvement could counteract this relationship with a lowered experience of work to family conflict (Parasuraman et al., 1996) (Figure 6).

2.3 Characteristics of Home-Work Interference

One workplace adaptation that has added insight into the phenomenon of conflict in the work-home interface is the introduction of flexibility around the workplace setting (Madsen, 2003). During the 1990s it was suggested by researchers that teleworking or home-based working would be the solution to work-home conflict as the individual could spend more time in the home, spend less time commuting, and had flexible work hours (Kugelmass, 1995). These factors were suggested to minimise the experience of work-home conflict as more time, energy, and commitment could be allocated to the home domain (Madsen, 2003; Golden, Veiga, & Simsek, 2006). Research has supported this assumption, with lower perceived levels of strain-based WHI and home-work interference (HWI), time-based WHI, behaviour-based HWI (Madsen, 2003), and in general lowered levels of WHI reported by home-based workers or teleworkers (Golden et al., 2006). However, it has been argued that the increase in work hours within the home environment may contribute to an increase in overall HWI (Golden et al., 2006). Furthermore, the decrease in experienced WHI may only be relevant to those in flexible scheduling who are employed by a company/organisation as

those who are self-employed are more likely to experience increases in WHI and not necessarily HWI (Parasuraman & Simmers, 2001; Galinsky & Kim, 2000). Therefore, different employment types appear to differentially experience different directions of conflict.

The implications that the conflict type has for well-being makes it important to identify the direction of experienced conflict. Research has indicated that WHI is detrimental as it influences job and life satisfaction, yet HWI affects only life satisfaction (Karimi, 2009). The exclusive relationship with life satisfaction suggests the potential for an increased negative impact of HWI on family satisfaction and well-being. Another issue for the teleworker or home-based worker is that of professional isolation. Professional isolation is the degree of disadvantage felt at missing opportunities to further one's career, feeling out of the loop, or missing emotional support from fellow workers (Golden, Veiga, & Dino, 2008). Professional isolation can be a result of the lifestyle of the teleworker or home-based worker and has been shown to negatively affect job performance, with increased time spent teleworking being associated with increased negative impacts on performance (Golden et al., 2008).

Some research suggests that although individuals may initially take on teleworking or home-based working due to the perceived benefits of increased time available for family, these expectations are not often met (Galinsky & Kim 2000). For example, it was found that teleworking parents perceived that, on average, they spent less time with their children than non-teleworking parents (Galinsky & Kim, 2000). The parents' perception of time with their children was in opposition to the children's perception of time spent with parents, demonstrating the importance of perceived rather than actual time (Galinsky & Kim, 2000). Mothers who were teleworkers were likely to rate their parenting skills more positively than did non-teleworkers. However, both

teleworkers and non-teleworking parents reported equal satisfaction and success as parents (Galinsky & Kim, 2000). Yet, though there was a greater reported autonomy as a teleworker, there was also greater reported difficulty in focusing on work at home. Also, there was equal reported difficulty for teleworkers and non-teleworkers in managing work and parenting responsibilities. Given these results, success as a teleworker or home-based worker would seem to stem from the ability to separate work and home responsibilities. This ability to separate the domains has been associated with greater success in role fulfilment and less experienced dissatisfaction (Rothbard et al., 2005).

Mirchandani (2000) suggested that teleworkers and home-based workers are likely to experience greater family-work conflict, as well as increased stress and anxiety, due to the proximity of the two domains and the blurring of roles and responsibilities. Therefore, in concordance with Rothbard et al. (2005), Mirchandani (2000) suggested that success in this interface could only occur when clear boundaries were in place to define work and home roles. These clear boundaries would be more likely decrease the experience of family-work conflict, stress, and anxiety. This suggestion is supported by findings from research conducted by Westman, Etzion, and Gortler (2004) who examined the work-family conflict experienced by travelling employees. Westman et al.'s (2004) research found that a decrease in experienced conflict was lowest whilst female employees were travelling for work, whereas reported conflict was high during pre-trip and post-trip periods. This could indicate that the physical distance between the two domains of home and work resulted in the decrease of experienced conflict for women. This may be as a result of the female participants accepting the barriers of the physical distance thus decreasing feelings of accountability for unfulfilled home responsibilities. In contrast, Westman et al.'s (2004) results

indicated that men's reported level of conflict remained constant during pre and mid-trip periods and subsequently decreased during the post-trip period. It therefore appears that the physical separation of the two domains does not decrease the experience of work/family conflict for men in the same way as it does for women. This could be a result of typical gender roles whereby men tend to be the main income-earners and have fewer responsibilities within the home environment. That is, men's main source of concern may be the lack of time spent within the home environment and not necessarily in relation to any unfulfilled roles or responsibilities. Therefore, men may have been experiencing conflict before they went away and whilst they were away because they were dissatisfied with the time spent away from the family. The experience of conflict and dissatisfaction were then appeased once this group was back within the family environment.

2.4 Outcomes of Role Conflict

Work-home and home-work interference can have direct and indirect impacts on health through increased job and family demands (Peeters, Montgomery, Bakker, & Schaufeli, 2005). Burnout is a serious outcome that is often associated with increased experience of work-home and home-work interference. For instance, the previously described research by Westman et al. (2004) on participants' experiences of work-family conflict on business trips found that women's reported level of burnout decreased as the trip continued. This also coincided with a decrease in reported work-family conflict. Additional outcomes of role interference can include exhaustion (Peeters, de Jonge, Janssen, & Van der Linden, 2004), depression, poor self-assessed physical health, and heavy alcohol consumption (Frone, Russell, & Barnes, 1996). These negative outcomes of role interference may be particularly present in dual income

earning couples due to the added pressures of balancing work and home environments (Frone et al., 1996). This finding is consistent with research by Hammer et al. (2005) who, in a longitudinal study, reported similar effects of work-family conflict on depression in dual-income earner couples. However, Hammer et al. (2005) also identified gender differences on the impact of specific directions of conflict. That is, the researchers found that family-work conflict was related to reports of depression in men but not women. Additionally, the husband's experience of work-family conflict was related to the incidence of depression in their wife, and the wife's experience of family-work conflict was related to the experience of depression in their husband (Hammer et al., 2005). The spillover of an individual's stress and mood onto their partner represents serious potential health outcomes for families, especially those with dual roles and blurred boundaries as this would likely increase the spillover process.

However, increased demands and the potential impact of one domain on another may not always result in negative outcomes. Other research has shown that although increases in dual-income families and single parents has generally been associated with increases in work-home interference, the increase in work involvement has also in some circumstances resulted in decreases in work-home interference (Nomaguchi, 2009). Nomaguchi (2009) hypothesised that observed outcome of decreased work-home interference may be a result of increased feelings of autonomy, finding meaningfulness in jobs, equity in parenting roles, time commitment to parenting roles, and a decrease in gender-bias attitudes within their sample. Therefore, it can be suggested that increased work demand is likely to be beneficial if there are simultaneous increases in professional efficacy and personal value within the workplace.

2.5 Family Business

As mentioned, reduction in conflict between the two domains of home and work occurs when there are clearly defined roles, responsibilities, and barriers in place to separate the home and work domains (Fox & Dwyer, 1999; Mirchandani, 2000; Rothbard et al., 2005). However, the complexities of the work-home interface are heightened when an individual owns or is involved in their family's business. (Danes & Morgan, 2004; Zody, Sprenkle, MacDermid, & Schrank, 2006). According to Parasuraman and Simmers (2001), those who choose to operate their own business tend to report doing so in order to achieve autonomy and a better work-home balance. However, in some cases, individuals enter into the family business due to perceived pressure from other intergenerational family members. This perceived pressure may contribute to feelings of reduced autonomy and control in decision-making and life choices (Rosenblatt & Albert, 1990). A reduction in perceived autonomy and control may be particularly evident in situations where the previous generation maintains some level of input in the business and thus may interfere with the management of the business (Rosenblatt & Albert, 1990).

In general, research into family-owned businesses has indicated that those who own their own business, or work with family members in family-owned businesses, are more likely to experience greater work-home conflict, higher job satisfaction and lower family satisfaction than those who work in organisations (Parasuraman & Simmers, 2001). The increased experience of conflict and poor family satisfaction may be a result of higher levels of job and parental demand (Parasuraman & Simmers, 2001). These findings are indicative of the core challenge faced by family businesses: the blurred boundaries of the work and home domains (Zody et al., 2006). Role descriptions for each domain may be unclear, and often the role an individual plays in one system is

transferred to the other system, resulting in increased tension and conflict that has ambiguous origins and causes (Danes & Morgan, 2004; Kiong, 2005). The decision to own or work in one's own family business may initially be influenced by the need to reduce work-home conflict and increase flexibility of scheduling in order to improve family lifestyles and satisfaction. However this form of employment is reported to be likely to negatively affect the family as it is the family who is constantly making sacrifices (e.g. time, involvement) in order for the business to succeed (Danes & Morgan, 2004; Moshavi & Koch, 2005). This negative outcome is in direct contrast to the initial motivations for operating a family business which in most cases is to increase work-home balance (Parasuraman & Simmers, 2001).

Though working in a family business may lead to perceived increased autonomy and improved work-home balance for some (Parasuraman & Simmers, 2001), this goal can be obstructed for women as members of family businesses. "Invisible women" are those in family businesses who play a role in the business, whether it is a partial or a critical role, but, where there is also lack of acknowledgement, compensation, or title for these women. The presence and value of their role is often ignored or underestimated by consultants, the family, and the women themselves (Gillis-Donovan & Moynihan-Bradt, 1990). Some suggested major contributors to the concept of the "invisible woman" are social forces, with men and women playing out gender roles and women not wanting to upset the balance of power. The invisible rules that influence roles and responsibilities of women within the family domain are then likely to be transferred to the business domain thus determining the roles that women can play (Hollander & Bukowitz, 1990). As a result, the predominant roles fulfilled by women within the business domain are usually emotional leader-type roles, for example the nurturing of new employees (Gillis-Donovan & Moynihan-Bradt, 1990; Cole, 1997).

This often results in outcomes such as women underplaying work roles, fulfilling the mother/nurturer role, deferring to husband or partner decisions, and feeling the husband or partner deserves more of the acknowledgement for business success. This may be a stereotypical description as other research has found that women do not always conform to gender roles and have recognised substantive roles and responsibilities (Cole, 1997; Jimenez, 2009). It is also suggested that the marginalised gender role that women are said to play in the family business, such as deferring to men, may be exaggerated as the balance of power is often shifting (Hamilton, 2006). That is, while from an external viewpoint men may appear to fulfil the role of leadership and management women play an important internal role to the establishment and progression of the family business (Hamilton, 2006).

The unique structure of the family business originates from dual relationships, the lack of opportunity to abandon tension at either the workplace or home, and differences in the focus and permanence of the business and family systems (Stafford, Duncan, Dane, & Winter, 1999). Conflict may occur as a result of the differential focus of the two systems as the business aims to achieve success external to the system whilst the family system aims for internal success. The permanence of each system may also differ as a result of the extent of emotional attachments. For instance, it has been argued that the family system is considered permanent with higher levels of emotional attachment, whilst the business system is considered relatively temporary with lower levels of emotional attachment (Stafford et al., 1999). The forms of conflict (Figure 7) that are hypothesised to result from the unique structure of the family business include justice conflict, role conflict, work/family conflict, identity conflict, and succession conflict (Beehr, Drexler, & Falkner, 1997; Kiong, 2005; Sorenson, 1999; Danes, Zuiker, Kean, & Arbuthnot, 1999).

Justice conflict refers to concerns surrounding compensation, quality of treatment, and division of resources. Role conflict centres on role confusion and ambiguity that result from dual roles and working relationships of family members. Identity conflict can arise when individuals strive for independence and a sense of self separate from the family business and may manifest through sibling rivalry or relationship conflicts between parent and child. Succession conflict refers to conflicts and problems which arise when transferring business control from one generation to the next (Beehr et al., 1997; Kiong, 2005; Sorenson, 1999; Danes et al., 1999).

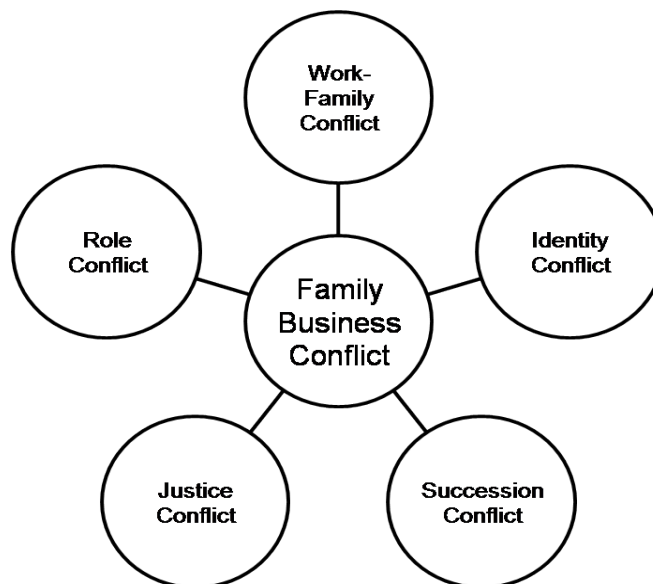


Figure 7. Types of conflict which may present within a family business system.

As mentioned previously, not all forms of role interference or conflict have negative consequences. Jehn (1997) and Kellerman and Eddleston (2004) suggested that some forms of conflict, such as task and process conflict, can ultimately contribute to success for the business and the work environment. Specifically for family businesses, task conflict would be advantageous when it occurs in only moderate amounts, as it involves identifying the means by which tasks should be achieved. Lower levels of task conflict may have negative outcomes for business progression as experience and

knowledge has not been passed on to the next generation or the uptake and integration of new ideas have not occurred (Kellerman & Eddleston, 2004). Alternatively, high levels of task conflict would be likely to challenge the successful integration of new ideas and previous experience and knowledge. Allowing family members to become involved in task completion decisions permits access to diverse perspective's, increased understanding of tasks, improved decision-making and productivity and increased acceptability of decisions (Kellerman & Eddleston, 2004; Jehn, 1997). It has been demonstrated that process conflict benefits the family business when present in low to moderate levels. Process conflict involves disagreement between members over how work should be conducted, how family members should be allocated tasks, and how much responsibility should be given to each family member. Through this conflict effective utilisation of each family member's specific talents is more likely to be realised and members placed in more appropriate positions, all of which ultimately benefits the business (Kellermanns & Eddleston, 2004; Jehn, 1997).

Whilst unclear and blurred boundaries in family businesses have been shown to negatively affect satisfaction and increase conflict for family members, Zody et al. (2006) noted that fluid boundaries can be less damaging than rigid boundaries. More rigid boundaries tend to force disengagement and separation of the domains of work and home. This suggests that the flexibility of time involvement, the merging of certain roles and blurring of domains can actually benefit the functioning of the family and business system. However this process is dependent upon how success is defined by the individual. For example, a family business whose members each hold similar values, goals, and expectations towards the roles and responsibilities within the business and family systems are more likely to perceive their family business to be successful than those who do not. Other benefits of blurred boundaries include increased autonomy and

flexibility of scheduling, which is often the initial motivation to participate in or own a family business (Parasuraman & Simmers, 2001). This may result in the individual perceiving an increase in available time to spend with family, thus increasing satisfaction and well-being.

2.6 Farming Family Business

While the farming family business shares characteristics with the work-home interface when compared to a generic family business and a home-based worker's work-home environment, farming family businesses also have unique characteristics which need to be considered (Danes & Lee, 2004; McShane & Quirk, 2009). The farming family business can be characterised by a merging of the work and home environments. That is, farming family businesses often exist within the family domain and family members make up the core worker base. Thus the farming family work-home interface is typified by blurred boundaries and dual roles. Additionally, work demands are often erratic as they are dependent on factors which may be beyond individual control (e.g. soil quality, weather conditions) and therefore often supersede family needs.

The similarities between the generic and farming family business can be related to the motivations of individuals who enter into the working environments of family businesses, home-based workers or teleworkers. For instance, family businesses and home-based workers often enter into this form of work to benefit the family through greater flexibility of scheduling (Madsen, 2003; Golden et al., 2006; Parasuraman & Simmers, 2001). However, family businesses often sacrifice family time and report low family satisfaction (Parasuraman & Simmers, 2001) and home-based workers reported high levels of family-work conflict (Golden et al., 2006). Given the similar characteristics of the work-home interface, these factors are likely to be evident in a

farming family work environment. Heightened role confusion and the inability to escape tension from one domain to the next are also factors shared by the family business and farming family business structures. Such factors are likely contributors to the increased levels of conflict that are reported in the farming family business (Danes, Leichtentritt, Metz, & Huddleston-Casas, 2000; Danes & Lee, 2004).

An additional similarity to the generic family business environment is that the farming family business environment would also be likely to benefit from task and process conflict. Task conflict may be advantageous in an intergenerational farming context as the experience of the older generation combined with the new ideas of the next generation would allow for family members to reach a decision that the majority are satisfied with and foster feelings of inclusion (Kellerman & Eddleston, 2004; Jehn 1997). In an intergenerational farming context, process conflict might be beneficial due to the diversity of skills required in a farming business. For example, allocating family members to tasks in which they are skilled or hold interests, such as mechanical work or managerial work, may contribute to overall business success (Kellerman & Eddleston, 2004; Jehn 1997).

Despite the similarities, there are characteristics of the farming family work-home environment that differ from the teleworker or home-based worker's work-home interface and the generic family business work-home environment. Findings reported by McShane and Quirk (2009) suggested that the farming family work-home interface was unique compared to the home-based workers as farmers reported higher levels of work-family conflict rather than family-work conflict. Additionally, other research suggests that teleworkers and home-based workers are likely to experience professional isolation which involves "feeling out of the loop" or feeling that they have "missed opportunities" for career advancement (Golden et al., 2008). This may not apply to

farming families as most farmers work in a more contained organisational structure, have greater autonomy in their work, and more control in the direction of their career. The perception of professional isolation may be less likely to apply to farmers due to the dual role nature of the farming family work environment and connectedness to the farming community and wider community in general. This is an important observation for potential impacts on farming family well-being as the decreasing number of farming families within the industry may lead to decreased community-connectedness and increased feelings of isolation. These perceptions of isolation may then have a cyclical effect as the person may further withdraw from social interactions as a result of the perceived isolation. This may occur as the social networks and interactions remind the individual of feelings of loss and loneliness which have resulted from the decreased community-connectedness (Cohen, 2004).

Differences between the generic- and farming family business environment may be best demonstrated through the unique stressors and characteristics of the farming family lifestyle. For instance, the uncontrollability of the scheduling of many work responsibilities due to dependency on seasonal and weather conditions are characteristics of the farm work environment and contributes to the farm superseding the needs of the family. Besides the unique stressors present in farming (e.g. weather, isolation), the success of the farming business may also be influenced by the specific attitudes and personality characteristics that have often been associated with farmers such as stoicism and high levels of conscientiousness. These factors may influence the operation of the farming family business as these characteristics are likely to buffer the impact of uncontrollable factors and high work demands on family and life satisfaction (Judd et al., 2006b; Willock et al., 1999). These uncontrollable demands are thought to

have partially contributed to the increased risk of conflict reported to occur within the farming family business structure (Danes et al., 2000).

2.7. Conclusion

This chapter used the different models of conflict between the work and home domains and the effects of conflict on role/domain satisfaction and harmony and well-being to demonstrate the differences between types of work-home environments. Within a generic work-home interface where the two domains are separated, individuals are more likely to experience work-home interference. However, this impact has been found to be mediated by levels of career involvement, time, and strain within the workplace. Spillover, a theory of conflict whereby demands from one domain spillover and impact the completion of responsibilities in the other domain, suggested that domain spillover could be both positive and negative. This concept of positive spillover altered the perception of researchers that interference or conflict always had to result in detrimental impact on health, satisfaction, and well-being. Research outcomes regarding the family business work-home interface identified additional types of conflict, including dual roles and succession conflict, as well as beneficial conflict types such as process and task conflict. The difference between the generic work-home environment of an organisational worker and that of the family business was further emphasised through highlighting the blurring of role and domain boundaries in the family business environment. The farming family work-home environment was then discussed in relation to its increased complexity in comparison to the previous two structures due to closer proximity of the two domains. Overall, this chapter presented evidence that the work-home environment is a leading determinant of an individual's well-being. The potential impact of the work-home interface on farming family well-being will be

further explored in the following chapter, which discusses the unique stressors, buffers, and protective factors of the farming population.

Chapter 3: Biopsychosocial Determinants of Health

This chapter aims to identify the biopsychosocial factors which are likely to affect farming family health and well-being. This will be achieved through defining stress and outlining the effect stress has on physical and mental health, thereby emphasising the importance of identifying and managing stressors. This will be followed by a review of specific work-related stressors and farming family stressors, then a review of the determinants of poor mental health within farming communities and how this is influenced by personality and lifestyle factors. The chapter will conclude with an overview of coping strategies, how these strategies can be situation-specific in terms of effectiveness, and what methods and buffers (factors which moderate or protect against the negative impact of other factors, such as stress or role conflict, upon well-being) are commonly employed in rural and farming populations.

3.1 Stress in a Health Context

Research into stress has shown the importance of acknowledging the role that stress plays in health and well-being (Kouvonen, Kivimaki, Cox, Cox, & Vahtera, 2005; Lalluka et al., 2008; Xanthopoulou et al., 2007; Moore, Sikora, Grunberg, & Greenberg, 2007; Delaney, Grube, Greiner, Fisher, & Ragland, 2002). Stress can be defined as a response to a stimulus (the event is stressful) or as a transaction, that is an internal state of being (the person perceives stress) (Morrison, Bennett, Butow, Mullan, & White, 2008). Acute manifestations of stress usually occur in reaction to an infrequent event, major life event (e.g. exams) or a catastrophic event (e.g. cyclones). Conversely chronic manifestations of stress are present for a long period of time (e.g. relationship concerns,

job insecurity, and financial strain) and may have serious potential health outcomes (Morrison et al., 2008). For example while stressors may be brief and infrequent, they may also have ongoing consequences with which the individual needs to cope. The ongoing challenges may result in the individual experiencing a chronic stress response. Such an outcome is undesirable as stress in general is associated with an over-arousal of the central nervous system which can lead to dysfunctional activation and circulation of immune cells, such as Natural Killer cells (important cells in the defence against virus' and cancer) (Gleeson et al., 1995). However, this negative outcome usually only occurs when arousal is prolonged, as is the case with chronic stress. Indeed lesser and temporary increases in levels of arousal can be potentially beneficial to the individual and confer a survival advantage as it enhances the immune response, reducing the susceptibility to pathogens such as viruses or bacteria (Dhabhar & McEwen, 1999).

From the perspective of health psychology, the impact of chronic stress is most frequently conceptualised within a biopsychosocial model. That is, from a consideration of the biological, psychological, and social determinants and outcomes of chronic stress and the interactive effect of these factors on stress and health. Biological factors may include an individual's predisposition towards developing a negative health outcome or the individual's current physical health status. Psychological factors may include an individual's personality characteristics, coping behaviours, or the level of perceived control of health outcomes. Social factors may include level of social support as a buffer against health-related stress or access to healthcare facilities. An example of the interactive effect of biopsychosocial components on health is the poor physical health outcomes that can occur as a result of chronic stress. In this example, work or personal relationships are factors which occur in a social setting and may be perceived as stressors (psychological component). Outcomes of chronic stress include negative

impacts on metabolism, increased risk of cardiovascular disease, a lowered immune response, prolonged recovery following surgery, slower wound healing, an increased risk of diabetes, cancer, higher risk for mortality, and poor psychological health outcomes of distress and psychiatric disorders such as depression (McEwan, 2004; Fletcher, 1991; Smith et al., 2009; Kopp & Re`thelyi, 2004; Kiecolt-Glaser, McGuire, Robles, & Glaser, 2002; Yudkin, Kumari, Humphries, & Mohamed-Ali, 2000; Vitaliano et al., 2002).

The impact of chronic stress on physical and psychological health can also be mediated by an individual's behaviour in predisposing, precipitating, and perpetuating poor health outcomes. For example it has been reported that chronic stress, leading to distress, can result in the poor health habits of low physical activity and poor diet and thus be predictive of later outcomes of metabolic syndrome (a pre-diabetes syndrome affecting levels of insulin, glucose, lipids, blood pressure, and usually accompanied by overweight or obesity) (Vitaliano et al., 2002). Further, the presence of metabolic syndrome can in turn be predictive of the presence of CHD (Vitaliano et al., 2002). Personality factors have also been used in the prediction of variability in health habits. For instance, Vollrath, Knoch, and Cassano (1999) investigated personality in relation to the likelihood of an individual performing health risk behaviours (i.e. smoking, being drunk, drunk driving, and risky sexual behaviour) and the individual's perceived susceptibility to disease outcomes (i.e. lung cancer, alcohol dependency, driving accidents, and sexually transmitted infections or diseases). Vollrath et al. (1999) found that those who presented with high levels of agreeableness and conscientiousness were less likely to partake in health risk behaviours and were more likely to perceive they had lower susceptibility to disease outcomes. Further, individuals high in extraversion were more likely to engage in the health risk behaviour of 'being drunk' but reported lower

perceived susceptibility to the outcome of alcohol dependency. Support for the relationship between personality characteristics and disease has been reported by many studies (Denollet et al., 1996; Chida & Steptoe, 2009; Friedman & Booth-Kewley, 1987). For example, Denollet et al. (1996) found that there was a higher mortality rate for individuals with CHD when the individual had higher levels of social inhibition and negative affectivity (characterised as Personality Type-D). Therefore, certain personality characteristics appear to both increase risk and be protective of health and well-being.

Chronic stress can have cumulative effects, for example depression as a major outcome of chronic stress can severely impact upon a person's quality of life (Ay-Woan, Sarah, Lynn, Tsyr-Jang, & Ping-Chuan, 2006). In turn, a person's reduced quality of life or life satisfaction, as an outcome of chronic stress, can be related to current reports and future development of symptoms of depressive disorders (Koivumaa-Honkanen, Kaprio, Honkanen, Viinamaki, & Koskenvuo, 2004). Research by Koivumaa-Honkanen et al. (2004) investigated the progression of the relationship between depressive disorders and life satisfaction in a Finnish twin sample (N=9679) over a 15 year period. Koivumaa-Honkanen et al. (2004) found that men who did not report depressive symptoms were associated with a reported low/normal level of alcohol consumption, being a non-smoker, having a higher socioeconomic status, living with other people, and being physically active. These factors were in turn found to be related to levels of reported life satisfaction, though this was likely a result of the strong negative linear relationship between life satisfaction and depressive symptoms (Koivumaa-Honkanen et al., 2004).

As the biopsychosocial model suggests, the social context also plays an important role in health. This role is demonstrated through research conducted by Marmot et al.

(1991) who replicated the classic Whitehall study of British civil servants. Marmot et al. (1991) gave self-assessment questionnaires (including demographic, health, personality, and work related questions) and objective health screening (including blood pressure, weight, cholesterol, and heart functioning) to a sample of British civil servants aged between 35-55 years. The researchers' findings were consistent with the Whitehall study as results suggested an inverse relationship between socioeconomic status and morbidity. Specifically, Marmot et al. (1991) found that those in a lower employment grade were more likely to report having a chronic illness and have biological indicators for angina, ischaemia, and chronic bronchitis. It was also found that those in low employment grades were more likely to participate in risk-taking behaviours (e.g. smoking, poor diet, low physical activity). Further, Marmot et al.'s (1991) findings on the impact of socioeconomic status on health were independent and above the affects of income on health. Other research investigating the impact of socioeconomic status on health has identified the relationship between chronic stress and lack of autonomy as a possible explanatory factor for the increased mortality rates in Central Eastern European countries (1970s to mid 1990s) (Kopp & Re`thelyi, 2004). Kopp and Re`thelyi (2004) noted that although there were increases in the quality and availability of healthcare and economic improvements during this time period in these countries, the mortality rate, particularly for men, continued to increase. The increase in mortality rates, mostly due to cardiovascular disease, was thought to be a result of chronic stress in relation to relative deprivation which was experienced due to continuous amplification of the discrepancy between the socio-economic classes (Kopp & Re`thelyi, 2004). The significant role that socioeconomic status and social inequalities have on health is recognised by the World Health Organisation (WHO) in association with the Commission of Social Determinants of Health (CSDH, 2008). Specifically, WHO and

the Commission emphasise how income, policy, access to health care or education, work place conditions and other social forces have a significant impact on life expectancy, disease susceptibility, and mortality rates. Understanding the determinants of chronic stress within a biopsychosocial framework can assist in the development of preventative techniques to benefit a person's overall well-being.

The interaction between psychological health, physical health, and immune system functioning is a growing field of interest in the behavioural sciences. Specifically, this interest is centred on psychoneuroimmunology, which can be defined as the interactive effect of psychological and neurological processes upon immune system functioning (Fletcher, 1991). For example, prolonged exposure to stressors can cause an over-activation of the stress response system (physiological processes) which, in turn, can result in depleted production and replacement of immune system cells. This lowering of the immune systems functioning leaves the individual more susceptible to viruses and infections such as the common cold or more serious disease outcomes (Fletcher, 1991, Morrison et al., 2008; Kiecolt-Glaser, Glaser, Gravenstein, Malarkey, & Sheridan, 1996). An example of the impact of chronic stress on health was reported in a study by Kiecolt-Glaser et al. (1996) who compared the immune response of a control group of older adults to that of older adults caring for a partner with dementia (chronic stressor). The research found that caregivers had a lower antibody response compared to non-carers following an influenza virus vaccination. These results suggest that chronic stress negatively impacts on the immune system response and demonstrates the potential for increased vulnerability to infections and physical illnesses (Kiecolt-Glaser et al., 1996).

Recent research has focused on systemic inflammation and its association with comorbid cardiovascular disease and major depression, specifically focusing on the

biological markers of ferritin and fibrinogen (Baune, Neuhauser, Ellert, & Berger, 2009). Typically, patients with cardiovascular disease generally present high levels of these biological markers, whilst people with depression present low levels. Baune et al. (2009) found that the high levels of ferritin and fibrinogen in individuals with cardiovascular disease was lowered when the disease was comorbid with major depression. This effect was gender-specific, with the significant changes in levels of ferritin and fibrinogen only reported in men (Baune et al., 2009). These findings suggest that, for men, mental health plays a greater role in physical health outcomes than physical health does in mental health outcomes. Fletcher (1991) outlines a number of studies which identify the impact of psychological conditions on immune system functioning and disease outcomes in animals. For instance, Fletcher (1991) reported that when animal test subjects (mice or rats) were put under stress, for example social isolation, cold (temperature) stress, noise, or electric shock, the test animal would show increases in cancerous tumour growth or spontaneous production of tumours. Classic research investigating cancer growth in mice has reported similar changes in disease progression as a result of psychological factors (Ader & Cohen, 1985). Specifically, Ader and Cohen (1985) found that when drug treatment for the cancer was intermittently paired with the regularly administered saccharin, the cancer development in mice was significantly slower in comparison to those mice that received an unpaired administration of treatment and saccharin and to the control group of mice which received no treatment. This study demonstrated the effect of the conditioning of a physiological response as a result of the expectation of receiving treatment and not only the actual administration of the treatment. Overall these studies demonstrate the importance of identifying biological, psychological and social determinants of health and well-being.

3.2 Work and Stress

Work is one of the most commonly identified chronic stressors within a person's life. The significant impact of work demand and role conflict on well-being was identified within Chapter 2. For instance, research indicates that the interaction of number of hours worked, the level of work involvement, low work harmony and level of work demands can lead to differing outcomes in personal health and life satisfaction (Xanthopoulou et al., 2007; Swatt, Gibson, & Piquero, 2007; McMillan, O'Driscoll, & Brady, 2004; Fox & Dwyer, 1999). Work-related stress has also been associated with poor behavioural outcomes such as drug and alcohol use. For example, research by Swatt et al. (2007) found that police officers who reported work strain were more likely to present with depression, anxiety, and anger issues. Depression and anxiety in turn mediated the relationship between work-strain and alcoholism in this sample. Work-related variables that were reported to result in work stress, and in turn led to heavy alcohol intake, were high job boredom, a low variety of possessed skills, and low autonomy. When the relationship between work-stress and other drug use was examined, similar mediating variables were found (Weisner, Windle, & Freeman, 2005; Frone, 2008). Factors found in other studies to explain the outcome of increased alcohol consumption include a family history of drinking, especially if both parents consumed alcohol (Moore et al., 2007), and the "winding down" period (time it took for an individual to relax after work). A longer winding down period has been associated with higher levels of alcohol consumption, with the length of the period usually determined by problems at work and skipping meals (Delaney et al., 2002).

3.2.1 Outcomes of work stress: Burnout.

As discussed, work-related stress can result in the experience of strain, high alcohol consumption, and poor life satisfaction. However, work-related stress can also result in psychological strain, with outcomes such as depression and burnout reported (Maslach, Schaufeli, & Leiter, 2001). Burnout is a response to chronic stress which results due to workplace factors and leads to a loss of sense of self and identity (depersonalisation), emotional exhaustion, cynicism, and a perceived lack of personal accomplishment (Maslach & Jackson, 1981; Maslach et al., 2001), with symptoms including feelings of dread about going to work and feelings of lack of progress or achievement in the job (Cordes & Dougherty, 1993). Particular work-related stressors, such as high job demand (specifically in terms of emotional demand), work overload, role ambiguity, and role conflict have been reported to have a direct relationship with burnout (Schaufeli & Peeters, 2000; Xanthopoulou et al., 2007; Cordes & Dougherty, 1993; Maslach et al., 2001). Further, job resources (e.g. social support at work, autonomy) may act as a buffer and thus can prevent high levels of burnout (Cordes & Dougherty, 1993). However, Xanthopoulou et al. (2007) suggested that such an effect of job resources is limited to the prevention of high levels of cynicism (as a dimension of the depersonalisation facet of burnout) and did not extend to the prevention of emotional exhaustion, another facet of burnout.

Differences in workplace characteristics are hypothesised to influence the relationship between work stressors and burnout. For example, the level of information about tasks at work and the level of control over the completion of those tasks available to the individual appear to have a direct relationship with all three dimensions of burnout. These factors have an impact upon the three dimensions of burnout when individuals have little feedback on performance, autonomy, and limited involvement

with decision-making they are more likely to experience higher levels of burnout (Maslach et al., 2001). Furthermore, limited work or career experience has been reported to have an effect on the presentation of burnout. If the career and work inexperience is in conjunction with the individual not being married (possibly indicating low social support), then the likelihood of reporting burnout is increased, particularly for men (Maslach et al., 2001). Other gender differences in the presentation of burnout are that men have been found to be more likely to report higher levels of cynicism and women higher levels of emotional exhaustion (Maslach et al., 2001). Individuals expressing low levels of hardiness (i.e. commitment, internal locus of control, willingness to address challenges) (Kobasa, 1979), high levels of neuroticism, external locus of control and an avoidant coping style were also more likely to report higher levels of burnout than those without these characteristics (Maslach et al., 2001). Other issues to consider as possible contributors to the experience of burnout are diminished sense of community within the workplace, lack of reward for effort, and conflict between job requirements and personal values and perceived fairness (Bakker, Killmar, Siegrist, & Schaufeli, 2000; Maslach et al., 2001; Piko, 2006b). Outcomes of burnout can include job withdrawal, lowered productivity, decreased job satisfaction, reduced job commitment, and increased personal conflict (Bakker et al., 2000; Maslach et al., 2001; Piko, 2006b). These factors suggest that an individual's experience of burnout can be transferred to others, with some researchers suggesting burnout can spill over into the family domain (Maslach et al., 2001). Health outcomes of burnout, as a response to chronic stress, can include anxiety, depression, substance abuse, and depletion of self-esteem levels (Hakanen, Schaufeli, & Ahola, 2008; Piko, 2006b, Conradi, Greiner, Ragland, & Fisher, 2003).

3.2.2 Outcomes of work stress: Physical health.

The effects of work stress can also impact upon workers' physical health. As previously mentioned, research has indicated that work stress has a significant relationship with obesity, over-eating, physical inactivity, smoking and chronic diseases such as cardiovascular disease (Kouvonen et al., 2005; Fletcher, 1991; Lallukka et al., 2008; Danna & Griffin, 1999; Johnson & Hall, 1988). For instance, Lallukka et al. (2008) found that high job strain in a work environment of low job demands and low job control has been positively related to physical inactivity and working overtime has been positively associated with obesity. Additionally, higher job strain, lower job control, and a higher imbalance between effort spent and reward received has been associated with a higher Body Mass Index (BMI) (Kouvonen et al., 2005). A study by Johnson and Hall (1988), who recruited a sample of 13779 Swedish workers, found that there was a high prevalence of cardiovascular disease amongst workers who reported low job control, low social support, and high job demand. These results found by Johnson and Hall (1988) are supported by findings by Fletcher (1991) who reported that chronic work-stress was associated with lowered immune system functioning and may result in an increased risk of developing chronic diseases. These studies highlight the importance of perceived control, autonomy, and work-life balance in protecting physical health. Additionally, these findings emphasise the significance of conceptualising health and well-being in a multi-dimensional framework.

3.3 Farm Family Stressors

The assessment of stress in a farming context has primarily considered stressors related to the management of the farm. In such studies the leading stressors are consistently noted as being personal finances, heavy workload, time pressure, and

climate conditions (Keating, 1987; Eberhardt & Pooyan, 1990; Alpass et al., 2004; Firth, Williams, Herbison, & McGee, 2007). Eberhardt and Pooyan (1990) also identified general economic conditions, hazardous working conditions, and geographic isolation as key stressors. Alpass et al. (2004) further noted machinery breakdown and government policies and bureaucracy as leading stressors. Also, Glassock, Rasmussen, Carstensen, and Hansen (2006) found that their sample of farmers were more likely to identify role conflict, administrative burden, unforeseen errors, and work delays as key sources of stress for farmers.

Research into stressors reported by Australian farmers has found similar results to the above international studies with key stressors noted as climate conditions, role conflict, financial pressures, workload, government regulations, and isolation (Gunn, 2008; Clarke & Morgan, 2010). Yet in addition to these stressors, Gunn (2008) also identified family-related stressors such as strain on relationships, family involvement in business, and an additional dimension of external pressures relating to ‘outsiders’ understanding of farming life and the pressure to participate in community activities. This is consistent with the history of farming outlined in Chapter 1, which identified the development of stereotypical views of farming and grazier families (Pritchard & McManus, 2000). For example, farmers and graziers in rural Victoria were often perceived as “environmental bandits” by individuals in urban environments even though research suggests that at an individual level farmers have a minimal impact on environmental degradation. The negative impact on the environment is more likely a result of the cumulative effect of the small acts of farming practices (Cocklin in Cocklin & Dibden, 2005). The findings of Gunn (2008) regarding family stressors are consistent with the findings of Crosby (1998) who suggested that the leading contributor to family breakdown and disharmony in farming families was the lack of communication and

discussion between the parents and children surrounding succession planning and the inheritance of the farm. Clarke and Morgan (2010), whose research focused on young Australian farmers, found that stressors were also related to feelings of uncertainty and powerlessness, which as mentioned previously are a key determinant of burnout (Maslach et al., 2001). However despite identifying these stressors, the young farmers involved in Clarke and Morgan's (2010) study also reported that they were aware of the stressors and therefore accepted them as a part of the farming life, demonstrating strong themes of resilience and hardiness. These two characteristics, resilience and hardiness, will be explored further in the following section.

3.4 Coping Behaviours and Buffering Characteristics

The different types of coping behaviours or strategies that an individual utilises to manage stressors may not have the same effect on health outcomes (Carver, Scheier, & Weintraub, 1989; Hamilton & Fagot, 1988; Stein & Nyamathi, 1999; Fritzsche et al., 2007) and are therefore important to understand in order to clearly identify determinants of well-being. Traits and strategies that can lead to differential health outcomes include dispositional optimism (i.e. thinking positively rather than negatively about outcomes), hardiness (i.e. commitment, internal locus of control, willingness to address challenges) (Jones & Creedy, 2008; Kobasa, 1979), problem-focused coping (e.g. planning, focusing, and confronting problem for a solution), emotion-focused coping (e.g. cognitive efforts – positive appraisal, seeking support, venting anger), attentional coping (e.g. being active towards the problem by seeking information), and avoidant coping (e.g. withdrawing, finding distractions) (Morrison et al., 2008; Carver, 1997).

Differences in individual personality characteristics have been shown to effect physical health outcomes. For example, individuals high in dispositional optimism are

more likely to have a faster recovery time post-surgery than those who are low in optimism. Additionally, dispositional optimism is reported to be a protective factor against poor health outcomes from work-related stressors (Makikangas & Kinnunen, 2003; Scheier et al., 1989). Geographical location and cultural differences also influence the effectiveness and applicability of coping behaviours. For example, research has shown that hardiness is especially beneficial for individuals living in rural and remote areas due to the uncontrollability of lifestyle factors such as isolation (Leipert & Reutter, 2005). A hardy individual is more likely to perceive the stressors and challenges of the rural lifestyle as an expected and acceptable part of the lifestyle and therefore be more likely to persevere despite adversity. How appropriate or adaptive a coping strategy, method or behaviour may be can also differ depending on the stressor, situation, or the individual. For instance, in situations that are controllable, the individual is more likely to use problem-focused coping. Yet if an individual perceives the situation to have more personal importance or the situation is uncontrollable, the individual is more likely to employ emotion-focused coping strategies (Carver et al., 1989). Just as some coping behaviours can be more effective than others depending on the situation or individual, other coping behaviours can be harmful towards health and well-being.

Coping strategies that are thought to be maladaptive include denial, self-blame, and self-distraction due to the negative impact of these strategies on quality of life and their association with the development of depressive symptoms (Klein, Turvey, & Pies, 2007). These methods, especially when used for an extended time, are categorised as maladaptive as the individual is not addressing the stressor and is instead avoiding or ignoring the issue (Klein et al., 2007). This is consistent with findings from Gunn (2008), who found that farmers who used behavioural disengagement, suppressed

competing activities, vented, mentally disengaged, and used alcohol/drug were more likely to report higher levels of psychological distress. Coping styles of disengagement and using alcohol or drugs can also be considered as methods of distraction as the stressor is not being addressed but instead avoided.

There are discrepancies between studies in terms of gender differences and coping styles with some research indicating no gender difference in terms of emotion-focused and problem-focused coping styles (Hamilton & Fagot, 1988). Conversely other research has indicated a difference between gender in relation to active and avoidant coping styles and negative health consequences (Matud, 2004; Stein & Nyamathi, 1999). Specifically, Matud (2004) reported that women were more likely to use avoidant and emotional coping and less like to use rational and disengaging or detached coping strategies than men. This pattern is partially supported by Stein and Nyamathi (1999) who investigated the interaction between stress, mood, self-esteem, coping behaviours, and health risk behaviours in men and women of minority groups (African American and Latin American). The researchers found that women were more likely to use avoidant coping styles, but when men used avoidant coping they were then more likely than women to use drugs as an escape. Furthermore, women were more likely to engage in risky sexual behaviours, particularly when under high stress and when using less active coping strategies (Stein & Nyamathi, 1999). Therefore, gender may influence the type of coping strategy employed. These finding may be an important factor to identify due to the potential negative health outcomes as a result of the type of coping behaviour used. Stein and Nyamathi's (1999) findings are further supported by Fritzsche et al. (2007) who found that those who used active and problem-focused coping were more likely to report better quality of life. Additionally, negative emotion-focused coping, known as depressive coping (reacting to others with impatience and

irritation, self-pity, brooding, blaming fate, withdrawal from others), was associated with decreased emotional well-being and quality of life (Fritzsche et al., 2007).

Cultural differences, for instance collectivist versus individualistic cultures, have also been noted regarding coping behaviours, attitudes, and strategies. Though Australia is considered an individualistic culture, rural areas are suggested to have more of a collectivist nature than their metropolitan counterparts (Kashima et al., 2004). This collective-self found in rural communities is more usually referred to as a psychological 'sense of community', or 'community-connectedness'. McMillan and Chavis (1986) defined a community in terms of the geographical location (e.g. town, suburb), known as territorial community, and relational community (e.g. the quality of relationship). Furthermore, the theory proposed that a sense of community is defined by the fulfilment of the four criteria of membership (sense of belonging), influence (sense of making a difference to the group), integration and fulfilment of needs (members' needs are met by the resources of the group), and shared emotional connection (belief that members will share history, time, experiences, and common places) (McMillan & Chavis, 1986).

Hobfoll, Jackson, Hobfoll, Pierce, and Young (2002) argued for the importance of communal-mastery for rural/collectivist communities. Communal-mastery, a different construct to social support, is defined as an individual's shared sense of self-efficacy with their community. Specifically, communal-mastery acted as a buffer in women against negative outcomes from increased stress levels such as depressive moods. Moreover, Piko (2006a) inferred from findings that communal-mastery helped buffer against substance use in adolescent boys. Communal-mastery, community-connectedness, and hardiness are characteristics that have been identified to help buffer against stressors and may be more important in more remote communities. Developing resilience to chronic stressors is important, especially for stressors that are outside the

individual's control. Leipert and Reutter (2005) identified three important factors for developing resilience in rural communities: becoming hardy, making the best of the geographical area, and supplementing those factors which were in deficit as a result of the geographical area, such as social opportunities or services. "Becoming hardy" was a process that involved perseverance, continuing despite adversity, and focusing on positive aspects of the lifestyle as well as a sense of commitment to the difficult lifestyle (Leipert & Reutter, 2005). This is complimented by Kobasa's (1979) definition of hardiness which additionally included a perceived internal locus of control, a strong sense of purpose, a sense of meaningfulness and commitment to the self.

Hegney et al.'s (2007) research on resilience in rural communities in Queensland, noted that there was another dimension to resilience in these communities, that of a connection to land, which is also reported in the literature on Indigenous community research. It was proposed that this connection to land is something that has built up over time within these non-Indigenous rural communities (Hegney et al., 2007). However, this comparison is likely superficial, with the meaning of connection being different for the two populations. For example, the connection to land for non-Indigenous farmers may likely be in relation to the family history with that farm and land whereas the Indigenous person's connection is far more extensive as it is a spiritual connection and a part of cultural history (Hill, 1995). Other findings by Kobasa (1979) indicate that resilience and hardiness are also associated with lower rates of illness when experiencing high levels stress. These findings suggest that the farmers and farming families who possess these characteristics would be more likely to cope better with stressors. Therefore the absence of or low levels of resilience and hardiness may be key determinants of the experience and outcome of stress leading to consequences such as poor mental health. Research has also identified the importance of community

connectedness in health outcomes. For example, research regarding social capital, a construct that involves a sense of community, has been shown to be positively related to an individual's well-being (Boyd, Hayes, Wilson, & Bearsley-Smith, 2008). Research by Berry and Rodgers (2003) suggested that the link between social or community connectedness and mental health was mediated by the degree of trust the individual has within their community. Specifically, findings from the study, which involved a sample of 969 rural Australians, reported that higher levels of trust were associated with lower levels of distress. Further, different generations found different components of trust more important, with participants from Generation X (respondents born between 1961-1984) identifying trust as believing that others are were reliable whereas Baby Boomer participants (respondents born between 1945-1960) reported believing others were not going to take advantage of them as a protective component of trust (Berry & Rodgers, 2009). Other research investigating the protective influence of community-connectedness found that a psychological sense of community was negatively related to negative mood and anti-social and aggressive action, with this relationship more notable in rural communities which had a higher sense of community than urban counter-parts (Roussi, Rapti, & Kiosseoglou, 2006). Boyd et al. (2008) argued that as rural communities possess a diverse range of social capital, which includes a psychological sense of community, strategies developed to address mental health issues in these communities should focus on collectivist rather than individualist approaches. For example, strategies should focus on identifying existing community networks, including community members in the development process, and including local organisations in the establishment of mental health strategies or programs. This was recommended as the presence of community-connectedness in rural communities facilitates this process, and therefore increases the likelihood of good mental health outcomes for the community.

3.5 Personality and Lifestyle Characteristics

In regards to the relationship between personality, lifestyle characteristics and health risk from the biopsychosocial perspective, a Type-A behaviour pattern (competitive achievement striving, time urgency/exaggerated impatience with time, and aggressiveness and hostility) is more likely to put an individual at risk of developing serious diseases such as CHD (Fletcher, 1991; Jones & Creedy, 2008). Personality characteristics are also hypothesised to have a deterministic element when considering the experience of stress, conflict between domains, and health (Kobasa, 1979; Van de Vliert & Euwema, 1994; Wierda-Boer, Gerris, & Vermulst, 2009). For instance, not all persons who are under high stress also develop an illness. As previously mentioned, research conducted by Kobasa (1979) explored the individual differences in the presentation of illness rates in association with the individual's stress levels. The researchers found that those participants with a high stress/low illness index were more likely to present with qualities of hardiness than participants presenting with high stress/high illness index (Kobasa, 1979). Traits of agreeableness (cooperative, solidarity) and activeness (opinionated, problem-solving) are also suggested to influence the path of conflict resolution, with more agreeable and active individuals more likely to resolve conflicts through cooperation, negotiation, and problem-solving, whilst non-agreeable, non-active individuals are reportedly more likely to use competition, indirect fighting, and resisting methods (Van de Vliert & Euwema, 1994).

Personality factors such as emotional stability, agreeableness, extraversion, conscientiousness, and openness to experience have been examined in relation to job and parental stress and experienced conflict. Wierda-Boer et al. (2009) found that emotional stability was negatively related to job stress (including burnout) and parental

stress and that agreeableness and extraversion was negatively related to burden of child rearing (parental stress). Additionally, Wierda-Boer et al. (2009) reported that openness to experience and conscientiousness were positively related to the increased feeling of parents feeling trapped by their roles and duties as a parent (parental stress). Work-family conflict was not related to any traits, though family-work conflict was positively related to openness to experience and negatively related to emotional stability (Wierda-Boer et al., 2009).

Research has shown that farmers generally present characteristics of conscientiousness and low levels of neuroticism and low levels of openness to experience (Judd et al., 2006b). These low levels of neuroticism may be related to a resilience to acquiring mental health problems, whilst the low levels of openness to experience corresponds with the presence of attitudinal barriers towards help-seeking in farming populations (Judd et al., 2006b; Austin, Deary, Edward-Jones, & Arey, 2005). These low levels of both neuroticism and openness to experience (Judd et al., 2006b) could possibly also indicate that farmers are less likely to be negatively affected by family-work conflict but more susceptible to the consequences of untreated or unidentified chronic stress (Wierda-Boer et al., 2009). Conscientiousness as a characteristic of farmers could be both beneficial and detrimental to well-being. High levels of conscientiousness indicate that the individual is more active and likely to resolve conflicts, has good business management, will use duty to cope with challenging conditions and contributes to a strong sense of commitment (Judd et al., 2006b; Austin et al., 2005; Kobasa, 1979). However, high levels of conscientiousness can be detrimental to well-being as they have been reported to be related to parental stress. This suggests that those individuals who feel trapped by their role in child rearing and parental duties will be more likely to demonstrate high levels of conscientiousness

(Wierda-Boer et al., 2009). As farming is in many cases a family business, the high levels of conscientiousness may negatively interact with family stressor. This interaction may occur as a result of the proximity of the two domains which, for those high in conscientiousness, may emphasise the feeling of being trapped by their family duties especially as it conflicts with the completion of farm duties, which are time demanding. Therefore, personality and lifestyle characteristics can play a significant role in poor mental health outcomes.

3.6 Mental Health of Farmers and Farming Families

The farming family business requires attention at all times, which is in contrast to the requirements of most other forms of employment. This constant demand for attention and awareness allows little respite for the farmer, potentially increasing their stress and anxiety levels and in turn affecting the satisfaction of the family whose time with the farmer is limited (McShane & Quirk, 2009). The complex work-home environment of farming families discussed in Chapter 2 raises questions about the potentially significant impact the interaction between the domains of farm and home have upon well-being. It is imperative to investigate the relationship between these factors due to the increasing concern for the mental health status of farming men.

Page and Fragar (2002) reported that male farmer suicide rates were higher than that of the national rate of suicide for males (Page & Fragar, 2002). Recent research further supports these statistics, with males within the agricultural industry presenting significantly higher suicide rates (2.20:1) compared to the rest of the employed population of Australia (Andersen, Hawgood, Klieve, Kolves, & De Leo, 2010). Though there are fewer reported cases of depression in farmers, approximately 92 farmers' complete suicide each year and a farm-related death occurs every 3 days in

Australia (Page & Fragar, 2002). This pattern of higher rates of suicide for rural individuals also occurs internationally, with people in farming occupations in the UK presenting higher rates of suicide than any other occupation (Gregoire, 2002). In India, during a period of drought it was estimated that 100 farmers were completing suicide each month (Sundar, 1999), and in China rural suicide rates are three times greater than rates in urban counterparts (Phillips et al., 2002). The United States has reported rural suicides at approximately twice the level of urban suicides (Singh & Siahpush, 2002), and in Ireland, rural suicide rates increased by 400% over a 20-year period for young males whilst the comparable urban rates remained relatively constant (Kelleher et al., 2002). Furthermore, though trends in suicide rates in rural or farming populations generally indicate more male suicides, women in the 30-44 year age group have also presented significantly higher rates of suicide in non-metropolitan areas compared to women in metropolitan areas in Australia (Caldwell, Jorm, & Dear, 2004). It is important to note that data obtained from studies comparing urban versus rural rates of suicide does not explicitly refer to farmers' suicide due to difficulties in obtaining accurate suicide statistics for the farming population. However many researchers who investigate farming suicide rely upon rural statistics as a reflection of suicide risk and suicide rates on the assumption that farmers exist within the population. Some research that has compared rural and farming suicide rates found that farming suicide rates are higher than the suicide rates of other rural individuals (Judd et al., 2006b).

It is possible that there is something about the structure of the farming occupation, the behaviour and personalities of farmers, or the interaction between these factors that exposes those who work in this field to unique stressors and circumstances that may contribute to an increased risk of psychological distress and suicide. In addition to the occupational structure and farming specific behaviours and stressors, the

structural factors surrounding access to health care and fewer diagnostic presentations (Rygh & Hjortdahl, 2007) may also contribute to the increased risk of undiagnosed poor mental health and suicide. However, it still remains unclear as to the explicit causes of this phenomenon and though there are many acknowledged proposals of likely causes, the only factor that is a fully recognised risk factor for suicide is that the individual is male (Page & Fragar, 2002).

Risk factors for suicide for men in the wider population include being unmarried, living alone at the time of suicide, being of fair complexion, and being of a young age (Stack, 2004; Denning, Conwell, King, & Cox, 2000). The risk factor of youth however is contrasted with results from Koivumaa-Honkanen et al.'s (2006) study which demonstrated that life dissatisfaction and subsequent depressive symptoms were more pronounced in the older individuals within their sample. However, epidemiological data has indicated that suicide risk across the lifespan is bimodal with peaks in younger and older age groups. However data presented by Caldwell et al. (2004) suggests that this trend may be more obvious in populations in metropolitan areas rather than those in rural and regional areas. Caldwell et al. (2004) suggested that proportionate rates of completed suicide continued to decrease with age in rural and regional individuals yet a slight increase was observed in the metropolitan data within older age groups. The gender differences in completed suicide rates are also perplexing as despite more reported cases of women presenting with suicide ideation than men, men have a higher completion rate of suicide (Canetto & Sakinofsky, 1998). The gender differences suggest that social expectations may be a determinant of suicidal behaviours. That is, a rural man may perceive pressure to maintain the image which they believe is characteristic of a rural man, such as strength, toughness and self-reliance, and subsequently creates a barrier to help seeking behaviours and symptom

recognition or expression. With this perceived pressure in mind, men may then internalise the symptoms of depression or suicidal thoughts until they finally express their feelings through completing suicide (Wright, 2009).

There is some support for the observed suicide rates in rural men being a result of the combination of accessibility to firearms, traditional views and concepts of masculinity, geographic isolation (impacting access social support and health services), and stigmatisation towards mental health which may lead to inhibited health provider contact and help seeking behaviours (Gregoire, 2002; Booth, Briscoe, & Powell, 2000; Hawton et al., 1999; Judd et al., 2006b; Judd, Cooper, Fraser, & Davis, 2006a). The use of firearms as the preferred or most often used form of suicide for male farmers or male rural workers is consistent with traditional concepts of masculinities, with men in general more likely to use more lethal and violent means of suicide than women (i.e. firearms and hanging as opposed to drug overdose) (Swami, Stanistreet, & Payne, 2008). The use of firearms is suggested to be the man's last expression of masculinity, as firearms are associated with strength and toughness, which is often a desired quality of rural and farming men (McCann in Davidson & Brodie, 2005). According to Swami et al. (2008), researchers investigating the determinants of suicide have too often ignored the association between suicide and masculinities (what it means to be male) which has been made by other investigators into the suicide phenomenon. The relationship between maleness and suicide has been noted as far back as Durkheim's (1897) sociological perspective of suicide in Europe in the 1800s. More recently, it has been noted that social constructions of masculinity could explain the association between suicide and maleness, with men less likely to have contact with health professionals as a result of social pressure to conform to male behaviours of emotional withdrawal (Swami et al., 2008). Also, those who adhere to traditional values of

masculinity stereotypically strive for independence and shy away from social support (Swami et al., 2008). This is consistent with Wright's (2009) findings of farming men identifying depression as "a woman's thing" and the expression of depression being perceived to be "weak or sissy" by others, therefore threatening identity and masculinities. The withdrawal from social support would have a significant facilitating effect on the pathway towards suicide. Research has shown a strong relationship in men between the reduction in experienced stress and depression with increased use of social support (Swami et al., 2008; Falk, Hanson, Isacsson, & Ostergre, 1992). Furthermore, masculinities also signify that men place great value on their ability to protect and provide and therefore men may be more sensitive to financial and socioeconomic changes. In a farming family context, this has implications for the pathway to depression or poor mental health and suicide in farming men due to the unpredictable and variable nature of income within the farming business, which has previously been identified as a leading stressor in this population (Eberhardt & Pooyan, 1990; Alpass et al., 2004).

Another factor that needs to be considered for individuals in a rural male population is the current diagnostic framework and tools most commonly used in the assessment and diagnosis of depression and mental illness. Though depression does not necessarily lead to suicidal behaviour, it is a recognised risk factor. This needs to be considered as despite the higher rates of completed suicide in rural and regional areas, individuals in rural and regional communities do not present with significantly higher rates of mood disorders, such as depression, than do those living in metropolitan areas (Eckert, Taylor, Wilkinson, & Tucker, 2004). Individuals living in remote areas, as opposed to those in rural communities, are an exception to this trend as there are a higher number of individuals in remote communities reporting mental illness than those

in metropolitan areas (AIHW, 2008). Another factor which is inconsistent with the high suicide rates for rural men is that the diagnostic rates of depression by gender indicate that women have a higher rate of diagnosis of depression than men. This discrepancy can be understood in the context of results that show rural men are less likely to visit mental health services and primary care facilities than are rural women (Wright, 2009). One explanation for these discrepancies is that it is likely not a case of men being more mentally healthy than women, or rural individuals being more mentally healthy than urban counterparts, but more likely that men are not presenting to clinicians to be diagnosed. Another possible explanation is that the diagnostic tools used may not be sufficiently assessing depressive and suicidal symptoms for men (Good & Wood, 1995; Kilmartin, 2005; Rochlen et al., 2010; Wright, 2009), or that they may be misdiagnosed with stress instead of depressive or suicidal symptoms.

Recent research by Wright (2009) investigated how rural Australian men expressed depressive symptoms (Figure 8). Wright's (2009) findings demonstrated that diagnostic tools need to consider the geographic location and gender of the individual when identifying symptoms of and diagnosing depression. Specifically, Wright (2009) found that rural men were less likely to express conventional symptoms of depression as a result of traditional views of masculinities perpetuating the view that depression "is a woman's thing". This is consistent with research by Rochlen et al. (2010) whose findings suggested that men consciously or unconsciously reject the symptoms of depression as the symptoms were considered a weakness and were inconsistent with self-concepts of masculinity. Wright (2009) suggested that assessment and diagnosis of depression in rural men needs to consider a different framework including the concepts of "the internal compound" and "within the boundary fence" (Figure 8). The "internal compound" refers to the connection between the experience and expression of

depression, whereas “within the boundary fence” refers to the impact of traditional values on the expression of depression from generational and societal standpoints. “Keeping it within the boundary fence” resulted in the individual attempting to avoid judgement by others and by the self which would threaten masculinities and result in the individual suppressing emotional experience which is then internally compounded and steadily increases in intensity (Figure 8).

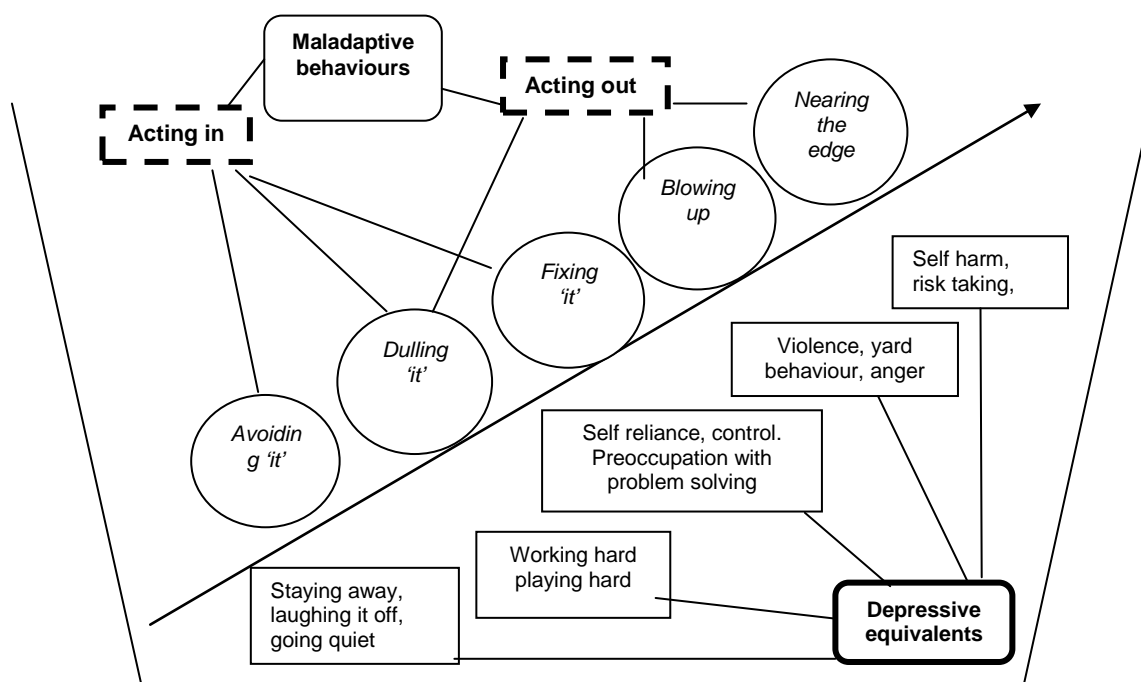


Figure 8. Representation of rural men's experience and expression of depression (Wright, 2009).

Some proposed typical responses of “the internal compound” in masking the experience of depression by rural men were avoiding (increasing involvement in work, decreasing involvement in social engagements), dulling (self-medicating, overwork), or fixing (self-reliance, problem-solving, or patch fixes) which further compounds the issue. The process of “the internal compound” can result in the expression of anger, risk-taking behaviours, relationship breakdown, aggression, violence and suicidal behaviour (Wright, 2009). Wright (2009) argues that when rural men feel an inability to

“fix” the problem, this may result in them experiencing failure and therefore needing to defend perceived threats to self-worth. The defence of self-worth is often done through expressing experience outward by ‘blowing up’ (effects of depression on others including domestic and peer violence, aggression within the workplace, communication breakdown within relationships) and ‘nearing the edge’(self-harm, suicidal ideation, completed/attempted suicide), which may increase risk-taking behaviour and lead to accidental or purposeful death (suicide) (Figure 8).

The findings presented from previous research suggest that risk factors for suicide in the rural population are multifaceted. An appropriate method to frame these risk factors would be in relation to Bouch and Marshall’s (2005) method of suicide risk assessment. Bouch and Marshall (2005) categorised suicide risk factors into four groups, namely static, stable, dynamic, and future. Static risk factors are those that are fixed and historical such as family history of completed and attempted suicide. Stable risk factors include those which are long-term but not fixed such as personality traits or disorders. Dynamic risk factors can include substance use of acute anxiety symptoms. Future risk factors are factors which can be anticipated as they result from current circumstances, for example, response to treatment or unavailability of treatment (Bouch & Marshall, 2005). Through the use of this framework, the risk factors for suicide in a rural male population have been categorised below (Figure 9).

Risk Factors for Male Farmer Suicide

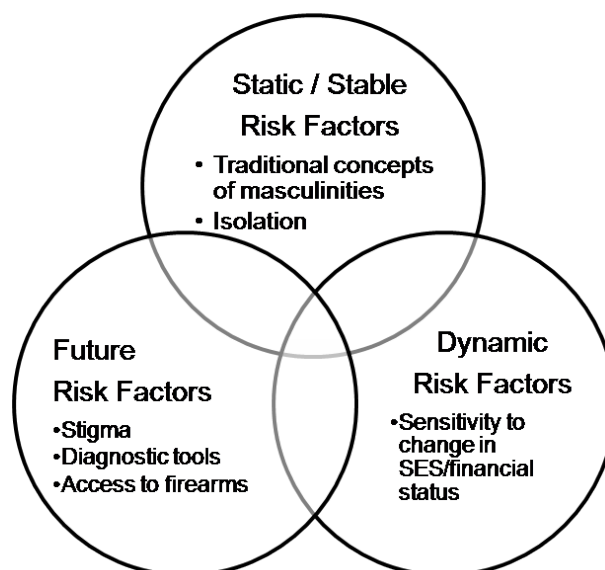


Figure 9. Potential contributors to higher suicide rates for male farmers of Australia.

3.7 Conclusion

The lifestyle that farmers lead may put them at increased risk of high stress, anxiety, depression and possibly suicide but also allows the farmers and their families to cope with the many challenges that occur in this occupation. This makes farming a lifestyle rather than an occupation (Swisher, Elder, Lorenz, & Conger, 1998). Farming families are reported to be resilient and possess unique sets of values that assist them in coping. These values include a strong sense of shared identity, good relationships and trust within the family and community and skills such as practical skills, self-efficacy and sense of purpose, which have often been developed from involvement in farm work (Larson & Dearthmont, 2002). A sense of belonging in a community, also known as community-connectedness, is an important resource for coping for rural individuals. Community-connectedness helps decrease feelings of isolation as it usually involves people being engaged in community events and activities and a perception of

connection to community. Further, community connectedness allows individuals to feel that they are not alone and that others are facing similar challenges (Caldwell & Boyd, 2009). These characteristics of the farming lifestyle such as community-connectedness, sense of purpose, self-efficacy and resilience are therefore potentially important in buffering and improving the mental health and well-being of farming population. Conversely, the farming lifestyle characteristics of high workload, high risk of relationship conflict and low control within the work environment are important factors which potentially have a negative impact on the mental health and well-being of the farming population. The following chapter provides a conclusion of the literature review and presents the generated hypotheses. The chapter then further explores the process by which those hypotheses may be addressed.

Chapter 4: Literature Review Implications

As a whole there is a gap in the reviewed literature pertaining to how characteristics of the working environment impact upon Australian farming families: their coping behaviours and well-being. This gap may be a result of a lack of investigation into how the nature of the working environment impacts upon well-being and also the limitations of the tools used to assess such characteristics within this population group. The need to further investigate the determinants of farming family well-being was identified by McShane and Quirk (2009). McShane and Quirk's (2009) research found that though it was clear that the working environment of farmers was unique and had a significant impact on well-being, this impact could not be comprehensively addressed due to limitations of the scales of stress and role conflict that were available at the time. The primary aim of the current research is to determine the impact that the farming family work environment has upon farming family well-being. Therefore in order to accurately examine this impact, scales that assess the work-home interface, stressors, and coping strategies specific to farmers and farming families in Australia need to be adapted from existing scales, developed, and validated.

4.1 Hypotheses

The following hypotheses are a-priori hypotheses generated from the review of the literature. It is expected that further hypotheses would be generated as a result of the qualitative component of scale development (see section 4.3).

1. The farming work-home environment will be unique from other work-home environments as it will not be bi-directional in conflict. That is, the conflict

within such environments will not only be work-home and home-work but a third domain which is uncontrollable will be evident. This domain may be typified by external interference, for example from government, and weather/climate issues.

This prediction is aligned with Research Question 1(p.3) regarding the investigation of the work-home environment of farming families. The hypothesis is primarily based on findings from McShane and Quirk (2009) who found that the standardised Work-Family Conflict Scale (Carlson et al., 2000) did not accurately assess the level of conflict present within the farming family work-home environment. This was suggested to be most likely a result of the interference of role completion originating from multiple domains and not simply the work place and home domains.

2. Domain conflict will be experienced both between and within the farm and home domains.

The hypothesis is aligned with Research Question 1 (p.3) and reflects the tenets of the two predominant theories of role conflict, Spillover theory and Segmentation theory (Gryzwacz et al., 2002; Michel & Hargis, 2008). For example, it is likely that farming demands will interfere with family demands. However due to the nature of some farming demands, such as high workload (Eberhardt & Pooyan, 1990), it is also likely that there will be farming demands that interfere with other farming demands.

3. Conflict/interference will not always have a negative impact on well-being.

This prediction is aligned with Research Question 1 (p.3) and links with Hypothesis 2. Literature on Spillover theory suggests that spillover can have both a positive and negative influence across domains (Hammer et al., 2005), a suggestion which is consistent with the concept of domestic psychological transference (Fletcher,

1991). This seems likely to occur within the farming context due to the organisational structure being a working lifestyle that involves family.

4. The stressors identified by farming families in Australia will be qualitatively different than those identified in the Farm Stress Survey (Eberhardt & Pooyan, 1990).

This hypothesis is aligned with Research Question 2 (p.3) and specifically refers to the Farm Stress Survey (Eberhardt & Pooyan, 1990) as this was the scale used in McShane and Quirk's (2009) research with Australian farmers. Further, this scale is one of the few psychometrically sound scales of farm stressors and has been employed internationally (e.g. Australia, New Zealand, and United States).

5. Key coping strategies and behaviours employed by farming families will be different in nature and effectiveness than those strategies and behaviours used by other populations as cited in the literature (Carver, 1997).

This hypothesis is aligned with Research Question 3(p.3) which refers to the investigation of farming family specific coping strategies, attitudes, and behaviours. This hypothesis is likely to be confirmed as the types of stressors and conflicts faced by farming families are often outside of the individual's control or a necessary part of the work lifestyle of farming (e.g. weather patterns, regulations, market prices). As a result of this, some of the coping strategies that are considered most effective within the general population may not be applicable in the context of farming.

6. Those individuals higher in levels of conscientiousness, openness to experience and agreeableness and lower in neuroticism will tend to report better well-being than those who report lower levels of these characteristics.

This is consistent with Research Question 4 (p.3) regarding the influence of farming family values and personality characteristics on well-being. Previous research

has indicated that those who are more conscientious, agreeable and emotionally stable tend to be more active and more likely to resolve conflicts. Additionally, such individuals tend to have better business management, use duty to cope with challenging conditions more often, report a stronger sense of commitment, have greater resilience to developing mental health problems, and be more likely to seek help if they do experience problems (Van de Vliert & Euwema, 1994; Judd et al., 2006; Austin et al., 2005; Kobasa, 1979).

4.2 Scale Development

The following section reviews the applicability and validity of the current scales available to assess the Australian farming family's work-home interface and direction and source of conflict, the stressors of Australian farming families, and the coping behaviours and strategies employed by Australian farming families. In all this section provides a rationale for the need to develop contextually-specific scales for farming families of Australia.

4.2.1. Scale development - Work-home interface.

As mentioned in Chapter 2, the majority of the scales developed to assess work-home interference originally measured conflict uni-directionally and uni-dimensionally (Greenhaus & Beutell, 1985; Frone et al., 1992) with the one exception being the Work-Family Conflict Scales (Carlson et al., 2000). Carlson et al.'s (2000) model of conflict considered work and home conflict bi-directionally and multi-dimensionally. This model allowed for a more comprehensive representation of inter-domain conflict than uni dimensional and directional models. Carlson et al.'s (2000) model was adopted by McShane and Quirk (2009) in an investigation of the potential mediating and moderating affects of work and home conflict upon farmer's mental health. However,

McShane and Quirk (2009) found that Carlson et al.'s (2000) model of work and home conflict was inadequate to assess farming work-home conflict due to the complex structure of the farming work and home interface. For instance, though it was hypothesised that farmers would experience more HWI due to the structure of the interface being more similar to home-based workers (as a farmer's place of work is also the home) it was found that farmers reported significantly more WHI than HWI. Further, WHI demonstrated greater explanatory power than HWI on the mediating affects of interference on psychological distress. Research has indicated that the interaction between the work and home domains of the home-based workers or teleworkers should result in greater reports of HWI than WHI and that HWI should have a greater impact on well-being than WHI (Golden et al., 2006; Weirda-Boer et al., 2009). McShane and Quirk's (2009) found that the pattern of role conflict for farmers was inconsistent with research findings for home-based workers and teleworkers, thus highlighting the differences between the farming work environment and a generic work-home interface.

McShane and Quirk (2009) also identified some key elements of the work environment that should be considered in the development of an appropriate scale of work-home interference for farmers. These factors included the physical proximity of the two domains, the variable place of work, and the dual roles of family members. The physical proximity of the two domains was important to consider as the work environment is physically fused with the home or family environment for farmers. The place of work varies as some work is completed in the home (e.g. administrative duties), whilst other work is completed outside of the home (e.g. paddock work), or away from the home (e.g. travelling for training, accreditation, or marketing). Dual roles are present as the employees or work colleagues may also include family members who

may not receive paid wages. This may further explain why the Carlson et al. (2000) scale of work and family conflict did not appear to sufficiently assess the impact of the work-home interface on farmer well-being as the fusion of and blurring of the boundaries between the two domains makes it difficult to determine the direction of conflict (McShane & Quirk, 2009). As a result, it was concluded by McShane and Quirk (2009) that a contextually relevant (Australian) and organisationally specific (farming) scale needed to be developed to assess this interface. It was further identified that the scale also needed to assess the impact of the work and home role conflict on family members due to the fused nature of the work and home environment and as family members are likely to contribute to the farm business.

4.2.2. Scale development – Stressors.

A review of the literature had not identified any developed scales of Australian farming family stressors. One scale to consider for adaptation in the development of an Australian farming family stressor was the Farm Family Stress Scale (Weigel, Weigel, & Blundall, 1987). This scale was developed in 1984 in the United States using a sample of 15 two-generation farm families. The questionnaire included items pertaining to authority, job tasks, team work, money, differing lifestyles and values, and communication (Weigel et al., 1987). A total item pool of 51 items was reduced to 22 items by an expert panel. Weigel et al.'s (1987) scale is limited in the generalisability of the scale, as it was generated from a small item pool which was provided by a small sample and further reduced and validated via recruiting another small sample. Additionally, the scale has not to this author's knowledge been used internationally or within recent years.

Another scale originating in the United States which has been used internationally, including Australia and New Zealand, is the Farm Stress Survey,

developed by Eberhardt and Pooyan (1990). This scale assesses farmer-specific stressors such as hazardous working conditions, time pressures, general economic conditions, and personal finances (Eberhardt & Pooyan, 1990). McShane and Quirk (2009) used the Farm Stress Survey in their research on the moderating and mediating affects of role conflict on farm stressors and psychological distress in Australian farmers. McShane and Quirk (2009) reported mediating effects of WHI but not HWI. However, as Eberhardt and Pooyan's (1990) scale only assesses farm work stressors, McShane and Quirk (2009) suggested the lack of HWI mediation could have been a result of an inaccurate assessment of farmer's stressors as the Farm Stress Survey did not include items that assessed home domain stressors (McShane & Quirk, 2009). As the current research focus is on the farming family and not just the farmer, the scale used to assess stressors would need to include stressors that are relevant for family members.

Another criticism for both the Farm Stress Survey and Farm Family Stress Scale in their applicability to the current research target population is that these scales were developed approximately 20 years ago. Over the intervening period other issues may have arisen for the modern farmer. For example, climate change and associated policy environment, advancements in technology, and the changing of the work environment for the average farmer such as the increased difficulties surrounding profitability that pressure farmers to expand or leave the industry. Therefore, the limitations of both scales in addressing the contextual stressors of Australian farming families suggest that a scale assessing farming family stressors needs to be developed.

4.2.3. Scale development – Coping.

As the need to develop a contextually-specific scale of stressors was identified, it also seemed reasonable that a complementary coping scale may also need to be

developed. Australian farming families are exposed to unique circumstances, such as isolation and limited communication technologies. It is not unreasonable to assume that responding appropriately to such stressors requires a unique set of coping skills. For example, opportunities to use coping methods such as seeking emotional and instrumental support may be limited. As farming families are in most cases living and working with the same people and therefore may not wish to burden others further by disclosing concerns such coping methods may be inappropriate. Also, opportunities to seek information may be limited due to physical isolation from health and other services. Furthermore, it is important to consider the personality characteristics and social pressures that discourage some forms of coping (such as emotion-focused) which may result in other methods of coping being selected. The connection that farming families have towards the farm, which may add to their resilience and is built up over time, can also be an important influence on the types of coping employed (Hegney et al., 2007).

A scale of farm family coping was identified within the literature, the Farm Family Cope Scale (Weigel et al., 1987). This scale was developed alongside the Farm Family Stress Scale in 1984 in the United States from the same sample of 15 two-generational farm families. The scale includes 15 items which were generated from an item pool of 26 items. The items concerned themes relating to faith, leaving the problem, family meeting, acceptance, and physical activity (Weigel et al., 1987). The Farm Family Cope Scale has similar limitations to the Farm Family Stress Scale, including low reliability (Cronbach alpha coefficient $<.7$), limited generalisability due to the small item pool and sample sizes, being used in a limited context by a limited number of researchers, and the lapsed time period. As a major aim of the current research is to develop contextually-specific scales for Australian farming families, the

Farm Family Cope Scale was not considered appropriate for use in the current research due to the aforementioned reasons. Therefore, due to these factors and the limited research of coping strategies and behaviours employed by farmers and farming families it is important to investigate the possibility of developing a contextually-specific coping scale.

4.3 Theoretical Framework for Scale Development

The method by which the scales of farming family work/home interference, farming family stress, and farming family coping were developed in the current study follows the process of development and validation outlined by Streiner and Norman (1989). Streiner and Norman (1989) described seven general steps involved in the development and validation processes for a new scale. These seven steps were divided into three major phases for the current research (Figure 10). As can be seen from the figure, Phase 1 included Step 1 and 2, with Step 1 being a literature review from which to adapt the scales that are already available. Additionally, an interview process with members of farming families was undertaken to provide the foundation for item generation and identification. Step 2 included item generation where the data collected from the interviews was analysed and incorporated in the draft scales for further testing. Additionally, as Grounded Theory was being used during the interview process due to the exploratory nature of the research, direction of development and hypotheses may be altered or generated in accordance with findings from interview data. Grounded Theory is an exploratory process of data collection which uses feedback from participants to adapt and guide question and theme development (Martin & Turner, 1986).

Phase 2 incorporated Step 3, 4, and 5, with Step 3 entailing an examination of the generated items by the researcher through employing psychometric and clinimetric techniques. Specifically, the item reduction process included assessment of the

relevance and importance of each item to the target population, face validity, internal consistency, and item-total correlations. In the present research this was achieved through two studies, an Item Reduction Study which involved a sample of farming family members, and an Expert Review Panel which involved a smaller sample of industry professionals. Step 4 involved questionnaire formatting, ensuring that layout and item construction is unambiguous. Step 5 included a pilot testing stage where the draft scales were distributed to a small sample representative of the final target population. Feedback from the participants in relation to face validity of the item content ensures that the items which may have been overlooked are included in the final item set and that the individual items are clear in their meaning.

The final Phase involved Step 6 and 7, where Step 6 assessed the validity of the scales by correlating them with similar existing scales (convergent-criterion validity). The farming family scales were also correlated with existing scales where the existing scale's purpose was in contrast with the newly developed scales (divergent-discriminant validity). Step 7 examined the reliability of the scales which was assessed using internal consistency analysis and a re-test framework. Following this standardised process the adaptation, development and initial validation of the farming family-related scales should be achieved as an outcome of the research. Furthermore, as scale development was partially driven by Grounded Theory, the potential for the generation of additional scales to the three initial farm family scales remained possible. These steps were undertaken with the approval of the James Cook University Experimentation Human Ethics Review Committee (approval number H3094).

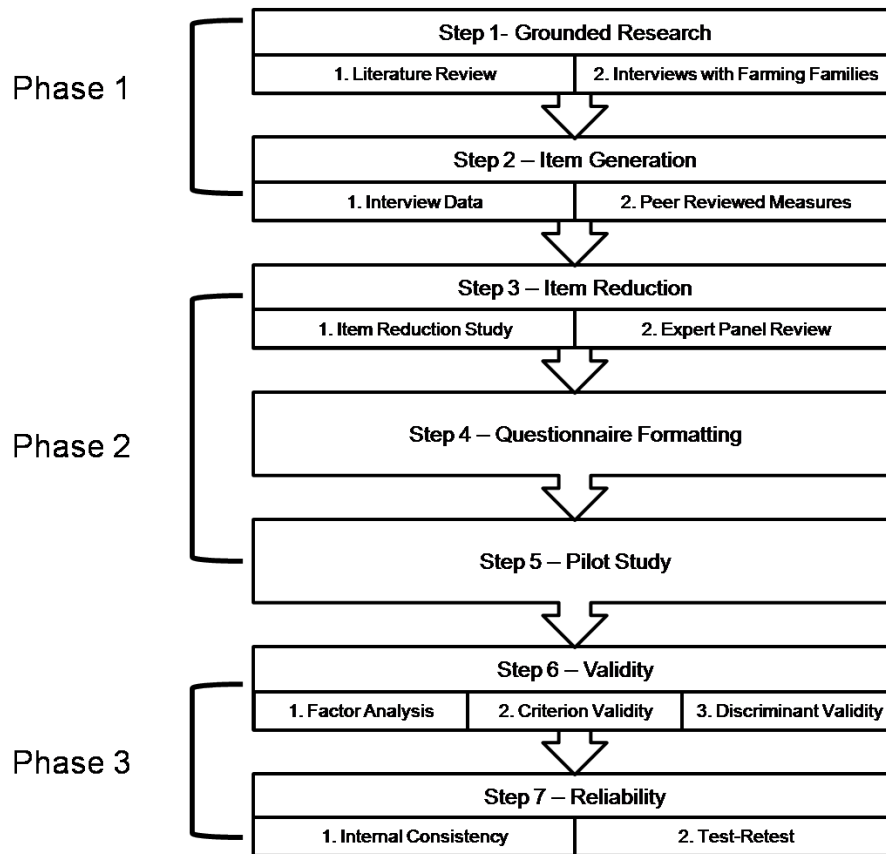


Figure 10. Overview of the process of the development of the Farming Family scales.

4.4 Conclusion

Through the development of these scales and the use of other established scales, the current research aimed to investigate the work-home environment and lifestyle of farming families including the interactions of work and home roles, the coping behaviours and methods used, and the challenges of the farming lifestyle. Additionally, the investigation aimed to identify influences of attitudes and personality characteristics on coping strategies, stressors, and role completion and the subsequent affect of the interaction of these factors on well-being. The importance of identifying the influence of the working environment on well-being was recognised in the potential outcome of providing a more inclusive understanding of the relationship between farmers and suicide. Additionally, the importance is emphasised through the impact that poor current

and future well-being of farming families may have on the valuable Australian primary industry, affecting the livelihood of rural communities and ultimately the wealth of urban centres. Therefore, improving the current health status of farming families through identifying key factors of the working environment that affect farming family well-being, preventing farming family relationship breakdown and disharmony, and identifying factors that could slow the decline in the number of farming families may improve the sustainability of rural industries and communities.

Chapter 5: Phase 1 – Getting to Know Farming Families

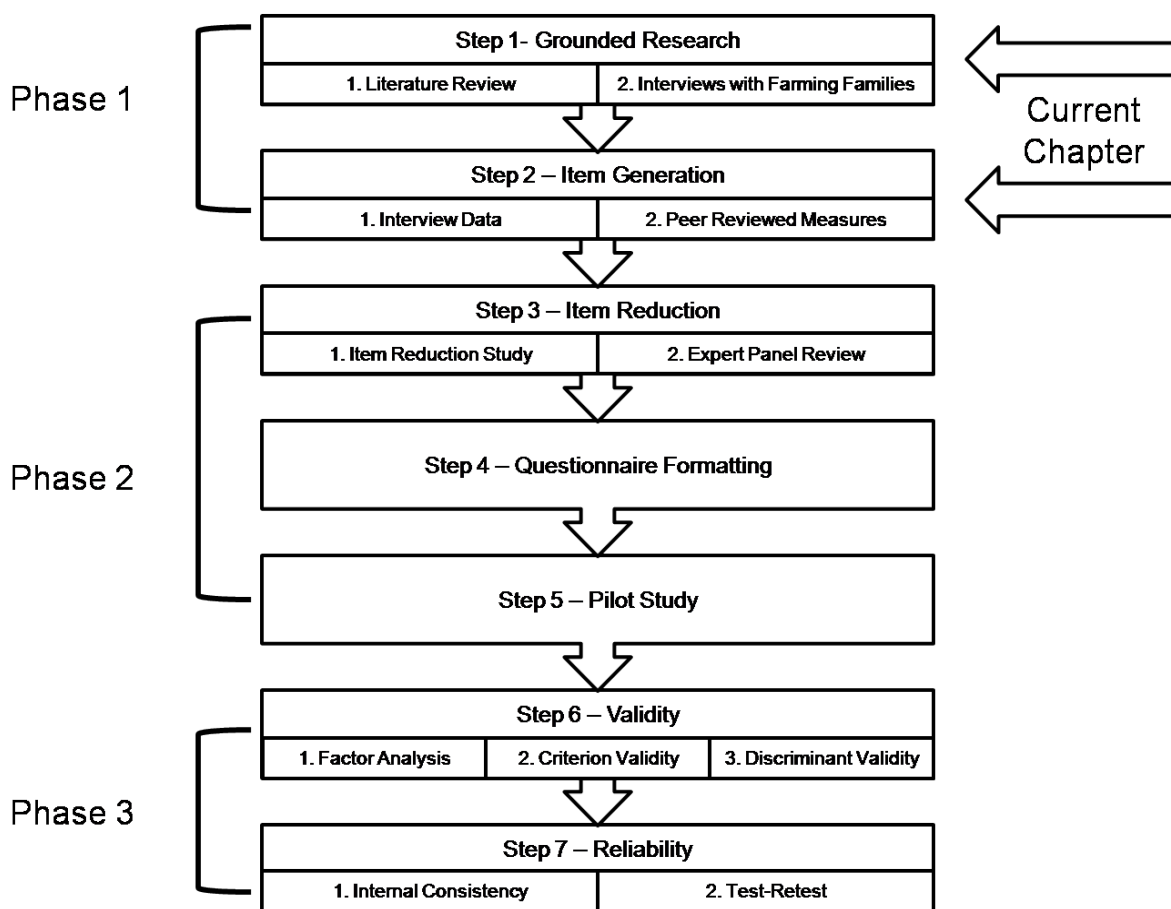


Figure 10. Overview of the process of the development of the Farming Family scales.

5.1 Context of Study

Driven by the review of the literature, this chapter outlines the grounded research undertaken to initiate the process of scale development. As indicated by conclusions drawn in the previous chapter, the scales that were available to assess stress, coping, and the work-home interface of farming families did not completely measure all relevant characteristics of this particular population. Additionally, the literature itself was not sufficient to generate items specifically relating to Australian farming families or to exclusively guide the development of the scales. The lack of farming family specific scales within the literature, previous research by the principal investigator, and the low

face and content validity of current scales (as assessed by the research team) supported the rationale to develop and adapt new scales (Streiner & Norman, 1989). The current study involved a Grounded Theory process which used interview data to guide the directions of the research (Glaser & Strauss, 1967). A content analysis approach was also used as it frames the research in the predetermined major categories of stress, coping, and work-home interface (Downe-Wamboldt, 1992). This process allowed for a large number of items to be developed, more than what was needed for the final scale. A large item pool is desirable in scale development to increase the likelihood that the most valid and reliable items are selected (Streiner & Norman, 1989). The current chapter incorporates Step 1 and 2 (Phase 1) of scale development, which was an important part of the scale development process and the overarching research. The importance of Phase 1 was identified as it allowed for an understanding of how and why an item may affect well-being and it provided a contextual understanding of current farming family life. Additionally, these steps of scale development allow for the opportunity of unforeseen items and scales to be generated, offers the opportunity for additional hypotheses to be generated which guides the direction of research, and offers a point of comparison and support for findings in latter stages of scale development and analysis. The proceeding chapter firstly presents themes and findings from the interview content and then outlines the item generation and categorisation that occurred as an outcome of interview findings.

5.2 Method

5.2.1 Participants.

Farming family participants (N=53) were recruited from across Queensland (N=45) and New South Wales (N=8), with the majority of participants residing in Queensland (84.9%). There were 31 interviews conducted in total, with interviews

consisting of 1 (n=11), 2 (n=19), or 4 (n=1) family members. The participants were recruited through contact with the principal investigator at field days, rodeos, focus groups, and via media sources (i.e. newspapers, radio). Men's age ranged from 27-71 years (M=50.44, SD=12.06) and women's age ranged from 26-67 years (M=51.25, SD=10.23). The majority of the participants were married (92%) and had been married for more than 20 years (57%) (Table 1).

Table 1. *Demographic details of farming family participants.*

Marital Status	Length of Relationship	N of Children	Produce Type	Employment Position
Married 92.5%	>10yrs 22.6%	1-2 45.5%	Sugar Cane 34.0%	Farm Owner 86.8% M=96.4% F=76.0%
Single 3.8%	10-20yrs 20.8%	3-4 50.9%	Grain 3.8%	Farm Manager 79.2% M=85.7% F=72.0%
De facto 3.8%	20+yrs 52.8%		Horticulture 22.6%	Farm Labourer 58.5% M=78.6% F=36.0%
Divorced 3.8%			Livestock 58.5%	Home Roles 64.2% M=35.7% F= 96.0%
			Cropping 22.6%	Off-farm Job 22.6% M=25.0% F=20%
			Organic 3.8%	

Almost all families represented in the sample reported farming more than one produce type (96%), and the two most frequent produce types were identified as livestock (58%) and sugar cane (34%). Most participants were farm owners (87%) and had been farming for, on average, approximately 26 years (Men=27.6 years, Women=24.4 years) (Table 1). Of the families involved, the majority were either currently or had previously been involved in intergenerational farming (72%). Though most of the participants did not indicate any major medical or mental health problems,

30.2% did report having experienced a serious physical health condition in the past such as cancer, heart conditions, and workplace injuries. Of the sample, 24.5% reported a current physical condition, which was in most cases related to previous health problems (i.e. blood pressure and cholesterol).

5.2.2 Materials.

5.2.2.1. Semi-structured interview development.

A semi-structured interview was designed to investigate work and home roles and responsibilities, the work environment structure, the stressors that families and individuals may be experiencing, the coping strategies used to buffer those stressors, and lifestyle elements of farming families. The interview was divided into two major sections: Experience Response and Opinionative Response, with each section containing four subsections including work-home interface, stressors, coping, and lifestyle elements (Appendix A). In the Experience Response section, participants were asked to describe their current roles and responsibilities around the farm and the home and also describe factors which impacted upon these responsibilities. Participants were also asked about their major stresses, daily stresses, and factors which increased their stress levels as well as the methods they used as an individual and as a family to cope with stressors and challenges. Further, the Experience Response section included questions about participants' farming history, why they continued to farm, their values and principles, and what they liked and disliked about the farming lifestyle. In the Opinionative Response section, participants were asked questions about how satisfied they were with their roles, responsibilities and life as well as how satisfied they perceived their family members to be with their own roles, responsibilities, and life. In this section, participants were also asked about their opinions surrounding intergenerational farming, whether the participant perceived their partner coped well

with stress, and what farming meant to the participant. Further, participants were questioned about what they thought a farmer needed to do to be successful within their lifestyle (not necessarily financially) and how they thought outsiders perceived farmers. Interviews were conducted either face to face or over the telephone and, except for one case, were audio recorded with consent for analysis purposes.

The initial questions were generated by the investigator and research supervisor drawing upon their previous research with this population and with consideration of the research questions of the current research. Some questions were modified throughout the interview stage as the wording was found to be ineffective. In the Experience Response section, questions relating to the work-home interface were generated by themes drawn from existing scales of work-family conflict (Carlson et al., 2000) as well as through literature on family businesses focussing upon multiple roles and role ambiguity (Beehr et al., 1997; Kiong, 2005; Sorenson, 1999; Danes et al., 1999). Questions regarding stress and coping were exploratory attempts which aimed to identify different categories of stress and coping. These questions were generated in this manner as the hypothesised fusion of family and farming domains suggested that there might be possible differences in grades of stressors (i.e. major, daily) or coping (i.e. family or individual). The section on lifestyle questions was also exploratory but was additionally informed by literature regarding values held by the farming and rural populations, such as community connectedness, in order to gain insight into the importance of farming for the farming family (e.g. Davidson & Brodie, 2005; Pritchard & McManus, 2000; Judd et al., 2006b; Austin et al., 2005; Kobasa, 1979). The questions generated for the Opinionative Response section about satisfaction with life and work and perceptions of coping ability allowed reflections to be made in relation to reported stressors and conflicts and perceived well-being. Additionally, these questions

also asked about the individual's perception of their partner's and family's satisfaction and coping abilities. These questions were included as findings in the literature suggest that farming populations hold stigmatised attitudes towards individuals reporting poor mental health and also that masculinities appear to play a role in the under-reporting of mental health issues and low help-seeking behaviours by males (Wright, 2009; Swami et al., 2008). Finally, questions about lifestyle were asked in this section to gain some understanding into the value of farming and the perceived outsider perspectives of farming. These questions were included to gain a more comprehensive understanding of the characteristics of the farming population but also as the outside misperception of farming lifestyle may contribute to a decrease in well-being due to this external expectation of a rich lifestyle not being concordant with reality (Davidson & Brodie, 2005; Pritchard & McManus, 2000).

5.2.2.2. Item generation tools and techniques.

Interviews were transcribed into and analysed using NVIVO_8. Content from interviews (N=31) conducted with farming family members (N=54) (Table 1) were analysed using Grounded Theory and Content Analysis. Grounded Theory, first established in 1967 by Glaser and Strauss, is a method of qualitative data analysis comprising of three stages of data collection, data coding, and memoing. Throughout the analysis process, these stages are to be repeatedly revisited. Data collection is the acquisition of data by the researcher, which for this research involved interviews. Data coding involves finding relationships within the data content and using this information to feedback into the data collection stage. Memos are notes by the researcher that help drive theory building, hypotheses, insights and directions for data collection and coding. The current study primarily used data collection, coding, and simplified aspects of the memoing stage. Coding was also influenced by Content Analysis, a form of qualitative

data analysis that involves coding data into predefined categories. Content Analysis is a systematic and objective method which is more than sorting data into categories but allows inferences to be drawn about those items based on the context and environment from which the items were collected (Downe-Womboldt, 1992). This method involves creating and designing categories, testing the validity and reliability of these categories, then if appropriate redefining the categories, and coding the data (Downe-Womboldt, 1992). Content Analysis compliments Grounded Theory well as though Content Analysis provides the foundations for analysis of categories, Grounded Theory provides the means to adapt and redefine these categories to best suit the population.

Generated items, as a part of the aforementioned theoretical methodology, were also adapted from existing scales. The items from the existing scales which were unique from the items generated from interview content were included within the developing farming family scales. Specifically, generated stressor items were compared with the Farm Stress Survey (Eberhardt & Pooyan, 1990) as this scale had been used internationally and has sound psychometric properties. The work-home environment items were compared with the Work-Family Conflict scales (Carlson et al., 2000) as this scale is one of few which consider role conflict on multiple dimensions. The coping-related items were compared to the Brief COPE Inventory (Carver, 1997). The Brief COPE Inventory was selected for comparison as it had sound psychometric properties and has been used in farming samples (Gunn, 2008). These existing scales were also part of the theoretical drive to adapt and develop farming family specific scales and therefore have assisted in the development of the current research framework.

5.2.3 Procedure.

5.2.3.1. Interview procedure.

Recruitment of participants began in May 2008, with interviews commencing in late October 2008 and continuing through to mid June 2009. There were a total of 31 interviews conducted, 19 were conducted face to face (generally at the participant's home), and 12 conducted via phone. The average duration of an interview was approximately 73 minutes (1hour 13 minutes), with a total accumulated time of 2274 minutes (37 hours 54 minutes). Interview recordings were then transferred to a computer file and manually transcribed by the investigator, taking an average of 30 minutes of transcribing to every 10 minutes of interview audio. This amounted to an average of 219 minutes per interview (3 hours 39 minutes) and an accumulated time of 6822 minutes (113 hours 42 minutes) spent transcribing.

5.2.3.2. Item generation procedure.

Interview content was analysed using Grounded Theory and Content Analysis to generate items relating to farming stressors, coping strategies, and role conflict. This combination was used as though the research was original in its intent to create scales that were specific for Australian farming families' (Grounded Theory), the interview process was also semi-structured in nature as there were predefined categories that were being investigated (Content Analysis). Additionally, Content Analysis was used in combination with Grounded Theory as, though there is a gap in the literature in relation to Australian farming family specific scales, there were content related scales available that were used as a flexible guide for scale development. This method of adaptation and generation is supported as an appropriate means for scale development (Downe-Womboldt, 1992). Based on previous research and literature in this field, the principal investigator defined the general categories from which data from the interviews would

be generated (Content Analysis). These categories were Work and Home Roles, Interference to Roles, Assistance with Roles, Intergenerational Farming, Life Satisfaction, Life Dissatisfaction, Major Stressors, Daily Stressors, Increases of Stressors, Individual Coping Strategies, Family Coping Strategies, Positive Lifestyle Elements, and Negative Lifestyle Elements. As a result, each interview transcript was examined for items/comments that pertained to each of these categories. Through the use of NVIVO_8, comments from each interview were compiled under these sections. However, as previously stated Grounded Theory was also utilised in the analysis process and consequently other categories and subcategories were established in the analysis process. Items within these categories were then assessed by the research team for the face validity of the items for scale development. Selected items were included in the subsequent stages of scales development, namely item reduction stages. Generated items were then compared to current scales of similar content for unique items which could be incorporated into the item list (Content Analysis). A sample from the analysis process was reviewed by a supervisor to corroborate findings. Items generated were compiled into scales reflecting the categories by the principal investigator. Items were screened for jargon, double-barrelled framing, ambiguity, and readability (Streiner & Norman, 1989). The final compilation of items was then revised by the primary supervisor to further screen for problematic item wording.

5.3 Results: Themes Presented within Interview Content

5.3.1 Work and home roles.

Work roles reported by the sample included collaborating with family members or business partners, attending educational programs, environmental conservation, administrative work, external or volunteer work, physical work, managing employees,

collaborating with government, and supplementary or helper worker (Appendix B). Men predominantly reported being responsible for the majority of farm/business work roles and women tended to report being responsible for the majority of work within the home (Table 2). Though women did have concrete roles within the business, such as administrative duties, women more frequently identified as being the “supplementary worker” or “helper”, a key role, which involved assisting others on the farm where and when it was required. Home roles included caring for child/family, household duties, and yard/maintenance duties (Appendix B).

Table 2. *Identified variables in work-home interface.*

Variable	Men	Women
Main Roles	Farming	Home/Family Supplementary worker
Interference	Family commitments Farm priority Weather/climate	Assisting others Family commitments Phone calls
Assist Role Completion	Technology Weather	Sharing workload with others
Positive Factors of Intergenerational Farm	Financial benefits No pressure Clear roles Communication	Good existing relationships Financial benefits
Negative Factors of Intergenerational Farm	Tension & conflict Financial issues Size of asset	Tension & conflict Succession issues Wives/in-laws Independence issues Concern for children

5.3.1.1 Example of men’s role on the farm.

(Interview 1) M: *Anything to do with the farm is all me. [I do the] labour, the accounts, all the physical input, all the managerial, all the thought input, the tax implications, the GST, the financial decisions – although we will sort of talk about it if we have to.*

5.3.1.2. Example of the supplementary or helper worker.

(Interview 18) F: *my main responsibilities are in the office, to keep the day to day accounts up to scratch, budgeting and things like that, and I'm usually on call for running around, or I'm usually doing some spot spraying or those types of jobs. I am also a grandparent so I am usually on call there as well, which in a family partnership is usually all a part of it of course*

(Interview 19) M: *I'll just ring up and say "I want to be shifted now"*

F: *....and so you've got to - and it doesn't matter if you've got a cake in the oven or...*

M: *not a please or can you come and pick me up, it's a "you've got to"*

5.3.1.3. Example of women's home roles.

(Interview 23) F: *get up and attend to the animals, get breakfast and get everybody up and outside and doing what they are supposed to be doing I suppose, then just basically taking the telephone calls, attending to people that come, when the mail comes attend to the mail, attend to the lunch and attend to the washing and tea and feed the animals again and yeah just basically tend to whatever needs to be tended to. Then I might go to town once a fortnight to do a shop, I'm really lucky we're only 60kms from [Town A], 40kms from [Town B], 50kms to [Town C], so I take my pick.*

5.3.1.4. Example of men's home roles.

(Interview 13) M: *ah mainly mow the lawn...yeah that's about all. I don't even like mowing the lawn some times because I would rather be in the paddock finishing something off...so yeah sometimes do.*

(Interview 6) M: *I'll dig the garden when she wants it dug, put up things when they need to be put up but otherwise....*

Interference with role completion included factors such as time taken assisting others, work external to the farm, family commitments, farm taking priority, being financially limited, phone calls, weather, and workload (Appendix B). Women were likely to indicate assisting others as a major interruption to their regular duties. Men, and to a lesser degree women, found family commitments and responsibilities a common interruption (though this was also cited as a positive interruption), as well as the farm taking priority over other responsibilities. Conditions that assisted in the role completion process were experience and education, good weather, being a part of an intergenerational farm (in relation to decreased workload and access to experience and knowledge), neighbours and friends, professional or employed help, sharing workload, and technology or equipment (Appendix B). Easing of workload in some form was helpful for both men and women however women seemed to focus on support from other people and men more often than women focused on support from technology and equipment (Table 2).

5.3.1.5. Example of family and farm interruption.

(Interview 15) M: *You just get too tired, my son would come home from school and I mean he was at boarding school but when he would come home he would want to do this and do that, but I was too busy so all the things I should have done with him I didn't because work sort of come first, it was a priority.*

(Interview 24) M: *my daughter! Yeah my daughter, on the days that she is with me full time, she's pretty good for a two year old, she can amuse herself for about an hour and a half but then I've got to spend at least a good half an hour. But then its*

food and snack times which is kind of four times a day I've got to sit down with her for half an hour so that [adds up]

5.3.1.6. Example of assisting others as an interruption.

(Interview 11) F: *well I mean it just depends, I might have a big day of my work planned and then [husband] will say he wants me to pick up the fluming today or he wants the fluming put out today or says - like today I have a heap of computer work to do but you're here [the interviewer]. It depends on what the day brings.*

5.3.1.7. Example of technology and equipment assisting role completion.

(Interview 20) M: *it is a bit easier these days with electronic equipment. You used to have to go back to the office and look through the faxes whereas now you can – I mean I can fire up the computer in two seconds, and even on my phone, I can gettextures and prices for the day, so that helps you plan things and all that a little better because it means you can read market reports and that on the run, particularly when you've got auto-steer and all that it is pretty good.*

5.3.1.8. Example of sharing workload assisting role completion.

(Interview 12) M: *for me it's the fact that I can always rely on [wife] to be around if I need something. Like if you sort of stuck doing things then it's just a matter of a phone call and she'll be around*

(Interview 2) F: *Being a team, working together and sharing the responsibilities, both being capable of the work.*

5.3.2 Intergenerational Farming

Farming families were more likely to indicate that intergenerational farming was generally more difficult than beneficial, either for the family or as a business

proposition. The perceived difficulty of intergenerational farming was compounded if the recommended guidelines suggested by farming family participants for a successful intergenerational business were not followed (Table 2). Conditions that resulted in an intergenerational farming environment becoming difficult included the financial dependence of the next generation, conflict between members, difference in ideas for farming practices and farm future, financial issues (e.g. the risk of inheriting debt), and jealousy and favouritism between members. The lack of independence in everyday life and decision making, the older generation remaining on farm and having different preferences for the farm than the current generation, pressuring the next generation to continue on the farm, succession issues, and new wives or in-laws were also identified as problems for intergenerational farms (Appendix B). However, the principal issue farming families identified for intergenerational farming was the tension and conflict that was perceived to inevitably arise between members of the family. For issues that were perceived to contribute to tension, men more often indicated issues surrounding financial difficulties and the size of asset, whilst women focused more on succession issues, the lack of independence in regards to decision-making, and children's lack of independence (Table 2).

5.3.2.1. Example of difficulties surrounding intergenerational farming.

(Interview 2) F: *Harder, very difficult. So many stakeholders all wanting their views heard, succession issues, husbands and wives have needs that can't be met, sons and daughters that inherit the farm often inherit debt or drought which makes it hard to stick it out but there is this sense of obligation that they can't sell the family place.*

(Interview 25) M: *yeah that's right you'll be better – unless you are an only child and you are inheriting a debt free farm then that's the only time where there is an*

advantage in it. Most of the time you've got a family situation there that you're going into, and it looks very relaxing to stay at home instead of going away and running the family farm with all the partners in it. It feels very comfortable I think because you don't have to worry about the debt or whatever and everything like that but then all of a sudden then everybody wants their money and it's the wars...

(Interview 20) M: *I don't particularly think with my experience I could run the place by myself so you really do need that intergenerational factor brought into the farm to actually make it work. I think it does work with us but it can provide a heap of conflict if you've got people that can come out with crazy new ideas, and that does happen. You see with so many farms where the son goes away and goes to uni and comes home with all these great ideas about how we're going to change the farm and change the world and the old man won't do it and he probably knows better. And somewhere along the way you are going to have to find a balance between those two.*

Overall, intergenerational farming was perceived as positive if there were clear roles, common goals, equality in decision making, enough land to accommodate all families, good existing relationships, no pressure on the next generation, open and honest communication, and a good succession plan. Other motivations for entering into an intergenerational farming business included adding to the legacy of the farm, if the farm was inherited with no debt or the older generation provided financial assistance. Further, participants reported that if the older generation relinquished control and families lived separately but ran the farm as one business then this would contribute to a positive intergenerational working environment (Appendix B). Men more frequently reported believing that intergenerational farming had great financial benefits

(inheritance or financial assistance from the older generation) whilst women more often emphasised the importance of good existing relationships between family members. Overall, for a successful intergenerational farming business, it was emphasised that members needed to have clear roles and open and honest communication.

5.3.2.2. Example of positive aspects of intergenerational farming.

(Interview 2) M: *it's easier for sure. Lots of people I work for out west, most of them have received their farm through generations, so they don't have to pay a mortgage so they can make money, they don't have that overhead.*

(Interview 18) F: *I know when she was having one of her pre-wedding get togethers, and it was what advise could you give [daughter-in-law] in getting married, and it was "if you've got a problem, come to me yourself, don't do it through your husband!". And she's worked a bit, and we've had to work a bit too, but we've got good communication. I hope I don't say too many things to upset her and I hope she doesn't upset me too often, but we are there to help...*

5.3.3 Stress

Major stressors identified included age, cost-profit margin, farm sustainability, financial income, future of the industry, government or other organisations impractical or restrictive regulations, increase price of inputs, market issues, negative and unfair perceptions/targeting by the public and government, feeling undervalued as an industry or commodity, and weather and climate concerns (Appendix B). The predominant major stressors for both men and women related to financial issues (cash flow, debt repayments, bills, earnings, effects on progress, retirement security); government or organisation regulations, control, and policies; and cost of inputs (Table 3). The majority of stressors for men centred on concerns around provision and sustainability,

all connected to the success of a farm business. Women, though they identified similar major stressors as the men, differed in relation to how they perceived the impact of these stressors. For example, though men found cost of inputs a stressor as it affected farm sustainability, women would identify this as a stressor because the cost of inputs would have a negative impact on family life and well-being.

Table 3. *Identified variables for stressors and coping.*

Variable	Men	Women
Major Stressors	Financial concerns Government control Cost of inputs Focus on provision and sustainability	Financial concerns Government control Cost of inputs Focus on farm stressors that affect family well-being
Daily Stressors	Time limitations Workload Things going wrong Family satisfaction	Time limitations Family demands and management
Increasers of Stress	Things going wrong Workload	Family welfare Things going wrong
Individual Coping	Acceptance Walk away (disengage mentally, physically) Venting Alcohol/drugs	Acceptance Take a break Resist stress Venting
Family Coping	Talk to partner Take a break Work-life balance	Talk to partner Take a break Work-life balance Socialising

5.3.3.1. Example of major stressors for farming families.

(Interview 6) M: *if we have a reasonable season we'll do ok crop wise, we don't know how we'll be money wise, but crop wise and we'll – we should be able to pay our way.*

F: *but that still doesn't give us much to live on. We can't live on what's left after we've paid all our fertiliser, and harvesting, all our repairs and what have you,*

fuel for the farm, we have to have an allocated pension to supplement our income from the farm. We just....you ask people to work 7 days a week from daylight to dark all year and come out with 18 thousand [AUD] dollars in their pocket. That's...centrelink¹, that's not even a centrelink payment.

M: and you can't go to centrelink because you've got too much...

F: you've got too many assets.

Daily stressors or hassles identified by farming families included managing family needs, maintaining family satisfaction, financial income, increase cost of inputs, risk (i.e. health and injury) involved with farm work, when things go wrong (farm inconveniences), time limitations, and workload (Appendix B). Participants most commonly identified time limitations as a daily stressor or hassle. Men additionally found workload, things going wrong and concerns over family satisfaction as a daily stressor/hassle, whilst women found attending to needs and demands of children, partner, and other family members as their daily hassle. Variables that were reported to be likely to increase the stress levels of farming family members included bad weather or climate conditions, financial income, crop or animal welfare, workload, family welfare, and things going wrong (farm inconveniences) (Appendix B). Women most frequently reported that concern over family welfare was likely to increase their stress levels, whereas men most commonly reported things going wrong (e.g. a mechanical breakdown) as the factor most likely to increase their stress levels (Table 3).

5.3.3.2. Example of family needs and satisfaction as a daily stressor.

(Interview 29) *F: no sleep is probably the biggest, what to feed everybody that is healthy that they will eat, getting enough time to ride my horse, and probably that*

¹ Centrelink is the Australian Government Welfare System

translates to getting enough time to get a clear head to face, for myself...but every day I am concerned about whether there will be a blow up between [husband] and his parents about not getting things done or doing things differently [on the farm], and probably the other thing is trying to maintain good contact with my family...so each day I try to ring one of them and keep in contact.

M: every concern is just getting...the stuff that I want to get done in the day, and keep the family happy and yourself involved in what they are doing and whatever. I 'spose my everyday thing is my frustration in quite often not getting done what I expected to get done in a day or in a certain time period, that's frustration. I'll quite often come in for lunch or smoko and you quite often will not get back outside when you thought or hoped you would, you'll stay and play with the kids and whatever.

5.3.3.3. Example of concerns over family welfare as an increaser of stress.

(Interview 17) F: I mean my mother is out of the equation now, but up until she passed away it was pretty full on with her and having the two of them together was really stressful... She got cancer...and that was pretty stressful the last couple of months with my mother ...

5.3.3.4. Example of when things go wrong as an increaser of stress.

(Interview 12) M: now I just sort of – once upon of time it did – it was worse when we were lasering because you would promise somebody you'd be there on Thursday and then something would happen, the tractor would break down, and then you got to rearrange that and the old dreaded phone call and they're jumping up and down and that used to stress you out a lot.

5.3.4 Coping

Many respondents recognised the negative effect that stress had on well-being, for example when stressed respondents reported sleep disturbances, feeling fatigued, and the threat of increased relationship conflict. In general respondents thought they coped well with stress however there was often one partner who was perceived to be far better at coping than the other. Those who were perceived not to be coping most commonly reported that this was due to sleep disturbances or angry mood swings. Methods or characteristics of coping identified by farming families included accepting level of perceived control over stressors, alcohol/drugs/food, escaping the situation (walk away), venting anger, going with the flow, perseverance, putting things in perspective, remembering previous experiences, prioritising, resisting the stress, taking the opportunity to relax (spending time alone, socially, outdoors, or family break), and talking to someone (Appendix B). The most common method of coping identified by both men and women was acceptance which can be operationalised as accepting the level of control over a situation and accepting what one can and cannot do. Women identified taking the opportunity to have a break as an important coping method. The next most frequently reported methods or behaviours were resisting feeling stressed and venting stress (through anger and yelling). Unlike men, women also identified talking to their partner as a useful coping strategy. Men found escapism (behavioural disengagement), venting stress, and using alcohol just as useful as acceptance for coping (Table 3). When addressing stressors and challenges as a family, strategies used included escaping the situation, spending time together as a family, socialising, taking the opportunity to have a break, talking to partner, or maintaining work-family balance. Specifically, men and women found talking to their partners an important method of coping and allowing for more family time (Table 3).

5.3.4.1. Example of perception of capability for coping.

(Interview 1) M: *well I reckon I cope well with it, I don't think I go through stress but obviously it is. I go through it, I tackle it and eventually wears off.*

F: *well I think it affects your sleep, like you don't sleep as well.*

(Interview 14) F: *I reckon we can handle it.....we make sure we get a good sleep. If everything is getting on top of you, you just make sure you get a good sleep – have a rum and a good sleep and you're right.*

M: *you just can't let too much pressure build up I think, like I'm not a psychiatrist but some people can handle it and some people can't.*

5.3.4.2. Example of acceptance as a coping strategy.

(Interview 19) F: *and with farming there is a lot of things where you can't do anything to change it to make it better.*

M: *you can only do so much – you can have all your fertiliser on, as much stored moisture as you can, you can plant it and have the right population then there is not much you can do. If it rains it rains, if it hails it hail, if it turns dry it turns dry, you've just got to suffer it, and you've just got to get used to doing that because there is not much you can do sometimes.*

5.3.4.3. Example of taking the opportunity to have a break as a coping strategy.

(Interview 22) F: *When I finish dinner, I finish watching TV usually at 8.30..., and then I will go into my time to unwind and ... I used to get [husband] into bed, because he goes to bed early, and then it would be time for me and I would just do what I want to do for an hour so I still don't get to bed until 11 o'clock at night, and I needed that time just for an hour for myself.*

5.3.4.4. Example of talking to partners as an important family coping method.

(Interview 7) M: *oh well sometimes she'll come home cranky with me*

F: *yeah but I'll say what's getting me down*

M: *we'll sit down and have a cup of tea and everything is all right*

F: *that's when I get a bit tired from some of these problems*

M: *you just have to think of somebody whose problems are worse off*

F: *and then he says to me the other day, I read somewhere that we have to have a laugh and a joke every day, so we have to have a joke every day.*

5.3.5 Lifestyle and Values

Positive elements of the farming lifestyle included having control over duties, enjoyment of work, flexibility, freedom, the good environment for children, providing opportunity to learn skills, open spaces, being your own boss, privacy, reaping rewards of hard work, the relaxed and easy-going atmosphere, appealing surrounding environment, and variability in work tasks (Appendix B). Positive elements of the farming lifestyle such as the surroundings, open spaces, being their own boss, and the freedom the job allowed were reported equally by men and women. Negative elements of the lifestyle of farming included access and reliability of services, continuous work demand, emotional strain associated with crop failure or animal death, farm always taking priority, income issues, lack of social opportunities, loss or lack of community connectedness, and the weather and climate (Appendix B). Men and women did differ in the identification of negative elements of a farming lifestyle, with women identifying more negative issues than men, such as income, lack of social opportunities, and the farm always taking priority (Table 4).

Table 4. *Identified variables for lifestyle elements and farming family qualities.*

Variable	Men	Women
Positive Lifestyle Elements	Surroundings	Open spaces
	Own boss	Own boss
	Open spaces	Freedom
	Freedom	Learn lots of skills (children)
Negative Lifestyle Elements	Income	Income
	Weather/climate (less identified)	Lack of social opportunities
		Farm priority
Values	Family	Family
	Hard working	Honesty
	Work ethic	Enjoy life / be happy
	Honesty	Health
Commitment to Farming	Enjoy work	Lifestyle
	Lifestyle	Here with partner
	Pride in product	Encourage children to leave
Identification with Farming	Enjoy work	Pride in product
	Who I am	Who I am
	Pride in product	
Successful Farmer	Manage for future	Adaptable
	Respect land/environment	Respect land/environment

Again issues identified by women focused on relationships and family well-being whereas negative aspects of lifestyle identified by men (income and weather/climate conditions) tended to be external to the family. Farming family values included being able to accept circumstances, open communication with each other, being considerate, having education or life experience, enjoying life and happiness, being fair, family, financial security, good relationships, being hard working, health, honesty, integrity, having pride in land and product, respect, taking responsibility, and having a good work ethic (Appendix B). Overwhelmingly, farming families identified family as the most valued and important aspect of their lives. Following on from that, women found honesty, enjoying life, health, and communication as the most important values. Men instead focused on values of hard working and having a good work ethic (Table 4).

5.3.5.1. Example of open spaces as a positive element of lifestyle.

(Interview 23) F: *oh the positive side is you get up every morning and nobody can see you and you can't see them. I know [with] my parents, there is about three feet between their house and the house next door. Yeah no thank you. Privacy and space, can do what you like when you like, you can go for a walk and not see a living soul. Take the dog for a walk and it's not attacking somebody else' dog or cat. Yeah I really like that, it's good.*

5.3.5.2. Example of being your own boss as a positive element of lifestyle.

(Interview 10) M: *Well it is that you are self-employed and you can choose what is going to happen this week or next week and therefore you pay the price of your mistakes or you reap the benefits from your good decisions. You know it's better than the poor bloke that turns up day to day, doing the one job, punching the one hole and something. It must be terribly hard to stay sane with that sort of thing*

5.3.5.3. Example of income and debt as a negative element of lifestyle.

(Interview 4) M: *oh well we have nothing positive to income, the fluctuation of the sugar market, wild fluctuating at times. The uncertainty of income. If you sort of own your farm and you don't have a debt you can survive. But if you've got a debt, you really get stressed out. Especially if you're counting on the sugar prices to be 26 / 28 dollars a tonne, and then suddenly the guts drop out and its 22 dollars a tonne. You know that's what really gets you going. We can survive alright, but you don't have the luxury to...you can't replace any of your machinery and this sort of stuff*

5.3.5.4. Example of social opportunities as negative elements of lifestyle.

(Interview 9) F: *after four weeks of only seeing him when it rained and we couldn't go anywhere! But it [the lack of social opportunities] does [is difficult] for me yeah. And even to go to [town] for a visit there is nothing to do there. But even if I went in there for anything it would just be to get groceries and nothing else and come straight home because there is nothing in there, no shop to look through, nothing.*

5.3.5.5. Example of family as a value for farming families.

(Interview 30) F: *family is very, very important to us, and even though – well we got two boys, one is in Melbourne and other is in Canberra, but you know we talk to them regularly and nobody fights, I'd say we are a very close family, nobody fights and yells or – we enjoy being together.*

5.3.5.6. Example of work ethics as a value of farming families.

(Interview 16) M: *And that is why I couldn't be someone who raped country so I could think I am making extra dollars because it's not on. Or I couldn't abuse drought subsidies or something because it's not right. And I have to sit here and see colleagues in the industry getting drought subsidies to feed their racing horses so that they don't have to work...*

(Interview 4) F: *the eldest works at Kentucky fry ... and the manager approached us the other day about the younger daughter...because the eldest only has 12months of school left,...because the eldest is always early, takes other peoples places who don't show up, she stays back, good work ethic. They're very happy with her, that's why they want the other one, she doesn't argue with them.*

5.3.6 Commitment and Identification with Farming

When asked why they remained in the industry, participant responses included the autonomy of farming, encouraging children to have options outside of the farm, enjoyment of the challenge, enjoyment of the work, for the benefits for children in relation to skill building, remaining to stay with partner, positive lifestyle elements, pride in product outcomes, pride and value of ownership, being too old to change, and the fact that farming was part of their identity (Who I Am) (Appendix B). Men and women most frequently identified positive lifestyle elements as a strong motivator to remain within the industry. Men also frequently indicated the enjoyment they experienced in their work and the pride of watching a product grow and succeed as a strong motivator. Women tended overall to give more negative responses, reporting that they remained in farming to be with their partner and that they also did not encourage their children to enter into the industry (Table 4). When asked what farming meant to them, participant responses included enjoying work, pride in product, and farming being a part of their identity (Who I Am) (Appendix B). Respondents indicated that a successful farmer was one who accepted limitations (kept it simple), was adaptable, committed, had prior education or experience, enjoyed the work, behaved ethically, hard working, managed for the future, multi-skilled, persevered, progressive, respected environment, land and wildlife, and understood their product (Appendix B). Men typically reported that a successful farmer was one who managed for the future (product and finances) and respected the land and environment. Women more commonly identified adaptability as the key to a successful farmer (Table 4).

5.3.6.1. Example of commitment and identification with farming.

(Interview 20) M: *there is no other reason that any other farmer is on the farm other than the fact that they love primary production, that they are growing*

things, that they are producing things. But it's the lifestyle, you are out in the country every day, you are out in the open air, you are not imposed upon by other people, you are your own boss, all that sort of thing of running your own business and owning your own land.

(Interview 12) F: *I think he's, it's in his blood, he likes to do the work.*

M: *I enjoy it, I don't know why, I hate it and I enjoy it.*

F: *I always question why you put so much into [something] that doesn't make money, that just – like I think there is a mental problem. But that's his choice, that is what he wants to do so we just go along.*

(Interview 1) F: *my main priority was for them to be educated and find a life away from the farm. And if they wanted to come back to the farm well they could do that as long as they had qualifications so they could have external work if they wanted it.....not to be trapped.*

5.3.6.2. Example of men's perspective of a successful farmer.

(Interview 21) M: *an emphasis on sustainable practices. ...the environment is being very cruel at the moment and it has been for the last ten years and we have to respect that environment. It's unified with what you're doing.*

(Interview 4) M: *I don't want to mine the land, I want to farm the land so that it is still productive for future generations. This is what a lot of people think that farmer's do is to rip as much out of the land as they can but...you're going to get less and less and less out of the land if you don't handle it properly.*

(Interview 24) M: *determination, um yeah determination and good business sense. They really need to be looking at strategically - where are they driving their business not tomorrow, not six months, but where are they driving it in the next five years.... And I don't think it can be - my dad did it this way so I'm going to do*

it this way, it's just not in a sustainable environment, you just can't operate that way. You need to be very up to date in terms of the latest technology and you need to be far more aware in terms of your markets, not only in terms of domestically but internationally, and these days as a farmer is far more perhaps than my father or his father ever needed to be.

5.3.6.3. Example of women's perspective of a successful farmer.

(Interview 5) F: And then I find that some other farmers who don't have that experience will find it very hard. And that's one of the best thing that has happened to farmers, is having to work out so that they can learn to cope with different situations and different things – rather than just sitting at home and they don't understand. They stay as they were. Life changes around them but then they won't change and they can't cope with it.

(Interview 23) F: oh yeah definitely, of some sort, anything, anything at all, whether it be technology, business, mechanics, they need it all, they need the lot. If they are going to do it all, they need a degree – not a degree, a diploma in everything. Mechanical engineering diploma, high school engineering diploma, they should have it no question about it, a taste of everything, they need truck licences, end loader licences, grader licences, excavator licences, the list is endless, they should have it.

5.3.7 Outsider Perspective

Farming families perceived the public and government to hold negative attitudes towards the farming sector. Reported themes included farmers being environmental vandals, a general lack of understanding for farming life, a lack of recognition of contribution, an overall negative view, the public generally having no respect for

farmers, the perception that farmers were uneducated, that farmers were wealthy, and that farmers were whingers (Appendix B). Participants frequently stated that the government, public, and media did not understand farming, what farming involved, and what farming families did every day (Table 4). Men perceived that there is generally a negative view of farming, a false perception of the ‘whinging farmer’, and an under recognition of the contribution of farmers to the community and economy. Women also noted this lack of recognition but also reported the perception that farming families were falsely stereotyped as wealthy.

5.3.7.1. Example of perceived attitudes of the public and government.

(Interview 27) F: *I think generally, the people who live in the country respect farmers but think their crazy because they are all farmers. City folk think that farmers are whingers and I think they also think they have a romanticised idea of what farming is, they really don't have a concept of what sort of effort, consistent effort that it takes to keep on going if you are on a farm, and the things you've got to get skilled at.*

(Interview 7) F: *I don't think people care about farmers, I really don't think people care about farmers. I think people don't think about where their food comes from, I don't think they even think that there is somebody out there picking beans so that they can buy it from the supermarket...*

M: *and they mustn't look in the supermarket where it comes from because it's getting sold. If the supermarket is selling [foreign] food it means people are buying. If people jacked up and not bought it, then they wouldn't have it on the shelf*

(Interview 25) M: *I don't think that people in the city, even the people in the agricultural departments, have any idea of how [what it takes to run a farm] – they sort of have lost touch with everything.*

5.3.8 Satisfaction with Life and Roles

Most participants reported satisfaction with their life and roles. Although, in regards to life satisfaction, some participants identified past circumstances in their life that they would have liked to have changed. Generally however, they reported that they accepted that it had occurred and therefore it did not impact on their satisfaction with life. Those satisfied with roles and responsibilities still identified small changes that could be made, however these were noted as not affecting their level of satisfaction. Those who were dissatisfied with their life most frequently identified issues surrounding their financial situation. Men usually identified issues with the type of product they were producing but perceiving that their decision to change were restricted. Women who were dissatisfied more frequently identified issues pertaining to relationship quality, specifically in relation to the impact that the farming lifestyle has had on their relationships.

5.3.8.1. Example of Satisfaction with Life and Roles.

(Interview 18) F: *well what is the point of regret? There isn't much is there – I've been lucky compared to so many people. Yeah there are so many times when you think well if we didn't do farming we would have led a different life but it's not a bad life, it's a lot of work, but no I have no major regrets.*

(Interview 10) F: *no I'm very satisfied with my life, the stress side of it, when he gets stressed it's not very nice, the marriage side of it. But that doesn't happen very often, and usually everything gets back to normal.*

(Interview 27) M: *farmer, due to my lack of knowledge, 90% of the time I'm pretty happy with my results, 10% of the time improvement is needed. My role as a father, most of the time, well my daughter goes to university so I don't see her much, and my son lives here, most of the time I am happy with that but I'm just a bit sad that I don't see my daughter very much. As F's partner I am 100% happy.*

5.3.8.2. Example of Dissatisfaction with Life and Roles.

(Interview 1) M: *I could possibly go as far as saying my ambition is to not be a cane farmer anymore, that's one of the ways I could summarise it, that's the way I feel about it, that's as far as sugar farming goes but if there was something else I could do with the land that might change my mind about it. If there was an income that was associated which matched the effort that was put into it then yes my view would change.*

(Interview 13) F: *um no sometimes I wish I went to uni and did something, and got a degree in something. I think sometimes I feel you just get stuck in a rut and you just feel like you are always being of service to everyone and not doing anything for yourself. And it's like because we've got relations that have got degrees in things, it sort of brings you down a bit. It does, when you are with them it brings you down a bit, and you haven't got nothing and sometimes that does get me a little bit down because they sort of like rub it into you and say oh you are intelligent – you know the way they rub it into you it puts you down and makes me think I really should have done something.*

(Interviews 22) F: *no I think it's more – he complains more that we are drifting apart because we each have our own jobs that have to be attended to, and we got to keep the ship afloat that way....anyway now he's getting too tired and old to do it so he does go out at night anyway. I am trying to frame it so that it's the last*

twenty years rather of the last years that we have been having problems because of our age, you know....we didn't find a community in which we lived here to find pleasurable....

5.4 Results: Item Generation

The major categories that comments/items clustered towards were the predefined categories of:

- Work and Home Roles
- Interference to Roles
- Assistance with Roles
- Intergenerational Farming
- Life Satisfaction
- Life Dissatisfaction
- Major Stressors
- Daily Stressors
- Increases of Stressors
- Individual Coping Strategies
- Family Coping Strategies
- Positive Lifestyle Elements
- Negative Lifestyle Elements

Additional categories generated were:

- Identification with Farming
- Commitment to Farming

- Successful Farmer
- Outsider Perspective
- Values
- Partner Perception
- Farming History

In total 664 items were generated, with some items relating to more than one category. Items within subcategories were then compared with existing scales in order to determine if any items from these existing scales had not been identified by the interview sample as a part of the Content Analysis approach (Downe-Wamboldt, 1992). Thus, the Interference to Roles and Assistance to Roles items were compared to the Work-Family Conflict Scales (Carlson et al., 2000). Items from Major Stressors, Daily Stressors, and Increases of Stressors were compared with items from the Farm Stress Survey (Eberhardt & Pooyan, 1990). Finally items within the Individual Coping Strategies and Family Coping Strategies subcategories were compared with items from the Brief COPE inventory (Carver, 1997). Items that were added to the relevant subcategories were all 18 items of the Work-Family Conflict Scales (Carlson et al., 2000) to the Interference to Roles subcategory. Two items (noise level around machinery, too much to do in too little time) from the Farm Stress Survey (Eberhardt & Pooyan, 1990) were added to the Major Stressors subcategory. Three items (I've been concentrating my efforts on doing something about the situation I'm in; I've been saying to myself "this isn't real."; I've been giving up trying to deal with it) from the Brief COPE Inventory (Carver, 1997) were added to the Individual Coping Strategies Category.

Subcategories which were thought to be most useful in progressing the development of a farming family work and home role conflict scale were items from the categories of Work (15 items) and Home (9 items) Roles, Interference to Roles (54 items), Assistance with Roles (33 items), and Positive (26 items) and Negative (20 items) Aspects of Intergenerational Farming. Items thought most appropriate for the development of a farming family stressor scale were items from Major Stressors (80 items), Daily Stressors (53 items), and Increases of Stress (69 items) categories. Items from the Individual Coping Strategies (63 items) and Family Coping Strategies (39 items) categories were considered appropriate for development of a farming family coping scale. Finally, an additional scale to assess buffering characteristics of farming families would be developed through items from the Commitment (34 items) and Identification (24 items) with Farming categories. These subcategories were then amalgamated into two sets of items, the Farming Family Work-Home Interface questionnaire package (215 items) and the Farming Family Stressor-Coping questionnaire package (304 items). The Farming Family Work-Home Interface questionnaire package included sets of potential items that addressed Work and Home Roles, Interference to Roles, Assistance with Roles, Positive and Negative Aspects of Intergenerational Farming, Identification with Farming, and Commitment to Farming. The Farming Family Stressor-Coping questionnaire package included sets of potential items that addressed of Major Stressors, Daily Stressors, Increases of Stressors, Individual Coping Strategies and Family Coping Strategies.

5.5 Conclusion

The current chapter reported an interview process with members of farming families (N=53) from across Queensland and New South Wales (Australia). The data

from the interviews suggested that conflict occurred both between and within domains thus supporting both Spillover and Segmentation theory. Men commonly reported interference from roles within the home (i.e. spending time with family) as well as from other farm duties while women were most likely to report interference from the demands of the farm. Furthermore, easing of workload for both men and women was identified as a means of assisting with role completion. This can be considered to align with the time and strain sources of conflict identified by Carlson et al. (2000). The findings did not support past literature regarding work-family conflict. Such literature has indicated that the occurrence of conflict has a significant direct and indirect negative impact on well-being (Van Hooff et al., 2006; Major et al., 2002). However men and women in the current study did not always identify conflicts as having negative impacts. For example, though men identified spending time with children as an interference to farm role completion, this was perceived as a positive interference; and though women identified the farm as a source of interference, this was also noted as acceptable as it was a necessary interruption and a part of their lives. Therefore, the findings in the current chapter supported the hypothesis that farming families have a unique work-home interface and that this interface is different to those reported within the literature in different contexts.

Some interview results were consistent with previous findings in the literature (e.g. Eberhardt & Pooyan, 1990). Respondents identified financial issues (cash flow, debt repayments, bills, earnings, effects on progress, retirement security), government or organisation regulations, control, and policies, and cost of inputs as their main concerns, with time limitations and workload more usually identified as a daily stressor. Overall though, men reported focus on stressors that affected provision and sustainability more often than women. Women tended to more frequently report

focussing on stressors that impacted upon family well-being. Phase 1 of the process also identified factors that may contribute to the resilience of farming families, such as the degree of commitment and identification that farming family members had with the farm. The finding suggests that those with high commitment and identification tended to be more resilient and buffer stressors more effectively than those who were not as committed. A major identified theme related to mental health in this population was one of perceived abandonment by an apparently uncaring public and government. This perception may have links to the pathways of depression through collective feelings of loneliness and isolation from the general population. The perceived abandonment may also be enhanced by the lack of social support and networks that are relevant for many farming families due to the distance from urban centres.

Respondents as a group also appeared to be content with most areas of their life, reporting satisfaction with how they conducted their roles and the direction their life had taken. When dissatisfaction was expressed by a respondent, it was not an all encompassing dissatisfaction. Rather, it was dissatisfaction with specific aspects of life such as feelings of wanting to have progressed further in plans or contemplating how life could have been different. Individuals of an older age group and nearing retirement were more dissatisfied than others. This was possibly due to added stressors, such as succession and financial issues, which arise when the farmer nears retirement age. Specifically, concerns of succession may impact upon life satisfaction if the next generation is not going to take up the family business and as a result the individual would question why they had worked so hard throughout their life to sustain the business. Financial concerns that affect life satisfaction at retirement may include the limited financial resources available for living as a result of decreased land value at

point of sale, high debt levels, or decreased profit due to lowered sale price for succession of farm to the next generation.

Items that clustered around themes of Commitment to Farming and Identification with Farming were included in the final total item pool as the themes were important to describing and defining buffering characteristics. These themes reflected buffering characteristics as interview data suggested that how the individual identified with farming and the extent to which they were committed to farming may be related to coping and life and work satisfaction. Commitment and Identification with Farming subscales were included in the Farming Family Work-Home Interface Scale in order to reduce participant burden due to the large number of items in the Farming Family Stressor-Coping Scale. In total 519 items were produced for the next stage of analysis, a greater number of items than expected. This may have been a result of the extensive number of variables identified via interview as affecting a farming family. Such variables include farm location (reflecting to weather and landscape variables), state location (in regards to the government policies employed), the type of business structure (which varies greatly), and the type of produce. As a result, though saturation was achieved in the interview process as similar core themes were presented, there were also additional and less commonly identified variables generated across interviews. These items were thought to be important to include due to the interview sample predominantly comprising of sugar cane and cattle producers from Queensland and New South Wales. As subsequent stages of scale development would include samples of a wider farming family demographic, this was thought the most appropriate avenue of determining items of relevance and importance to the farming family population of Australia.

These findings add validity to the aim of developing and adapting scales specific for farming families of Australia. The data indicated that this sample reported qualitatively different perceptions to past research samples when discussing role conflict, the nature of family specific stressors, the types of farming specific coping styles, and factors that support and build resilience in farming families. Additionally, the incorporation of items from established scales into the generated items allowed for the gaps that were identified within the interview content to be filled (Downe-Wamboldt, 1992). Chapter 6 will outline the next stage of scale development, which is concerned with reducing the item lists for validation of the scales (Item Reduction). Furthermore, the following generated hypotheses were additional drivers to the research:

7. Lowered connection to farm (lowered commitment) will have a negative impact on well-being and life satisfaction.

This hypothesis was driven by findings from the interview content which suggested that high levels of commitment to farming and a close identity to farming were important buffering characteristics against lifestyle and work challenges. Therefore, individuals with high levels of these characteristics were hypothesised to be more likely to report better well-being in comparison to those who do not possess such characteristics. This hypothesis was supported by findings in the literature which indicate that high career involvement may help explain why, despite everything, farmers continue to farm.

8. Low commitment or identity to farming will moderate the relationship between negative role interference and well-being, resulting in poorer outcomes of well-being in comparison to those who have high commitment or identity with farming.

This hypothesis was related to the previous one. The hypothesis emphasised the protective role that these characteristics have against negative role interference and stressors.

Chapter 6: Phase 2 – Gaining Perspective on Life on the Farm

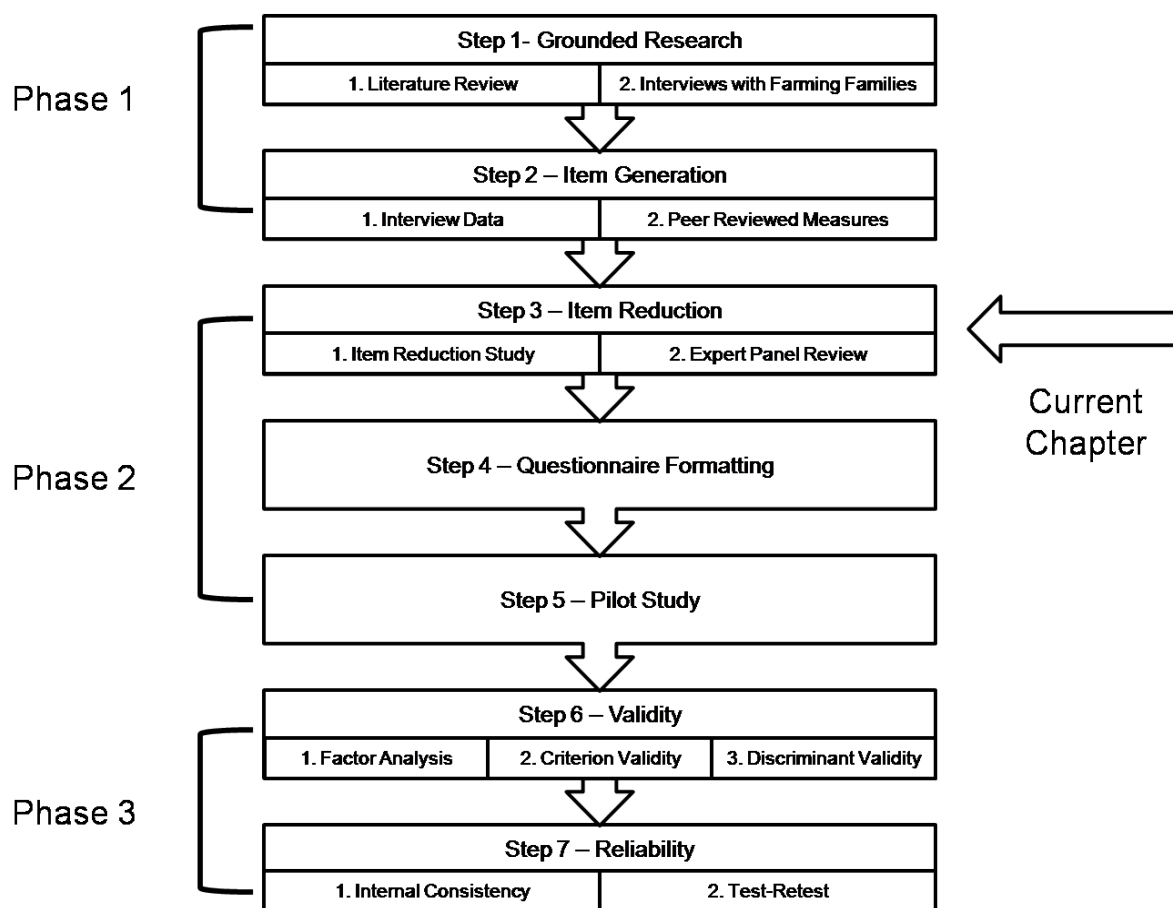


Figure 10. Overview of the process of the development of the Farming Family scales.

6.1 Context of Study

The literature review demonstrated that there were few psychometrically sound scales developed to assess the constructs of stress, coping, and the work-home interface for farming families. As a result, the current research aimed to generate farming family specific scales. Findings from the previous chapter reinforced the need to adapt current scales and develop new scales that assess these constructs as differences were found in the content in comparison between the developing farming family scales and the existing scales. A need to develop farming family specific stressor scales were driven by

the limitations of current scales. For instance, the Farm Stress Survey, developed by Eberhardt and Pooyan (1990) and originating in the United States, is one scale that has been employed in many countries. However, some items included in the Farm Stress Survey were not relevant for Australian farmers and, conversely, findings from Chapter 5 identified items of importance to Australian farmers which were not included in the Farm Stress Survey. Such issues included climate change, advancements in technology, family specific stressors, and the changing of the work environment for the average farmer (i.e. difficulties surrounding profitability which requires farmers to expand or leave the industry). Additionally, due to the differences in values and characteristics of farming communities to the general population which discourage forms of emotion-focused coping (particularly for men), the lifestyle and location that limits method of instrumental coping, and the connection to farm and land that acts as a source for resilience, the farming family's coping methods were also investigated. Specifically, it was thought more appropriate to assess this population for coping resources and characteristics of resilience and perseverance rather than other methods of coping. This suggestion was supported through the additional identification of farming commitment and identification as buffers for stress and conflict within interview content. Finally, the development of a scale for role conflict that was contextually-specific to the farming population was considered necessary as it appeared that the farming family work-home interface could not be conceptualised within a two-dimensional framework of work and home due to the multiple external influences on this population. As the majority of established scales consider inter-role conflict as conflict between the work and home domains, the scales were therefore unlikely to gauge a comprehensive understanding of role conflict and interference within the farming family context.

As an outcome of Chapter 5, analysis of the interview content generated 519 items distributed across 13 possible scales. These draft scales included Work (15 items) and Home (9 items) Roles, Interference to Roles (54 items), Assistance with Roles (33 items), Positive (26 items) and Negative (20 items) Aspects of Intergenerational Farming, Identification with Farming (24 items), Commitment to Farming (34 items), Major Stressors (80 items), Daily Stressors (53 items), Increases of Stressors (69 items), Individual Coping Strategies (63 items) and Family Coping Strategies (39 items). Following on from Chapter 5, the current chapter seeks to reduce the item pool generated from the analysis of the interview content. The current chapter incorporated Step 3 of item development, the item reduction process. This process was undertaken initially by conducting an item reduction study with members of farming families who assessed the relevancy and importance of items (Streiner & Norman, 1989). This form of item reduction allowed the target population to screen the item pool before other reduction processes to ensure the items initially extracted from the interview content were consistent and could be generalised to the population of interest. This was followed by a more qualitatively focused method of item reduction via review by an expert panel. The expert review panel's purpose was to assess items based on relevance for farming families in *general*. The use of an expert panel was an appropriate method to assist in item reduction as it added to the content validity and construction of the scale (Davis, 1992). Therefore, through the combination of these two methods of item reduction, the construct validity and generalisability of the items were enhanced. The proceeding chapter first presents the findings of the item reduction study followed by a justification of the analysis procedure and item removal. The findings from the expert review panel is then reported and also be followed by a justification of analysis

technique and item removal before concluding the chapter with a general discussion of study outcomes.

6.2: Stage 2 – Item Reduction Study

6.2.1 Method.

6.2.1.1 Participants.

A total of 84 farming family members participated in the completion of both questionnaire packages (the Farming Family Work-Home Interface Scale (FFWHI) and the Farming Family Stressor-Coping Scale (FFSC). There were 36 (Men=4, Women=32) completed responses for the Stressors scale, 28 (Men=2, Women=26) completed responses for the Coping scales (overlap of participants from Stressor scale participation), and 24 (Men=5, Women=19) completed responses for the Work-Home Interface scales. Participants were recruited from across Australia and also across different types of farming (Table 5 and 6), with the most common product type identified as beef (54%) and just over half of the sample were from Queensland (51%). Table 5 and 6 presents the demographic information, displaying the number of responses for each questionnaire and the overall percentage of the demographic variable. Recruitment methods included advertising in leading industry magazines and newsletters, attendance at field days, media coverage, and advertising through a mail drop via a list of addresses purchased from a mailing list company.

Table 5. Demographic information of the participants from the Item Reduction Study.

Variable		N of FFSC	N of FFWHI	Total %
Gender	Men	5	5	15.4
	Women	36	19	84.6
Age Group	18-29	0	2	3.1
	30-45	14	5	29.2
	46-60	19	14	50.8
	61-75	8	3	16.9
	76+	0	0	0
State/Territory	QLD	18	15	50.8
	NSW	10	3	20.0
	VIC	9	4	20.0
	SA	1	0	1.5
	WA	1	2	4.6
	TAS	1	0	1.5
	NT	1	0	1.5
	ACT	0	0	0
Marital Status	Single	2	3	6.2
	In Relationship	0	2	3.1
	De Facto	1	1	3.1
	Married	37	17	83.1
	Divorced	1	1	3.1
Length of Relationship	>18mths	0	1	1.5
	2-5yrs	0	0	0
	5-10yrs	4	2	9.2
	10-20yrs	11	3	21.5
	20yrs+	24	14	58.5
Number of Children	0	5	4	13.9
	1-2	17	8	38.5
	3-4	18	12	46.2
	5+	1	0	1.5
Number of Dependents (at home, financially)	0	17.5	12.5	46.2
	1-2	16	8	36.9
	3-4	6.5	3.5	15.4
	5+	1	0	1.5

Note: FFSC represents the Farming Family Stressor-Coping Questionnaire; FFWHI represents the Farming Family Work-Home Interface Questionnaire

Table 6. *Farming and produce types of the participants from the Item Reduction Study.*

Variable	N of FFSCS	N of FFWHIS	Total %	
Produce Type	Broadacre Crops	13	5	27.7
	Rice	1	0	1.5
	Sugar	2	4	9.2
	Cotton	1	1	3.1
	Wine Grapes and Wine	1	0	1.5
	Horticulture	8	5	20.0
	Wool	4	3	10.8
	Sheep Meat	9	5	21.5
	Beef	22	13	53.9
	Pig Meat	1	0	1.5
	Poultry	0	0	0
	Dairy	4	0	6.2
	Organic	2	1	4.6
	Other	6	3	13.9
Business Structure	Family Business with unpaid family employees	19	14	50.8
	Family Business with paid family employees	8	3	16.9
	Family Business with paid external employees	8	4	18.5
	Intergenerational Business with unpaid family employees	4	0	6.2
	Intergenerational Business with paid family employees	3	0	4.6
	Intergenerational Business with paid external employees	1	3	6.2
	Non-Family Business with paid employees	0	0	0
	Other	2	2	6.2
	Employment Position	Owner	36	18	83.1
Intergenerational Business Manager		3	3	9.2
Family Employee		1	3	6.2
Homemaker		1	2	4.6
Homemaker		6	5	16.9
Primary Family Carer		6	2	12.3
Off-Farm Job		6	6	20.0
Other		7	6	20.0
Other		2	2	6.2
Number of Years Farming	Life	9	9	27.7
	1-5	2	3	7.7
	5-10	4	0	6.2
	10-20	10	2	18.5
	20+	16	10	40.0
Intergenerational Farm Experience	Yes	25	16	63.1
	No	16	8	36.9

6.2.1.2 Materials.

The item reduction study involved the list of items (519 items) generated from the analysis of the interviews, as well as the items adapted from other scales (Carlson et al.'s Work-Family Conflict Scale, [2000]; Eberhardt & Pooyan's Farm Stress Survey, [1990]; Carver's Brief COPE inventory [1989]). Items were grouped into 13 draft subscales which are listed in Table 7 included Major Stressors, Daily Stressors, Increases of Stress, Individual Coping, Family Coping, Work Roles, Home Roles, Assistance with Roles, Interference with Roles, Commitment to Farming, Identification with Farming, Negative Elements of Intergenerational Farming, and Positive Elements of Intergenerational Farming (Appendix C).

Table 7. *Farming family subscales included in the Item Reduction Study.*

Questionnaire	Subscale	N=Items
Farming Family Stressor-Coping Scale	Major Stressors	80
	Daily Stressors	53
Farming Family Work-Home Interface Scale	Increases of Stress	69
	Individual Coping	63
	Family Coping	39
	Work Roles	15
	Home Roles	9
	Assistance with Roles	33
	Interference with Roles	54
	Commitment to Farming	34
	Identification with Farming	24
	Negative Elements of Intergenerational Farming	20
	Positive Elements of Intergenerational Farming	26

Each item was rated on a Likert scale of 0-3 in relation to degree of relevance (0 = 'Does not apply to me at all', 3 = 'Applies to me very much') and importance (0 = Not important at all, 3 = It is very important) to the respondent. The demographic section for this study assessed family size, length of relationship with partner, farming produce type, business structure (e.g. family farm, corporation), number of years involved in farming, geographical area, age, gender, and mental and physical health history

(Appendix C). The survey was available in paper format, electronic format, and via the internet through the Survey Monkey website.

6.2.1.3 Procedure.

Items generated from the interview data were transformed into a list of meaningful and directional statements, framed from an individual's perspective. For example, the stressor of "weather" became "Lack of control associated with the weather is concerning for me". These items were then divided into two major draft scales: the Farming Family Stressor-Coping Scale and the Farming Family Work-Home Interface Scale (Table 7). The division of items into two major scales was an attempt to reduce participant burden due to the size of the item set as participants did not have to complete both questionnaires in order to participate. Participants were instructed to evaluate each item in relation to degree of relevance and importance the item had for them on a 4-point Likert scale. Participants were also provided with the opportunity to include any additional comments at the end of each subscale in relation to content, missing items, and other general comments.

6.2.2 Results.

Feedback from participants indicated that for some items, the wording was considered too negative (e.g. stressor items involved statements of "It is concerning"). As a result a number of items within the draft stressor scales (Major Stressors, Daily Stressors, and Increases of Stress) were altered to more positive wording which meant the items were then reverse scored. The items with their new phrasing are listed in Table 8. Furthermore, feedback also indicated that the survey was too long and some items were repetitive. The stressor items were evaluated in relation to participant feedback, pattern of responses, and perceived participant burden, resulting in the decision to

remove the Increases of Stress scale due to item redundancy. Unique items (items 2-5, 8, 20) were transferred to the Daily Stressors scale, and the Increases of Stress scale removed from the item pool (519 to 456 items).

Table 8. *Rephrased reverse scored items from the Major, Daily, and Increases of Stress Subscales.*

Subscale	Item Number	Rephrased Item
Major Stressors	1.	I am not concerned that the distance I am from town makes it difficult to get parts and supplies.
	2.	I am not concerned that the distance I am from town makes it difficult to get people to come out for work.
	3.	The isolation of the property from help, services, family, and friends, isn't concerning for me.
	12.	It doesn't worry me that my children and family live so far away from me.
	13.	Trying to keep up with family duties and responsibilities is not stressful for me.
	14.	Though sometimes my children can be quite demanding, I do not find this stressful.
	19.	The limited time I have to spend with my family is not concerning.
	20.	Though my family or recreational time is often cut short by farming commitments, this is not a concern of mine.
	21.	I am not concerned about whether or not my partner will retire.
	28.	I am not concerned that I am the last generation on this farm and that my children don't want to or cannot take over the business when I retire.
	29.	Succession planning is not stressful to me.
	30.	I am not concerned about how I am going to pass the farm onto my children and how I am going to divide the asset.
	39.	The amount of paperwork that has to be completed in the farming business is not stressful for me.
	40.	Working with old and unreliable machinery and equipment is not concerning to me.
	41.	I am not concerned about the noise level around machinery.
	48.	Dangerous wildlife, such as snakes, is not concerning for me.
	50.	I am not concerned about the quality of my crop and land.
	52.	I am unconcerned about the old and negative attitudes of traditional conventional farming.
	53.	I am not concerned about the future of the primary industry and what is going to happen to farming.
	57.	I am not concerned about the negative attitude of the Australian public and organisations towards the farming population.
61.	I am not concerned about constructions and building development taking over farming land.	
64.	I am not concerned about water supply and irrigation.	
66.	Lack of control associated with weather is not concerning me.	
68.	The price mark-up in supermarkets does not concern me.	
72.	Repayment of my farm loans is not concerning for me	
74.	I am not concerned about the current financial crisis and economic stability.	
77.	The price of land is not concerning for me.	

Table 8. *Continued...*

Subscale	Item Number	Rephrased Item
Daily Stressors	2.	The distance from shops and services is not a hassle for me.
	7.	I am not concerned daily about my own health.
	9.	I am not worried daily about the welfare of my partner or family working on the farm though there is a high risk of injury as it can be a dangerous job.
	14.	The distance I am from my family is not a daily concern for me.
	16.	It is not a daily concern for me whether or not my family is happy and satisfied.
	18.	Maintaining personal relationships does not worry me on a daily basis.
	23.	I am not worried daily that I have too much work for one person.
	25.	The continuous work demand is not a daily hassle for me.
	29.	I don't find it a daily concern the lack of available workers.
	31.	The older generation's control in the family business is not a daily concern for me.
	35.	I am not concerned daily about our financial income and situation.
	37.	It is not a daily hassle that I have to go to my off-farm job.
	42.	I am not concerned daily with the negative perceptions the public, media, and government have on the farming industry.
	44.	It is not a hassle for me to change my plans daily according to weather conditions.
	49.	It is not a daily hassle for me if things go wrong in the home or with the family.
	53.	I find it's not a hassle to get services (such as mechanics, agronomists, product transport trucks) out to the property.
	Increases of Stress	2.	I don't become increasingly stressed when the community is gossiping or harassing me.
4.		It is not more stressful when I am disorganised.
9.		Though my age prevents me from doing duties, it does not increase my stress levels.
13.		Though my work on the farm involves dangerous duties as I am at risk of being injured, this does not increase my stress levels.
16.		I do not become more stressed when my partner and I are fighting or conflicting.
18.		I do not become more stressed when there is conflict or tension between the others in the family business or intergenerational business.
21.		My stress levels are not increased if I am conflicting with the older generation.
23.		I am not more stressed when I consider the lack of steady financial income.
28.		I do not become more stressed when I consider the market's control over prices.
30.		It does not bother me when the government announces more legislation and rules that will affect our farming practices.
35.		It does not bother me when it is apparent that the government, media, and public do not seem to have any value in the industry or its commodities.
39.		It does not bother me when issues arise from my off-farm job.
42.		I do not become increasingly stressed when I have to travel through towns and cities.
44.		My stress levels are not increased if I have to share equipment and machinery with other farmers as they may not take proper care of the equipment and machinery.
48.	It does not bother me if I have to attend to other peoples' mistakes.	
50.	I do not become more stressed when I am dealing with other people who are inexperienced.	

Table 8. *Continued...*

Subscale	Item Number	Rephrased Item
	53.	Though the unpredictability of my jobs and duties means I can't plan anything with friends or family, this doesn't bother me.
	56.	It doesn't bother me if I don't have enough time to complete my duties and responsibilities.
	59.	Though phone calls interrupt what I am doing, this doesn't bother me.
	62.	My stress levels are not increased when I work with highly technological equipment or machinery though it can be difficult to understand.
	65.	I am not increasingly stressed when I am working with old machinery or equipment though it is unreliable.
	68.	When I have to use chemicals, the potential effect on the environment does not make me more stressed.

Initial analysis of participant responses included an assessment of the endorsement frequency, discrimination between items and face validity of items. This procedure resulted in items that were strong indicators of the quality being assessed being selected for the final item set. Additionally, this procedure helped identify those items which had a greater variability in responses between participants (i.e. all respondents do not respond the same for the item) (Streiner & Norman, 1989). Another analysis technique used to reduce the item set was the mean-frequency product. The analysis technique has been used by multiple researchers as a means of identifying items (Juniper et al., 1993; Kirkley, Griffin; McLintock, & Ng, 1998; Duval et al., 2006). The mean-frequency product (mfp) was calculated by taking the mean value of the degree of Importance of the item and multiplying that value with the highest frequency of the degree of Relevance of the item ($mfp=MI \times FR$). Those items with a mean-frequency product below the 25th percentile were identified for deletion (Table 9).

Table 9. *Floor and ceiling levels of the mean-frequency product for each sub scale.*

		Major Stress	Daily Stress	Individual Cope	Family Cope	Assist Role	Interfere Role	Commit	Identity	(-) Intergen- erational	(+) Intergen- erational
N	Valid	80	59	63	39	33	54	34	24	20	26
	Missing	8	29	25	49	55	34	54	64	68	62
Median		9.57	1.89	10.45	10.00	32.94	.66	12.94	16.08	5.79	7.00
Variance		164.79	110.57	206.19	133.01	393.46	10.50	184.38	130.27	14.81	9.56
Min		.00	.00	.00	.00	1.06	.00	.00	.00	1.14	1.83
Max		55.86	43.04	58.00	46.29	57.17	14.00	42.50	39.00	14.25	15.00
Percentiles	25	5.19	.81	3.36	6.11	10.38	.00	3.76	7.85	3.78	5.00
	50	9.57	1.89	10.45	10.00	32.94	.66	12.94	16.08	5.79	7.00
	75	23.28	11.25	23.81	22.00	47.25	2.24	27.94	25.92	10.81	9.70

a. Multiple modes exist. The smallest value is shown

Table 10. Means and frequencies of Major Stressor.

Corresponding Item	R Mean	R SD	R Frequency	I Mean	I SD	I Frequency	Product (I Mean x R Frequency)
1.	2.55	0.65	24.00	1.73	1.10	11.00	41.46
2.	2.30	0.88	19.00	1.58	1.12	8.00	29.94
3.	2.14	0.98	17.00	1.52	1.09	7.00	25.77
4.	0.92	1.00	4.00	1.35	0.98	4.00	5.38
5.	0.86	0.96	3.00	1.06	0.96	3.00	3.19
6.	0.92	0.77	0.00	1.37	1.03	6.00	0.00
7.	0.69	0.79	0.00	1.27	0.94	3.00	0.00
8.	1.11	0.82	2.00	1.63	1.03	7.00	3.27
9.	1.43	0.85	5.00	1.97	0.84	9.00	9.84
10.	1.11	0.93	4.00	1.47	1.04	6.00	5.87
11.	1.54	0.98	8.00	1.81	0.90	9.00	14.50
12.	2.34	0.91	19.00	2.15	1.10	14.00	40.81
13.	1.63	0.97	5.00	1.33	1.03	3.00	6.67
14.	2.06	1.03	15.00	1.83	1.15	11.00	27.50
15.	1.62	0.89	6.00	1.90	0.76	6.00	11.40
16.	0.69	0.68	0.00	1.37	1.13	6.00	0.00
17.	1.08	0.98	4.00	1.72	1.13	9.00	6.90
18.	1.03	1.08	6.00	1.45	1.18	9.00	8.69
19.	1.92	1.11	14.00	1.37	1.13	7.00	19.13
20.	1.64	1.02	7.00	1.38	0.94	4.00	9.66
21.	2.31	0.88	13.00	2.12	1.01	12.00	27.56
22.	0.37	0.82	2.00	0.88	1.13	4.00	1.76
23.	0.51	0.87	2.00	0.81	0.98	2.00	1.62
24.	0.95	0.93	4.00	1.26	0.98	4.00	5.04
25.	0.55	0.92	3.00	1.16	1.14	5.00	3.48
26.	0.43	0.73	1.00	0.88	0.93	1.00	0.88
27.	1.53	0.90	6.00	1.74	1.02	8.00	10.44
28.	2.49	0.99	27.00	1.88	1.20	11.00	50.76
29.	1.97	1.11	15.00	1.58	1.21	8.00	23.65
30.	2.36	0.83	19.00	1.68	1.14	7.00	31.92
31.	0.18	0.51	0.00	0.50	1.06	3.00	0.00
32.	0.57	0.81	1.00	0.92	1.04	3.00	0.92
33.	0.94	0.84	2.00	1.59	1.15	9.00	3.19
34.	1.23	0.97	3.00	1.71	1.05	8.00	5.14
35.	0.94	1.11	5.00	1.59	1.25	10.00	7.96
36.	1.32	0.94	5.00	1.83	1.04	10.00	9.14
37.	1.38	1.04	7.00	1.75	1.08	9.00	12.25
38.	1.09	1.00	4.00	1.64	1.13	8.00	6.57

Table 10. *continued...*

Corresponding Item	R Mean	R SD	R Frequency	I Mean	I SD	I Frequency	Product (I Mean x R Frequency)
39.	1.43	0.98	5.00	1.17	1.05	4.00	5.83
40.	2.17	0.85	14.00	1.71	1.08	8.00	24.00
41.	2.31	0.63	14.00	1.78	1.09	8.00	24.89
42.	1.46	0.85	5.00	1.71	0.85	6.00	8.57
43.	1.23	1.06	7.00	1.93	1.13	13.00	13.52
44.	1.24	0.96	5.00	1.90	1.18	13.00	9.48
45.	1.26	1.05	6.00	1.90	1.23	14.00	11.38
46.	1.31	0.93	4.00	2.07	0.96	13.00	8.28
47.	1.11	0.93	3.00	1.93	1.00	11.00	5.79
48.	2.24	0.85	18.00	1.89	0.93	8.00	34.00
49.	1.64	0.90	7.00	2.00	0.68	6.00	14.00
50.	1.58	1.02	8.00	0.90	0.88	1.00	7.20
51.	1.75	0.91	8.00	2.25	0.84	13.00	18.00
52.	1.46	0.95	5.00	1.36	1.03	5.00	6.79
53.	1.12	0.95	3.00	0.85	0.99	3.00	2.55
54.	1.39	1.05	7.00	1.93	1.02	11.00	13.51
55.	2.49	0.70	21.00	2.66	0.55	20.00	55.86
56.	2.09	0.89	14.00	2.40	0.86	18.00	33.60
57.	1.11	1.05	3.00	0.79	1.05	2.00	2.37
58.	2.11	1.02	18.00	2.32	1.02	18.00	41.76
59.	2.11	0.98	17.00	2.21	0.99	16.00	37.57
60.	1.67	1.01	9.00	1.97	1.10	13.00	17.70
61.	1.75	1.20	13.00	1.15	1.12	4.00	15.00
62.	0.22	0.59	1.00	0.56	0.96	2.00	0.56
63.	1.03	1.01	3.00	1.57	1.19	9.00	4.70
64.	1.97	1.13	16.00	1.38	1.27	8.00	22.15
65.	1.59	0.96	8.00	1.96	0.96	10.00	15.71
66.	1.72	0.81	6.00	1.41	1.08	4.00	8.44
67.	1.86	0.88	10.00	2.11	0.88	12.00	21.07
68.	1.31	1.02	6.00	1.21	1.17	6.00	7.29
69.	2.06	0.98	15.00	2.23	0.95	14.00	33.46
70.	0.59	0.80	1.00	1.08	1.13	5.00	1.08
71.	1.29	1.05	5.00	1.96	0.98	9.00	9.82
72.	1.92	1.01	12.00	1.38	1.10	5.00	16.62
73.	1.09	0.92	3.00	1.78	1.09	9.00	5.33
74.	1.69	0.87	5.00	1.21	1.01	3.00	6.03
75.	1.91	0.85	11.00	2.24	0.83	14.00	24.66
76.	2.06	0.76	11.00	2.26	0.86	14.00	24.85

Table 10. *continued...*

Corresponding Item	R Mean	R SD	R Frequency	I Mean	I SD	I Frequency	Product (I Mean x R Frequency)
77.	1.71	1.10	10.00	1.41	1.21	8.00	14.14
78.	2.00	0.91	12.00	2.36	0.83	15.00	28.29
79.	1.11	0.89	4.00	1.57	1.10	7.00	6.29
80.	0.89	0.78	2.00	1.17	1.13	5.00	2.33

Note: 'R' = relevancy statistic, 'I' = importance statistic. Frequency = frequency item was rated as very relevant/important.

Initially, comparison of responses for the draft Major Stressors and Daily Stressors scales, or the draft Individual Coping and Family Coping scales was undertaken. Face validity indicated no distinct differences between responses to similar items of the two stressor scales or of the two coping scales. The two stressors scales and the two coping scales were combined, with repetitive or similar items with a low mean-frequency product deleted (items with a product below the 25th percentile) (Table 9). The retained items were merged with other items that appeared to be measuring a similar construct.

Items identified for deletion included 5-8, 16, 22-26, 31-34, 53, 57, 62, 63, 70, 80 of the draft Major Stressors scale, items 15, 27, 28, 33, 34, 38, 40, 45-48, 50, 54 of the draft Daily Stressors scale, items 11, 13, 16, 24-26, 31, 33-37, 39, 47, 48 of the draft Individual Coping scale, and items 10-12, 17-20, 23, 29 of the draft Family Coping scale. This process resulted in a draft Stressor Scale (66 items) (Table D1 [Appendix D], Table 10 and Table 11) and a draft Coping Scale (54 items) (Table D2 [Appendix D], Table 12 and Table 13). The exceptions to this process included Items 22, 24, 25, 27, 31, and 62 of the draft Major Stressors scale, and Item 40 of the draft Daily Stressors scale. Though these items presented a product score below the 25th percentile they were retained. In regards to the draft Coping scale, items that were the exception to the immediate deletion process included Items 11, 13, 16, 25, 26, 31, 33, 35-37, 39, 47,

and 48 of the draft Individual Coping scale and Items 18, 20, and 23 of the draft Family Coping scale.

Table 11. *Means and frequencies of Daily Stressor.*

Corresponding Item	R Mean	R SD	R Frequency	I Mean	I SD	I Frequency	Product (I Mean x R Frequency)
1.	0.87	0.81	1.00	1.50	1.10	6.00	1.50
2.	2.34	0.75	16.00	1.87	1.01	7.00	29.91
3.	1.31	1.15	7.00	2.00	1.02	9.00	14.00
4.	0.47	0.76	1.00	1.18	1.05	3.00	1.18
5.	0.76	1.00	4.00	1.58	1.18	8.00	6.33
6.	0.70	0.81	1.00	1.24	1.04	4.00	1.24
7.	2.15	0.91	14.00	1.75	1.07	6.00	24.50
8.	0.97	0.80	1.00	1.68	1.17	7.00	1.68
9.	2.10	0.84	11.00	1.64	0.95	4.00	18.00
10.	0.75	0.98	2.00	1.33	1.11	3.00	2.67
11.	0.72	0.73	1.00	1.10	0.97	2.00	1.10
12.	0.63	0.93	3.00	1.25	1.16	4.00	3.75
13.	0.58	0.81	1.00	1.33	1.28	5.00	1.33
14.	2.39	0.95	19.00	1.86	1.21	9.00	35.41
15.	0.71	0.74	1.00	0.81	0.98	2.00	0.81
16.	1.91	0.96	10.00	1.50	1.14	5.00	15.00
17.	0.59	0.80	1.00	1.09	1.11	4.00	1.09
18.	1.91	0.93	9.00	1.59	1.14	6.00	14.32
19.	1.16	0.77	2.00	1.36	1.00	4.00	2.73
20.	1.10	0.83	1.00	1.64	1.09	5.00	1.64
21.	1.23	0.86	4.00	1.48	1.12	6.00	5.91
22.	1.30	0.88	4.00	1.45	1.14	6.00	5.82
23.	1.60	0.89	4.00	1.38	1.12	4.00	5.52
24.	1.23	0.77	3.00	1.55	1.06	6.00	4.64
25.	1.90	0.99	9.00	1.67	1.11	5.00	15.00
26.	0.87	0.78	1.00	1.18	1.01	3.00	1.18
27.	0.45	0.68	1.00	0.74	0.99	2.00	0.74
28.	0.31	0.59	1.00	0.84	1.17	1.00	0.84
29.	2.50	0.68	18.00	1.77	1.19	8.00	31.91
30.	-	-	-	-	-	-	-
31.	0.52	0.85	23.00	0.75	1.07	11.00	17.25
32.	2.50	0.92	2.00	2.11	1.24	2.00	4.21
33.	0.55	0.93	1.00	0.83	1.10	1.00	0.83

Table 11. *continued...*

Corresponding Item	R Mean	R SD	R Frequency	I Mean	I SD	I Frequency	Product (I Mean x R Frequency)
34.	0.39	0.80	1.00	0.83	0.99	5.00	0.83
35.	0.68	0.79	6.00	1.19	1.21	3.00	7.14
36.	1.90	0.75	5.00	1.41	0.96	8.00	7.05
37.	1.45	0.91	22.00	1.96	0.93	9.00	43.04
38.	2.60	0.81	0.00	1.95	1.13	1.00	0.00
39.	0.16	0.37	3.00	0.62	0.86	4.00	1.86
40.	1.21	1.01	0.00	1.55	1.06	1.00	0.00
41.	0.13	0.49	4.00	0.47	0.90	8.00	1.89
42.	1.39	0.92	6.00	1.88	0.99	5.00	11.25
43.	1.62	0.98	7.00	1.25	1.19	13.00	8.75
44.	1.52	1.09	17.00	2.13	1.12	9.00	36.13
45.	2.47	0.68	0.00	2.00	1.02	5.00	0.00
46.	0.93	0.70	0.00	1.57	1.12	4.00	0.00
47.	0.70	0.53	0.00	1.38	1.02	1.00	0.00
48.	0.42	0.62	1.00	0.82	0.85	2.00	0.82
49.	0.87	0.72	11.00	1.14	0.91	6.00	12.57
50.	2.13	0.86	0.00	1.77	1.07	3.00	0.00
51.	0.65	0.66	2.00	1.27	1.03	6.00	2.55
52.	0.90	0.91	2.00	1.61	1.08	7.00	3.22
53.	1.07	0.87	13.00	1.61	1.12	5.00	20.91
54.	2.23	0.80	0.00	1.52	1.12	0.00	0.00
55.	-	-	-	-	-	-	-
56.	-	-	-	-	-	-	-
57.	-	-	-	-	-	-	-
58.	-	-	-	-	-	-	-
59.	-	-	-	-	-	-	-

Note: 'R' = relevancy statistic, 'I' = importance statistic. Frequency = frequency item was rated as very relevant/important. Items 30, 50-59 are transferred increase stressor items, already assessed as unique.

Table 12. Means and frequencies of Individual Coping Strategies items.

Corresponding Item	R Mean	R SD	R Frequency	I Mean	I SD	I Frequency	Product (I Mean x R Frequency)
1.	2.16	0.90	14.00	2.17	0.96	11.00	30.33
2.	2.55	0.57	18.00	2.52	0.51	12.00	45.39
3.	2.58	0.62	20.00	2.57	0.51	13.00	51.30
4.	2.53	0.63	18.00	2.57	0.73	15.00	46.17
5.	2.06	0.77	10.00	2.04	0.68	6.00	20.40
6.	1.97	0.84	9.00	2.00	0.88	8.00	18.00
7.	2.00	0.89	11.00	1.75	0.90	5.00	19.25
8.	2.42	0.76	18.00	2.42	0.72	13.00	43.50
9.	2.16	0.93	15.00	2.25	0.74	10.00	33.75
10.	1.55	0.77	4.00	1.68	0.95	5.00	6.72
11.	0.61	0.84	2.00	0.70	0.97	2.00	1.39
12.	1.48	0.89	4.00	1.67	0.92	4.00	6.67
13.	1.03	0.84	2.00	1.52	1.03	5.00	3.05
14.	1.06	1.21	7.00	1.24	1.26	6.00	8.67
15.	1.39	0.72	2.00	1.68	0.90	5.00	3.36
16.	0.97	0.76	1.00	1.43	1.12	5.00	1.43
17.	2.37	0.72	14.00	2.29	0.86	12.00	32.08
18.	1.80	0.89	7.00	1.65	1.03	6.00	11.57
19.	2.20	0.71	10.00	2.09	0.79	7.00	20.87
20.	1.27	0.91	3.00	1.73	0.94	6.00	5.18
21.	2.00	0.83	9.00	2.18	0.73	8.00	19.64
22.	1.63	0.76	4.00	1.96	0.77	6.00	7.83
23.	1.68	0.87	6.00	1.95	0.86	7.00	11.71
24.	0.48	0.68	0.00	0.68	0.99	2.00	0.00
25.	0.80	0.89	1.00	1.04	1.02	2.00	1.04
26.	0.10	0.40	0.00	0.42	0.90	1.00	0.00
27.	2.23	0.82	14.00	2.30	0.93	13.00	32.26
28.	1.83	1.05	10.00	1.74	1.10	7.00	17.39
29.	1.70	1.06	9.00	1.55	0.91	4.00	13.91
30.	1.70	0.95	7.00	1.59	0.96	4.00	11.14
31.	1.10	0.88	2.00	1.18	0.91	1.00	2.36
32.	1.42	0.96	5.00	1.63	0.76	2.00	8.16
33.	1.10	0.83	2.00	1.35	0.99	3.00	2.70
34.	0.60	0.50	0.00	1.06	1.00	2.00	0.00
35.	0.93	0.45	0.00	1.25	0.68	1.00	0.00
36.	0.67	0.61	0.00	1.18	0.81	1.00	0.00

Table 12. *continued...*

Corresponding Item	R Mean	R SD	R Frequency	I Mean	I SD	I Frequency	Product (I Mean x R Frequency)
37.	0.47	0.73	1.00	0.50	0.79	1.00	0.50
38.	1.59	0.68	3.00	1.71	0.72	3.00	5.14
39.	1.21	0.73	2.00	1.55	0.89	4.00	3.10
40.	1.31	0.85	4.00	1.65	0.93	4.00	6.60
41.	1.45	0.78	3.00	1.71	0.78	4.00	5.14
42.	1.80	1.00	9.00	2.05	0.89	8.00	18.45
43.	1.57	1.07	8.00	2.25	0.91	10.00	18.00
44.	1.63	0.96	7.00	1.95	0.89	6.00	13.65
45.	1.33	0.88	4.00	1.50	1.00	4.00	6.00
46.	1.38	0.73	2.00	1.95	0.83	5.00	3.90
47.	0.83	0.83	1.00	1.21	1.03	2.00	1.21
48.	0.83	0.91	1.00	1.21	0.98	1.00	1.21
49.	2.69	0.60	22.00	2.64	0.49	14.00	58.00
50.	1.86	0.64	4.00	1.90	0.54	2.00	7.62
51.	2.28	0.59	10.00	2.38	0.50	8.00	23.81
52.	1.83	0.71	5.00	1.76	0.77	4.00	8.81
53.	2.24	0.69	11.00	2.29	0.64	8.00	25.14
54.	1.57	1.01	6.00	1.63	0.96	3.00	9.79
55.	2.41	0.68	15.00	2.33	0.66	9.00	35.00
56.	2.17	0.80	11.00	2.43	0.60	10.00	26.71
57.	2.38	0.68	14.00	2.10	1.00	9.00	29.33
58.	2.37	0.67	14.00	2.18	0.73	8.00	30.55
59.	2.27	0.78	13.00	2.27	0.70	9.00	29.55
60.	1.87	0.94	9.00	2.14	0.64	6.00	19.23
61.	0.90	1.09	4.00	1.14	1.13	4.00	4.55
62.	1.83	1.05	10.00	2.29	0.78	10.00	22.86
63.	1.77	0.77	5.00	2.09	0.81	8.00	10.45

Note: 'R' indicates relevancy statistic, 'I' indicate importance statistic. Frequency is calculated as the frequency the item was rated as very relevant/important.

Table 13. Means and frequencies of Family Coping Strategies items.

Corresponding Item	R Mean	R SD	R Frequency	I Mean	I SD	I Frequency	Product (I Mean x R Frequency)
1.	1.90	0.72	5.00	2.14	0.65	6.00	10.71
2.	2.34	0.55	11.00	2.38	0.50	8.00	26.19
3.	1.59	0.82	5.00	2.00	0.73	5.00	10.00
4.	1.62	0.73	4.00	2.00	0.73	5.00	8.00
5.	1.69	0.97	7.00	1.85	0.93	6.00	12.95
6.	2.31	0.71	13.00	2.40	0.60	9.00	31.20
7.	1.93	0.80	7.00	2.21	0.71	7.00	15.47
8.	1.97	0.73	7.00	2.15	0.75	7.00	15.05
9.	1.03	1.12	5.00	1.37	1.30	6.00	6.84
10.	1.34	0.67	2.00	1.45	0.89	2.00	2.90
11.	1.55	0.74	3.00	1.65	0.88	3.00	4.95
12.	1.55	0.78	3.00	1.75	0.85	4.00	5.25
13.	2.00	0.93	11.00	2.00	0.89	7.00	22.00
14.	1.97	0.78	8.00	2.00	0.89	7.00	16.00
15.	1.97	0.87	9.00	2.11	0.81	7.00	18.95
16.	2.41	0.68	15.00	2.40	0.68	10.00	36.00
17.	0.69	0.76	1.00	0.65	0.67	0.00	0.65
18.	0.55	0.51	0.00	0.70	0.57	0.00	0.00
19.	1.41	0.91	3.00	1.52	0.98	3.00	4.57
20.	1.03	0.73	0.00	1.16	0.69	0.00	0.00
21.	2.17	0.80	12.00	2.40	0.68	10.00	28.80
22.	1.69	0.81	4.00	2.00	0.65	4.00	8.00
23.	0.37	0.49	0.00	0.53	0.70	0.00	0.00
24.	1.54	0.92	4.00	1.79	0.79	3.00	7.16
25.	1.48	0.87	4.00	1.80	0.89	5.00	7.20
26.	1.79	0.82	6.00	1.76	0.77	3.00	10.57
27.	1.59	0.91	5.00	1.65	0.75	2.00	8.25
28.	1.59	0.78	4.00	1.76	0.77	4.00	7.05
29.	1.38	0.86	3.00	1.70	0.86	3.00	5.10
30.	1.76	0.91	8.00	2.15	0.81	8.00	17.20
31.	1.55	0.78	4.00	1.86	0.85	6.00	7.43
32.	1.86	0.69	5.00	2.05	0.92	8.00	10.24
33.	1.83	0.71	4.00	2.10	0.62	5.00	8.38
34.	2.28	0.59	10.00	2.29	0.46	6.00	22.86
35.	2.34	0.67	13.00	2.38	0.67	10.00	30.95

Table 13. *continued...*

Corresponding Item	R Mean	R SD	R Frequency	I Mean	I SD	I Frequency	Product (I Mean x R Frequency)
36.	2.28	0.70	12.00	2.30	0.73	9.00	27.60
37.	2.45	0.63	15.00	2.43	0.60	10.00	36.43
38.	2.55	0.63	18.00	2.57	0.51	12.00	46.29
39.	1.03	1.22	5.00	1.22	1.26	4.00	6.11

Note: 'R' indicates relevancy statistic, 'I' indicate importance statistic. Frequency is calculated as the frequency the item was rated as very relevant/important.

Key items from Work Roles (Items 1, 3-5, 7-9, 11-13, and 12) and Home Roles (Items 1, 3-5, 7, and 8) (Appendix C) scales were transferred to the demographic section with the remaining items deleted. The Assistance with Role Completion and Interruptions scales were assessed for repetitive items and items with a low mean-frequency product were deleted (items with a product below the 25th percentile) (Table 9). The retained items were then merged with other items that appeared to be measuring a similar construct (Assistance with Role Completion 27 items; Interruption to Role Completion 39 items) (Table D3 [Appendix D], Table 14 and Table 15). Items identified for deletion included Items 11, 13, 19, 25-29, and 33 of the Assistance scale and Items 1, 2, 5, 8, 9, 11, 15, 17, 24, 33, 34, 42, 43, 45-48, and 50-54 of the Interruptions scale. The exceptions to the process included Items 11 and 13 of the Assistance scale and Items 1 and 2 of the Interruptions scale.

Table 14. Means and frequencies of Assistance with Role Completion items.

Corresponding Item	R Mean	R SD	R Frequency	I Mean	I SD	I Frequency	Product (I Mean x R Frequency)
1.	2.58	0.50	14.00	2.61	0.61	12.00	36.56
2.	2.75	0.44	18.00	2.72	0.46	13.00	49.00
3.	2.74	0.45	17.00	2.67	0.49	10.00	45.33
4.	2.83	0.38	20.00	2.72	0.46	13.00	54.44
5.	2.71	0.62	19.00	2.67	0.59	13.00	50.67
6.	2.83	0.38	20.00	2.78	0.43	14.00	55.56
7.	2.88	0.34	21.00	2.72	0.57	14.00	57.17
8.	2.83	0.38	20.00	2.72	0.46	13.00	54.44
9.	2.67	0.56	17.00	2.67	0.49	12.00	45.33
10.	2.54	0.59	14.00	2.50	0.51	9.00	35.00
11.	1.96	0.81	7.00	1.88	0.86	4.00	13.18
12.	2.71	0.55	18.00	2.61	0.61	12.00	47.00
13.	1.43	1.08	4.00	1.61	1.09	4.00	6.44
14.	2.63	0.71	18.00	2.61	0.61	12.00	47.00
15.	2.83	0.38	20.00	2.72	0.46	13.00	54.44
16.	2.70	0.47	16.00	2.59	0.51	10.00	41.41
17.	2.75	0.53	19.00	2.50	0.71	11.00	47.50
18.	2.38	0.88	14.00	2.35	0.86	9.00	32.94
19.	1.00	1.07	2.00	0.85	1.04	1.00	1.70
20.	1.88	0.95	7.00	1.72	0.96	4.00	12.06
21.	1.79	1.10	7.00	1.88	1.17	6.00	13.18
22.	2.17	1.09	13.00	2.22	1.17	1.00	28.89
23.	1.88	1.15	10.00	1.82	1.07	6.00	18.24
24.	2.58	0.65	16.00	2.39	0.78	10.00	38.22
25.	0.92	0.88	1.00	1.06	1.03	2.00	1.06
26.	0.61	1.03	2.00	0.61	1.04	2.00	1.22
27.	1.71	1.00	5.00	1.94	1.09	7.00	9.71
28.	0.96	1.15	3.00	1.11	1.23	4.00	3.33
29.	1.09	1.12	3.00	1.24	1.15	3.00	3.71
30.	1.65	1.11	7.00	1.58	1.02	3.00	11.05
31.	1.92	1.10	10.00	2.00	1.06	7.00	20.00
32.	1.96	0.91	8.00	1.78	0.88	4.00	14.22
33.	1.58	0.88	5.00	1.76	0.90	5.00	8.82

Note: 'R' indicates relevancy statistic, 'I' indicate importance statistic. Frequency is calculated as the frequency the item was rated as very relevant/important.

Table 15. Means and frequencies of Interference with Role Completion items.

Corresponding Item	R Mean	R SD	R Frequency	I Mean	I SD	I Frequency	Product (I Mean x R Frequency)
1.	0.74	0.45	0.00	0.59	0.62	0.00	0.00
2.	0.91	0.51	0.00	0.72	0.67	0.00	0.00
3.	1.27	0.77	2.00	1.12	0.70	0.00	2.24
4.	1.00	0.76	2.00	1.12	0.86	1.00	2.24
5.	1.09	0.51	0.00	1.12	0.49	0.00	0.00
6.	1.13	0.76	2.00	1.12	0.70	0.00	2.24
7.	1.35	1.03	4.00	1.24	0.97	2.00	4.94
8.	0.91	0.73	0.00	0.82	0.81	0.00	0.00
9.	0.96	0.64	0.00	1.00	0.71	0.00	0.00
10.	0.65	0.83	1.00	0.69	0.95	1.00	0.69
11.	0.52	0.60	0.00	0.47	0.64	0.00	0.00
12.	0.57	0.84	1.00	0.60	0.83	1.00	0.60
13.	0.57	0.84	1.00	0.56	0.89	1.00	0.56
14.	0.91	0.85	1.00	1.00	1.00	1.00	1.00
15.	0.64	0.49	0.00	0.69	0.70	0.00	0.00
16.	1.13	0.81	1.00	1.35	0.86	1.00	1.35
17.	0.55	0.51	0.00	0.75	0.68	0.00	0.00
18.	1.64	1.14	6.00	1.65	1.00	3.00	9.88
19.	1.18	0.96	3.00	1.38	1.02	3.00	4.13
20.	1.68	0.99	6.00	1.65	0.93	4.00	9.88
21.	1.86	0.99	7.00	2.00	0.87	6.00	14.00
22.	1.00	0.87	2.00	1.13	0.96	1.00	2.25
23.	0.82	0.73	1.00	1.00	0.97	1.00	1.00
24.	0.91	0.75	0.00	1.06	1.00	1.00	0.00
25.	0.55	0.80	1.00	0.69	0.95	1.00	0.69
26.	0.33	0.73	1.00	0.63	0.81	1.00	0.63
27.	0.45	0.80	1.00	0.53	0.80	1.00	0.53
28.	1.09	0.87	1.00	1.31	0.95	2.00	1.31
29.	1.73	0.88	5.00	1.94	1.03	7.00	9.71
30.	0.95	1.09	3.00	1.17	1.10	3.00	3.50
31.	1.64	0.95	6.00	1.83	0.99	6.00	11.00
32.	1.64	0.79	4.00	1.59	0.80	2.00	6.35
33.	1.00	0.69	0.00	0.94	0.90	1.00	0.00
34.	0.23	0.53	0.00	0.44	0.89	1.00	0.00
35.	1.09	0.61	1.00	1.00	0.82	1.00	1.00
36.	1.32	0.89	3.00	1.47	0.80	1.00	4.41
37.	0.91	0.87	2.00	1.12	0.70	0.00	2.24
38.	1.18	0.80	2.00	1.18	0.88	1.00	2.35
39.	0.86	0.73	1.00	0.94	0.97	1.00	0.94
40.	0.68	0.89	1.00	1.00	1.27	4.00	1.00

Table 15. *continued...*

Corresponding Item	R Mean	R SD	R Frequency	I Mean	I SD	I Frequency	Product (I Mean x R Frequency)
41.	0.73	1.03	2.00	0.94	1.24	3.00	1.88
42.	0.95	0.58	0.00	0.88	0.78	1.00	0.00
43.	0.86	0.56	0.00	0.81	0.75	1.00	0.00
44.	0.86	0.91	1.00	0.59	0.71	0.00	0.59
45.	0.59	0.73	0.00	0.63	0.81	0.00	0.00
46.	0.50	0.60	0.00	0.41	0.62	0.00	0.00
47.	0.41	0.67	0.00	0.47	0.72	0.00	0.00
48.	0.36	0.58	0.00	0.38	0.72	0.00	0.00
49.	0.76	1.00	2.00	0.53	0.80	1.00	1.06
50.	0.43	0.75	1.00	0.29	0.59	0.00	0.29
51.	0.24	0.54	0.00	0.24	0.56	0.00	0.00
52.	0.20	0.41	0.00	0.31	0.60	0.00	0.00
53.	0.30	0.57	0.00	0.29	0.59	0.00	0.00
54.	0.30	0.57	0.00	0.29	0.59	0.00	0.00

Note: 'R' indicates relevancy statistic, 'I' indicate importance statistic. Frequency is calculated as the frequency the item was rated as very relevant/important.

The items within the Commitment to Farming and Identification with Farming subscales were analysed for overlap and validity. Items identified as repetitive through face validity were merged and items with a low mean-frequency product (items with a product below the 25th percentile) were deleted (Table 9). These two scales were then combined to create one scale (31 items) as each appeared to be measuring a similar construct (Table D4 [Appendix D], Table 16 and Table 17). Items identified for deletion included Items 22, 24-30, and 34 of the Commitment scale and Items 4, 14, 18, 19, and 21-24 of the Identification scale. The exceptions to this deletion process were Items 22, 24-26, 30, 34 of the Commitment scale and Items 14, 21, 23 of the Identification scale which were retained.

Table 16. Means and frequencies of Commitment to Farming items.

Corresponding Item	R Mean	R SD	R Frequency	I Mean	I SD	I Frequency	Product (I Mean x R Frequency)
1.	2.25	0.91	11.00	2.13	1.02	8.00	23.38
2.	2.38	0.74	11.00	2.44	0.73	9.00	26.81
3.	2.33	0.80	11.00	2.38	0.81	9.00	26.13
4.	2.33	0.80	11.00	2.50	0.73	10.00	27.50
5.	2.19	0.87	10.00	2.38	0.62	7.00	23.75
6.	1.19	1.08	3.00	1.53	0.92	2.00	4.60
7.	2.52	0.68	13.00	2.56	0.63	10.00	33.31
8.	2.24	0.89	11.00	2.44	0.81	10.00	26.81
9.	2.38	0.80	12.00	2.44	0.73	9.00	29.25
10.	2.52	0.68	13.00	2.50	0.63	9.00	32.50
11.	2.67	0.58	15.00	2.56	0.63	10.00	38.44
12.	2.57	0.75	15.00	2.63	0.62	11.00	39.38
13.	2.38	0.92	13.00	2.44	0.63	8.00	31.69
14.	2.00	1.00	8.00	2.31	0.60	6.00	18.50
15.	1.33	1.06	3.00	2.44	0.81	9.00	7.31
16.	2.71	0.64	17.00	2.50	0.63	9.00	42.50
17.	2.67	0.58	15.00	2.50	0.63	9.00	37.50
18.	1.76	1.22	8.00	2.19	1.05	8.00	17.50
19.	1.67	1.02	6.00	1.67	0.98	3.00	10.00
20.	1.76	1.22	8.00	1.93	1.10	6.00	15.47
21.	0.90	1.09	3.00	1.27	1.16	3.00	3.80
22.	1.71	1.01	6.00	1.63	1.15	5.00	9.75
23.	1.00	1.18	4.00	1.40	1.18	4.00	5.60
24.	0.90	1.17	3.00	1.21	1.25	3.00	3.64
25.	0.67	1.06	2.00	1.00	1.20	2.00	2.00
26.	0.29	0.64	0.00	0.80	1.01	1.00	0.00
27.	0.76	1.04	2.00	1.40	1.18	3.00	2.80
28.	0.95	0.97	2.00	1.27	1.03	2.00	2.53
29.	0.52	0.81	1.00	0.94	1.06	2.00	0.94
30.	0.33	0.48	0.00	0.47	0.74	0.00	0.00
31.	1.62	1.16	6.00	1.67	1.18	5.00	10.00
32.	1.43	1.16	6.00	1.73	1.28	6.00	10.40
33.	1.14	1.15	4.00	1.60	1.24	6.00	6.40
34.	1.19	0.87	2.00	1.50	1.03	4.00	3.00

Note: 'R' indicates relevancy statistic, 'I' indicate importance statistic. Frequency is calculated as the frequency the item was rated as very relevant/important.

Table 17. Means and frequencies of Identification with Farming items.

Corresponding Item	R Mean	R SD	R Frequency	I Mean	I SD	I Frequency	Product (I Mean x R Frequency)
1.	2.50	0.61	11.00	2.33	0.72	7.00	25.67
2.	2.20	0.70	7.00	2.20	0.68	5.00	15.40
3.	1.80	0.89	5.00	1.87	0.99	4.00	9.33
4.	1.75	0.85	4.00	1.73	0.96	3.00	6.93
5.	2.60	0.68	14.00	2.47	0.74	9.00	34.53
6.	2.10	0.85	7.00	2.31	0.85	7.00	16.15
7.	2.30	0.80	10.00	2.27	0.80	7.00	22.67
8.	2.16	0.83	7.00	2.13	0.83	5.00	14.93
9.	2.00	0.94	7.00	2.29	0.61	5.00	16.00
10.	2.37	0.96	12.00	2.60	0.63	10.00	31.20
11.	2.50	0.76	13.00	2.50	0.76	9.00	32.50
12.	1.80	1.15	8.00	2.07	1.21	8.00	16.57
13.	2.15	0.81	8.00	2.33	0.72	7.00	18.67
14.	1.95	1.00	8.00	2.27	1.03	9.00	18.13
15.	2.40	0.68	10.00	2.60	0.51	9.00	26.00
16.	2.65	0.67	15.00	2.60	0.74	11.00	39.00
17.	2.45	0.76	12.00	2.40	0.74	8.00	28.80
18.	1.20	0.83	1.00	1.20	0.94	2.00	1.20
19.	1.35	1.18	5.00	1.53	1.25	5.00	7.67
20.	1.50	1.10	6.00	1.40	1.06	3.00	8.40
21.	2.05	0.89	7.00	2.07	0.88	5.00	14.47
22.	0.10	0.31	0.00	0.43	0.94	1.00	0.00
23.	0.20	0.70	1.00	0.64	1.28	3.00	0.64
24.	0.10	0.31	0.00	0.43	0.76	0.00	0.00

Note: 'R' indicates relevancy statistic, 'I' indicate importance statistic. Frequency is calculated as the frequency the item was rated as very relevant/important.

The Positive Elements of Intergenerational Farming and Negative Elements of Intergenerational Farming scales were examined for the existence of polarised items (items that were positively worded in one set and negatively in the other set). The polarised items were then either combined as a single item or items with a low mean-frequency product were deleted (items with a product below the 25th percentile) (Table 9), resulting in the Intergenerational Farming Scale (29 items) (Table D5 [Appendix D], Table 18 and Table 19). This identification process resulted in the following items

recommended for deletion: Items 1, 6-8, and 19 of Negative Elements scale and Items 19, 21-23, and 26 of the Positive Elements scale. The exception to this deletion process was Item 6 of the Negative Elements scale.

Table 18. Means and frequencies of Intergenerational Farming (Negative) items.

Corresponding Item	R Mean	R SD	R Frequency	I Mean	I SD	I Frequency	Product (I Mean x R Frequency)
1.	1.78	1.09	2.00	1.71	0.95	1.00	3.43
2.	2.00	1.15	5.00	2.25	1.04	4.00	11.25
3.	2.20	1.14	6.00	2.25	0.71	3.00	13.50
4.	2.30	0.95	6.00	2.38	0.74	4.00	14.25
5.	1.89	1.05	3.00	2.00	0.58	1.00	6.00
6.	1.67	1.00	2.00	1.57	1.13	2.00	3.14
7.	1.67	0.87	2.00	1.86	0.90	2.00	3.71
8.	0.89	1.05	1.00	1.14	0.90	0.00	1.14
9.	2.00	1.05	4.00	2.00	0.76	2.00	8.00
10.	2.10	1.10	5.00	2.25	0.71	3.00	11.25
11.	1.20	1.32	3.00	1.50	1.07	2.00	4.50
12.	1.70	1.06	3.00	2.25	0.71	3.00	6.75
13.	1.70	1.06	3.00	1.63	0.92	1.00	4.88
14.	1.80	0.79	2.00	2.00	0.76	2.00	4.00
15.	1.33	1.41	3.00	1.86	1.35	3.00	5.57
16.	1.60	1.07	3.00	2.13	0.83	3.00	6.38
17.	1.40	1.43	4.00	2.38	1.06	5.00	9.50
18.	1.56	1.24	3.00	1.71	1.25	2.00	5.14
19.	1.44	1.01	1.00	2.00	0.00	0.00	2.00
20.	2.11	1.17	5.00	2.29	0.76	3.00	11.43

Note: 'R' indicates relevancy statistic, 'I' indicate importance statistic. Frequency is calculated as the frequency the item was rated as very relevant/important.

Table 19. Means and frequencies of Intergenerational Farming (Positive) items.

Corresponding Item	R Mean	R SD	R Frequency	I Mean	I SD	I Frequency	Product (I Mean x R Frequency)
1.	2.13	1.13	4.00	2.33	0.82	3.00	9.33
2.	2.25	1.16	5.00	2.50	0.55	3.00	12.50
3.	2.63	0.74	6.00	2.50	0.55	3.00	15.00
4.	2.38	0.74	4.00	2.50	0.55	3.00	10.00
5.	1.75	1.28	3.00	2.33	0.52	2.00	7.00
6.	1.88	1.13	3.00	2.17	0.75	2.00	6.50
7.	2.00	1.07	3.00	2.17	0.41	1.00	6.50
8.	1.75	1.04	2.00	2.50	0.55	3.00	5.00
9.	2.00	1.07	3.00	2.33	0.52	2.00	7.00
10.	2.13	1.36	5.00	2.50	0.55	3.00	12.50
11.	2.13	1.13	4.00	2.40	0.55	2.00	9.60
12.	1.88	0.99	2.00	2.50	0.55	3.00	5.00
13.	2.00	1.00	3.00	2.57	0.53	4.00	7.71
14.	1.63	1.30	3.00	2.33	0.82	3.00	7.00
15.	1.88	1.13	3.00	2.17	0.41	1.00	6.50
16.	2.00	1.31	4.00	2.67	0.52	4.00	10.67
17.	2.00	1.31	4.00	2.50	0.55	3.00	10.00
18.	1.88	1.25	3.00	2.67	0.52	4.00	8.00
19.	1.50	1.20	2.00	1.83	1.17	2.00	3.67
20.	1.75	1.16	3.00	2.33	0.82	3.00	7.00
21.	1.25	1.16	1.00	1.83	0.75	1.00	1.83
22.	1.63	1.19	2.00	2.33	0.82	3.00	4.67
23.	1.63	1.06	2.00	1.67	0.82	1.00	3.33
24.	1.88	1.13	3.00	2.00	0.89	2.00	6.00
25.	1.88	1.13	3.00	2.00	0.89	2.00	6.00
26.	1.63	1.30	3.00	1.50	1.05	1.00	4.50

Note: 'R' indicates relevancy statistic, 'I' indicate importance statistic. Frequency is calculated as the frequency the item was rated as very relevant/important.

6.2.3. Justification of analysis of Item Reduction Study.

Preliminary feedback by respondents suggested that there may not be a distinct difference between the stressor and coping scales. However the principal investigator and supervisor initially refrained from shortening the item set as it still seemed unclear whether this was a minority opinion and whether there was still some rationale for

maintaining the item set as it stood, for example retaining the three stressor sub scales (Major, Daily, and Increases of Stress Scales) and the two coping sub scales (Individual and Family Coping Scales). This was thought to be valid as personal values, such as masculinities, and perceived social pressure may inhibit the use of different coping behaviours and strategies. As a result, certain coping behaviours and strategies would be more acceptable to use from a family perspective, such as communication, than from an individual perspective. Nonetheless, the size of the item list was a burden to participants and therefore the utility of the stressor scales was evaluated. Though at this stage of scale development it was expected that the item set be larger than was necessary (Streiner & Norman, 1989). It was determined based on participant response and research team experience that the Increases of Stress subscale was the major contributor to the Stressor scale being deemed too repetitive as the majority of items of this subscale also appeared in the Major and Daily Stressors subscales.

During the item reduction process, there were cases where items were retained despite the reduction procedure indicating it would be appropriate to remove them. The exceptions to the deletion process included Items 22, 24, 25, 27, 31, and 62 of the Major Stressors scale, and Item 40 of the Daily Stressors scale. Though these items presented a product score below the 25th percentile they were retained for subsequent stages of analysis. Items 22 and 25 were retained because the items referred to stressors about retirement, which were predominant issues identified within Phase 1 in regards to satisfaction with life. As the current samples predominant age groups were between 30-45years (29.23%) and 46-60years (50.77%), an accurate assessment of the items may not have been achieved and therefore were retained for further analysis. A similar rationale applied to the retention of Item 24, as this item specifically referred to financial issues associated with retirement. Therefore this item was thought important

due to the implications for mental health and sensitivity to changes in financial status for men (Swami et al., 2008). Items 27 and 31 referred to stressors about the individual's future on the farm, issues that may be more relevant to a younger age group as they may be considering their future on the farm. Therefore, due to the limited sample of participants from the 18-29years age group (3.08%), these items were retained due to the possible importance of this item to this cohort. Additionally, Item 52 of the Major Stressors scale was deleted, though it did not present a product score below the 25th percentile. This item referred to concerns of "the old and negative attitudes of traditional conventional farming" was deleted as the item did not appear to hold any singular value, with the concept of the item captured within other items (Appendix D, Table D1).

Items that were retained within the coping scales included Item 11 of the Individual Coping and 23 of the Family Coping scales, which stated they "like to go to the pub" or "have a drink with friends to cope with stress". These items were amalgamated and retained as the resulting item was distinctly identified as an important issue within the interview data. Additionally, it was thought that inclusion of an item which assessed the extent to which alcohol was used as a coping resource within the farming community would be useful for cross-analysis with psychological distress and life satisfaction in subsequent studies. Items 13 and 16 of the Individual Coping scale "I don't get stressed..." and "I tend to be a worrier..." were retained for the next stage of item reduction as findings from the interview data suggested that such statements were indicative of people who denied and ignored the existence of stress. As a result it was hypothesised that these two items may have an important relationship with scales of well-being. Therefore, these items were retained for the next round of item reduction to better assess whether or not they had value within the Coping scale. Items 25 and 26 of

the Individual Coping and Item 18 of the Family Coping were retained (Items 25 and 18 merged) for further analysis to determine whether comfort foods and drugs other than alcohol could help identify a wider range of individuals who were using substances to cope with stress. Item 31 of the Individual Coping scale (“Purposefully make myself relax”) was retained as the item centred on themes of being positive and practical and therefore might act as a useful indicator of those individuals who gain control and cope effectively with their stress levels. Item 33 and 35 of the Individual Coping and Item 20 of the Family Coping subscales reflected strong themes identified by farming family men within the interview data and therefore were retained for further analysis due to the lower number of men involved in this stage of item reduction. Items 36 and 37 of the Individual Coping scale were items originating from the Brief COPE (Carver, 1997) and were retained for the next stage of item reduction to confirm their lack of value within the Coping scale. Item 39 of the Individual Coping scale was retained to confirm whether the item was similar to Item 35, which could be perceived as an unhelpful method of coping, or was a more proactive and beneficial form of coping and therefore distinct from Item 35. Finally, Items 47 and 48 of the Individual Coping scale were retained and merged as the item referred to work-life balance. These items were retained as the content of the items presented potential for comparative analysis with the Role Impact scales. Item 15 of the Individual Coping scale (“I don’t sleep very well...”) was deleted despite presenting a product score above the 25th percentile as the item was more a symptom of stress rather than an approach to dealing with stress (Appendix D, Table D2).

The exceptions to the deletion process within the role impact scales included Items 11 and 13 of the Assistance scale and Items 1 and 2 of the Interruptions scale as these items were specifically related to farm business management and farm demands,

which were strong themes within the interview stage data. Due to the gender imbalance in this sample, it was unclear whether these items were not applicable to both men and women or only women. This was important to further investigate due to the items representing strong themes within the interview data stage. Therefore, further evaluation of these items was needed to determine whether they were of particular importance to men as a source of role interference. Item 19 of the Assistance scale and Items 8 and 9 of the Interruptions scale were retained as the items, which referred to spending less time at the off-farm job or volunteer work, seemed to add another dimension to the work-home interface and therefore warranted further analysis for applicability. Items 25-29 of the Assistance scale were retained as the value of these items may not have been sufficiently assessed in the current population due to possibly being more applicable to younger farming family members and those who are a part of an intergenerational family. Therefore further analysis would assist in determining the significance of these items. Items 33 and 34 of the Interruptions scale were retained as these interferences to role completion specifically referred to access and reliability of machinery. As this was a farm work issue, the gender imbalance in this sample may have influenced the poor rating on this item which therefore warranted further analysis. Items 24, 43, 45, 46, and 53 were retained as these items were from Carlson et al.'s (2000) Work-Family Conflict scale and as the majority of the items within this scale scored poorly, all the items within the Work-Family Conflict scales were assessed with the most applicable and clearly worded items retained. As a result of the aforementioned factors, items were retained, with an additional deletion of Item 50 (Appendix D, Table D3).

Items that were retained despite statistical recommendation for removal within the Buffer scales included Items 24-26 (Items 24 and 25 were merged) of the Commitment

Scale as these items referred to negative reasons to why the individual remains in farming. It was therefore considered that these items may indicate a lack of commitment to farming and as a result needed further analysis to determine the appropriateness of inclusion in the final item pool. A similar line of reasoning was used to retain Item 30 of the Commitment scale and Item 23 of the Identification scale which both referred to “farming is just a job” and would therefore indicate a lack of intrinsic commitment to farming. These items were subsequently amalgamated. Item 34 of the Commitment scale was also retained as this item seemed profoundly negative and therefore further analysis was required to identify whether the item was applicable to a wider sample. This was thought necessary as this item may be key to identifying those with low commitment to farming and as a result have an increased risk of poor well-being. Items 22 of the Commitment scale and 14 and 21 of the Identification scale were deleted although each presented a product score above the 25th percentile. These items were deleted as the theme of the items (Items 22 and 21) was adequately presented in other items or the item did not seem to appropriately measure the construct (Item 14). Finally, it should be noted that though Item 26 (“the sentimental value of the farm, its tradition and do not want to disappoint the previous generations”) of the resulting Buffer scale is based upon the theme of Item 12 of the Identification scale (“it’s for family”), its wording is more similar to the deleted items of 28 and 29 of the Commitment scale and Item 18 of the Identification scale. This outcome was due to the item needing to be more specific in relation to whether it was a low commitment or high commitment item as “it’s for family” was too ambiguous and the finalised item specified that this was a low commitment item (Appendix D, Table D4).

Finally, the exceptions to this deletion process were Item 6 of the resulting Intergenerational Farming scale as though the item should be worded similarly to Item 5

of the Positive Elements scale; it was in fact worded similarly to the deleted Item 6 of the Negative Elements scale. This occurred as the items referred to the same concept and therefore there was some applicability of Item 6 of the Negative Elements scale. Additionally, the wording of this item was clearer and more effective in communicating the intended construct to the potential farming family participants. Therefore the wording of this item was used instead of Item 5 of the Positive Elements scale (Appendix D, Table D5).

As a result of the aforementioned analysis process the item set was reduced from 456 to 246 items. These were then formatted for an expert panel to review and reduce (Appendix E). This qualitative form of item reduction was appropriate as review panels are designed to assess content validity of scales and identify important items and missing items (Davis, 1992). Therefore the main method of reduction during this stage was using means, frequencies, and face validation methods to remove items that overlapped, were redundant, or received endorsement for removal by the respondents.

6.3: Stage 3 – Expert Panel Review

6.3.1 Method.

6.3.1.1 Participants.

An Expert Review Panel (N=11) were recruited to evaluate the item pool. The panel included men (n=5; M=44.00 yrs, SD=10.47) and women (n=6; M=40.33yrs, SD=17.10) located in Queensland (n=8), New South Wales (n=2), and Victoria (n=1), however due to the nature of the participants' employment, their experience with the farming industry crossed state borders. The panel included the principal investigator, members of farming families, and professionals from within the agricultural and grazing industry who had experience associated with farming families. An expert was defined as

individual who was in a leading position in a rural industry that addressed issues relevant to farming families or was a member of a farming family. These experts were from a range of organisations and occupations, including a member of multiple agricultural boards/committees; a farm business management consultant; a farm financial advisor/counsellor; a member involved in research, training, policy development, and service coordination; a director of a rural health not-for-profit health promotion organisation; a succession planning lawyer; a rural psychologist; and farmers or farming family members (n=4; this role was simultaneous with one of the aforementioned roles for two of the respondents).

6.3.1.2 Materials.

The Expert Review Panel involved a review of the reduced set of items (246 items) from the previous item reduction study. This set of items however only included the following subsections; Stressors (66 items), Coping (54 items), Assist Role Completion (27 items), Interruptions (39 items), Commitment and Identifying (31 items), and Intergenerational Farming (29 items) (Appendix E). Items were evaluated using a 4-point Likert Scale in terms of their perceived degree of relevance and importance (0 = 'Not very important/relevant', 3 = 'Very important/relevant') to farmers and farming families. Demographic information collected from the review panel included age, gender, and occupation or involvement in the agricultural/farming industry (Appendix E). This item set was delivered electronically to participants.

6.3.1.3 Procedure.

Potential participants of the Expert Review Panel were initially emailed a brief (Appendix E) detailing their expected role if they consented to participate. Potential participants were phoned a week later to obtain confirmation of participation and to clarify expected role and study information. The set of 246 items was prepared

electronically and delivered to the Expert Review Panel (N=11) who were instructed to assess the items in terms of relevance and importance. The Expert Review Panel also had the opportunity to comment on each item such as whether to negatively or positively frame the item, whether the item should be divided into questions regarding the individual or family, and suggestions regarding adjectives and wording that would be the most appropriate to frame the statement. This method allowed greater weighting to be placed on the responses of the participants as the Expert Review Panel was instructed to consider each item in terms of farming families in general rather than from an individual perspective. Responding in this frame was facilitated by the Panel's experience and knowledge of working across farming industries and with multiple farming families. Participants were given a time frame of 2-3 weeks to complete the survey with the principal researcher contacting participants in each subsequent week as a reminder, resulting in all surveys completed within 4 weeks of delivery. The research team (consisting of Principal Investigator and Primary and Secondary Supervisors) also completed the surveys. Items were quantitatively and qualitatively analysed by the research team through identifying items with low means (<2), gender differences, redundancies, variability of item applicability, relevancy to scale, item-to-scale correlation, and reliability of item in order to determine which items would be removed from the list (Streiner & Norman, 1989).

6.3.2 Results.

A number of procedures were used to identify items for possible deletion or amalgamation. Results of these procedures were tabulated in a matrix grid which allowed the principal investigator an overall representation of the quality of each item. The first stage of analysis in this item reduction stage involved calculating the mean

rating for each item. The ratings of importance and relevance for each item were combined to form a total score. Items with a total mean score of less than two were deleted. This procedure reduced the item pool by 56 items leaving a total of 190 items in the pool. If there was a discrepancy between item mean score for relevance and mean score for importance (i.e. only relevance or importance presented a mean ≥ 2) then the item would need to satisfy additional deletion criteria. Items were then assessed for a significant gender difference ($\alpha < .05$) as the scale needed to be relevant for both sexes (28 items identified). Feedback was used from participants about the redundancy, variability of item applicability, and the degree of item relevance to construct (91 items identified). Items were then qualitatively (researchers' experience and expertise) (75 items identified) and quantitatively assessed for redundant items (items measuring a similar construct). Correlations between items of each scale were calculated. Items that had a correlation coefficient value of $r \geq .8$ were either combined or one of the items was deleted (99 items identified). Some items that had a coefficient less than .8 were retained despite having been previously identified for possible deletion through other methods. In many cases there were multiple correlations between items which complicated the decision of which items to retain. In these cases, the final item selected was the item which had been identified least by other reduction methods.

Another method used for item reduction involved assessing whether an item was correlated to the scale total, as a low correlation indicated that the item did not measure the construct assessed in the farming family scale. This method assessed the correlation for each item as a whole (relevance and importance rankings combined) as well as examining the correlations for relevance and importance independently (76 items identified). Finally, to determine the reliability of items, Cronbach's alpha coefficient of item-to-item correlations was considered (de Vaus, 2002). Items which presented an

item-total correlation of less than .3 were identified for possible deletion (38 items identified).

The aforementioned methods of identifying items for possible deletion or amalgamation were tabulated in a matrix grid which allowed the principal investigator an overall representation of the standing of each item. Items were deleted if $M \leq .2$ or if the item was identified on multiple occasions by the aforementioned reduction processes, though there were some exceptions to this process. Items from the Stressor scale that were deleted were items 5, 6, 9, 11, 13, 19, 23-25, 27, 29, 32-34, 36, 37, 40-44, 48-55, and 59, with exceptions to this process being Items 9, 11, 13, 23, 24, 33, and 42 (Table F1, Appendix F). Within the Coping scale, items that were deleted were 3-5, 7, 12, 13, 15, 17, 18, 21, 24b, 24c, 29-35, 37, 40-42, 45-47, 50, 51, and 53 (Table F2, Appendix F). The exceptions within this scale were Items 3, 19, 24, 35, and 39 (Table F2, Appendix F). Items that were deleted with the Assistance with Role Completion scale were Items 2, 6, 10-12, 14, 16-22, and 24-26 (Table F3, Appendix F), with 10-12, 14, 18, and 19 being deleted due for alternative reasons, namely poor discriminatory or face validity. The items deleted from the Interruption to Role Completion scale were Items 1, 4, 5, 7, 9, 12-15, 17, 19-22, 24, 27, 28, 30, 31, 33-37, and 39 (Table F4, Appendix F). The exceptions to this process were 1, 12, 14, 19, and 28-39 (Table F4, Appendix F). Items that were deleted from the Buffer scale were 4-7, 10, 14, 16, 17, 19, 21-24, 27-29, and 31 (Table F5, Appendix F). The exceptions to this process were Items 14, 16, 17, 27, 28, 30, and 31 (Table F5, Appendix F). Finally, items that were deleted from the Intergenerational Farming scale were Items 1, 2, 5, 6, 11-13, 16-19, 22, and 26-29 (Table F6, Appendix F). Exceptions to this deletion process were 12, 13, 26-29, which were deleted due to low content validity and discrimination, and Items 23 and 24 were retained despite support from the deletion process (Table F6, Appendix F).

Through the combination of the previously described qualitative and quantitative methods, the item pool was reduced from 246 to 100 items (Tables F1-F6, Appendix F). As a result of these processes, the Major and Daily Stressor Scales were combined to form the Stressor Scale (29 items), the Individual and Family Coping Scales formed the Coping Scale (25 items), the Role Assistance and Role Interference Scales formed the sub scales of the Role Impact Scale (23 items), the Commitment to Farming and Identification with Farming Scales formed the Buffer Scale (12 items), and the Positive and Negative Intergenerational Farming Scales formed the Intergenerational Farming Impact Scale (11 items).

6.3.3. Justification of analysis of Expert Panel results

During the item reduction process, there were cases where items were retained for additional review despite the reduction procedure indicating their appropriateness for removal. Additionally, there were also cases where items were deleted though they were not sufficiently identified for removal through the deletion criteria. These items were in most cases deleted due to content and face validity issues and a perceived lack of discrimination of responses to the item. Deviations from the deletion process which resulted in items being deleted within the Stressor Scale included items 9, 11, 13, 23, 24, 33, and 42. These items referred to issues such as lack of sleep, how age impacted their physical ability to maintain level of work, outcome of the farm if partner fell ill or died, the future of the farm, and level of paperwork. However, after further assessment of these items by the Expert Review Panel, these items were subsequently deleted. These items were deleted due to the likelihood that there would be little variability in response to these items as lack of sleep and death of a partner is going to increase an individual's stress levels. The level of paperwork as a stressor would also lack

variability as it is a consistently necessary part of business functioning. Additional support for deletion of this item was that the impact of this stressor would be assessed through other retained items, specifically “lack of care by public and government”. This was thought likely as during the interview stage most participants identified the paperwork item as a stressor mostly in association with discontent with government regulations and policies. This would be addressed by the item “lack of care by public and government” as the interview content identified the discontent was likely a result of the farming family participants perceiving that these policies and regulations did not benefit them and were not enforced with consideration of the farming family’s needs. Item 36, “working with old and unreliable machinery and equipment”, was deleted as it was only identified as having a low relevance mean. Nonetheless as the aim was to develop a scale for all Australian farming families, and this item was not relevant to all families, then it did not warrant retaining. In contrast to this, Item 30, “Difficulties surrounding the availability and quality of workers”, was retained despite being related to another item. Though this item may not relate to the entire farming population, the item would be an important item for those that do employ workers, especially those such as horticultural farmers who employ large numbers of workers.

Additional items deleted within the Coping Scale despite not meeting the deletion criteria included Items 3 and 35 as they did not sufficiently correlate to the scale total and did not appropriately contribute to the Cronbach’s alpha coefficient. This indicated that the item was unreliable and participants would be unlikely to respond to this item in a predictable pattern. In contrast to this, Item 19 was retained despite not correlating with the total score on the scale or satisfying the criteria for reliability as this item referred to “Having control over the outcome or situation” as a coping strategy. This item was the predominant coping strategy identified in the interview stage. Further, the

item would also be a useful comparison to the Stressor scale as many of the stressor items refer to stressors outside of the person's control and thus this coping strategy may help explain those characteristics of the farming lifestyle which contribute to poor well-being. Item 24 was retained only in part and reworded to become "To help me wind down I like to have a beer, wine, or other alcoholic drink", as most participants were not responding to items 24b and 24c and the rewording of the item contributed to it being more easily interpreted. A similar approach was taken to Item 39, which was simplified to "Take the opportunity to have a break by doing something else" as it seemed unnecessary to be explicit about what the break would entail.

Additional items removed from the Assistance with Role Completion Scale included Item 6, as it did not sufficiently correlate to scale total and satisfy reliability. Items 10-12 and 14 were also deleted despite only being identified for deletion by one method (not correlating to scale total) due to comments from one participant which highlighted that these items, though useful for assisting in role completion, were not always possible or accessible, indicating that the items were less relevant. For example, the items referred to having experience, business meetings, multiple skills, and cash flow, and though all these items may be desirable, having cash flow or experience is outside of a person's control and therefore not something every person could use readily to assist role completion. Item 19, though not identified by the participant, was also deleted due to similar reasons. Item 18, "The location of the farm is helpful in terms of being closer to town and its services", was deleted as this would be relevant only for a limited number of farming families.

Items that did not sufficiently fulfil the criteria for deletion but were nonetheless removed from the Interference to Role Completion Scale included Item 1 and 19. These items were removed as they were polarised to Item 27 and 15, respectively, from the

Assistance with Role Completion scale and would therefore be redundant if retained. Items 12 and 14, referring to personal or family health issues and lack of enthusiasm, were deleted as responses to these items would likely have low variance due to health issues or low enthusiasm likely impacting on the role completion of most people. Item 28 was deleted as it was too domain specific, citing work to home interference, and was rated higher by men, suggesting that the item was more relevant for the farmer, the majority of which are men, and not a farming family. As Items 29-39 were all highly inter-related, the items were reworded and amalgamated to reflect the meaning of the items. For example, three key statements seemed to most appropriately reflect the original 11 statements, “Being so emotionally drained from work to contribute to family”, “Being stressed from family responsibilities, results in a hard time concentrating on work”, and “The problem-solving behaviours used in the job are not effective in resolving problems at home”.

Additional items removed from the Buffer Scale included Item 14, “the positive lifestyle elements of the farming life”, as this statement seemed too general and other items referred to the elements that may contribute to a positive lifestyle. Items 16 and 17 were deleted as it did not sufficiently correlate to scale total and satisfy reliability. Item 28 was deleted due to comments from one of the participants that highlighted though this item may be relevant, farmers and partners are often aware of this and therefore it does not affect commitment to farming. Additionally, Items 27 and 31 were deleted upon comments from a participant, indicating for example for Item 31 that though farmers may be unrealistically optimistic, this is a necessary attitude to help with buffering the negative circumstances or stressors. Item 30 was retained regardless of participant comments due to strong themes presented within the Interview content

which suggested those not committed to farming were active in their discouragement of the children to enter into the farming industry.

Additional items removed from the Intergenerational Farming Scale included Items 12 and 13 which referred to being treated differently from external workers and having dual roles. These items were deleted as this outcome is inevitable in an intergenerational farming context and would also be expected from most of those entering this form of business. Items 26-29 were deleted as these items did not seem relevant to measuring the construct as they referred to desirable benefits of a good intergenerational business rather than methods by which potential participants may be operating their intergenerational business. Both Items 23 and 24 were retained despite the items presenting high inter-item correlation. At face value, these items seem to refer to different aspects of intergenerational farming and also seem important for gauging the impact of the farming business on family well-being.

6.4. Conclusion

The key aim in developing these scales was to produce scales that were relevant for all types of farming families (e.g. regardless of business structure, produce type, etc) from across Australia. However, this aim was challenging due to the dynamics within this industry and the access to potential respondents. Nonetheless, some items that may not have been relevant to all farming families were still retained as they were considered very important to a minority. For example the stressor item referring to the quality and availability of employees reflects a very important stressor for horticultural producers and not as important a stressor for beef or broadacre farmers who generally do not require a large number of employees. Items retained in the Farming Family Stressor Scale reflected issues pertaining to retirement, finances, market control, external

influences, family welfare and relationships, personal dispositions, and the future of the farming industry. As a result, this scale at this point of analysis focused on issues which differed to those assessed in previous farm stress scales (e.g. Eberhardt & Pooyan's [1990] Farm Stress Survey) as the current scales included items that considered family, relationships, and personal internal states, and therefore was not simply an assessment of stressors from the farmers perspective. This wider lens allowed for a more comprehensive view of current concerns and stressors that impact upon farming families. To consider stressors from the wider point of view was necessary as previous research by the authors has identified that farming families operate as a fused unit, with the farm being more of a working lifestyle that involves and impacts upon the whole family rather than simply being a form of employment (Chapter 5). This was further emphasised in findings regarding the development of the Farming Family Role Impact Scales which identified multiple sources of conflict, establishing a multi-directional conflict model rather than the generic bi-directional model (Carlson et al., 2000). For instance, items referring to interference with role completion represented themes of work demands and family relationships but also of external sources of interference that were not within individual control, such as errors made by others and problems with technology and accessing services. Furthermore, assistance with duties did not simply reflect the easing of workload/domain demands or increase in time but also personal internal dispositions (e.g. enthusiasm, adaptability, pride) and external sources (e.g. weather).

The establishment of the Farming Family Buffer scale also emphasised the difference in coping styles employed by farming families. For such individuals the predominant determinant of psychological distress appeared to be the extent to which an individual commits to and identifies with the farm. The coping "strategies" deemed

most relevant and important for farming families included items pertaining to emotion-focused and problem-focused strategies. However the scale also included items that were not addressed in the Brief COPE inventory (Carver, 1997), such as “Watching animals” and “Knowing other people are going through the same thing”, the latter item highlighting the importance of community connectedness for farming families.

Through the two studies, the initial item pool was decreased from 519 to 100 items, and resulted in 6 item sets addressing: the Farming Family (FF) Role Impact which comprised of the FF Role Assistance (11 items) and the FF Role Interference (12 items), the FF Stressor (29 items), the FF Cope (25 items), the FF Buffer (commitment and identity) (12 items), and the Intergenerational Farming Impact (11 items). The next stage of scale development focused on preparing each of the scales for validation through pilot testing. This bridged item reduction and validation steps as it not only added to the validation process through questionnaire formatting but also the item reduction process through final qualitative feedback received from an additional target sample.

Chapter 7: Phase 3 – Pilot Study

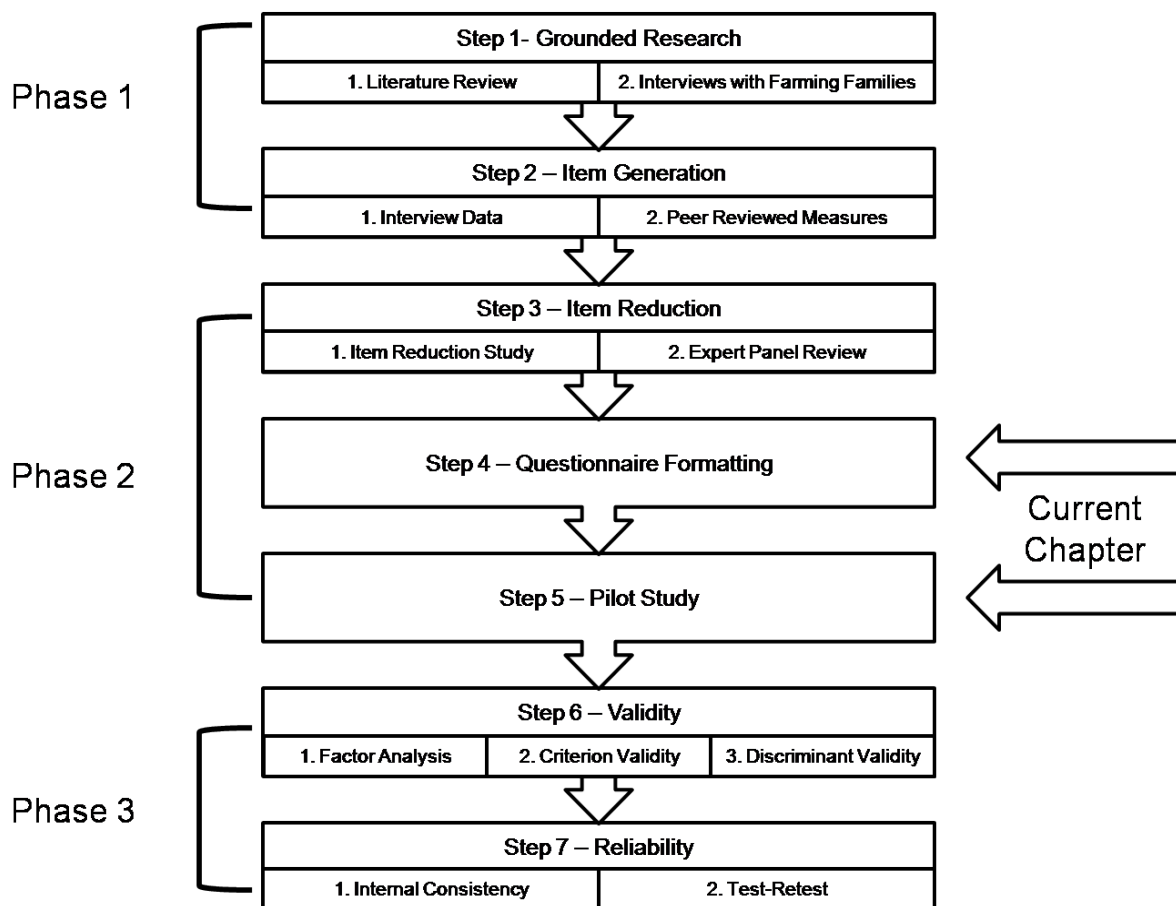


Figure 10. Overview of the process of the development of the Farming Family scales.

7.1 Context of Study

In the previous chapter the procedure undertaken to reduce the item pool into 6 distinct scales was outlined. The initial pool of 519 items was evaluated through two studies which reduced the item pool to 100 items. The generated item sets included the Farming Family (FF) Role Assistance item set (11 items) which focused on circumstances or methods that allowed for ease of completion of roles and responsibilities within any domain. These methods or circumstances included weather conditions, sharing workload, or personal dispositions such as being well rested. The FF

Role Interference item set (12 items) focused on items that impacted or interrupted the completion of roles and responsibilities around the farm or home. These interruptions were not simply bidirectional like many previous models of role conflict, but instead presented interferences from multiple domains, such as from the family, farm, personal dispositions, and external sources. The FF Stressor item set (29 items), which addressed the predominant stressors for farming family members, and therefore referred to stressors relative to farm work, home responsibilities, personal relationships, external demands, financial stressors, and personal states (e.g. exhaustion). The FF Cope item set (25 items) outlined sources and strategies that farming family members felt assisted them in coping with stressors. These sources and strategies focused on multiple themes such as social support, resilience, external locus of control, and active and problem focused coping, as well as some distinct contextually specific items like “watching animals”. The FF Buffer item set (12 items) focused on how the positive commitment and identification with the farm could assist in the coping process and help buffer the negative effects of both stressors and role conflicts. This item set differed from the FF Cope item set as it focused more on the extent of commitment and meaning the individual derived from the farming lifestyle. It was therefore hypothesised that those with low commitment/identification with farming would not manage the stress and role conflicts well, despite the methods of coping utilised. Therefore, unlike the FF Cope item set, the FF Buffer item set more or less assessed the individual state of mind in relation to farming in general rather than what methods or resources they drew upon to cope with stress or conflict. The final scale generated was the Intergenerational Farming (IF) Impact item set (11 items) which addressed the individual’s intergenerational farming business structure, though it is aligned with the FF Role Impact item sets. Compared to the FF Role Impact item sets, the IF Impact item set was also more

positively worded, with higher scores suggesting a more optimal structure of an intergenerational business. Items focused on balance of roles, extent of input, and methods in which the family worked together.

The current chapter aimed to further evaluate these scales through a pilot study. The pilot study incorporated Steps 4 (questionnaire formatting) and 5 (pilot study) of the scale development process. This study assessed the physical layout of each scale, the readability and wording of instructions and each item, and face validity of scales and items (Streiner & Norman, 1989). The outcome of the study provided the final format of the questionnaire package to be administered in the validity study.

7.2. Method

7.2.1. Participants.

Fifty potential participant addresses were randomly generated from a list of 1000 farming addresses from across Australia in order to increase external validity of responses. Two copies of the survey were sent to the 50 addresses (100 surveys), indicating to potential participants that this research was aimed not only at farmers but farming family members over the age of 18 years. Of these potential participants, there were 14 surveys returned (28% response rate, Men=9, Women=5), the majority of these from Queensland (50%) (Table 20). Age within the sample ranged from 19-75 years ($M=51.14$ yrs, $SD=16.81$) with most participants reporting being married (78.6% for an average of 27.54 years ($SD=14.37$)). Most participants had 3 children (50%) who were no longer living at home or financially dependent (64.3%). Participants had been farming for an average of 33.69 years ($SD=13.12$, range 12-60 yrs), with many participants indicating they were members of an intergenerational farming family (64.3%) and identifying their business as a family business with paid external

employees (64.3%). The most frequent farm type identified was a farm that produced multiple products, often a combination of livestock and crops (42.9%) (Table 21).

Table 20. Demographics of Pilot Study sample.

Variable	Freq.
Sex	
Men	9
Women	5
State	
QLD	7
NSW	4
VIC	1
WA	1
SA	1
Marital Status	
Single	1
Married	11
Divorced	1
De Facto	1

7.2.2 Materials.

The questionnaire package (Appendix G) included the 6 scales being developed, titled the FF Role Impact Scale which comprised of the FF Role Assistance (11 items) and the FF Role Interference Scales (12 items), the FF Stressor Scale (29 items), the FF Cope Scale (25 items), the FF Buffer (commitment and identity) Scale (12 items), and the IF Impact Scale (11 items). These scales were assessed using a 5-point Likert scale, from 1="Not at all" to 5="Worries/Helps me a lot" (FFS/FFC) or "Very much so" (FFB, IFI), with the exception of the FF Role Impact Scale.

Table 21. *Demographics of Production & Farming Type for Pilot Study Sample.*

Variable	Freq.
Produce Type	
Broadacre	1
Sugar	1
Beef	2
Other	1
Growing & Livestock	6
Multiple Livestock	1
Multiple Growing	2
Business Structure	
Intergenerational business with unpaid family employees	1
Family business with paid family employees	1
Family business with unpaid family employees	2
Family business with paid external employees	9
Combination family business with family employees & external employees	1
Intergenerational Farm	
	Yes 9
	No 5

The FF Role Impact scale asked participants to indicate the degree to which each item assisted or interfered with role completion within the farm and home domain, from 1=“Mainly home” to 5=“Mainly farm”. Other scales included in the questionnaire package that would be used in the validity study were the Kessler-10 (Kessler et al., 2002), BFI_44 (John, Donahue, & Kentle, 1991; John, Naumann, & Soto, 2008), Work-Family Conflict Scales short version (6 items) (Matthews, Kath, & Barnes-Farrell, 2010; Carlson et al., 2000), the Brief COPE-28 (Carver, 1997), Farm Stress Survey (28 items) (Eberhardt & Pooyan, 1990), and the Satisfaction With Life Scale (5 items) (Diener, Emmons, Larsen, & Griffin, 1985). These scales were included to pilot the size of the questionnaire package and the appropriateness of the scales for the target

population. Additionally, the questionnaire package included a demographic section asking specific questions about the type of business, produce, roles, and region with which the participant identified. A comments section gave respondents the opportunity to provide any further information or recommendations regarding important items they perceived missing, suggestions regarding the wording of questions, the clarity of instructions, and any other general comments regarding the survey.

7.2.2.1 Kessler-10.

The Kessler-10 is a 10-item scale of psychological distress with 5 subscales of Depressed Mood (3 items), Motor Agitation (2 items), Fatigue (2 items), Worthlessness (1 item), and Anxiety (2 items) (Kessler et al., 2002). The K-10 uses a 5-point Likert scale to assess the extent the item best described how the participant had felt in the past 30 days, from 1='None of the time' and 5='All of the time'. However due to a formatting error, the current research used a 4-point scale of 1='None of the time' to 4='Most of the time'. This was thought unlikely to affect analysis due to the K-10 predominantly being used as an index of extent of distress and not as a diagnostic tool in the current research. Further, the current research will also use the K-10 to report the level of psychological distress within the sample, which will be an underestimation due to the formatting of the 4-point scale.

7.2.2.2 Big Five Inventory_44.

The BFI_44 is a 44 item scale of personality traits, specifically assessing the Big Five traits of Neuroticism, Extraversion, Openness to Experience, Conscientiousness, and Agreeableness (John, et al., 1991; John et al., 2008). The BFI_44 is a reduced item set of the larger Big Five Inventory, and asks respondents to rate the extent the described characteristic applied to them on a 5-point Likert Scale (1=Strongly Disagree to 5=Strongly Agree).

7.2.2.3 Work Family Conflict Scales.

The Work-Family Conflict Scale Short Version is a 6-item scale representing a 6-dimensional assessment of conflict between the work and home domains in relation to time, strain, and behaviour based conflict (Matthews et al., 2010; Carlson et al., 2000). Each item is assessed on a 5-point Likert scale and asked participants to indicate the degree they agreed with the statement (1=Strongly Disagree to 5=Strong Agree). The scale presents adequate psychometric properties with internal consistency values of $>.7$ Cronbach alpha coefficients and presents a good fit model $\chi^2(5)=8.43$, $p>.05$, CFI=.99 for Confirmatory Factor Analysis (Matthews et al., 2010).

7.2.2.4 Brief COPE Inventory.

The Brief COPE is a 28 item scale, a reduction from the original scale of the COPE Inventory (Carver, 1997). The Brief COPE assesses different coping styles and asks participants to indicate the extent that they do or do not do this [behaviour] when experiencing stressful events on a 4-point scale where “0=I haven't been doing this at all”, to “3=I've been doing this a lot”. The different coping styles include Active Coping, Self-Distraction, Denial, Substance Use, Emotional Support, Instrumental Support, Behavioural Disengagement, Vent, Positive Reframe, Planning, Humour, Accept, Religion, and Self-Blame (Carver, 1997). Exploratory factor analysis indicated that all primary loadings were $>.4$, with 22 of the 28 items loading $>.6$, and each coping theme presented sufficient internal consistency Cronbach alpha coefficients $>.6$ (Carver, 1997).

7.2.2.5 Farm Stress Survey.

The Farm Stress Survey is a 28-item scale including 6 subscales which assess stressors relevant to farming operations, specifically Hazardous Working Conditions (7

items), Geographic Isolation (5 items), Personal Finances (5 items), Time Pressure (4 items), Climate Conditions (4 items), and General Economic Conditions (3 items) (Eberhardt & Pooyan, 1990). Responses are made on a 7-point scale assessing the extent of personal concern about each item, with higher scores indicating higher levels of concern. The Farm Stress Survey and subscales have good reported internal consistency with Cronbach alpha coefficients $>.8$ with the exception of General Economic Conditions ($<.7$) (Eberhardt & Pooyan, 1990).

7.2.2.6. The Satisfaction with Life Scale.

The Satisfaction with Life Scale is a 5-item scale assessing the degree a person is globally satisfied with their life (1=“Strongly Disagree” to “7=Strongly Agree”) (Diener et al., 1985). The scale presents satisfactory psychometric properties with factor loadings $>.6$, item-total correlations $>.5$, a test-retest correlation $r=.82$, and a Cronbach alpha coefficient of $.87$ (Diener et al., 1985). The scores range from 5 to 35, with 5-9 indicating extremely dissatisfied, 10-14 slightly dissatisfied, 15-19 slightly dissatisfied, 20 neutral, 21-25 slightly satisfied, 26-30 satisfied, 35 indicating high satisfaction (Parvot & Diener, 2009).

7.2.3 Procedure.

The questionnaire package (containing 2 surveys and return stamped envelope) were posted to 50 randomly selected farming addresses (provided by a mailing list company). Recipients were invited to participate and were informed that the survey was applicable to all members of the farming family (18years+) and farmer, and to producers of all types of produce (e.g. grazing, horticulture, grain, dairy, sugar). Furthermore, recipients were informed that this survey was a part of an ongoing process developed through information obtained from other farming families and if they chose to participate they would have the chance to comment on the wording, layout,

instructions, and item content. Participants were given a time frame of two-three weeks to return the survey and were sent a reminder letter at the 3 week point.

7.3 Results

Feedback from participants indicated that there were problems surrounding the FF Role Impact scale in relation to difficulties in instructions and readability of the scale. The response format assessing the degree of helping/interrupting within the farm or home was confusing for participants. The scale was redesigned and the two subscales (FF Role Assistance and FF Role Interference) were combined, with statements worded neutrally (e.g. “Being financially limited” became “My financial situation”). Also, based on responses from participants, items 1, 2, and 5 of the FF Assistance scale and items 7 and 12 of the FF Interruption scale (e.g. “Being adaptable and willing to diversify”; “unreliable access to communication technology”) were removed. These items were removed due to consistent non-responses from participants for these items and cross-scale repetitiveness, reducing the scale to 18 items (Table 22). The scale now asked participants to indicate the degree to which each item interfered with the completion of their roles and responsibilities from “1=Not at all”, to “5=Most of the time”. Additionally, changes were made to the wording of Items 7, 10, and 11 of the FF Buffer Scale. The original wording of these items referred to participant’s children. However, as not all participants would have children, these items were reworded to apply to the broader farming family population (Table 23).

Table 22. *Modifications to the FF Role Impact scale based on pilot study responses.*

Scale	Items Pre-Pilot	Reorder of Item List
FFA	1. Being adaptable and willing to diversify.	Deleted
	2. Being determined.	Deleted
	3. Being well-rested and focused.	1. My level of rested and focus.
	4. Having enthusiasm or motivation for work.	2. My enthusiasm or motivation for work.
	5. Having pride in your land and product.	Deleted
	6. Delegating duties to employed professionals such as agronomists, accountants, and contractors.	3. Delegating duties to employed professionals.
	7. Having good management skills, such as planning and prioritising.	4. My management skills (e.g. planning and prioritising).
	8. Having flexibility in work.	5. The level of flexibility in my work.
	9. When the weather is good.	6. The weather.
	10. Ease of communication between immediate or intergenerational family members.	7. The level of communication between family members.
	11. Sharing my workload with others.	8. Sharing my workload with others.
FFI	1. The continuous work demand.	9. The continuous work demand.
	2. The unpredictability of duties.	10. The unpredictability of duties.
	3. Having to attend education courses, programs, and meetings for the farm and business.	11. Having to attend educational courses, programs, and meetings.
	4. Intergenerational tension or conflict.	12. Family tension or conflict.
	5. Family or recreational commitments or holidays.	13. Spending time with family or recreational commitments or holidays.
	6. Being financially limited.	14. My financial situation.
	7. The unreliable access to communication services (phone service, internet connections).	Deleted
	8. When things go wrong on the farm, in the home, in the business, or when other people make mistakes.	15. When things go wrong or when other people make mistakes.
	9. The availability and quality of employees.	16. The availability and quality of employees.
	10. Being so emotionally drained from work to contribute to family.	17. Being too emotionally drained from other jobs and responsibilities.
	11. Being stressed from family responsibilities, results in a hard time concentrating on work.	18. Being stressed or worried about some jobs and responsibilities.
	12. The problem-solving behaviours used in the job are not effective in resolving problems at home.	Deleted

Table 23. *Modifications to the FF Buffer scale based on pilot study responses.*

Items Pre-Pilot	Edited Items
7. Being part of a farming family is good for the children's future as they gain a lot of skills.	7. As a part of a farming family, you gain a lot of skills.
10. For the children's future so they can benefit from the farm in some way.	10. For the next generation so they can benefit from the farm in some way.
11. The children are encouraged to go into farming.	11. The children are or will be encouraged to go into farming.

7.4 Conclusion

Outcomes of the Pilot Study demonstrated the value and necessity of this step as a bridging step between the item reduction phase and the validity study as it resulted in further reduction of items. Items were removed due to low face validity, specifically in regards to discrimination of items and ambiguous formatting or inappropriate wording of instructions. For instance, feedback on wording of instructions and format of the Role Impact scale resulted in a further 5 items being removed from the item list and the scale restructured. Additionally, changes were also made within the instructions of the non-farming scale of the Brief COPE Inventory. Changes were made as it was likely the word "stress" deterred participants from completing the scale. Comments from participants regarding the Brief COPE indicated that they "don't get stressed", even though both participants had completed both the FF Stress scale and the Farm Stress Survey. It has been noted that this population may experience stigma towards mental health (Judd et al., 2006b) and throughout this research project the principal researcher had noted the negative reactions of participants or potential participants to the word "stress", particularly in relation to men's willingness to participate. Furthermore, changes to the rewording of items within the Buffer Scale in regards to relevancy to all ages, with or without children, was still considered valid as the core meaning of items were still linked to issues identified by farming families. The resulting scales that were

produced for item validation included the FF Role Impact Scale (18 items), the FF Stressor Scale (items), the FF Cope Scale (25 items), the FF Buffer Scale (12 items), and the Intergenerational Farming (IF) Impact Scale (11 items) (Tables 24-28).

Table 24. *FF Role Impact Scale item list pre-validation stage.*

-
1. My level of rest and focus.
 2. My enthusiasm or motivation for work.
 3. Delegating duties to employed professionals.
 4. My management skills (e.g. planning and prioritising).
 5. The level of flexibility in my work.
 6. The weather.
 7. The level of communication between family members.
 8. Sharing my workload with others.
 9. The continuous work demand.
 10. The unpredictability of duties.
 11. Having to attend educational courses, programs, and meetings.
 12. Family tension or conflict.
 13. Spending time with family or recreational commitments or holidays.
 14. My financial situation.
 15. When things go wrong or when other people make mistakes.
 16. The availability and quality of employees.
 17. Being too emotionally drained from other jobs and responsibilities.
 18. Being stressed or worried about some jobs and responsibilities.
-

Table 25. *FF Stressor Scale item list pre-validation stage.*

-
1. Getting services (such as mechanics, agronomists, product transport trucks, employees) out to the property.
 2. Unreliable communication technology, such as phone reception and internet service.
 3. Isolation from people and services, such as health services, shops (e.g. groceries), social opportunities.
 4. Feeling exhausted, having no energy, or not enthusiastic about work.
 5. Talking about stress.
 6. The health, safety and welfare of yourself or a family member as a result of the farm (e.g. risk of injury, effects of chemicals).
 7. Distance from children and family.
 8. Trying to keep up with family duties and responsibilities (e.g. taking care of partner or children.).
 9. Maintaining personal and family relationships.
 10. Providing sufficiently for family.
 11. When to retire.
 12. Concerns over retirement (e.g. if partner will retire, financial issues)
 13. Succession issues involved with the process of passing on the farm and dividing the asset.
 14. Working with family members.
 15. Difficulties surrounding the availability and quality of workers.
 16. Having too much to do for one person.
 17. Workload that is increased or interrupted due to other people's errors.
 18. The amount of chemicals used in the industry.
 19. Other farmers doing the right thing or having poor farming practices.
 20. The future of the primary industry and what is going to happen to farming.
 21. The Australian public and Government do not value the industry enough.
 22. Market control and its effect on product and income.
 23. The price mark-up in supermarkets.
 24. The amount of foreign products in the market.
 25. The financial situation of the farm.
 26. Economic stability.
 27. The cost-profit margin in farming in relation to the increase of price of inputs and the discrepancy between financial return and effort put in.
 28. The price of land.
 29. The constant change in technology is increasingly expensive or difficult to understand.
-

Table 26. *FF Cope Scale item list pre-validation stage.*

1.	Accept what you do and do not have control over.
2.	Accept responsibility and face the issue.
3.	Enjoy work and have a lot of job satisfaction.
4.	Remembering past difficulties or experience to help with current issues.
5.	Be positive and satisfied with life.
6.	Recognising achievements.
7.	Visit friends, family, neighbours, or socialise in general.
8.	Faith or religious beliefs.
9.	Share workload with others (e.g. partner or family).
10.	Open communication within the family.
11.	Not alone as other people are going through the same thing.
12.	To help you wind down you like to have a beer, wine, or other alcoholic drink.
13.	Having a good laugh at yourself.
14.	Watching animals.
15.	Get away to a different view, some location where the scenery is completely different from home.
16.	Exercise, such as going for walks.
17.	Focus on dealing with this problem and, if necessary, let other things slide a little.
18.	Just to go with the flow.
19.	Take the opportunity to have a break by doing something else.
20.	Trust amongst each other (e.g. family).
21.	Commitment to responsibilities.
22.	Compromising with each other.
23.	Taking things one step at a time or prioritising.
24.	If there is too much to do, delegate certain responsibilities or ask advice of professionals (e.g. agronomists, accountants, planters, workers, counsellor).
25.	Talk to partner or someone else.

Table 27. *FF Buffer Scale item list pre-validation stage.*

-
1. Enjoy working with animals or watching things grow and getting satisfaction from a good product.
 2. Enjoy the work and challenge of the farm.
 3. Being a land owner as you can do what you want when you want, within reason.
 4. Being down-to-earth.
 5. Like improving the land and having pride in its appearance.
 6. The surrounding environment and landscape of location.
 7. As a part of a farming family, you gain a lot of skills.
 8. Farming contributes to people in general.
 9. Farming is who you are.
 10. For the next generation so they can benefit from the farm in some way.
 11. The children are or will be encouraged to go into farming.
 12. The sentimental value of the farm, its tradition.
-

Table 28. *IF Impact Scale item list pre-validation stage.*

-
1. There is a difference in the quality of work or perceived workload between family members.
 2. Members have an equal say in what happens on and the direction of the farm and business.
 3. Each member is committed to the business and farm – they want to be there.
 4. Members have good relationships with each other.
 5. There is open and honest communication between family members.
 6. Each member has common goals, they all agree generally with the direction of the farm.
 7. There is jealousy amongst siblings in terms of perceived favouritism.
 8. There is central management, so all members have their responsibilities and live as separate families but there are one or two members who manage the business.
 9. There is loyalty among family members.
 10. There is a good and clear succession plan in place.
 11. Members trust and accept decisions made by other members.
-

Chapter 8: Phase 3 – Validating the Struggles and Triumphs

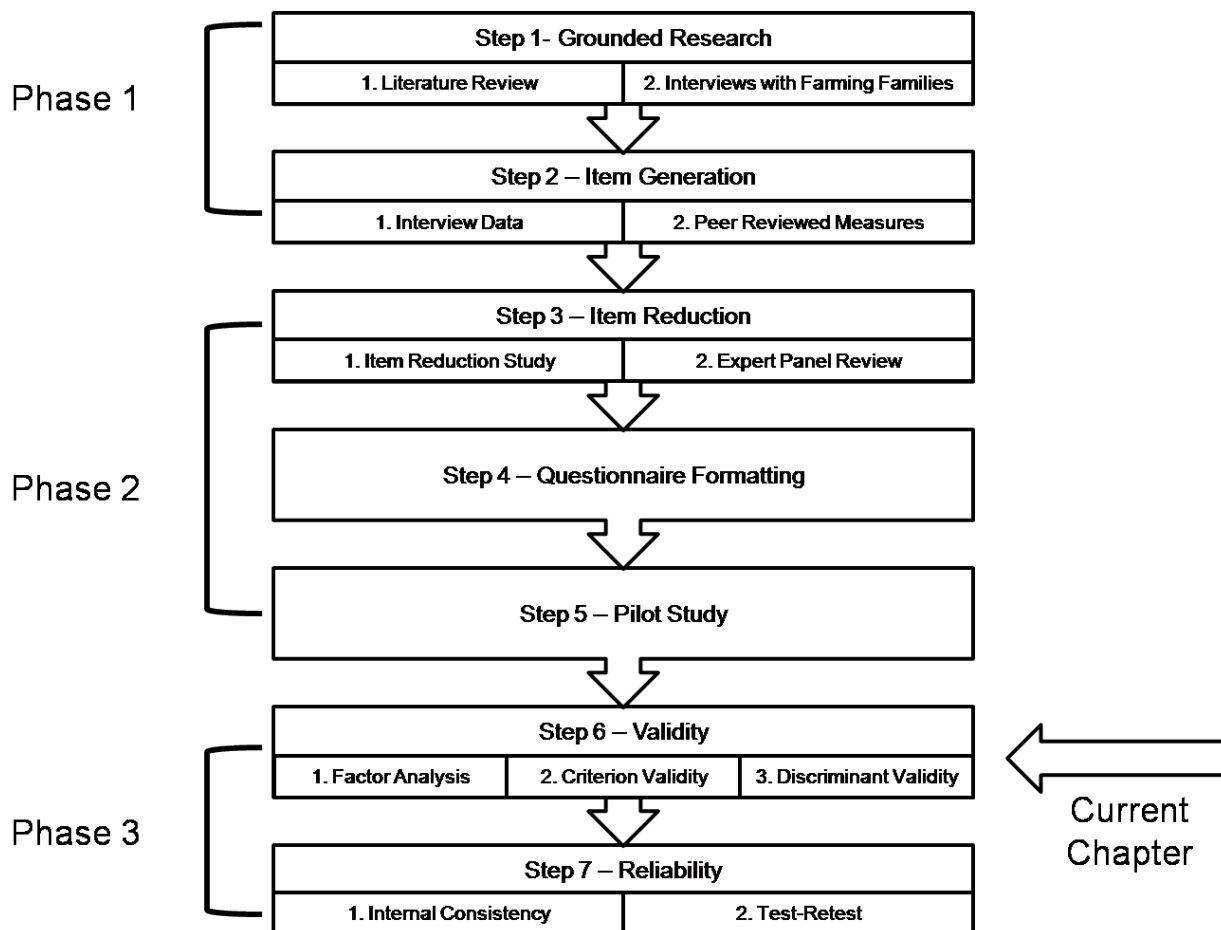


Figure 10. Overview of the process of the development of the Farming Family scales.

8.1 Context of Study

The previous chapter outlined the findings from the Pilot Study which encompassed Step 4 and 5 of scale development (Streiner & Norman, 1989). The outcomes of the Pilot Study included further reduction and formatting changes to the role impact scales of Assistance with Role Completion and Interference with Role Completion. This resulted in the single scale of the Role Impact Scale (18 items). Items within the FF Buffer Scale were reworded to be applicable to a wider population, and changes were made to the instructions of the Brief COPE Inventory, substituting the

word “stress” for “concerning” and “worrisome”. These changes to instructions were made due to the stigma the farming population has been reported to have towards stress and mental health (Judd et al., 2006b). Findings from previous stages in scale development in the current research suggested that substituting the word “stress” for “concerning” and “worrisome” was more acceptable for this population. The following preliminary scales were developed: Farm Family (FF) Role Impact Scale (18 items), the FF Stressor Scale (29 items), the FF Cope Scale (25 items), the FF Buffer Scale (12 items), and the Intergenerational Farming (IF) Impact Scale (11 items) (Tables 24-28).

The current chapter aimed to further evaluate these scales through a validation study, which was Step 6 of scale development (Streiner & Norman, 1989) (Figure 10). The validation study used exploratory factor analysis, criterion validity, and discriminative validity techniques to assess the validity of the farming family scales. Factor analysis was used to identify the underlying factors or themes of each scale (Streiner & Norman, 1989). This process is a recommended technique in scale development (Streiner & Norman, 1989). Factor analysis assists in the validation of scales as poor item validity is identified through items which load on factors that do not have face validity or items that load weakly on multiple factors. Items identified through this process would suggest removal of that item.

Criterion (concurrent) validity involved the comparison of scores on each farming family scale to a similar existing scale, indicating that the appropriate construct was being measured (Streiner & Norman, 1989). Specifically, the FF Role Impact Scale was correlated with the Work-Family Conflict Scales (Carlson et al., 2000), with positive correlations expected as both scales assessed role interference. The Work-Family Conflict Scales were selected for criterion validity as it assessed role conflict from both directions of the work and home domains across multiple conflict types of time, strain,

and behavior (Carlson et al., 2000). Additionally, the IF Impact Scale was correlated with the Work-Family Conflict Scales (Carlson et al., 2000) and the FF Role Impact Scale. The IF Impact Scale was compared to scales of role interference as no similar scales within the literature were identified as suitable for comparison. Nonetheless, as the IF Impact Scale assessed a positive working environment, it was expected that this scale would negatively correlate with both the FF Role Impact Scale and the Work-Family Conflict Scale as these scales suggest a poor working environment (Carlson et al., 2000; McShane & Quirk, 2009).

The FF Stressor Scale was correlated with the Farm Stress Survey (Eberhardt & Pooyan, 1990) as this scale had demonstrated international applicability in assessing farmer stress (note: not farm family) (Alpass et al., 2004; Glassock et al., 2006; McShane & Quirk, 2009). The relationship between these two scales was expected to be positive as both scales assessed stressors.

The FF Cope Scale and the FF Buffer Scale were correlated with the Brief COPE Inventory as all scales assessed coping behaviours, strategies or attitudes which affected the individual's ability to manage stressors and role interference. The Brief COPE Inventory has strong psychometric properties, includes a range of coping themes (including positive and negative coping styles) (Carver, 1997), and has been used in a farming setting in previous research (Gunn, 2008). As a scale total, the FF Cope Scale was expected to positively correlate with the Brief COPE, however specific positive and negative relationships were expected to be observed in comparisons between the underlying factors of the FF Cope Scale and the existing coping styles of the Brief COPE. The FF Buffer Scale was also predicted to positively correlate with the Brief COPE, specifically with the coping styles of positive reframing, acceptance, and denial. This hypothesis was based upon the nature of the key themes from the interview content

that contributed to the development of the FF Buffer Scale (Chapter 5). For example, commitment and identification with farming was linked to the individual being unrealistically optimistic, enjoying farming despite adversity, and accepting challenges as a part of lifestyle (Chapter 5). Additionally, the FF Buffer Scale was also correlated with the FF Cope, with a positive relationship expected. This was expected due to themes from the interview content which suggested that strong commitment/identification with the farm should buffer stress and assist in the coping process (Chapter 5).

Discriminant validity also aimed to ensure that the scale under development assessed an appropriate and meaningful construct. However, unlike criterion validity, this was done by assessing how the developing scale relates to other constructs (Streiner & Norman, 1989). Scales selected for this task included the Kessler-10 (K-10) (Kessler et al., 2002), a measure of psychological distress; the Satisfaction with Life Scale (SLS) (Diener et al., 1985), a measure of life satisfaction; the Maslach Burnout Inventory_General Survey (MBI_GS) (Maslach et al., 1996), as a measure of burnout; and the Brief COPE Inventory (Carver, 1997), a measure of different coping styles. The FF Stressor and FF Role Impact Scales were expected to positively correlate with the K-10 and MBI_GS and negatively correlate with the SLS as these farm family scales assess levels of stress and role interference, which negatively impacts mental health and well-being (Carlson et al., 2000; Eberhardt & Pooyan, 1990; McShane & Quirk, 2009). The FF Cope, FF Buffer, and IF Impact Scales were expected to negatively correlate with the K-10 and MBI_GS and positively correlate with the SLS as these farm family scales were measuring themes of managing stressors and challenges or positive working environments. Generated subscales (underlying factors) of the FF Cope were also expected to correlate differentially with the alternative coping styles of the Brief COPE

Inventory. For example, if the FF Cope produced a factor of positive coping styles, this subscale would then be expected to correlate negatively with Brief COPE Inventory themes of self-blame, denial, and substance use. Additionally, a similar trend was also expected of the FF Buffer Scale. As well, scores on the FF Buffer Scale were expected to have a positive relationship with scores on the professional efficacy component of the MBI_GS, as this component can be considered as the buffering component of the burnout scale.

Through the aforementioned process, the psychometric properties of the scales will be identified and the level of validity determined. Additionally, factor analysis will identify the underlying subscales and themes of the farming family scales. Essentially this study aims to answer the question: Does this item/scale measure what it was intended to measure?

8.2 Method

8.2.1 Participants.

Farming family members (N=278, Men=100, Women=178) were recruited from across Australia to participate in the validation of the FF Role Impact Scale, the FF Stressor Scale, the FF Cope Scale, the FF Buffer Scale, and the IF Impact Scale. The participants ranged from 22years to 77years of age, with men presenting a mean age of 51.23 years (SD= 1.37) and women a mean age of 47.89 years (SD= 0.88) (Table 29). Most participants were identified in the 46-64yrs (N=132) and the 31-45yrs age groups (N=82). The majority of participants reported being married (85.5%), with a mean length of relationship of 23.02years (SD=13.06). Most participants reported having 2 children (31.9%) who were financially dependent (20.9%) children living at home (21.8%). Over one-third of participants reported that they had completed an

undergraduate degree (Men=30.9%, Women=38.6%) and approximately 9% (Men=1.0%, Women=13.6%) of the participants had completed a post-graduate degree (i.e. PhD or Masters). Only 4% (Men=9.3%, Women=1.1%) reported that they had not completed Year 10 at high school (Table 29).

Table 29. *Demographics of Validity Study population.*

Variable	Valid	Freq.	Mean	Std. Dev.	Min	Max
Age	268		49.06	12.34	22.00	77.00
	18-30	20				
	31-45	82				
	46-64	132				
	65-80	34				
State	277		n/a	n/a	n/a	n/a
	QLD	105				
	NSW	83				
	VIC	45				
	WA	24				
	SA	8				
	TAS	3				
	NT	7				
	ACT	2				
Marital Status	276		n/a	n/a	n/a	n/a
	Single	17				
	Married	236				
	Divorced	3				
	Separated	2				
	De Facto	11				
	In a relationship	6				
	Other	1				
Length of Relationship	264	n/a	23.02	13.06	.00	71.00
No. of Children	273	n/a	2.33	1.39	.00	8.00
No. of Financial Dependent Children	263	n/a	1.14	1.29	.00	5.00
No. Children Living at Home	266	n/a	1.06	1.22	.00	5.00
Education Level	273					
Did not complete Year 10	11					
Completed Year 10	39					
Completed Year 12	39					
Completed Trade	22					
Completed Undergraduate Degree	98					
Completed Post-Graduate Degree	25					
Completed Diploma	22					
Other	17					

Participants were recruited through advertisements in industry-related magazines and e-newsletters, rural newspapers, industry-relevant websites, a facebook community page, a mail drop to 953 potential participants (addresses acquired from a mailing company), and emails distributed through networks. Recruitment was targeted to reflect the ratio of farmers per state/territory and types of producers, in order to improve the representativeness of the sample.

Based on data from the National Farmers Federation, the proportion of farmers per state that were targeted for recruitment were 31.2% from New South Wales, 24.6% Victoria, 20.8% Queensland, 10.7% South Australia, 9.3% Western Australia, 2.9% Tasmania, 0.4% Northern Territory, and 0.02% Australian Capital Territory (NFF, 2010). It was difficult to target specific types of producers, however as each state specialises in a particular subset of produce type, it was determined that a proportionate level of produce types could be relatively achieved. The resulting demographic analysis found the majority of participants were from Queensland (37.9%), followed by New South Wales (30.0%), Victoria (16.2%), Western Australia (8.7%), South Australia (2.9%), Northern Territory (2.5%), Tasmania (1.1%), and the Australian Capital Territory (0.7%). The most identified types of produce included broadacre cropping (26.7%), horticulture (25.6%), wool (22.0%), sheep meat (26.7%), and beef (43.0%) (Table 30).

Participants reported being involved in farming, on average, for 25.6 years (SD=14.4) and 59.0% indicated that they were currently, or had previously, been involved with an intergenerational farming business. It should be noted that a number of participants did indicate a cumulative number of years the family had been involved in farming, often going back multiple generations (e.g. 100+ years). In these cases the number of years was not included in the data set, yet it is important to note as it

represents the collectivist nature of this population as the individual at times considers their place in the world from a family perspective rather than an individual perspective.

Table 30. *Demographics of Produce type and Farming Structure.*

Variables	Valid	Freq.	Mean	Std. Dev.	Min	Max
Produce Type	277		n/a	n/a	n/a	n/a
Broadacre		74				
Rice		5				
Horticulture		71				
Pig Meat		3				
Sugar		13				
Wool		61				
Sheep Meat		74				
Cotton		9				
Beef		119				
Wine/Grapes		5				
Poultry		1				
Dairy		10				
Other		48				
Yrs Farming	265	n/a	25.57	14.40	1.00	80.00
Business Structure	274		n/a	n/a	n/a	n/a
Intergenerational Business with paid family employees		19				
Intergenerational Business with unpaid family employees		13				
Intergenerational Business with paid external employees		15				
Family Business with paid family employees		19				
Family Business with unpaid family employees		67				
Family Business with paid external employees		57				
Non-Family Business with paid external employees		16				
Combination Intergenerational Business with family employees & external employees		15				
Combination Family Business with family employees & external employees		17				
Multiple Intergenerational Business employee type		17				
Other		19				
Intergenerational Farm	271		n/a	n/a	n/a	n/a
Yes		160				
No		111				

Participants most often indicated that their farming business was structured as a family business with unpaid family employees (24.5%) or a family business with paid external employees (20.8%). The leading roles around the farm or business for men

included identifying as the owner (67%), the manager (45%), and performing administrative duties (37%). The leading roles around the farm or business for women included performing administrative duties (52.8%), being in a partnership (50.6%), being the owner (48.9%), and managing the finances (48.3%) (Table 31).

The leading roles around the home or family identified by men included being the breadwinner (79.4%), attending to outside duties (e.g. mowing, maintenance) (45.4%), and ensuring the family was happy and satisfied (34%). Women highly identified as being responsible for all roles around the home, particularly house duties (e.g. cleaning, cooking) (87.4%) and keeping the family happy and satisfied (74.9%).

Table 31. *Farm and Home Roles.*

Variable	Valid	Men Freq.	Men %	Women Freq.	Women %
Role on Farm					
Owner	278	67	67.0	87	48.9
Final Decision		27	27.0	15	8.4
Manager		45	45.0	24	13.5
Partnership		31	31.0	90	50.6
Manage Employees		30	30.0	29	13.3
Labourer		29	29.0	42	23.6
Administrative Duties		37	37.0	94	52.8
Financial Duties		32	32.0	86	48.3
Family Employee		7	7.0	21	11.8
Collaborate with Family		21	21.0	44	24.7
Collaborate with Government Programs		22	22.0	41	23.0
Attend Educational Programs		23	23.0	55	30.9
Helper		3	3.0	63	35.4
Off-farm Volunteer		9	9.0	27	15.2
Off-farm Job		8	8.0	63	35.4
Other		2	2.0	15	8.4
Role in Home					
Carer	272	26	26.8	102	58.3
Breadwinner		77	79.4	84	48.0
House Duties		22	22.7	153	87.4
Outside Duties		44	45.4	126	72.0
Family Happiness / Satisfaction		33	34.0	131	74.9
Other		10	10.3	36	20.6

To gauge participants' physical and mental health, participants were asked to indicate if in the last ten years they had had a type of cancer other than skin cancer, high

blood pressure, heart disease, a work-related injury, depression, anxiety, or suicidal thoughts. Participants were also asked if they had taken or been prescribed anti-depressants, anxiolytics, or sleeping tablets. Men reported higher levels of a history of high blood pressure (16%), work-related injury (26.5%), depression (35.4%), and taking more than one medication type (9.5%) than women. Women most frequently reported a history of high blood pressure (13.7%), workplace injury (15.4%), anxiety (29.4%), and taking anti-depressant medication (13.7%). Women also reported higher levels of suicidal thoughts (5.1%) than men (1%) (Table 32).

Table 32. *Past 10 year history of physical and mental health.*

Variable	Valid	Men Freq.	Men %	Women Freq.	Women %
Physical Health	273				
Cancer		5	5.1	5	2.9
High Blood Pressure		16	16.3	24	13.7
Heart Disease		8	8.2	4	2.3
Farm Work-related Injury		26	26.5	27	15.4
Other		5	5.1	15	8.6
No Illness		49	50.0	117	66.9
Mental Health	276				
Depression		35	35.4	50	28.2
Anxiety		30	30.3	52	29.4
Suicidal Thoughts		1	1.0	9	5.1
Other		3	3.0	13	7.3
No Mental Illness		51	51.5	92	52.0
Medication	270				
Anti-Depressant		7	7.4	24	13.7
Anti-Anxiety		0	0.0	5	2.9
Sleeping Tablet		5	5.3	3	1.7
Multiple		9	9.5	6	3.4
Other		1	1.1	2	1.1
No medication		73	76.8	135	77.1

Note: If a participant reported more than one medication type, then it was coded as 'multiple medication' and was not coded separately as 'anti-depressant', 'anxiolytic' or 'sleeping tablet'.

8.2.2 Materials.

The questionnaire package included the 5 scales being developed, which were FF Role Impact Scale (18 items), the FF Stressor Scale (29 items), the FF Cope Scale (25 items), the FF Buffer Scale (12 items), and the IF Impact Scale (11 items) (Appendix

H). Scales were assessed on a 5-point Likert scale, with FF Stressor items rated from 1="Not at all" to 5="Worries me a lot" and the FF Cope items rated from 1="Not at all" to 5="Helps me a lot". The FF Buffer and IF Impact items rated from 1="Not at all" to 5="Very much so", and the FF Role Impact items rated from 1="Not at all" to 5="Most of the time".

Other scales included for validity purposes were the Kessler-10 (Kessler et al., 2002) to assess psychological distress; the BFI_44 to assess personality variables (John, Donahue, & Kentle, 1991; John, Naumann, & Soto, 2008); the Work-Family Conflict Scales short version to assess inter-role conflict (6 items) (Matthews et al., 2010; Carlson et al., 2000); the Brief COPE-28 to assess coping mechanisms (Carver, 1997); Farm Stress Survey to assess farm work related stressors (28 items) (Eberhardt & Pooyan, 1990); and the Satisfaction With Life Scale to assess well-being and life satisfaction (5 items) (Diener et al., 1985). Furthermore, part way through data collection preliminary analysis suggested that the assessment of well-being needed to be extended, therefore the Maslach Burnout Inventory: General Survey (MBI_GS) (Maslach, Jackson, & Leiter, 1996) was added to the questionnaire package (Appendix H). The MBI_GS assesses work-related burnout and was therefore thought an appropriate addition to the questionnaire package as the research focussed on the impact of the working environment on well-being. The MBI_GS was added approximately one-third of the way of the data collection period, with 24.8% (n=69) of the total participant pool having already completed the survey. The questionnaire package also included a demographic section asking specific questions about the type of business, produce, roles, and region that the participant identified with. Participants were provided with the opportunity to comment at the end of each FF scale. This

questionnaire package was available via an online survey website, Survey Monkey, and a hard copy was available on request.

8.2.2.1 Maslach's Burnout Inventory_General Survey.

The MBI-GS assesses work-related burnout in relation to degree of emotional exhaustion (5 items), professional efficacy (6 items), and cynicism (5 items) (Maslach et al., 1996). Items are assessed on a 7-point scale reflecting the degree to which the participant had ever felt a particular way about their work (0="Never", to 6="Every day"). Each item of the MBI-GS has good internal consistency, with Cronbach alpha coefficients $>.7$, and sound validity with factor loadings $>.5$ and cross-sample consistency in factor structure. High burnout is indicated with high levels of emotional exhaustion (mean score greater than 3.20) and cynicism (mean score greater than 2.20) and low levels of professional efficacy (mean score less than 4.00) (Maslach et al., 1996).

8.2.3 Procedure

A letter inviting participation in an online survey (or to alternatively have a hard copy posted out) was mailed to 953 potential participants. A web-link to the survey and contact details of the principal investigator was posted on industry relevant websites, promoted through a facebook community page, and circulated through e-newsletters, newsletters, and email networks of industry-relevant organisations (e.g. fruit and vegetable organisations, cattle organisations, or state farming organisations). At two weeks following initial contact with an organisation, the principal investigator requested a follow-up notice to be redistributed throughout networks to remind potential participants of the opportunity to participate. Data was collected over a 4 month period (July to November). Data was then downloaded and entered into SPSS for analysis.

8.3. Results

Data was screened for outliers and items were assessed for normality through examining the level of skewness and kurtosis. Cases were deleted if the participant hadn't completed all Farming Family scales, with the exception of the Intergenerational Farming Impact Scale as this scale was targeted at a select group. Cases were retained if the participant had completed all Farming Family scales but did not complete all additional scales (K-10, SLS, FSS, etc.) as it was determined that these partially completed cases could still be useful in relation to factor analysis and reliability study comparisons.

8.3.1. Exploratory Factor Analysis

To satisfy the criteria for validity through factor analysis, items should present factor loadings $>.32$ and the items clustered on each factor should have face validity (Tabachnick & Fidell, 2001). For those factors which have less than two items loaded, these items should be flagged for further analysis in subsequent stages of validation (i.e. criterion and discriminant validity). For factor analysis to be used effectively, an appropriate sample size is required with Tabachnick and Fidell (2001) recommending a minimum ratio of 5 cases per item. As the largest scale being assessed in this study had 29 items (FF Stressor Scale), then a sample size of $N=145$ was required for factor analysis. Suitability of data for factor analysis was achieved as the current study sample size was $N=278$, the correlation matrices for each scale indicated a number of coefficients of $r \geq .3$ present, a KMO value $>.84$ (recommended value is $>.6$) and Bartlett's test of Sphericity of $p < .05$ for each farming family scale.

8.3.1.1. Factor analysis of Farming Family Role Impact Scale

Initial analysis indicated 4 factors with eigenvalues >1.0 , accounting for a cumulative 59.36% of variance (Table 33). Inspection of the scree plot suggested that 3

factors may produce a better fit (Figure 11). After comparing rotated component matrices of 2, 3 and 4 factors, it was determined that the best fit for the FF Role Impact Scale was 3 factors. Factor 1 (22.40% of the variance) contained 7 items clustering around the theme of “facilitate role completion”. Factor 2 (22.35% of the variance) contained 9 items with a theme of “inhibitors of role completion”. Factor 3 (8.51% of the variance) consisted of 2 items referring to “moderators of role completion”. The items within Factor 3 were identified for possible deletion depending on findings of further analysis due to the size of the factor (consisting of only 2 items), yet the high loadings of the items “family tension” and “level of communication” ($r=.746$, $r=.670$, respectively) were noted (Table 34).

Table 33. *Number of factors initially extracted from the FF Role Impact Scale.*

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.865	38.138	38.138	6.865	38.138	38.138
2	1.555	8.640	46.778	1.555	8.640	46.778
3	1.167	6.483	53.260	1.167	6.483	53.260
4	1.097	6.095	59.355	1.097	6.095	59.355
5	.951	5.285	64.639			
6	.813	4.517	69.156			
7	.796	4.420	73.576			
8	.670	3.724	77.300			
9	.627	3.481	80.781			
10	.574	3.187	83.968			
11	.494	2.743	86.712			
12	.457	2.537	89.249			
13	.405	2.249	91.497			
14	.373	2.072	93.570			
15	.356	1.980	95.550			
16	.315	1.749	97.299			
17	.281	1.560	98.859			
18	.205	1.141	100.000			

Extraction Method: Principal Component Analysis.

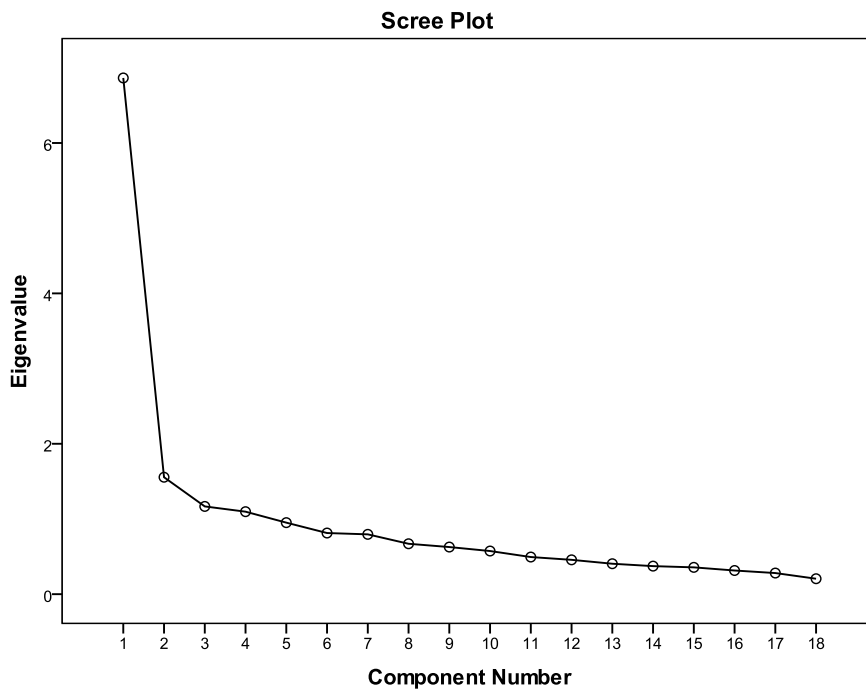


Figure 11. Scree plot indicating number of factors extracted for the FF Role Impact Scale.

Table 34. Rotated component matrix^a output for Farming Family Role Impact Scale.

	Component		
	1	2	3
Management Skills	.808		
Enthusiasm	.800		
Flexibility	.736		
Delegating	.636		
Share workload	.614		
Rested	.475		
Courses & Meetings	.335		
Things go Wrong		.754	
Finances		.676	
Unpredictability of Jobs		.673	
Emotionally Drained		.607	
Stressed		.605	
Work Demand		.586	
Time with Family		.579	
Weather		.541	
Employees		.470	
Family Tension			.746
Communication			.670

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

8.3.1.2. Factor Analysis of Farming Family Stressor Scale

Initial analysis indicated 7 factors with eigenvalues >1.0 , explaining a cumulative 68.46% of variance (Table 35). Inspection of the scree plot suggested that 4 factors may produce a better fit (Figure 12). After comparing rotated component matrices of 4, 5, and 6 factors, it was determined that the best fit for the FF Stressor Scale was 5 factors.

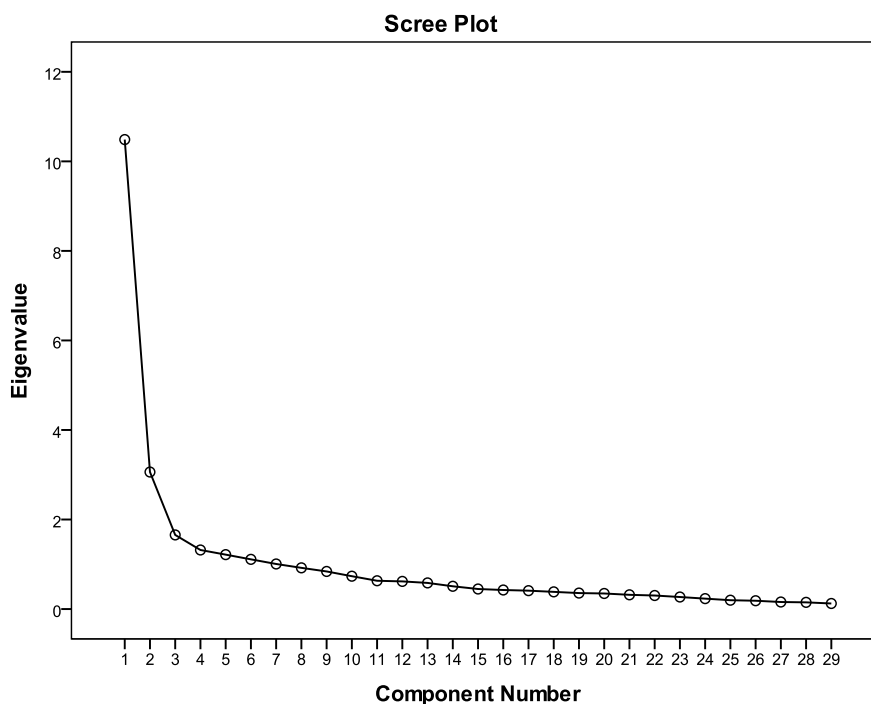


Figure 12. Scree plot indicating number of factors extracted for the FF Stressor Scale.

Factor 1 (19.44% of the variance) contained 9 items clustering around the theme of “external and financial pressures”. Factor 2 (15.38% of the variance) contained 9 items and centred on “family and personal concerns”. Factor 3 (12.22% of the variance) consisted of 6 items referring to “future concerns” predominantly in relation to retirement and succession issues. Factor 4 (8.43% of the variance) contained 3 items centred on “daily stressors”. Factor 5 (5.69% of the variance) contained only 2 items best described as “uncontrollable factors” as these items referred to “other farmers practices” and the “amount of chemicals in the industry”, which the individual would have no influence or control over. These items within Factor 5 were identified for

possible deletion depending on findings with further analysis due to the size of the factor. At this point the items were retained due to the high loadings ($r=.730$, $r=.704$, respectively). “The continuous workload” was an item presented in Factor 2, Family and Personal Concerns. However, this item also loaded highly on Factor 4, “daily stressors”, and it was determined that it would be a better fit for this item to be represented in the latter factor. Furthermore, “talking about stress” was an item identified in Factor 3 (future concerns/retirement issues) and Factor 2 (family and personal concerns), with Factor 2 determined to be the more appropriate for the item (Table 36).

Table 35. *Number of factors initially extracted from the FF Stressor Scale.*

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	10.487	36.161	36.161	10.487	36.161	36.161
2	3.060	10.553	46.715	3.060	10.553	46.715
3	1.656	5.709	52.424	1.656	5.709	52.424
4	1.319	4.549	56.973	1.319	4.549	56.973
5	1.215	4.191	61.164	1.215	4.191	61.164
6	1.110	3.828	64.992	1.110	3.828	64.992
7	1.007	3.472	68.464	1.007	3.472	68.464
8	.920	3.174	71.638			
9	.840	2.896	74.534			
10	.734	2.530	77.064			
11	.632	2.179	79.243			
12	.618	2.130	81.373			
13	.584	2.013	83.386			
14	.509	1.754	85.140			
15	.448	1.544	86.684			
16	.425	1.467	88.151			
17	.411	1.417	89.568			
18	.384	1.324	90.892			
19	.357	1.231	92.123			
20	.348	1.199	93.322			
21	.318	1.097	94.419			
22	.303	1.043	95.462			
23	.269	.927	96.389			
24	.233	.803	97.192			
25	.198	.681	97.873			
26	.186	.640	98.513			
27	.157	.542	99.056			
28	.150	.516	99.572			
29	.124	.428	100.000			

Extraction Method: Principal Component Analysis.

Table 36. *Rotated component matrix^a output for Farming Family Stressor Scale*

	Component				
	1	2	3	4	5
Supermarket	.837				
Foreign Products	.828				
Australian Public & Government	.824				
Market Control	.810				
Cost-Profit Margin	.791				
Future of Industry	.746				
Economy	.586				
Farm Financial Situation	.542				
Price of Land	.496				
Family Duties		.767			
Maintaining Relationships		.710			
Distance of Family		.698			
Isolation		.636			
Unreliable Communication Technology		.632			
Health of Family		.562			
Providing for Family		.561			
Continuous Workload		.437		.412	
Exhausted		.423			
Concerns for Retirement			.762		
When to Retire			.756		
Succession Issues			.631		
Changes in Technology			.440		
Working with Family			.405		
Talking about Stress		.391	.403		
Employees				.750	
Other People's Errors				.698	
Services				.536	
Practices of Other Farmers					.730
Chemicals in Industry					.704

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 8 iterations.

8.3.1.3. Factor analysis of Farming Family Cope Scale

Initial analysis indicated 7 factors with eigenvalues >1, explaining a cumulative 63.84% of variance (Table 37). Inspection of the scree plot suggested that either 4 or 5 factors may produce a better fit (Figure 13). After comparing each reduction, it was determined that 5 factors (cumulative 55.05% of the variance) produced a more accurate description of the subthemes within the scale.

Table 37. Number of factors initially extracted from the FF Cope Scale.

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.751	31.004	31.004	7.751	31.004	31.004
2	1.840	7.361	38.365	1.840	7.361	38.365
3	1.583	6.332	44.697	1.583	6.332	44.697
4	1.366	5.465	50.162	1.366	5.465	50.162
5	1.222	4.889	55.051	1.222	4.889	55.051
6	1.165	4.660	59.711	1.165	4.660	59.711
7	1.033	4.133	63.844	1.033	4.133	63.844
8	.932	3.729	67.573			
9	.878	3.511	71.083			
10	.771	3.086	74.169			
11	.673	2.691	76.860			
12	.648	2.591	79.451			
13	.577	2.307	81.758			
14	.558	2.233	83.991			
15	.535	2.140	86.131			
16	.478	1.912	88.043			
17	.465	1.859	89.902			
18	.436	1.745	91.647			
19	.388	1.553	93.200			
20	.367	1.468	94.668			
21	.323	1.291	95.959			
22	.298	1.191	97.150			
23	.288	1.153	98.302			
24	.243	.974	99.276			
25	.181	.724	100.000			

Extraction Method: Principal Component Analysis.

Factor 1 (6 items) centred around the theme of “Reassessing” one’s situation (16.89% of variance), Factor 2 (5 items) focused on “Positive Reframing” (12.36% of variance), Factor 3 (6 items) focused on “Community-connectedness” (11.73% of variance), Factor 4 (5 items) centred on “Awareness and accepting lack of control” (7.77% of variance), and Factor 5 (3 items) centred around “Disengaging” (6.31% of variance) (Table 38).

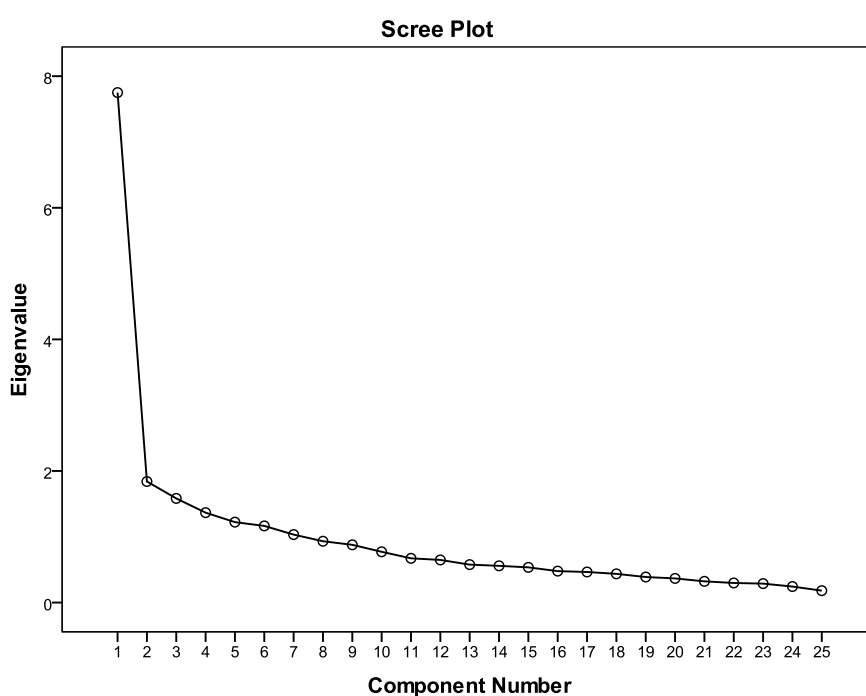


Figure 13. Scree plot indicating number of factors extracted for the FF Cope Scale.

Table 38. *Rotated component matrix^a output of the FF Cope Scale.*

	Component				
	1	2	3	4	5
Commitment	.792				
Compromise	.698				
Prioritise	.696				
Talk	.658				
Professional	.617				
Accept Responsibility	.601				
Open Communication	.584				
Trust	.568				
Recognise Achievement		.714			
Positive		.711			
Enjoy Work		.692			
Remember Experiences		.621			
Laugh		.448			
Share Workload			.652		
Socialise			.641		
Not Alone			.540		
Break			.498		
Faith			.487		
Focus on Problem				.664	
Go with Flow				.648	
Exercise				.463	
Accept Control				.433	
Alcohol					.629
Animals					.535
Get Away					.494

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 19 iterations.

8.3.1.4. Factor analysis of Farming Family Buffer Scale

Initial analysis indicated 2 factors with eigenvalues >1, explaining a cumulative 55.38% of variance (Table 39). Inspection of the scree plot suggested that 3 factors may produce a better fit, with the 3rd factor producing an eigenvalue of .990 (Figure 14). Factor 1 (6 items) “Farming Attractions” explained 23.92% of the variance, Factor 2 (3 items) “Family Commitment” explained 20.35% of the variance, and Factor 3 (3 items) “Pride in Identity” explained 19.36% of the variance (Table 40).

Table 39. Number of factors initially extracted from the FF Buffer Scale.

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.800	39.999	39.999	4.800	39.999	39.999
2	1.845	15.377	55.376	1.845	15.377	55.376
3	.990	8.254	63.629			
4	.822	6.851	70.481			
5	.735	6.125	76.606			
6	.571	4.758	81.364			
7	.480	3.997	85.360			
8	.445	3.711	89.071			
9	.401	3.342	92.414			
10	.350	2.917	95.331			
11	.325	2.709	98.040			
12	.235	1.960	100.000			

Extraction Method: Principal Component Analysis.

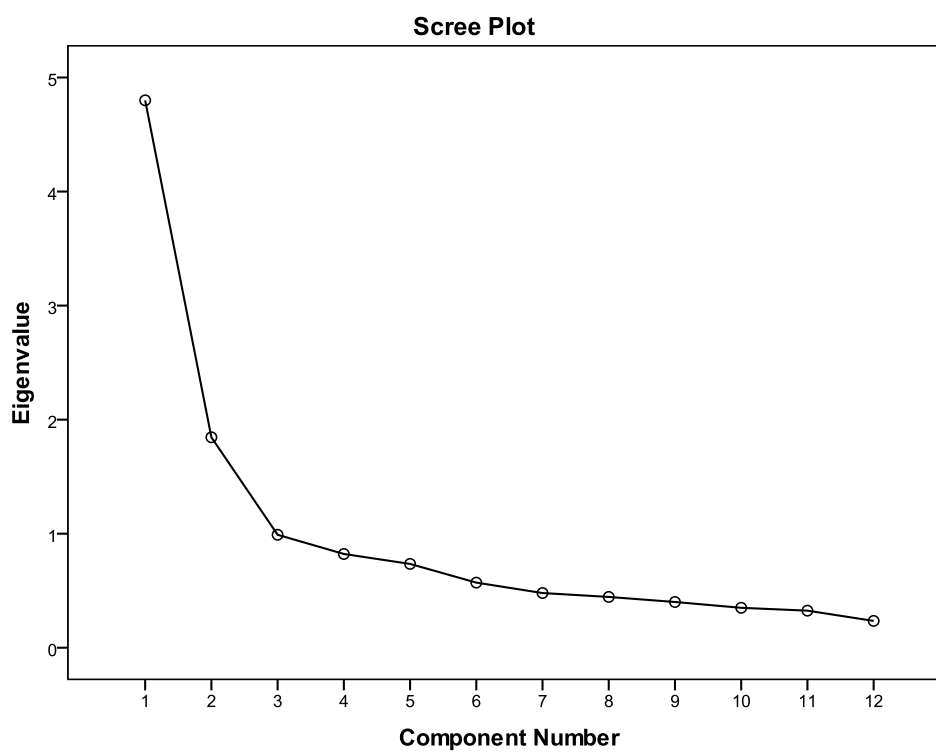


Figure 14. Scree plot indicating number of factors extracted for the FF Buffer Scale.

Table 40. *Rotated component matrix^a output of the FF Buffer Scale.*

	Component		
	1	2	3
Enjoy Animal/Product	.707		
Gain Skills	.696		
Contributes to People	.686		
Enjoy Work	.667		
Who I am	.604		
Improving Land	.575		
Children's Future		.807	
Children Encouraged to Farm		.786	
Sentimental		.775	
Landowner			.777
Down to Earth			.709
Surroundings			.659

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 9 iterations.

8.3.1.5. Factor analysis of Intergenerational Farming Impact Scale

Initial analysis indicated only 1 factor with an eigenvalue >1, explaining 57.35% of the variance (Table 41). Inspection of the scree plot suggested that perhaps 2 factors may produce a better fit (Figure 15), however after comparing the two analyses, there were too many cross-loadings occurring with 2 factors and it was therefore determined that a 1 factor solution was more appropriate (Table 42).

Table 41. Number of factors initially extracted from the IF Impact Scale.

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.308	57.347	57.347	6.308	57.347	57.347
2	.920	8.362	65.709			
3	.714	6.491	72.200			
4	.661	6.008	78.208			
5	.565	5.136	83.343			
6	.466	4.237	87.581			
7	.406	3.695	91.276			
8	.342	3.111	94.387			
9	.275	2.496	96.883			
10	.213	1.939	98.822			
11	.130	1.178	100.000			

Extraction Method: Principal Component Analysis.

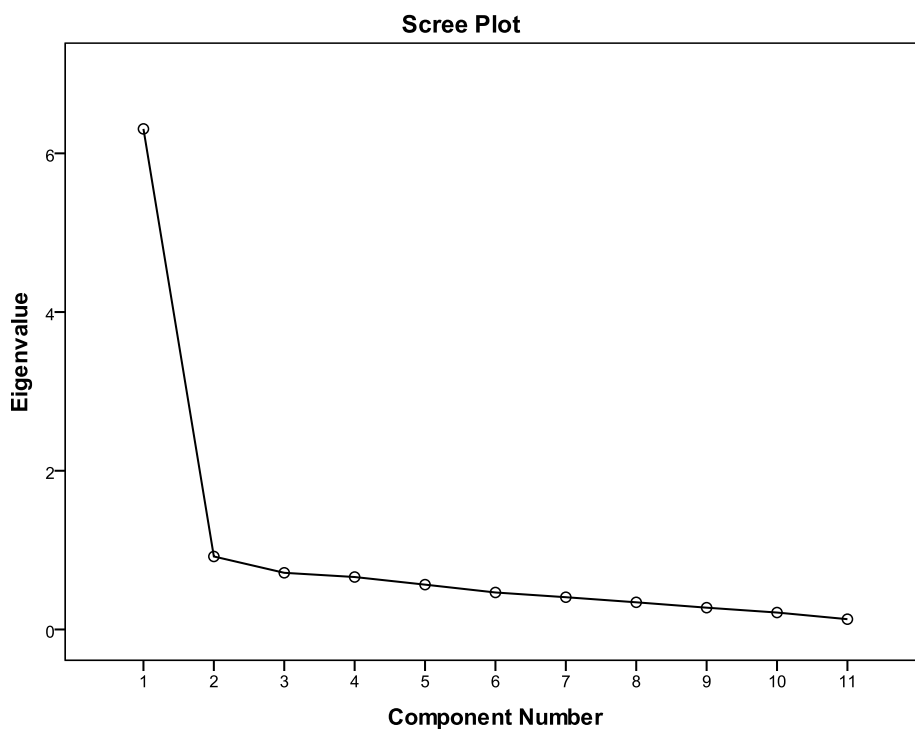


Figure 15. Scree plot indicating number of factors extracted for the IF Impact Scale.

Table 42. Comparison of 1 & 2 Factor Extraction from the rotated component matrix^a output of the IF Impact Scale.

	Single	2-Factor	
	Extraction	Extraction	
	1	1	2
Succession Plan	.883	Open & Honest Communication	.745
Trust	.882	Loyalty	.729 .471
Loyalty	.861	Jealousy	.724
Equal Say	.837	Good Relationships	.688 .359
Common Goals	.833	Equal Say	.683 .488
Good Relationships	.758	Succession Plan	.658 .589
Committed	.723	Common Goals	.640 .534
Open & Honest Communication	.698	Committed	.528 .495
Difference in Work	-.614	Central Management	-.836
Central Management	-.602	Difference in Work	-.718
Jealousy	.539	Trust	.611 .644

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

8.3.2. Criterion Validity

Criterion validity was assessed through examining matrices of the correlations between the farming family scales and similar existing scales. Significant correlations in the predicted direction indicated criterion validity, whilst a correlation value $r > .8$ between the existing scale or item and the developing scale or item suggested a questionable need for the new scale or item. All items should significantly correlate with the criterion scale, with those items presenting variable, low (.01-.05 alpha), or no correlations identified for comparison to other tests for validity and reliability to determine the utility of the item.

8.3.2.1. Criterion validity of Farming Family Role Impact Scale

A correlation matrix between FF Role Impact Scale and the Work-Family Conflict Scales (WFCS) was produced. Total scores on the FF Role Impact scale were

positively correlated with the WFCS total scores ($r=.437$, $n=224$, $p=.000$), work-to-family conflict ($r=.439$, $n=224$, $p=.000$), family-to-work conflict ($r=.310$, $n=225$, $p=.000$), time-based conflict ($r=.293$, $n=225$, $p=.000$), strain-based conflict ($r=.460$, $n=225$, $p=.000$), and behaviour based conflict ($r=.348$, $n=224$, $p=.000$). A similar pattern was observed for each of the FF Role Impact subscales, RI-Facilitators, RI-Inhibitors, and RI-Moderators (Table 43). Multiple significant correlations were presented between items of both scales and all items of the FF Role Impact scale correlated with the WFC scale total, except for “weather” ($r=.118$, $n=261$, $p=.057$) and “attending courses and meetings” ($r=.074$, $n=258$, $p=.234$) (Table 43). “Weather” was positively correlated with work-to-family conflict (subset of WFCS) ($r=.166$, $n=261$, $p=.007$) and strain-based conflict ($r=.129$, $n=262$, $p=.037$). “Attending courses and meetings” did not significantly relate to any of the WFC subscales (Table 43).

8.3.2.2. Criterion validity of Farming Family Stressor Scale

A correlation matrix between FF Stressor Scale and the Farm Stress Survey (FSS) indicated that all FF Stressor items were positively correlated with the FF Stressor Scale total. Each individual FF Stressor item also correlated positively with the FSS scale total. No individual item presented a correlation of $r=.8$ or above. The FF Stressor scale ($r=.734$, $n=188$, $p=.000$) as well as the FF Stressor scales S-Financial Concerns ($r=.644$, $n=208$, $p=.000$), S-Family Concerns ($r=.621$, $n=209$, $p=.000$), S-Future Concerns ($r=.593$, $n=212$, $p=.000$), S-Daily Concerns ($r=.561$, $n=216$, $p=.000$), and S-Uncontrollable Concerns ($r=.467$, $n=211$, $p=.000$) all positively correlated with the FSS scale (Table 44). Additionally, the FF Stressor Scale and subscales significantly correlated with all FSS subscales (Table 44).

Table 43. Correlation matrix (Pearson's r) between FF Role Impact Scale items, FF Role Impact Scale total and the Work-Family Conflict Scale.

	FF Role						
	Impact	WFC Total	WFC	FWC	Time	Strain	Behaviour
Rested	.541**	.283**	.304**	.176**	.167**	.341**	.205**
Enthusiasm	.574**	.245**	.188**	.235**	.099	.256**	.258**
Delegating	.626**	.239**	.283**	.118	.172**	.221**	.210**
Management Skills	.639**	.186**	.144*	.177**	.127*	.165**	.175**
Flexibility	.715**	.266**	.237**	.218**	.182**	.231**	.257**
Weather	.379**	.118	.166**	.028	.054	.129*	.115
Communication	.563**	.243**	.207**	.214**	.149*	.272**	.192**
Share Work	.674**	.250**	.232**	.194**	.184**	.219**	.229**
Work Demands	.744**	.322**	.367**	.176**	.305**	.333**	.171**
Unpredictability of Jobs	.730**	.271**	.293**	.164**	.181**	.265**	.238**
Courses/Meetings	.424**	.074	.105	.016	.085	.095	.012
Family Tension	.524**	.413**	.348**	.361**	.189**	.429**	.418**
Time with Family	.464**	.194**	.220**	.105	.229**	.143*	.122*
Finances	.583**	.240**	.283**	.116	.142*	.264**	.198**
Things Go Wrong	.614**	.234**	.305**	.084	.107	.240**	.240**
Employees	.453**	.196**	.249**	.075	.151*	.198**	.146*
Emotionally Drained	.685**	.464**	.465**	.339**	.319**	.490**	.351**
Stressed	.716**	.472**	.453**	.354**	.305**	.481**	.397**
RI-Facilitators	.874**	.327**	.319**	.238**	.208**	.334**	.285**
RI-Inhibitors	.910**	.407**	.435**	.262**	.305**	.412**	.307**
RI-Moderators	.628**	.369**	.309**	.327**	.186**	.397**	.344**
FF Role Impact	1.000	.437**	.439**	.310**	.293**	.460**	.348**

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Table 44. Correlation matrix (Pearson's *r*) between FF Stressor Scale items and scale total, the Farm Stress Survey and subscales.

	FF Stressors	FSS	FSS-Hazardous	FSS-Isolation	FSS-Personal Finances	FSS-Time Pressures	FSS-Climate	FSS-Economy
Services	.529**	.372**	.208**	.315**	.257**	.350**	.163**	.246**
Unreliable Communications	.552**	.372**	.186**	.339**	.268**	.272**	.217**	.311**
Isolation	.488**	.477**	.149*	.708**	.291**	.250**	.247**	.225**
Exhausted	.609**	.368**	.232**	.175**	.309**	.383**	.196**	.227**
Talking about Stress	.575**	.371**	.218**	.207**	.360**	.399**	.189**	.236**
Health of Family	.656**	.495**	.440**	.284**	.399**	.352**	.266**	.341**
Distance from Family	.523**	.381**	.216**	.382**	.298**	.292**	.245**	.206**
Family Duties	.625**	.474**	.277**	.283**	.397**	.489**	.240**	.343**
Maintaining Relationships	.619**	.375**	.199**	.247**	.365**	.395**	.130*	.167**
Providing for Family	.693**	.522**	.368**	.271**	.590**	.442**	.221**	.336**
When to Retire	.612**	.486**	.259**	.247**	.581**	.368**	.279**	.334**
Concerns over Retirement	.645**	.492**	.322**	.164*	.626**	.364**	.328**	.341**
Succession Planning	.616**	.401**	.287**	.151*	.445**	.286**	.278**	.259**
Working with Family	.473**	.272**	.256**	.142*	.230**	.200**	.126*	.117
Employees	.492**	.353**	.178**	.228**	.254**	.422**	.130*	.228**
Workload	.677**	.621**	.370**	.288**	.499**	.758**	.355**	.360**
Others Errors	.554**	.386**	.239**	.257**	.334**	.473**	.095	.333**
Chemicals	.440**	.408**	.438**	.165*	.302**	.215**	.389**	.243**
Other Farmers	.535**	.427**	.374**	.265**	.298**	.285**	.329**	.308**
Future of Industry	.733**	.559**	.307**	.278**	.562**	.423**	.352**	.541**
Aus. Public and Government lack of Value	.699**	.544**	.326**	.223**	.516**	.443**	.333**	.609**
Market Control	.674**	.540**	.336**	.198**	.546**	.389**	.331**	.568**
Supermarket	.591**	.457**	.306**	.190**	.467**	.298**	.211**	.573**
Foreign Products	.595**	.423**	.289**	.089	.397**	.316**	.227**	.540**

Table 44. *Continued...*

	FF Stressors	FSS	FSS-Hazardous	FSS-Isolation	FSS-Personal Finances	FSS-Time Pressures	FSS-Climate	FSS-Economy
Financial Farm	.707**	.531**	.334**	.203**	.672**	.458**	.289**	.370**
Economy	.719**	.507**	.281**	.179**	.600**	.443**	.313**	.480**
Cost-Profit Margin	.625**	.429**	.256**	.056	.499**	.405**	.250**	.491**
Price of Land	.564**	.467**	.339**	.274**	.457**	.331**	.240**	.426**
Changes in Technology	.519**	.482**	.343**	.188**	.416**	.392**	.263**	.427**
S-Financial	.839**	.644**	.390**	.246**	.678**	.494**	.369**	.664**
S-Family	.841**	.621**	.372**	.476**	.521**	.534**	.319**	.392**
S-Future	.792**	.593**	.396**	.234**	.655**	.448**	.370**	.420**
S-Daily	.745**	.561**	.316**	.343**	.436**	.653**	.236**	.373**
S-Uncontrollable	.554**	.467**	.464**	.226**	.332**	.273**	.402**	.302**
FF Stressors	1.000**	.734**	.457**	.372**	.703**	.615**	.410**	.577**

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

8.3.2.3. Criterion validity of Farming Family Cope Scale

Criterion validity was assessed by examining a correlation matrix between scores on the FF Cope Scale and those on the 14 Brief COPE Inventory coping styles. Significant correlations were noted between similar coping styles on each of the two scales (Table 45). For example, “Socialise” positively correlated with emotional support ($r=.181$, $n=256$, $p=.004$), instrumental support ($r=.133$, $n=254$, $p=.034$), and venting ($r=.147$, $n=253$, $p=.020$), and negatively correlated with behavioural disengagement ($r=-.179$, $n=254$, $p=.004$). “Watching animals” only correlated with humour ($r=.206$, $n=248$, $p=.001$). The FF Cope total positively correlated with active coping ($r=.214$, $n=219$, $p=.001$), emotional support ($r=.211$, $n=218$, $p=.002$), instrumental support ($r=.188$, $n=218$, $p=.006$), positive reframing ($r=.221$, $n=219$, $p=.001$), humour ($r=.157$, $n=217$, $p=.021$), acceptance ($r=.143$, $n=218$, $p=.035$), and religion ($r=.175$, $n=217$, $p=.010$). The FF Cope total negatively correlated with behavioural disengagement ($r=-.278$, $n=217$, $p=.000$). The correlations between the Brief COPE coping styles and the FF Cope also provided discriminant validity for the FF Cope (Table 45).

Table 45. Correlation matrix (Pearson's *r*) between FF Cope Scale items and scale total and the Brief COPE Inventory Coping Themes.

	FF Cope	Active Cope	Self-Distract	Denial	Substance Use	Emotional Support	Instrumental Support	Behavioural Disengagement	Vent	Positive Reframe	Planning	Humour	Accept	Religion	Self-Blame
Accept Control	.521**	.118	-.098	-.102	-.088	.124*	.171**	-.104	-.063	.145*	.064	.078	.101	.139*	-.111
Accept Responsibility	.589**	.196**	-.118	-.182**	-.050	.098	.171**	-.201**	-.020	.132*	.156*	.030	.181**	.018	-.083
Enjoy Work	.560**	.088	-.146*	-.115	-.059	.080	.105	-.229**	-.138*	.153*	.033	.135*	.062	.008	-.180**
Remember Past	.583**	.149*	-.159*	-.025	-.011	.040	.116	-.203**	-.025	.174**	.051	.139*	.092	.003	-.049
Positive	.662**	.164**	-.085	-.005	-.089	.054	.077	-.189**	-.057	.169**	.081	.104	.119	.078	-.132*
Recognise Achievements	.661**	.145*	-.119	-.019	-.113	.040	.099	-.203**	-.040	.124*	.053	.120	.065	.004	-.161**
Socialise	.521**	.065	.043	-.050	-.024	.181**	.133*	-.179**	.147*	.100	.026	.038	.013	-.012	-.048
Faith	.385**	.150*	.000	.032	-.019	.126*	.099	.068	-.058	.137*	.049	.065	.105	.749**	-.035
Share Work	.600**	.012	-.072	-.119	-.075	.124*	.051	-.172**	.002	-.009	-.029	-.071	-.021	.079	-.073
Open Communication	.663**	.148*	-.157*	-.249**	-.145*	.205**	.116	-.249**	.002	.038	.039	.007	.104	.174**	-.033
Not Alone	.599**	.098	.021	.041	-.043	.204**	.185**	-.118	.003	.101	.023	.160*	.094	.106	-.104
Alcohol	.213**	-.002	.107	-.019	.448**	-.026	-.054	.058	.182**	-.029	-.037	.089	-.024	-.121	.161**
Laugh	.605**	-.006	-.088	-.074	-.055	.060	.038	-.161*	-.019	.131*	-.007	.278**	.038	-.024	-.134*
Animals	.312**	.062	.026	.037	.045	-.028	.046	-.002	.032	.102	.003	.206**	.060	-.100	.055
Get Away	.389**	.022	.192**	.064	.169**	.160*	.114	.024	.134*	.111	.054	.029	-.040	.021	.041
Exercise	.409**	.115	.157*	-.029	-.037	.144*	.175**	-.063	.152*	.154*	.130*	-.004	.055	.062	.097
Let Other Things Slide	.446**	-.005	-.066	-.023	-.140*	.030	-.005	-.048	-.060	.091	.011	.038	.063	.050	-.191**
Flow	.287**	-.137*	-.052	.008	-.137*	-.031	-.039	.076	-.142*	.101	-.076	.173**	.058	.067	-.189**
Break	.518**	-.011	.007	-.106	-.088	.098	-.010	-.098	-.021	.152*	-.049	.056	.048	.158*	-.169**
Trust	.663**	.112	-.162*	-.104	-.121	.208**	.110	-.229**	.040	.058	.015	.024	.053	.129*	-.080
Commitment	.683**	.154*	-.127*	-.145*	-.037	.083	.086	-.237**	.007	.045	.085	.027	.114	.033	-.050

Table 45. *Continued...*

	FF Cope	Active Cope	Self-Distract	Denial	Substance Use	Emotional Support	Instrumental Support	Behavioural Disengage	Vent Positive Reframe	Planning	Humour	Accept	Religion	Self-Blame	
Compromise	.665**	.036	-.152*	-.223**	-.114	.095	.030	-.212**	-.035	.067	-.005	.029	.066	.013	-.088
Prioritise	.644**	.191**	-.033	-.118	.019	.136*	.167**	-.232**	.105	.122	.182**	.153*	.096	-.072	.036
Professional Help	.598**	.105	-.114	-.117	-.168**	.140*	.217**	-.240**	.001	.007	.062	-.091	-.018	-.042	-.088
Talk	.599**	.077	-.152*	-.229**	-.098	.316**	.156*	-.297**	.011	.015	.024	-.043	.014	-.010	-.080
C-Reassess	.828**	.191**	-.163*	-.231**	-.080	.207**	.194**	-.329**	.020	.100	.133*	.013	.107	.000	-.070
C-Positive	.822**	.144*	-.171**	-.068	-.085	.070	.116	-.259**	-.075	.209**	.064	.217**	.104	.012	-.173**
C-Community	.826**	.168**	-.078	-.097	-.108	.282**	.191**	-.180**	.029	.115	.045	.063	.108	.388**	-.088
C-Accept	.711**	.046	.004	-.066	-.151*	.127*	.100	-.092	-.055	.211**	.039	.102	.096	.172**	-.169**
C-Disengage	.452**	.035	.162*	.036	.353**	.047	.038	.033	.183**	.088	.012	.168**	-.010	-.111	.128*
FF Cope	1.000**	.214**	-.101	-.115	-.023	.211**	.188**	-.278**	.002	.221**	.117	.157*	.143*	.175**	-.113

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

8.3.2.4. Criterion validity of Farming Family Buffer Scale

Individual items of the FF Buffer scale significantly correlated with the FF Buffer total and the FF Cope total, except for 5 items which did not significantly correlate with the FF Cope total. These items were “Landowner” ($r=.128$, $n=234$, $p=.051$), “Who I am” ($r=.068$, $n=234$, $p=.303$), “Children’s Future” ($r=.083$, $n=233$, $p=.210$), “Children encouraged into farming” ($r=.059$, $n=235$, $p=.364$), and “Sentimental value” ($r=.066$, $n=235$, $p=.311$) (Table 46). The FF Buffer total positively correlated with the FF Cope scale ($r=.257$, $n=226$, $p=.000$). The FF Buffer total negatively correlated with the planning subscale of the Brief COPE ($r=-.140$, $n=238$, $p=.031$). Individually, all items correlated significantly with at least one Brief COPE coping style, with the exception of “Gain skills” which did not present any significant correlations (Table 46).

8.3.2.5. Criterion validity of Intergenerational Farming Impact Scale

Criterion validity was assessed by entering IF Impact scale, FF Role Impact Scale, and the WFC scale into a correlation matrix. Findings revealed that all items of the IF Impact scale significantly correlated with the IF Impact scale total (Table 47). The IF Impact total negatively correlated with the FF Role Impact total ($r=-.229$, $n=127$, $p=.009$), RI-Inhibitors ($r=-.191$, $n=135$, $p=.027$), RI-Moderate ($r=-.287$, $n=143$, $p=.001$), the WFC scale ($r=-.237$, $n=137$, $p=.005$), work-to-family conflict ($r=-.233$, $n=137$, $p=.006$), strain-based conflict ($r=-.225$, $n=138$, $p=.008$), and behaviour-based conflict ($r=-.224$, $n=137$, $p=.009$). In relation to the individual items, all items of the IF Impact Scale significantly correlated in some respect to either the FF Role Impact scale or the WFC scale. The majority of correlations presented were negative with the exceptions of, for example, “Difference in workload” and “Central management” (Table 47).

Table 46. Correlation matrix (Pearson's *r*) between FF Buffer Scale items and scale total and the Brief COPE Inventory Coping Themes.

	FF Buffer	FF Cope	FF Cope (2)	Active Cope	Self-Distract	Denial Substance Use	Emotional Support Instrumental	Support Behavioural Disengage	Vent Positive Reframe	Planning Humour	Accept Religion	Self-Blame					
Enjoy Working with Animals/Product	.600**	.238**	.254**	.041	-.120	-.103	-.011	.015	.018	-.135*	-.177**	-.030	-.014	-.021	-.021	-.075	.012
Enjoy Work	.661**	.301**	.333**	.001	-.211**	-.101	-.006	.013	-.012	-.185**	-.187**	-.021	-.081	.047	-.061	-.049	-.092
Land Owner	.549**	.128	.140*	-.154*	-.043	-.102	.057	.008	-.080	-.141*	-.038	-.066	-.166**	.043	-.064	-.032	-.068
Down to Earth	.647**	.310**	.307**	-.065	-.015	-.097	.059	.012	-.027	-.113	.011	-.030	-.071	-.033	.017	-.045	.047
Improving Land	.590**	.275**	.290**	.005	-.123*	-.055	.057	-.012	-.064	-.182**	-.113	-.109	-.030	-.031	-.085	-.094	.026
Surroundings	.551**	.229**	.239**	-.077	-.013	-.046	-.001	-.035	.006	-.083	-.008	-.091	-.076	-.033	-.021	-.132*	.035
Skills	.703**	.230**	.234**	-.089	-.039	.064	.030	-.045	-.071	-.062	-.052	-.049	-.069	-.004	-.069	-.081	-.041
Contributes to People	.644**	.301**	.289**	-.001	-.035	.071	.030	-.005	.030	-.069	-.072	-.014	-.035	.001	-.038	.031	-.045
Who I Am	.730**	.068	.076	-.129*	.029	.133*	.119	-.109	-.100	.078	-.056	-.118	-.127*	-.019	-.120	-.059	.013
Children's Future	.667**	.083	.082	-.047	.074	.177**	.080	-.098	-.030	.009	.084	-.006	-.087	-.022	-.061	.010	.028
Children Encouraged	.571**	.059	.047	-.150*	.048	.016	.050	-.066	-.085	.077	.064	-.117	-.217**	-.040	-.226**	.066	.059
Sentimental	.612**	.066	.042	-.071	.114	.229**	-.043	-.082	-.027	.089	.019	-.036	-.094	.000	-.127*	.049	.031
B-Pride In Identity	.735**	.276**	.282**	-.123*	-.027	-.103	.055	.005	-.044	-.145*	-.015	-.075	-.126*	.004	-.024	-.078	.009
B-Farming Attraction	.891**	.294**	.309**	-.046	-.093	.020	.058	-.037	-.047	-.100	-.136*	-.076	-.078	-.006	-.084	-.070	-.025
B-Family Commitment	.742**	.082	.067	-.110	.099	.174**	.035	-.101	-.060	.072	.068	-.063	-.161*	-.024	-.165**	.048	.050
FF Buffer	1.000	.257**	.265**	-.101	.004	.050	.064	-.041	-.041	-.063	-.049	-.083	-.140*	-.014	-.116	-.037	.029

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Table 47. Correlation matrix (Pearson's *r*) between IF Impact Scale items and scale total and the FF Role Impact Scale and Work-Family Conflict Scales.

	IF Impact	FF Role Impact	RI- Facilitator	RI- Inhibitor	RI- Moderator	WFC Total	WFC	FWC	Time	Strain	Behaviour
Difference in Workload	-.347**	.143	.081	.166*	.254**	.089	.094	.048	.107	.102	.015
Equal Say	.793**	-.156	-.113	-.140	-.287**	-.214**	-.155	-	-.100	-.194*	-.232**
Committed	.692**	-.213*	-.099	-.263**	-.179*	-.166*	-.170*	-.106	-.075	-.145	-.178*
Good Relationships	.741**	-.171	-.133	-.100	-.249**	-.149	-.153	-.096	-.077	-.166*	-.113
Open/Honest Communication	.745**	-.188*	-.104	-.153	-.319**	-.190*	-.188*	-.127	-.113	-.151	-.200*
Common Goals	.803**	-.260**	-.215**	-.293**	-.201*	-.185*	-.194*	-.112	-.141	-.145	-.168*
Jealousy	.616**	-.153	-.062	-.129	-.137	-.149	-.190*	-.048	-.130	-.164	-.077
Central Management	-.316**	.221*	.151	.286**	.184*	.022	.039	-.008	.074	.048	-.062
Loyalty	.851**	-.212*	-.107	-.207*	-.245**	-.184*	-.195*	-.108	-.091	-.185*	-.169*
Succession Plan	.825**	-.152	-.070	-.131	-.275**	-.080	-.063	-.072	-.035	-.066	-.096
Trust	.816**	-.252**	-.132	-.262**	-.325**	-.183*	-.171*	-.134	-.086	-.171*	-.186*
IF Impact	1.000**	-.229**	-.144	-.191*	-.287**	-.237**	-	-.167	-.135	-	-.224**
							.233**			.225**	

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

8.3.3. Discriminant Validity

Discriminant validity was satisfied if the scale total and items significantly correlated to the scales of well-being in the predicted direction. Those items which presented variable, low (.01-.05 alpha), or no correlations to the discriminant scales will be identified for comparison to other tests for validity and reliability to determine the utility of the item.

8.3.3.1. Discriminant validity of Farming Family Role Impact Scale

The FF Role Impact scale total positively correlated with the K-10 ($r=.527$, $n=217$, $p=.000$), K-Depressed Mood ($r=.486$, $n=230$, $p=.000$), K-Motor Agitation ($r=.413$, $n=223$, $p=.000$), K-Fatigue ($r=.478$, $n=231$, $p=.000$), K-Worthlessness ($r=.403$, $n=228$, $p=.000$), K-Anxiety ($r=.420$, $n=230$, $p=.000$), and the burnout components of MBI-Emotional Exhaustion ($r=.523$, $n=155$, $p=.000$) and MBI-Cynicism ($r=.387$, $n=150$, $p=.000$). In addition, the FF Role Impact scale total negatively correlated with the SLS ($r=-.357$, $n=251$, $p=.000$). A similar pattern for the FF Role Impact subscales was also presented (Table 48). “Attending courses and meetings” only correlated with the K-10 ($r=.126$, $n=249$, $p=.047$), K-Motor Agitation ($r=.149$, $n=259$, $p=.016$), and K-Fatigue ($r=.156$, $n=267$, $p=.011$) (Table 48).

8.3.3.2. Discriminant validity of Farming Family Stressor Scale

The FF Stressor scale positively correlated with the K-10 ($r=.538$, $n=220$, $p=.000$), K-Depressed Mood ($r=.484$, $n=227$, $p=.000$), K-Motor Agitation ($r=.390$, $n=226$, $p=.000$), K-Fatigue ($r=.473$, $n=228$, $p=.000$), K-Worthlessness ($r=.338$, $n=227$, $p=.000$), K-Anxiety ($r=.429$, $n=228$, $p=.000$), MBI-Emotional Exhaustion ($r=.578$, $n=146$, $p=.000$), MBI-Cynicism ($r=.430$, $n=139$, $p=.000$). Additionally, the FF Stressor scale total negatively correlated with the SLS ($r=-.421$, $n=209$, $p=.000$). S-Family, S-

Future, and S-Daily Concerns subscales presented similar patterns to the FF Stressor total (Table 49). Each individual item of the FF Stressor scale was significantly correlated with the SLS, K-10, most K-10 subscales, MBI-Emotional Exhaustion and MBI-Cynicism. Most items did not relate to the MBI-Professional Efficacy. The “Amount of chemicals in the industry” item did not significantly correlate with any scales of well-being, suggesting consideration of this item for deletion (Table 49).

Table 48. *Correlation matrix (Pearson's r) between FF Role Impact Scale and the Satisfaction with Life Scale, Kessler-10, Maslach's Burnout Inventory.*

	SLS	K10	K- DM	K- MA	K-F	K-W	K-A	MBI- EE	MBI- PE	MBI- CY
Rested	-.226**	.426**	.355**	.301**	.388**	.263**	.377**	.464**	.073	.244**
Enthusiasm	-.145*	.343**	.310**	.271**	.264**	.261**	.291**	.301**	-.112	.244**
Delegating	-.095	.230**	.182**	.139*	.238**	.206**	.197**	.297**	.079	.146
Management Skills	-.044	.233**	.209**	.228**	.152*	.225**	.226**	.251**	-.063	.192*
Flexibility	-.160*	.298**	.243**	.181**	.259**	.267**	.229**	.309**	-.136	.222**
Weather	-.139*	.156*	.076	.170**	.085	.013	.156*	.262**	.123	.054
Communication	-.130*	.216**	.224**	.161**	.166**	.226**	.155*	.237**	.075	.205**
Share Work	-.188**	.323**	.275**	.219**	.241**	.268**	.333**	.246**	-.002	.211**
Work Demands	-.235**	.317**	.303**	.258**	.364**	.202**	.262**	.448**	.057	.281**
Unpredictability of Jobs	-.210**	.252**	.269**	.232**	.305**	.196**	.228**	.415**	.032	.234**
Courses/Meetings	-.053	.126*	.044	.149*	.156*	.062	.110	.082	-.035	.109
Family Tension	-.403**	.462**	.447**	.370**	.388**	.359**	.304**	.362**	-.020	.245**
Time with Family	-.169**	.177**	.191**	.115	.223**	.064	.188**	.250**	-.006	.227**
Finances	-.413**	.363**	.362**	.249**	.339**	.245**	.322**	.339**	.118	.295**
Things Go Wrong	-.316**	.305**	.313**	.244**	.358**	.161**	.279**	.388**	.038	.294**
Employees	-.160*	.250**	.273**	.194**	.260**	.126*	.180**	.305**	.089	.248**
Emotionally Drained	-.303**	.527**	.484**	.349**	.533**	.374**	.417**	.512**	-.039	.339**
Stressed	-.337**	.588**	.545**	.480**	.496**	.393**	.464**	.564**	-.043	.365**
RI-Facilitators	-.208**	.409**	.322**	.313**	.354**	.337**	.356**	.399**	-.056	.294**
RI-Inhibitors	-.405**	.507**	.486**	.377**	.489**	.321**	.419**	.533**	.028	.388**
RI-Moderators	-.292**	.378**	.378**	.299**	.307**	.326**	.250**	.334**	.033	.246**
FF Role Impact	-.357**	.527**	.486**	.413**	.478**	.403**	.420**	.523**	-.038	.387**

Table 49. Correlation matrix (Pearson's *r*) between FF Stressor Scale items and the Satisfaction with Life Scale, Kessler-10, Maslach's Burnout Inventory.

Stressor Item	SLS	K10	K-DM	K-MA	K-F	K-W	K-A	MBI-EE	MBI-PE	MBI-CY
Services	-.213**	.268**	.256**	.219**	.230**	.184**	.280**	.207**	-.084	.189*
Unreliable Communications	-.198**	.208**	.180**	.205**	.195**	.165**	.225**	.285**	.027	.160*
Isolation	-.273**	.198**	.152*	.200**	.211**	.224**	.194**	.146	-.184*	.204**
Exhausted	-.413**	.625**	.559**	.432**	.635**	.390**	.446**	.612**	-.005	.374**
Talking about Stress	-.382**	.576**	.553**	.373**	.548**	.344**	.476**	.559**	.051	.304**
Health of Family	-.358**	.397**	.398**	.280**	.352**	.294**	.328**	.390**	-.008	.211**
Distance from Family	-.229**	.223**	.268**	.191**	.196**	.202**	.176**	.202**	-.061	.126
Family Duties	-.257**	.412**	.384**	.317**	.358**	.290**	.389**	.415**	-.053	.343**
Maintaining Relationships	-.425**	.521**	.480**	.372**	.429**	.422**	.433**	.447**	-.072	.326**
Providing for Family	-.424**	.372**	.385**	.240**	.326**	.189**	.343**	.399**	.099	.263**
When to Retire	-.331**	.296**	.317**	.170**	.258**	.204**	.219**	.384**	.049	.433**
Concerns over Retirement	-.319**	.344**	.334**	.172**	.321**	.212**	.252**	.449**	.127	.435**
Succession Planning	-.234**	.340**	.326**	.247**	.308**	.271**	.238**	.359**	.010	.250**
Working with Family	-.323**	.313**	.310**	.257**	.253**	.324**	.228**	.237**	-.060	.166*
Employees	-.189**	.239**	.259**	.191**	.249**	.113	.212**	.315**	.080	.271**
Workload	-.247**	.363**	.354**	.263**	.342**	.222**	.340**	.453**	.097	.273**
Others Errors	-.223**	.296**	.252**	.258**	.291**	.091	.284**	.346**	.063	.219**
Chemicals	-.086	.047	.030	.005	.066	.003	.101	.104	.010	.128
Other Farmers	-.183**	.212**	.163**	.135*	.173**	.112	.223**	.267**	.036	.145
Future of Industry	-.185**	.277**	.281**	.213**	.269**	.147*	.225**	.387**	.162*	.215**
Aus. Public and Government lack of Value	-.154*	.238**	.239**	.161**	.267**	.106	.167**	.327**	.132	.230**
Market Control	-.130*	.266**	.245**	.230**	.229**	.111	.237**	.359**	.185*	.240**
Supermarket	-.115	.154*	.163**	.151*	.130*	.013	.146*	.286**	.137	.188*
Foreign Products	-.143*	.164**	.148*	.135*	.123*	-.060	.118	.233**	.200**	.154*

Table 49. *Continued...*

Stressor Item	SLS	K10	K-DM	K-MA	K-F	K-W	K-A	MBI-EE	MBI-PE	MBI-CY
Financial Farm	-.288**	.341**	.324**	.242**	.319**	.187**	.314**	.359**	.187*	.281**
Economy	-.361**	.330**	.318**	.202**	.283**	.172**	.297**	.348**	.133	.273**
Cost-Profit Margin	-.172**	.176**	.156*	.136*	.182**	.035	.157*	.311**	.121	.184*
Price of Land	-.163*	.196**	.190**	.167**	.191**	.066	.165**	.208**	.028	.174*
Changes in Technology	-.140*	.216**	.235**	.208**	.185**	.160**	.143*	.342**	.093	.313**
S-Financial	-.248**	.319**	.305**	.248**	.295**	.123	.264**	.413**	.179*	.289**
S-Family	-.478**	.562**	.527**	.413**	.510**	.396**	.476**	.548**	-.025	.371**
S-Future	-.365**	.432**	.412**	.284**	.378**	.320**	.296**	.487**	.057	.426**
S-Daily	-.270**	.383**	.353**	.287**	.357**	.201**	.349**	.421**	.056	.296**
S-Uncontrollable	-.146*	.151*	.101	.074	.135*	.071	.179**	.216**	.019	.155*
FF Stressors	-.421**	.538**	.484**	.390**	.473**	.338**	.429**	.578**	.079	.430**

** Correlations are significant at the <.01 level (2-tailed).

* Correlations are significant at the <.05 level (2-tailed).

8.3.3.3. Discriminant validity of Farming Family Cope Scale

The FF Cope Scale total positively correlated with the SLS ($r=.315$, $n=209$, $p=.000$) and MBI-Professional Efficacy ($r=.238$, $n=140$, $p=.005$), and negatively correlated with K-Depressed Mood ($r=-.148$, $n=226$, $p=.026$), K-Worthlessness ($r=-.188$, $n=228$, $p=.004$), and MBI-Cynicism ($r=-.181$, $n=139$, $p=.033$). The FF Cope subscales and most individual items significantly correlated with either the SLS or K-10 and components of the MBI (Table 50). “Faith” and “Get away” positively correlated with only two scales for discriminant validity, MBI-Professional Efficacy ($r=.185$, $n=170$, $p=.016$) and MBI-Cynicism ($r=.208$, $n=168$, $p=.007$), respectively. “Focus on problem and let other things slide” negatively correlated with only one scale for discriminant K-Depressed Mood ($r=-.158$, $n=264$, $p=.010$). “Watching animals” and “Exercise” did not significantly correlate with any scales of well-being and psychological distress. These findings limit the validity of “Faith”, “Exercise”, “Watching animals”, “Get away”, and “Problem-focused” and are therefore identified for possible removal.

Table 50. Correlation matrix (Pearson's *r*) between FF Cope Scale items and the Satisfaction with Life Scale, Kessler-10, and Maslach's Burnout Inventory.

	SLS	K10	K-DM	K-MA	K-F	K-W	K-A	MBI-EE	MBI-PE	MBI-CY
Accept Control	.135*	-.133*	-.181**	.001	-.155*	-.181**	-.061	-.086	.137	-.144
Accept Responsibility	.090	-.084	-.188**	.017	-.064	-.193**	-.009	.010	.247**	-.127
Enjoy Work	.349**	-.251**	-.284**	-.052	-.250**	-.300**	-.125*	-.267**	.218**	-.410**
Remember Past	.123	-.032	-.144*	.062	-.031	-.151*	.023	.023	.179*	-.026
Positive	.338**	-.198**	-.264**	-.046	-.178**	-.196**	-.117	-.145	.092	-.237**
Recognise Achievements	.300**	-.132*	-.234**	-.039	-.163**	-.181**	-.095	-.105	.229**	-.253**
Socialise	.189**	-.071	-.106	-.074	-.133*	-.046	-.070	-.059	.078	-.111
Faith	.123	.007	.042	.002	-.034	.011	.020	.060	.185*	.089
Share Work	.278**	-.026	-.040	-.047	-.061	-.067	-.009	-.061	.160*	-.043
Open Communication	.359**	-.102	-.075	-.048	-.106	-.085	.006	-.091	.106	-.086
Not Alone	.215**	-.089	-.120	-.033	-.070	-.162**	-.043	-.048	.183*	-.027
Alcohol	-.030	.178**	.179**	.104	.174**	.075	.171**	.089	-.100	.037
Laugh	.279**	-.134*	-.180**	-.010	-.096	-.142*	-.125*	-.146	.134	-.161*
Animals	.026	-.004	-.044	-.004	.043	-.011	-.033	-.048	.040	-.103
Get Away	-.071	.060	.055	.049	.092	.029	.071	.131	.043	.208**
Exercise	.107	.000	-.060	.062	-.009	.084	.056	-.136	-.076	.000
Let Other Things Slide	.124	-.112	-.158*	-.003	-.081	-.103	-.086	-.091	.078	-.077
Flow	.149*	-.146*	-.177**	-.052	-.146*	-.197**	-.119	-.127	.052	-.083
Break	.152*	-.104	-.155*	-.020	-.086	-.073	-.073	-.066	.085	-.025
Trust	.314**	-.118	-.133*	-.067	-.109	-.111	-.024	-.053	.069	-.148
Commitment	.197**	-.021	-.100	.090	-.037	-.129*	.093	-.055	.115	-.163*
Compromise	.291**	-.081	-.165**	.013	-.127*	-.122*	-.001	-.089	.114	-.112
Prioritise	.188**	.035	-.051	.102	.003	-.032	.069	.060	.219**	-.160*
Professional Help	.287**	-.132*	-.152*	-.022	-.186**	-.129*	-.012	-.197**	.163*	-.266**

Table 50. *Continued...*

	SLS	K10	K-DM	K-MA	K-F	K-W	K-A	MBI-EE	MBI-PE	MBI-CY
Talk	.347**	-.046	-.092	.004	-.034	-.119	.039	-.035	.104	-.111
C-Reassess	.305**	-.062	-.143*	.044	-.091	-.159*	.035	-.060	.234**	-.214**
C-Positive	.362**	-.192**	-.289**	-.026	-.179**	-.266**	-.128*	-.165*	.220**	-.290**
C-Community	.335**	-.083	-.079	-.042	-.111	-.109	-.002	-.012	.226**	-.033
C-Accept	.204**	-.146*	-.211**	-.003	-.152*	-.131*	-.074	-.162*	.096	-.083
C-Disengage	-.035	.124	.105	.078	.153*	.049	.113	.082	-.008	.065
FF Cope	.315**	-.095	-.148*	.042	-.100	-.188**	-.018	-.060	.238**	-.181*

*. Correlation is significant at the 0.05 level (2-tailed).

** . Correlation is significant at the 0.01 level (2-tailed).

8.3.3.3.1. *Analysing an alternative version of the FF Cope Scale.*

The possible removal of the aforementioned items from the FF Cope Scale resulted in additional analysis of validity. Factor analysis after the removal of these items indicated the KMO value to be .888, Bartlett's test of Sphericity was $p < .05$, and 6 factors with an eigenvalue > 1.0 , explaining 67.99% of the variance. An orthogonal varimax rotation indicated 4 factors were the best fit. Factor 1 (7 items, "Reassess") explained 20.00% of the variance. Factor 2 (6 items, "Perseverance") explained 18.30% of the variance. Factor 3 (6 items, "Ease Stress") explained 12.97% of the variance. Factor 4 (1 item, "Alcohol") explained 6.09% of the variance (cumulative 57.37% of variance). Factor 4 only consisted of one item, "Alcohol". All items significantly correlated to the new FF Cope (2) total (minus the 5 removed items). In relation to criterion and discriminant validity, all FF Cope (2) subscales and FF Cope (2) total presented adequate relationships. For example, the SLS positively correlated with "Reassess" ($r = .333$, $n = 229$, $p = .000$), "Perseverance" ($r = .278$, $n = 239$, $p = .000$), "Ease Stress" ($r = .310$, $n = 238$, $p = .000$), and FF Cope total ($r = .336$, $n = 213$, $p = .000$). The K-10 negatively correlated with "Perseverance" ($r = -.190$, $n = 245$, $p = .003$) and "Ease Stress" ($r = -.135$, $n = 243$, $p = .035$). MBI-Cynicism negatively correlated with "Reassess" ($r = -.176$, $n = 156$, $p = .028$), "Perseverance" ($r = -.249$, $n = 162$, $p = .001$), and the FF Cope (2) Total ($r = -.199$, $n = 142$, $p = .018$) (Table II, Appendix I).

8.3.3.4. *Discriminant validity of Farming Family Buffer Scale*

The FF Buffer total positively correlated with the SLS ($r = .207$, $n = 235$, $p = .001$), and negatively correlated with K-Worthlessness ($r = -.141$, $n = 252$, $p = .025$). B-Pride in Identity and B-Family Commitment also positively correlated with the SLS, whereas the B-Farming Attraction subscale positively correlated with MBI subscales (Table 51). Individually, most items correlated with at least one scale of well-being and

psychological distress. “Improving land”, “Surroundings”, and “Next generation’s/Children’s future” did not significantly correlate with any of the scales for well-being and psychological distress, identifying these items for possible deletion (Table 51).

8.3.3.4.1. *Analysing an alternative version of the FF Buffer Scale.*

On deletion of these items, factor analysis was repeated, producing a KMO value of 0.79, Bartlett’s test of Sphericity was $p < .05$, and produced a best fit for the 3 factors with the same items in the previous factor analysis clustering towards the respective factors. In this repeated process, Factor 1 “Farming Attractions” (5 items) explained 29.33% of the variance, Factor 2 “Pride in Identity” (2 items) explained 19.47% of variance, and Factor 3 “Family Commitment” (2 items) explained 19.18% of the variance. A correlation matrix indicated that the new FF Buffer (2) scale total and its subscales presented slightly improved criterion and discriminative validity by increasing the strength of many of the correlations. In addition to the previously significant correlations presented in the analysis of the first version of the FF Buffer scale, the new FF Buffer (2) total positively correlated with MBI-Emotional Exhaustion ($r = .166$, $n = 170$, $p = .031$) and MBI-Professional Efficacy ($R = .154$, $n = 163$, $p = .049$), negatively correlated with acceptance ($r = -.128$, $n = 247$, $p = .045$). The FF Buffer (2) did not present a significant correlation with a K-Worthlessness ($r = -.122$, $n = 256$, $p = .052$), which was a previously significant correlation of the FF Buffer (1). In addition to the correlations reported in the FF Buffer (1) version, the “Family Commitment” also negatively correlated with active coping ($r = -.127$, $n = 258$, $p = .042$) and “Pride in Identity” also negatively correlated with K-Anxiety ($r = -.127$, $n = 264$, $p = .040$) (Table I2, Appendix I).

Table 51. Correlation matrix (Pearson's *r*) between FF Buffer Scale items and the Satisfaction with Life Scale, Kessler-10, and Maslach's Burnout Inventory.

	SLS	K10	K-DM	K-MA	K-F	K-W	K-A	MBI-EE	MBI-PE	MBI-CY
Enjoy Working with Animals/Product	.126*	-.048	.013	-.003	-.001	-.120	-.102	.073	.210**	-.114
Enjoy Work	.244**	-.129*	-.087	-.026	-.104	-.224**	-.126*	-.059	.233**	-.232**
Land Owner	.301**	-.149*	-.128*	-.126*	-.088	-.214**	-.184**	-.024	-.021	-.103
Down to Earth	.212**	.000	.043	.051	.010	-.063	-.025	.108	.083	.020
Improving Land	.118	.045	.070	.038	.014	-.028	.036	.082	.132	-.070
Surroundings	.096	-.009	.012	.003	.033	-.074	-.056	.001	-.054	-.036
Skills	.039	.009	.016	.033	.079	-.131*	-.026	.183*	.072	.120
Contributes to People	.082	.029	.029	.053	.039	-.050	.101	.169*	.161*	-.068
Who I Am	-.014	.125*	.105	.101	.168**	.048	.035	.230**	.105	.109
Children's Future	.101	.007	.031	.022	.050	-.098	-.024	.129	.060	-.015
Children Encouraged	.162*	-.023	-.037	-.005	-.026	-.033	-.052	-.012	.067	-.093
Sentimental	.124	.025	.035	.002	.054	.004	-.009	.150*	.108	.036
B-Pride In Identity	.263**	-.071	-.037	-.036	-.037	-.162**	-.120	.033	.016	-.069
B-Farming Attraction	.122	.023	.045	.051	.066	-.100	-.009	.187*	.194*	-.023
B-Family Commitment	.155*	.003	.011	.005	.034	-.049	-.036	.112	.091	-.024
FF Buffer	.207**	.002	.020	.019	.035	-.141*	-.057	.145	.117	-.066

*. Correlation is significant at the 0.05 level (2-tailed).

** . Correlation is significant at the 0.01 level (2-tailed).

Table 52. Correlation matrix (Pearson's *r*) between IF Impact Scale items and the Satisfaction with Life Scale, Kessler-10, and Maslach's Burnout Inventory.

	SLS	K10	K-DM	K-MA	K-F	K-W	K-A	MBI-EE	MBI-PE	MBI-CY
Difference in Workload	-.104	-.021	.010	.086	-.011	.020	.028	.079	.024	.109
Equal Say	.265**	-.186*	-.255**	-.209*	-.073	-.238**	-.139	-.134	.087	-.175
Committed	.309**	-.202*	-.205*	-.194*	-.204*	-.124	-.183*	-.246*	.036	-.241*
Good Relationships	.193*	-.111	-.120	-.186*	-.081	-.131	-.096	-.103	.108	-.184
Open/Honest Communication	.215*	-.323**	-.272**	-.381**	-.222**	-.233**	-.257**	-.237*	-.031	-.132
Common Goals	.234**	-.221*	-.232**	-.290**	-.124	-.135	-.249**	-.162	.054	-.136
Jealousy	.267**	-.126	-.182*	-.129	-.065	-.182*	-.136	-.097	.042	-.001
Central Management	-.100	.037	.107	.104	.018	-.021	.083	.116	.132	.014
Loyalty	.196*	-.127	-.140	-.227**	-.064	-.132	-.139	-.049	.121	-.172
Succession Plan	.115	-.113	-.147	-.208*	-.019	-.108	-.118	-.035	.109	-.086
Trust	.259**	-.201*	-.259**	-.233**	-.122	-.121	-.185*	-.176	.031	-.101
IF Impact	.283**	-.270**	-.298**	-.313**	-.206*	-.257**	-.241**	-.183	.112	-.203

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

8.3.3.5. *Discriminant validity of Intergenerational Farming Impact Scale*

Findings indicated that the IF Impact scale positively correlated with the SLS ($r=.283$, $n=134$, $p=.001$), and negatively correlated with the K-10 ($r=-.270$, $n=131$, $p=.002$), K-Depressed Mood ($r=-.298$, $n=137$, $p=.000$), K-Motor Agitation ($r=-.313$, $n=137$, $p=.000$), K-Fatigue ($r=-.206$, $n=142$, $p=.014$), K-Worthlessness ($r=-.257$, $n=139$, $p=.002$), and K-Anxiety ($r=-.241$, $n=142$, $p=.004$) (Table 52). Most of the individual items were significantly correlated in a similar fashion to the SLS or K-10. The MBI-Emotional Exhaustion was negatively correlated with “Committed” ($r=-.246$, $n=93$, $p=.017$) and “Open and honest communication” ($r=-.237$, $n=94$, $p=.021$). MBI-Cynicism was negatively correlated with “Committed” ($r=-.241$, $n=89$, $p=.023$). “Difference in workload” and “Central management” did not significantly correlate with any scales of well-being and psychological distress, bringing the validity and usefulness of the items into question. Additionally, “Succession plan” only significantly negatively correlated with K-Motor Agitation ($r=-.208$, $n=141$, $p=.013$). As “Succession plan” only negatively correlated with one scale for criterion validity, RI-Moderate ($r=-.275$, $n=148$, $p=.001$), this also brings the “Succession plan” item validity and usefulness into question (Table 52).

8.3.3.5.1. *Analysing an alternative version of the IF Impact Scale.*

After deleting the aforementioned 3 items, the factor analysis was repeated, producing a KMO value of .913 and a significant Bartlett’s test of sphericity ($p<.05$). Factor analysis identified one factor with an eigenvalue >1.0 , explaining 61.34% of the variance. Assessing criterion and discriminant validity indicated that the significant relationships had not changed. The criterion validity correlations had strengthened in comparison to the original version of the IF Impact scale and the discriminant validity correlations had weakened (Table I3, Appendix I).

8.4. Conclusion

The stage of scale development described in this chapter assessed validity of the 5 farming family scales of FF Role Impact, FF Stressors, FF Cope, FF Buffer, and IF Impact scales through factor analysis and criterion and discriminant validity. Factor analysis indicated that the FF Role Impact Scale (18 items) contained 3 subscales. RI-Facilitators (7 items) referred to role impacts that would also assist role completion if the individual possessed this characteristic, such as good management skills or enthusiasm. RI-Inhibitors (9 items) referred to items that were demanding on or inhibited role completion such as being stressed, work demand, or if something went wrong. RI-Moderators (2 items) referred to items that would moderate the degree of role conflict experienced, such as degree of family tension and level of communication. The FF Role Impact Scale and subscales satisfied criterion and discriminant validity with the exception of the RI-Moderators subscale due to the small item content of the scale. This resulted in the RI-Moderators subscale identified for deletion dependent on findings from within the Reliability study.

Factor analysis revealed that the FF Stressors Scale (29 items) contained 5 subscales. S-Financial Concerns (9 items) focused on stressors regarding external financial pressures including market control and perceived lack of care/support from public and government. S-Family Concerns (9 items) referred to stressors surrounding family and relationships. For example, concerns of maintaining relationships and those factors that impacted family such as isolation and communication technology. S-Future Concerns (5 items) referred to stressors about retirement and future changes on the farm such as succession and technology. S-Daily Concerns (4 items) focused on daily hassles such as workload and employees. S-Uncontrollable Concerns (2 items) referred to

stressors which were concerning but completely outside of personal control, namely practices of other farmers and the amount of chemicals in the industry. The FF Stressor scale and subscales satisfied requirements for validity, including criterion and discriminant, however due to the low number of items in the S-Uncontrollable Concerns scale, these two items were identified for possible deletion. An interesting relationship within the FF Stressor scale was the positive relationship between S-Financial Concerns and MBI-Professional Efficacy, as this was inconsistent with expectations of the discriminant validity analysis. S-Financial Concerns was expected to negatively correlate with Professional Efficacy as Professional Efficacy is considered a positive factor. However, as the item did not negatively relate to any of the FF Stressor scales or positively relate to the SLS, this may have suggested that this construct is more complex and cannot be categorised as a positive or negative factor.

Factor analysis indicated that the FF Cope Scale (25 items) contained 5 subscales. C-Reassess (6 items) referred to coping styles that indicated the individual was aware of stressors and was re-evaluating their current situation to determine the best course of action, such as talking to their partner, using professional help, or reaffirming commitment. C-Positive Reframe (5 items) regarded coping styles that indicated the individual would try to view the situation more positively through recognising achievements or enjoying their work. C-Community Connectedness (6 items) referred to a coping style that involved others, such as socialising, or a sense that the individual was a part of something, such as faith. C-Aware (5 items) referred to coping styles where the individual was aware and preoccupied with issues of concern, yet they could not address the problem, for example accepting control (lack of), exercising, or letting other things slide. C-Disengage (3 items) referred to methods of coping that allowed the individual to be distracted mentally or physically from the stressor, including using

alcohol, watching animals, or getting away. The FF Cope Scale total and subscales satisfied the criteria for criterion and discriminant validity, however 5 items were identified as questionable and inclusion in the final item set would be determined by performance in the Reliability study. These items included “Faith”, “Exercise”, “Animals”, “Get away”, and “Focus on problem, let other things slide”.

Factor analysis indicated that the FF Buffer Scale (12 items) contained 3 subscales. B-Farming Attractions (6 items) referred to positive aspects of the farming lifestyle including enjoying the work or product and the contribution that farming has to people. B-Family Commitment (3 items) referred to commitment to farming for family such as a sentimental value of the farm or as the farm is for the children’s future. B-Pride in Identity (3 items) referred to the connection of farming to identity, for example the individual was proud to be a farmer as it indicated land ownership or that they were a down to earth person. The FF Buffer Scale and subscales satisfied criterion and discriminant validity with the exception of “Improving land”, “Surroundings”, and “Children’s future” which may need further support for inclusion. Criterion validity of the FF Buffer scale demonstrated that although there are not a large number of correlations between scales, the correlations observed are consistent with the themes presented in the Interview stage (Chapter 5). For example, the positive relationships with denial, such as “Who I am”, “Children’s future”, and “Sentimental value”, and the negative relationships with planning, such as “Landowner”, “Who I am”, and “Children encouraged into farming”, support the notion that the reasons why individuals commit to farming is not necessarily logical, and that despite all challenges and reasoning, the individual will continue to farm.

Factor analysis indicated that the IF Impact Scale measured a single construct. This was not unexpected as the item content of this scale addressed a very specific

construct. The scale satisfied criterion and discriminant validity criteria however three items “Succession plan”, “Difference in workload”, and “Central management”, needed further assessment for inclusion in the final item set. The criterion validity of the items “Difference in workload” and “Central management” was questioned as the items positively rather than negatively correlated with criterion scales. However, when considering the content of these items, “Differences in workload” is a negatively worded item that implies tension and conflict. “Central management”, though perceived as a positively worded item, seems to indicate that an unbalanced distribution of control and power within a family business results in conflict and tension. Furthermore, due to low correlation values within criterion and discriminant analysis, items were experimentally removed to assess a second version of the IF Impact scale. Results from this analysis indicated that the significant relationships had not changed, though criterion validity correlations appeared to have strengthened in comparison to the original version of the IF Impact scale. In contrast, the discriminant validity correlations weakened. Therefore, it was thought that in this case the scale would be more informative and be more psychometrically sound if the 3 items were retained as with the items included the overall strength of the scale was improved whereas removal of the items weakened the scale.

The results indicated that the FF Stressor, Role Impact, Cope, Buffer, and IF Impact Scales were distinctly different constructs from each other and the existing scales of the Farm Stress Survey, Work-Family Conflict Scales, and Brief COPE Inventory. Additionally, the Farming Family scales in most cases presented stronger correlations than the criterion scales with the scales of well-being, as assessed by the life satisfaction, psychological distress, and work burnout scales. This indicated that the contextually-specific farming family scales may provide a more comprehensive and

accurate understanding of contributors to farming family well-being than did previous scales. Nonetheless, there were a number of items identified that did not significantly correlate with a sufficient number of criterion or discriminant scales and there were factors with less than 3 items. This presents challenges to the validation and subsequent reliability process as a factor with less than 3 items as it impacts the internal consistency of the factor. The items that were identified for possible removal included “Amount of chemicals in the industry” and “other farmers’ practices” from the FF Stressor scale. Items identified from the FF Role Impact Scale were “family tension” and “level of communication”. “Faith”, “Exercise”, “Animals”, “Get away”, and “Focus on problem, let other things slide” from the FF Cope scale; “Improving land”, “Surroundings”, and “Children’s future” were identified for possible deletion from the FF Buffer scale. The items “Succession plan”, “Difference in workload”, and “Central management” were identified for possible deletion from the IF Impact scale. The validity and reliability of these items was further assessed in the following chapter which evaluated the reliability of the developed scales through assessment of internal consistency and test-retest reliability. The final decision to retain the items drew on findings from the validity and reliability studies as well as consideration of the content validity from a theoretical viewpoint (Streiner & Norman, 1989).

Chapter 9: Phase 3 – Did We Get It Right?

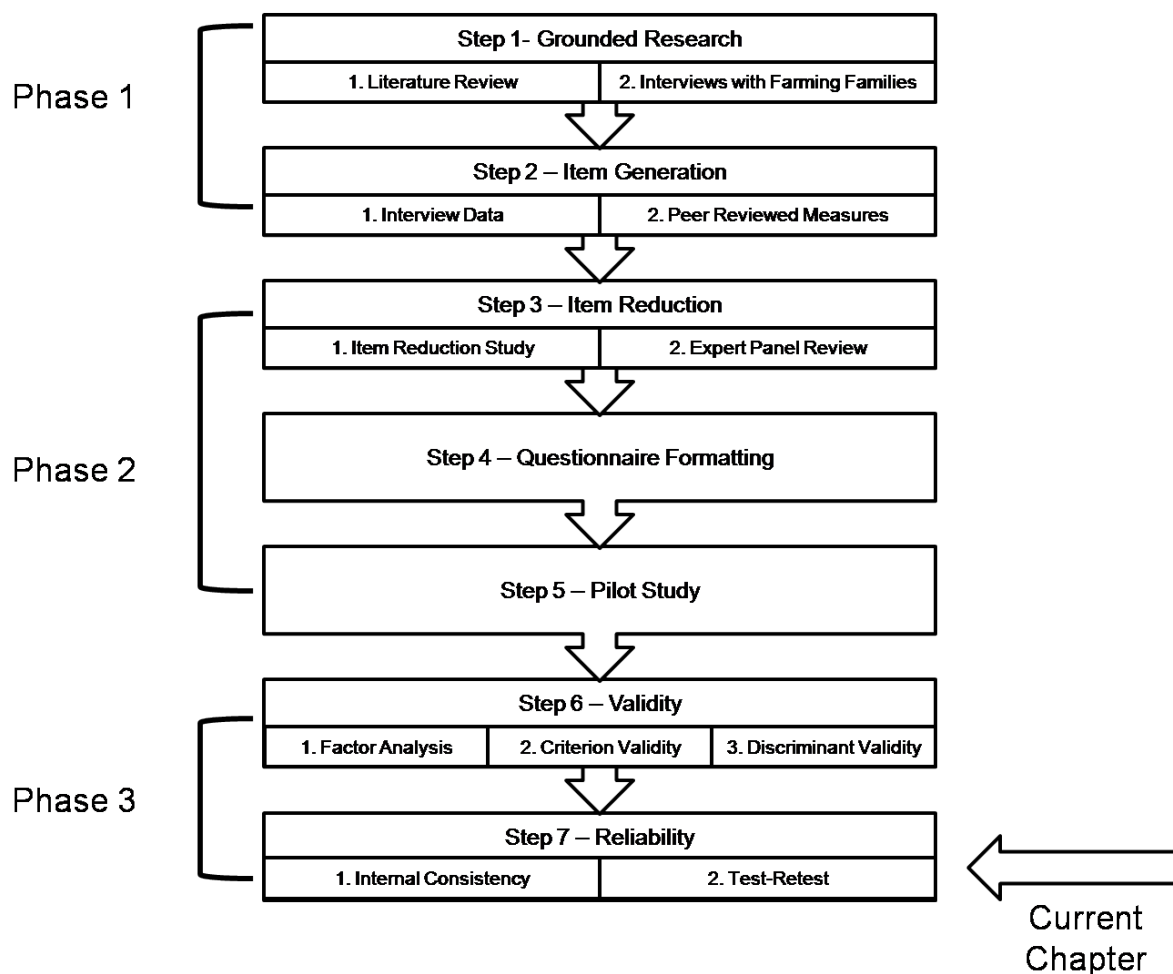


Figure 10. Overview of the process of the development of the Farming Family scales.

9.1 Context of Study

The previous chapter determined that the farming family scales developed satisfied tests of validity, including factor analysis, criterion validity, and discriminant validity. The criteria for validity included distinct loading of items on factors with a value greater than .3, significantly correlating with similar existing scales with values less than $r=.8$, and significantly correlating with at least one measure of well-being in a predicted direction. For example, FF Stressor item set significantly positively correlated to psychological distress and negatively correlated to life satisfaction. Analysis resulted

in the generation of the FF Role Impact Scale (18 items) consisting 3 subscales, RI-Facilitators (7 items), RI-Inhibitors (9 items), and RI-Moderators (2 items). The FF Stressors Scale (29 items) consisting 5 subscales, S-Financial Concerns (9 items), S-Family Concerns (9 items), S-Future Concerns (5 items), S-Daily Concerns (4 items), and S-Uncontrollable Concerns (2 items). The FF Cope Scale (25 items) consisting of 5 subscales, C-Reassess (6 items), C-Positive Reframe (5 items), C-Community Connect (6 items), C-Aware (5 items), and C-Disengage (3 items). The FF Buffer Scale (12 items) consisting 3 subscales, B-Farming Attractions (6 items), B-Family Commitment (3 items), B-Pride in Identity (3 items). The IF Impact Scale was the final scale assessed for validity and did not contain any subscales as it was measuring a single constructed.

The current study assessed the aforementioned scales but did so in relation to the reliability of items and scales, which was Step 7 of item development (Streiner & Norman, 1989). Reliability testing is a procedure that provides information about the variability of participant responses. This should, in theory, be an indication of the degree of generalisability and consistency of the items and scales in the population of interest (Streiner & Norman, 1989). Though reliability testing is considered to be an important part of the scale development process, Streiner and Norman (1989) argue that the assessment of reliability is difficult, with most statistical techniques only considered, at best, to be a close assessment of the true degree of reliability. The two tests of reliability assessed in this chapter were internal consistency and test-retest reliability. Internal consistency requires that items within a scale be moderately related to each other and that each item should be related to the total score of the scale (Streiner & Norman, 1989). Test-retest reliability involves administering the same scale to the same participants at two different time intervals. There are differing opinions of what constitutes an appropriate time interval and appropriateness often depends upon the type

of test and nature of the population of interest (Streiner & Norman, 1989). Two weeks is generally considered an appropriate interval and for the current study this time period was used as a minimum length between administrations. This procedure was considered appropriate due to the variability in the work life of farming families, such as the seasonal nature of products. That is, there was likely to periods of the year that were more demanding than others for most farming product types. Therefore, the variation of the period between completed responses of the questionnaire package by the participants may have helped account for the inherent changeability of the farming environment. This hypothesis for reliability assessment was supported by previous research which suggested that variable time intervals may help account for changes that develop across the response time period within the sample data (McArdle & Woodcock, 1997; Salthouse, Schroeder, & Ferrer, 2004).

Therefore, through the use of procedures to assess the reliability of the farming family scales, this chapter aimed to answer the question: Do these scales consistently produce similar properties and results within different samples or at different times?

9.2 Method

9.2.1 Participants.

To examine the stability of the scales over time, a test-retest procedure was used. Participants who responded to the Validity study were asked upon completion of the survey whether they were willing to participate in the next stage of analysis, which would be a shortened version of the validity study. Of the 278 participants who completed the Validity survey, 113 potential participants volunteered to participate in the Reliability study. Of these individuals 53 (47%) participants (21 men and 32 women) returned completed Reliability surveys. Participants age ranged from 25 to 77

years ($M=51.68$, $SD=12.34$), with participants from Queensland (30.2%), New South Wales (28.3%), and Victoria (18.9%) (Table 53).

Table 53. *Demographics of Validity Study population.*

Variable	Valid	Freq.	Mean	Std. Dev.	Min	Max
State	53		n/a	n/a	n/a	n/a
QLD		16				
NSW		15				
VIC		10				
WA		6				
SA		3				
TAS		1				
NT		2				
State Location	53		n/a	n/a	n/a	n/a
North		1				
South		1				
West		2				
Central		13				
North-East		6				
South-East		19				
North-West		7				
South-West		4				
Marital Status	53		n/a	n/a	n/a	n/a
Single		4				
Married		43				
Separated		1				
De Facto		4				
In a relationship		1				
Length of Relationship	50	n/a	22.84	14.35	.00	51.00
No. of Children	53	n/a	2.17	1.33	.00	5.00
No. of Financial Dependent Children	53	n/a	.92	1.31	.00	5.00
No. Children Living at Home	52	n/a	.79	1.21	.00	5.00
Education Level	53		n/a	n/a	n/a	n/a
Did not complete Year 10		2				
Completed Year 10		9				
Completed Year 12		3				
Completed Trade		3				
Completed Undergraduate Degree		24				
Completed Post-Graduate Degree		6				
Completed Diploma		4				
Other		2				

Most frequently participants were married (81.1%) for an average of 22.84 years ($SD=14.35$), and having 2 (30.2%) to 3 (28.3%) children, of which most were not financially dependent (60.4%) or living at home (60.4%). Most participants had at least

completed year 10 level education (17.0%), with 24 (45.3%) participants having completed an undergraduate degree, and 6 (11.3%) participants having completed a post-graduate degree (i.e. Masters or PhD) (Table 53).

Table 54. *Demographics of Produce type and Farming Structure.*

Variables	Valid	Freq.
Produce Type	53	
Broadacre		14
Rice		2
Horticulture		7
Pig Meat		1
Sugar		3
Wool		15
Sheep Meat		18
Cotton		1
Beef		25
Wine/Grapes		1
Dairy		3
Other		8
Business Structure	51	
Intergenerational Business with paid family employees		4
Intergenerational Business with Unpaid family employees		5
Intergenerational Business with paid external employees		3
Family Business with paid family employees		6
Family Business with unpaid family employees		12
Family Business with paid external employees		12
Non-Family Business with paid external employees		3
Combination Intergenerational Business with family employees & external employees		1
Multiple Intergenerational Business employee types		1
Other		4

The most common types of production were broadacre cropping (26.4%), horticulture (13.2%), wool (28.3%), sheep meat (34%), and beef (47.2%), with participants being involved in farming for 1 to 56 years ($M=25.41$, $SD=13.19$). Most participants identified their business structure as either a family business with unpaid

family employees (22.6%) or a family business with paid external employees (22.6%). The majority of participants also indicated that they had been involved in an intergenerational farm at some point (N= 31, 58.5%) (Table 54). Men's work roles included being the owner (47.6%), manager (47.6%), and in a partnership (38.1%). Women identified being the owner (40.6%), in a partnership (46.9%), completing administrative (43.8%) and financial duties (40.6%), and being the helper (46.9%). Men's predominant home roles included being a parent/carer (33.3%) and the breadwinner (66.7%), whilst women identified as being a parent/carer (53.1%), contributing to the house (84.4%) and the outside (e.g. mowing, maintenance) (78.1%), and ensuring family satisfaction (68.8%) (Table 55).

Table 55. *Farm and Home Roles.*

Variable	Valid	Men Freq.	Men %	Women Freq.	Women %
Role on Farm					
Owner	52	10	47.6	13	40.6
Final Decision		5	23.8	0	0
Manager		10	47.6	4	12.5
Partnership		8	38.1	15	46.9
Manage Employees		3	14.3	4	12.5
Labourer		5	23.8	6	18.8
Administrative Duties		3	14.3	14	43.8
Financial Duties		3	14.3	13	40.6
Family Employee		1	4.8	3	9.4
Collaborate with Family		2	9.5	8	25
Collaborate with Government Programs		2	9.5	7	21.9
Attend Educational Programs		2	9.5	9	28.1
Helper		2	9.5	15	46.9
Off-farm Volunteer		2	9.5	7	21.9
Off-farm Job		1	4.8	9	28.1
Other		1	7.8	1	3.1
Role in Home					
Carer	51	7	33.3	17	53.1
Breadwinner		14	66.7	14	43.8
House Duties		5	23.8	27	84.4
Outside Duties		6	28.6	25	78.1
Family Happiness / Satisfaction		7	33.3	22	68.8
Other		2	9.5	5	15.6

A self-reported past 10 year history of physical and mental health indicated that approximately 15-20% of men and women reported having experienced high blood pressure or a farm workplace injury. Men self-reported a higher incidence of depression than women whilst women self-reported a higher incidence of anxiety and suicidal thoughts than men (Table 56). These demographics indicate that the participants of the current Reliability study were similar to the participants of the Validity study in terms of demographic data (Tables 29-32 with Tables 53-56).

Table 56. *Past 10 year history of physical and mental health.*

Variable	Valid	Men Freq.	Men %	Women Freq.	Women %
Physical Health	52				
Cancer		2	9.5	2	6.3
High Blood Pressure		4	19.0	7	21.9
Heart Disease		2	9.5	1	3.1
Farm Work-related Injury		3	14.3	6	18.8
Other		1	4.8	1	3.1
No Illness		6	28.6	19	59.4
Mental Health	52				
Depression		8	38.1	11	34.4
Anxiety		5	23.8	12	37.5
Suicidal Thoughts		1	4.8	3	9.4
Other		1	4.8	1	3.1
No Mental Illness		6	28.6	14	43.8
Medication	52				
Anti-Depressant		0	0.0	5	15.6
Anti-Anxiety		0	0.0	2	6.3
Sleeping Tablet		1	4.8	0	0.0
Multiple		3	14.3	1	3.1
Other		0	0.0	2	6.3
No medication		16	76.2	21	65.6

Note: If a participant reported more than one medication type, then it was coded as 'multiple medication' and was not coded separately as 'anti-depressant', 'anxiolytic' or 'sleeping tablet'.

9.2.2 Materials.

The questionnaire package included the 5 scales being developed, titled the FF Role Impact Scale (18 items), the FF Stressor Scale (29 items), the FF Cope Scale (25 items), the FF Buffer Scale (12 items), and the IF Impact Scale (11 items) (Appendix J).

The FF Role Impact Scale assessed factors that may interfere with or effect role completion for a farming family member. This scale consisted of 3 subscales, RI-Facilitators (7 items), RI-Inhibitors (9 items), and RI-Moderators (2 items). The FF Stressor Scale scales stressors that may be impacting a farming family member and consists of 5 subscales, S-Financial Concerns (9 items), S-Family Concerns (9 items), S-Future Concerns (5 items), S-Daily Concerns (4 items), and S-Uncontrollable Concerns (2 items). The FF Cope Scale assessed the coping styles or resources that a farming family member may employ to cope with stress. This scale consists of 5 subscales, C-Reassess (6 items), C-Positive Reframe (5 items), C-Community Connect (6 items), C-Aware (5 items), and C-Disengage (3 items). The FF Buffer Scale assessed attributes and values that may assist a farming family member to remain resilient and persevere through stress and challenges. This scale consisted of 3 subscales, B-Farming Attractions (6 items), B-Family Commitment (3 items), B-Pride in Identity (3 items). The IF Scale assessed the attributes of a farming family member's intergenerational farming experience. Scales were assessed on a 5-point Likert scale, with FF Stressor items rated from 1="Not at all" to 5="Worries me a lot", the FF Cope items rated from 1="Not at all" to 5="Helps me a lot", the FF Buffer and Intergenerational Farming Impact items rated from 1="Not at all" to 5="Very much so" (FFB, IFI), and the FF Role Impact items rated from 1="Not at all" to 5="Most of the time".

9.2.3 Procedure.

The Reliability study was launched in November 2010 at the completion of the Validity study data collection period. Participants who indicated interest in participation upon completion of the Validity survey were emailed or posted the Reliability survey a minimum of 2 weeks after participation in the Validity survey. This period of time varied greatly as the data collection period of the Validity study lasted for 4 months.

Therefore some participants who were contacted for the Reliability study had participated in the Validity study up to 4 months earlier than those who participated towards the end of the Validity data collection period. In relation to test-retest reliability, Time 1 of participation was embedded in the Validity study and Time 2 was participation in the Reliability study. Participants were also emailed reminders about the possibility of participating in an additional study towards the end of the Validity data collection period. The survey package included a cover letter reintroducing the participants to the research, an information sheet describing the participant's role and nature of the study, a demographics section, and five scales (FF Stressor, FF Cope, FF Role Impact, FF Buffer, and the IF Impact Scales). The items within each scale were randomly reordered using a statistical randomizing calculator. Additionally, 5 versions of the survey were statistically randomized with each version presenting a different order of presentation of each scale (Table K1, Appendix K). Participants were sent 2 emails at 2 week intervals reminding them to return the surveys.

9.2.4 Analysis.

The aim of this study was to compare the responses to each measure per participant to the responses gathered at the time of the Validity Study in order establish the extent of test-retest reliability. Initially, responses from each Version (1-5) were compared for significant differences in order to rule out an ordering effect. Internal consistency was assessed for both the Validity and Reliability sample by examining Cronbach's alpha coefficient, with alpha values $>.7$ taken as indicating scale internal consistency and individual items with item-total correlations $<.3$ indicating that the item may not be measuring the same construct as the total scale. Previous research recommends that if there is low number of items within scales, the inter-item

correlations should also be examined in conjunction with the alpha coefficient, with an optimal range of $r=.2$ to $.4$ (Briggs & Cheek, 1986).

Test-retest analysis was conducted by pairing participants from the Validity (Time 1) and Reliability (Time 2) surveys and correlating their responses using Spearman's ρ , with high correlation coefficients of $\rho >.7$ indicating strong reliability and $\rho=.6$ indicating moderate reliability (Streiner & Norman, 1989; Dikmen, Heaton, Grant, & Temkin, 1999).

9.3 Results

9.3.1. Internal consistency.

9.3.1.1 Internal consistency of the FF Role Impact Scale in the validity sample.

The FF Role Impact scale within the Validity sample had a Cronbach alpha coefficient of .89, though “Weather” did present a low item-total correlation ($r<.3$) (Table 57).

Table 57. *Internal consistency of items of the FF Role Impact Scale with the Validity data sample.*

	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Rested	.473	.885
Enthusiasm	.500	.885
Delegating	.571	.883
Management Skills	.575	.882
Flexibility	.662	.879
Weather	.293	.892
Communication	.487	.885
Share workload	.623	.881
Work Demand	.694	.878
Unpredictability of Jobs	.680	.878
Courses & Meetings	.354	.889
Family Tension	.447	.886
Time with Family	.387	.888
Finances	.512	.884
Things go Wrong	.565	.883
Employees	.362	.890
Emotionally Drained	.629	.880
Stressed	.665	.879

An examination of the FF Role Impact subscales indicated that each subscale, RI-Facilitator, RI-Inhibitors, and RI-Moderators had Cronbach alpha coefficients $>.7$ and all item-total correlation $>.3$, satisfying criteria for internal consistency. As there were only two items within RI-Moderators, the correlation between the items was examined indicating that the items exceeded the appropriate range ($r=.543$).

9.3.1.2 Internal consistency of the FF Role Impact Scale in the reliability sample.

The FF Role Impact scale produced a Cronbach alpha coefficient of .89, however “Delegating” and “Time with family” produced low correlation values ($<.3$) with the scale total ($r=.22$, $r=.21$, respectively) (Table 58).

Table 58. *Internal consistency of items of the FF Role Impact Scale within the Reliability data sample.*

	Corrected Item- Total Correlation	Cronbach's Alpha if Item Deleted
Flexibility	.463	.881
Communication	.445	.882
Delegating	.222	.888
Weather	.445	.882
Share workload	.388	.884
Work Demand	.769	.869
Finances	.519	.880
Rested	.798	.870
Unpredictability of Jobs	.629	.875
Time with Family	.208	.888
Employees	.449	.882
Management Skills	.458	.881
Stressed	.716	.872
Family Tension	.424	.882
Emotionally Drained	.636	.875
Enthusiasm	.579	.877
Things Go Wrong	.516	.879
Courses & Meetings	.521	.879

Analysis of the internal consistency of the FF Role Impact subscales, indicated that the value of the Cronbach alpha coefficient was satisfactory for the RI Facilitators (.73) and RI Inhibitors (.82) scales, though “Delegating” from the RI Facilitator scale and “Time with family” from the RI Inhibitors scale presented low item-total correlation values ($r=.22$, $r=.11$, respectively). The third subscale, RI Moderators, produced a Cronbach alpha coefficient of .69, and also produced high inter-item correlation ($r=.54$), exceeding the optimal range.

9.3.1.3 Internal consistency of the FF Stressor Scale in the validity sample.

Internal consistency for the FF Stressor scale was satisfied with a Cronbach alpha coefficient of .94, and all items presented satisfactory item-total correlation values ($>.3$) (Table 59). FF Stressor subscales all produced Cronbach alpha coefficient $>.7$, with the exception of S-Uncontrollable which presented a .69 alpha coefficient. As S-Future, S-Daily, and S-Uncontrollable stressor subscales had a small item list, an assessment of the inter-item correlation matrices indicated a number of high and low correlations which exceeded the optimal range ($r\pm.2-.4$) (Table 60).

Table 59. *Internal consistency of items of the FF Stressor Scale with the Validity data sample.*

	Corrected Item- Total Correlation	Cronbach's Alpha if Item Deleted
Services	.491	.934
Unreliable Communications	.506	.934
Isolation	.441	.935
Exhausted	.574	.933
Talking about Stress	.542	.933
Health of Family	.621	.932
Distance from Family	.480	.934
Family Duties	.588	.933
Maintaining Relationships	.582	.933
Providing for Family	.660	.932
When to Retire	.570	.933
Concerns over Retirement	.604	.933
Succession Planning	.570	.933

Table 59. *continued...*

	Corrected Item- Total Correlation	Cronbach's Alpha if Item Deleted
Working with Family	.426	.935
Employees	.444	.935
Workload	.644	.932
Others Errors	.514	.934
Chemicals	.389	.935
Other Farmers	.494	.934
Future of Industry	.703	.931
Aus. Public and Government lack of Value	.670	.932
Market Control	.644	.932
Supermarket	.551	.933
Foreign Products	.557	.933
Financial Farm	.675	.932
Economy	.688	.932
Cost-Profit Margin	.594	.933
Price of Land	.520	.934
Changes in Technology	.476	.934

Table 60. *Inter-item correlation matrices of the FF Stressor subscales S-Future Concerns, S-Daily Concerns, and S-Uncontrollable Concerns.*

Scale Items	1	2	3	4	5
S-Future Concerns					
	When to Retire	Concerns over Retiring	Succession Plan	Working with Family	Changes in Technology
When to Retire	1.000				
Concerns over Retiring	.834	1.000			
Succession Plan	.446	.452	1.000		
Working with Family	.179	.228	.564	1.000	
Changes in Technology	.421	.340	.260	.147	1.000
S-Daily Concerns					
	Workload	Employees	Other's errors	Services	
Workload	1.000				
Employees	.479	1.000			
Other's errors	.531	.500	1.000		
Services	.346	.491	.325	1.000	
S-Uncontrollable Concerns					
	Chemicals				
Chemicals	1.000				
Practices of Other Farmers	.525				

Note: Bold r-values indentify items which correlate outside of appropriate range .2-.4.

9.3.1.4 Internal consistency of the FF Stressor Scale in the reliability sample

The FF Stressor scale produced a Cronbach alpha coefficient of .90, though “Changes in technology”, “Isolation”, and “Working with family” produced item-total correlations $<.3$ (Table 61). Internal consistency was then examined for the 5 subscales of the FF Stressor scale revealed that S-Financial, S-Family, and S-Daily produced Cronbach alpha coefficient $>.7$, with each item with these subscales correlating $>.3$ for item-total correlations.

Table 61. *Internal consistency of items of the FF Stressor Scale with the Reliability data sample.*

	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Distance from Family	.529	.892
When to Retire	.737	.887
Talking about Stress	.509	.892
Economy	.546	.892
Health of Family	.463	.893
Change in Technology	.273	.897
Services	.496	.893
Farm Financial Situation	.469	.893
Chemicals	.409	.895
Workload	.692	.888
Employees	.510	.892
Unreliable Communications	.543	.891
Future of Industry	.488	.893
Isolation	.296	.897
Maintaining Relationships	.482	.893
Practices of Other Farmers	.302	.896
Cost-Profit Margin	.442	.894
Supermarkets	.330	.895
Working with Family	.105	.900
Succession Plan	.359	.895
Others Errors	.413	.894
Family Duties	.438	.894
Foreign Products	.383	.895
Aus. Public and Government lack of Value	.380	.895
Providing for Family	.642	.890
Market Control	.480	.893
Price of Land	.370	.895
Concerns over Retirement	.645	.889
Exhausted	.527	.892

As S-Future, S-Daily, and S-Uncontrollable contained a smaller item set, the inter-item correlations were examined indicating that “Concerns over retirement” and “When to retire” (S-Future) exceeded the recommended correlation range or $r=.2-.4$, “Working with family” (S-Future) did not present high inter-item correlations or item-total correlations, suggesting this item may be more appropriate within another factor/subscale. For instance, “Working with family” also cross-loaded into S-Family Concerns (Chapter 7). If this item was moved to S-Family Concerns, the Cronbach alpha coefficient for S-Future increases from .675 to .742, the S-Family Concerns Cronbach alpha coefficient remains strong ($>.7$), and “Working with family” has improved correlation levels with inter-item correlations and item-total correlation (Table 62). There were high inter-item correlations ($>.4$) between “Workload”, “Employees”, and “Others errors” (S-Daily), however each item of this subscale did correlate highly for item-total correlations ($>.3$). The S-Uncontrollable items presented appropriate inter-item correlation range ($r=.2-.4$), however the item-total correlation was low ($<.3$).

Table 62. *Inter-item correlation between items of the S-Future and S-Family Concerns subscales and the “Working with Family” item.*

	Working Family	with
S-Future Concerns		
When to Retire	.045	
Changes in Technology	-.033	
Succession Plan	.249	
Concerns over Retirement	.032	
S-Family Concerns		
Distance from Family	-.163	
Talking about Stress	.243	
Health of Family	-.184	
Unreliable Communications	.116	
Isolation	.109	
Maintaining Relationships	.384	
Family Duties	.388	
Providing for Family	.185	
Exhausted	.253	

9.3.1.5 Internal consistency of the FF Cope Scale in the validity sample.

The FF Cope (1) scale and FF Cope (2) scale both produced Cronbach Alpha coefficients of .89. Item-total correlations were low (<.3) in relation to the FF Cope (1) scale for “Faith”, “Alcohol”, “Animals”, and “Flow”, and the FF Cope (2) scale for “Alcohol” and “Flow” (Table 63).

Table 63. Internal consistency of items of the FF Cope (V1) and Cope (V2) Scales within the Validity data sample.

	COPE 1 Corrected Item- Total Correlation	COPE 1 Cronbach's Alpha if Item Deleted	COPE 2 Corrected Item- Total Correlation	COPE 2 Cronbach's Alpha if Item Deleted
Accept Control	.461	.881	.476	.888
Accept Responsibility	.542	.879	.573	.885
Enjoy Work	.512	.880	.528	.886
Remember Past	.532	.879	.542	.886
Positive	.625	.878	.657	.883
Recognise	.624	.878	.636	.884
Achievements				
Socialise	.466	.881	.440	.888
Faith	.290	.887	n/a	n/a
Share Work	.544	.878	.549	.885
Open Communication	.617	.877	.644	.882
Not Alone	.543	.878	.507	.887
Alcohol	.116	.892	.113	.902
Laugh	.553	.878	.561	.885
Animals	.232	.887	n/a	n/a
Get Away	.312	.885	n/a	n/a
Exercise	.327	.885	n/a	n/a
Let Other Things Slide	.387	.882	n/a	n/a
Flow	.209	.887	.187	.897
Break	.455	.881	.409	.890
Trust	.619	.877	.638	.883
Commitment	.646	.877	.665	.883
Compromise	.624	.877	.640	.883
Prioritise	.605	.878	.621	.884
Professional Help	.541	.878	.560	.885
Talk	.550	.879	.585	.884

An evaluation of the subscales of FF Cope (1) satisfied internal consistency for C-Reassess (.84), C-Positive Reframe (.80), and C-Community Connectedness (.76).

Comparisons of inter-item correlations C-Awareness and C-Disengage, due to small item lists, indicated low correlation levels ($r < .2$) of multiple items within both subscales (Table 64). Internal consistency was also satisfied for the FF Cope (2) subscales C-Reassess (.88), C-Perseverance (.81), and C-Ease of Burden (.72).

Table 64. *Inter-item correlation matrices of the FF Cope (VI) subscales C-Aware and C-Disengage within the validity sample.*

Items	1	2	3	4
			Focus Problem	on Flow
C-Aware				
Accept Control	1.000			
Exercise	.147	1.000		
Focus on Problem	.223	.286	1.000	
Flow	.184	.053	.335	1.000
C-Disengage				
Alcohol		Animals	Get Away	
Alcohol	1.000			
Animals	.154	1.000		
Get Away	.153	.148	1.000	

Note: Bold r-values identify items which correlate outside of appropriate range .2-.4.

9.3.1.6 Internal consistency of the FF Cope Scale in the reliability sample.

The FF Cope (1) scale, producing a Cronbach alpha coefficient of .88, though “Animals”, “Get away”, “Faith”, and “Alcohol” produced low item-total correlations ($r < .3$) (Table 65). An examination of the reliability of the subscales of the FF-Coping Scale indicated that C-Reassess, C-Positive Reframe, and C-Awareness presented Cronbach alpha coefficients $> .7$, with no individual items presenting low item-total correlations ($r < .3$) within these subscales. C-Community Connectedness and C-Disengage presented low Cronbach alpha coefficients.

Table 65. *Internal consistency of items of the FF Cope (V1) Scale within the Reliability data sample.*

	Corrected Item- Total Correlation	Cronbach's Alpha if Item Deleted
Animals	.090	.888
Trust	.432	.879
Commitment	.561	.876
Remember Experiences	.575	.876
Professional Assistance	.493	.877
Get Away	.227	.885
Faith	.131	.889
Compromise	.462	.878
Exercise	.485	.877
Positive	.605	.875
Not Alone	.573	.875
Flow	.405	.880
Accept Control	.492	.877
Talk	.658	.873
Break	.601	.874
Share Workload	.711	.870
Socialise	.394	.880
Laugh	.505	.877
Recognise Achievements	.547	.876
Enjoy Work	.631	.874
Focus on Problem	.517	.877
Prioritise	.351	.881
Open Communication	.584	.875
Accept Responsibility	.659	.875
Alcohol	.057	.891

An evaluation of the inter-item correlations indicated that “Break” and “Faith” of the C-Community Connectedness presented multiple correlations outside of the appropriate range ($r=.2-.4$) and “Animals” and Getaway” of the C-Disengage did not significantly correlate ($r=.050$) (Table 66). The FF Cope (2) scale presented Cronbach alpha coefficients $>.7$ for the scale as a whole as well as each individual subscale, however low item-total correlations were noted for “Alcohol” ($r=.041$) of the FF Cope (2), “Flow” ($r=.297$) of the C-Ease of Stress subscale, and “Prioritise” ($r=.237$) of the C-Reassess (2) subscale.

Table 66. *Inter-item correlation matrices of the FF Cope (V1) subscales C-Community Connect and C-Disengage within the reliability sample.*

Items	1	2	3	4	5
	Share Work	Socialise	Not Alone	Break	Faith
C-Community Connect					
Share Work	1				
Socialise	.371	1			
Not Alone	.356	.277	1		
Break	.405	.585	.371	1	
Faith	.153	-.111	.277	.085	1
C-Disengage					
	Alcohol	Animals	Get Away		
Alcohol	1				
Animals	.276	1			
Get Away	.256	.050	1		

Note: Bold r-values identify items which correlate outside of appropriate range .2-.4.

9.3.1.7 Internal consistency of the FF Buffer Scale in the validity sample.

The FF Buffer (1) scale presenting a Cronbach alpha coefficient of .85, and the FF Buffer (2) scale a coefficient of .81, with this version of the scale presenting low (<.3) item-total correlations (Table 67).

Table 67. *Internal consistency of items of the FF Buffer (1) and Buffer (2) Scales within the Validity data sample.*

	BUFFER 1 Corrected Item- Total Correlation	BUFFER 1 Cronbach's Alpha if Item Deleted	BUFFER 2 Corrected Item- Total Correlation	BUFFER 2 Cronbach's Alpha if Item Deleted
Enjoy Working with Animals/Product	.528	.840	.512	.797
Enjoy Work	.593	.836	.583	.790
Land Owner	.443	.845	.425	.806
Down to Earth	.571	.837	.540	.793
Improving Land Surroundings	.523	.841	n/a	n/a
Skills	.474	.843	n/a	n/a
Contributes to People Who I Am	.626	.832	.610	.783
Children's Future	.566	.837	.564	.790
Children Encouraged	.641	.830	n/a	n/a
Sentimental	.554	.838	.656	.775
	.444	.847	.404	.812
	.478	.846	.443	.810

A comparison of the internal consistency between the subscales of the two version of the FF Buffer scale indicate that B-Farming Attractions (1 & 2) and B-Family Commitments (1) presented Cronbach alpha coefficients $>.7$, the first version of the Buffer scale presented coefficients higher than the second version in all cases (Table 68).

Table 68. *Comparison of Cronbach Alpha Coefficients between Version 1 & 2 of the Buffer subscales within the Validity sample.*

Subscale	Cronbach alpha (1)	Cronbach alpha (2)
Farming Attractions	.83	.81
Family Commitment	.77	.63
Pride in Identity	.68	.64

9.3.1.8 Internal consistency of the FF Buffer Scale in the reliability sample.

The FF Buffer Scale presented a Cronbach alpha coefficient of $.79$, with only one item “Land owner” presenting an item-total correlation value of $<.3$ (Table 69). The FF Buffer subscales B-Farming Attractions and B-Family Commitment also produced high Cronbach alpha coefficients ($>.7$).

Table 69. *Internal consistency of items of the FF Buffer (VI) Scales within the Reliability data sample.*

	Corrected Item- Total Correlation	Cronbach's Alpha if Item Deleted
Down to Earth	.400	.778
Children's Future	.489	.769
Sentimental	.649	.748
Gain Skills	.467	.771
Landowner	.192	.799
Enjoy Animal/Product	.481	.773
Children Encouraged into Farming	.430	.776
Contributes to People	.373	.780
Surroundings	.362	.781
Improve Land	.446	.780
Enjoy Work	.357	.782
Who I Am	.625	.752

A comparison of inter-item correlations indicated that a number of items from each subscale did not have coefficients in the appropriate value range ($r=.2-.4$) (Table 70).

Table 70. *Inter-item correlation matrices of the FF Buffer (1) subscales.*

Items	1	2	3	4	5	6
	Enjoy Animal/Product	Gain Skills	Contributes to People	Enjoy Work	Who I Am	Improving Land
B-Farm Attraction						
Enjoy Animal/Product	1.000					
Gain Skills	.225	1.000				
Contributes to People	.267	.443	1.000			
Enjoy Work	.625	.015	.139	1.000		
Who I Am	.431	.246	.265	.514	1.000	
Improving Land	.524	.160	.272	.606	.345	1.000
B-Family Commitment	Children Encouraged	Children's Future	Sentimental			
Children Encouraged	1.000					
Children's Future	.526	1.000				
Sentimental	.414	.651	1.000			
B-Pride in Identity	Landowner	Down to Earth	to Surroundings			
Landowner	1.000					
Down to Earth	.111	1.000				
Surroundings	.376	.300	1.000			

Note: Bold *r*-values identify items which correlate outside of appropriate range .2-.4

Reliability was also assessed for the second version of the FF Buffer (2) scale and its subsequent subscales. Results indicated stronger Cronbach alpha coefficients for the original version of the FF Buffer (1) scale and subscales (Table 71).

Table 71. *Comparison of Cronbach Alpha Coefficients between Version 1 & 2 of the Buffer scales within the Reliability sample.*

Subscale	Cronbach alpha (1)	Cronbach alpha (2)
FF Buffer	.79	.74
Farming Attractions	.71	.68
Family Commitment	.77	.58
Pride in Identity	.50	.20

9.3.1.9 Internal consistency of the IF Impact Scale in the validity sample.

The IF Impact Scale presented a Cronbach alpha coefficient of .76 within the Validity sample. No items of the IF Impact Scale had low item-total correlations (<.3) (Table 72).

Table 72. *Internal consistency of items of the IF Impact Scale within the Validity data sample.*

	Corrected Item- Total Correlation	Cronbach's Alpha if Item Deleted
Difference in Workload	-.484	.843
Equal Say	.729	.710
Committed	.599	.724
Good Relationships	.653	.715
Open/Honest Communication	.640	.712
Common Goals	.729	.703
Jealousy	.485	.735
Central Management	-.470	.851
Loyalty	.797	.697
Succession Plan	.762	.701
Trust	.754	.704

9.3.1.10 Internal consistency of the IF Impact Scale in the reliability sample.

The IF Impact Scale presented a Cronbach alpha coefficient of .81 within the Reliability sample. Two items, “Jealousy” and “Difference in workload”, presented low item-total correlations (<.3) (Table 73).

Table 73. *Internal consistency of items of the IF Impact Scale within the Reliability data sample.*

	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Loyalty	.633	.776
Jealousy	-.182	.855
Common Goals	.749	.761
Trust	.774	.759
Difference in Work Committed	-.252 .565	.859 .780
Open & Honest Communication	.693	.765
Succession Plan	.504	.786
Equal Say	.730	.763
Good Relationships	.755	.764
Central Management	.559	.781

9.3.2. Test-retest reliability.

9.3.2.1 Test-retest reliability of the FF Role Impact Scale.

The FF Role Impact total at Time 1 and Time 2 presented a moderately high correlation ($\rho=.619$, $n=33$, $p=.000$). Correlations between Time 1 and Time 2 for each of the subscales indicate the ρ -value was moderately high for RI-Inhibitors ($\rho=.651$, $n=40$, $p=.000$) and RI-Moderators ($\rho=.640$, $n=40$, $p=.000$), with a weaker correlation value for RI-Facilitators ($\rho=.368$, $n=38$, $p=.023$) (Table 74).

9.3.2.2 Test-retest reliability of the FF Stressor Scale.

The FF Stressor total at Time 1 and Time 2 presented a moderately high correlation ($\rho=.661$, $n=31$, $p=.000$). A comparison of Time 1 and Time 2 for test-retest reliability indicated that S-Financial, S-Family, and S-Future values were $\rho>.7$, whilst and S-Uncontrollable produced moderately high correlation ($\rho=.677$, $n=42$, $p=.000$), though S-Daily was weaker ($\rho=.537$, $n=43$, $p=.000$) (Table 75).

Table 74. Test-retest comparison of FF Role Impact Scale from Validity sample (Time 1) to Reliability sample (Time 2).

	Time 1	FF Role Impact	RI-Facilitator	RI-Inhibitor	RI-Moderator
Time 2					
FF Role Impact	<i>rho</i>	.619**	.431**	.596**	.359*
	p-value	.000	.010	.000	.031
	N	33	35	37	36
RI-Facilitator	<i>rho</i>	.453**	.368*	.433**	.261
	p-value	.006	.023	.005	.108
	N	36	38	40	39
RI-Inhibitor	<i>rho</i>	.632**	.437**	.651**	.185
	p-value	.000	.007	.000	.260
	N	35	37	40	39
RI-Moderator	<i>rho</i>	.416*	.240	.335*	.640**
	p-value	.010	.142	.032	.000
	N	37	39	41	40

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Table 75. Test-retest comparison of FF Stressor Scale from Validity sample (Time 1) to Reliability sample (Time 2).

Time 2		FF Stressors	S-Financial	S-Family	S-Future	S-Daily	S-Uncontrollable
Time 1							
FF Stressors	<i>rho</i>	.661**	.521**	.613**	.678**	.550**	.223
	p-value	.000	.002	.000	.000	.000	.184
	N	31	34	36	37	38	37
S-Financial	<i>rho</i>	.621**	.736**	.370*	.596**	.399**	.370*
	p-value	.000	.000	.019	.000	.010	.019
	N	34	37	40	40	41	40
S-Family	<i>rho</i>	.422*	.123	.732**	.456**	.429**	.016
	p-value	.015	.473	.000	.004	.006	.923
	N	33	36	38	39	40	39
S-Future	<i>rho</i>	.516**	.407*	.480**	.783**	.457**	.178
	p-value	.002	.011	.001	.000	.002	.266
	N	35	38	41	41	42	41
S-Daily	<i>rho</i>	.490**	.362*	.505**	.493**	.537**	.103
	p-value	.002	.024	.001	.001	.000	.515
	N	36	39	42	42	43	42
S-Uncontrollable	<i>rho</i>	.400*	.335*	.224	.289	.279	.677**
	p-value	.016	.037	.153	.064	.070	.000
	N	36	39	42	42	43	42

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

9.3.2.3 Test-retest reliability of the FF Cope Scale.

A comparison of scores on the FF Cope (1) at Time 1 and Time 2 indicated a high correlation ($\rho=.742$, $n=34$, $p=.000$). A comparison of Time 1 and Time 2 for the FF Cope subscales showed high positive correlations for C-Community Connect ($\rho=.746$, $n=42$, $p=.000$), C-Reassess ($\rho=.610$, $n=40$, $p=.000$) while C-Disengage scores ($\rho=.644$, $n=44$, $p=.000$) had a moderate correlation over time as did C-Positive Reframe scores ($\rho=.584$, $n=43$, $p=.000$). Scores on the C-Awareness subscale ($\rho=.479$, $n=42$, $p=.001$) had weaker correlation values between administrations (Table 76).

Table 76. Test-retest comparison of FF Cope (V1) Scale from Validity sample (Time 1) to Reliability sample (Time 2).

Time 2		FF COPE	C- Reassess	C- Positive	C- Community	C- Aware	C- Disengage
Time 1							
FF COPE	<i>rho</i>	.742**	.599**	.636**	.698**	.418**	.182
	p-value	.000	.000	.000	.000	.010	.275
	N	34	36	37	37	37	38
C-Reassess	<i>rho</i>	.571**	.610**	.490**	.460**	.353*	.126
	p-value	.000	.000	.001	.002	.024	.427
	N	38	40	41	41	41	42
C-Positive	<i>rho</i>	.523**	.419**	.584**	.441**	.307*	.060
	p-value	.001	.006	.000	.003	.045	.699
	N	40	42	43	43	43	44
C-Community	<i>rho</i>	.579**	.454**	.485**	.746**	.334*	-.011
	p-value	.000	.003	.001	.000	.031	.945
	N	39	41	42	42	42	43
C-Aware	<i>rho</i>	.497**	.382*	.362*	.441**	.479**	-.001
	p-value	.001	.014	.018	.003	.001	.996
	N	39	41	42	42	42	43
C-Disengage	<i>rho</i>	.190	.064	.010	.171	-.002	.644**
	p-value	.240	.686	.951	.272	.989	.000
	N	40	42	43	43	43	44

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

A comparison of scores on the FF Cope (2) at Time 1 and Time 2 indicated that FF Cope (2) presented a significant and strong correlation ($\rho=.704$, $n=35$, $p=.000$). Only scores on the C-Alcohol subscale presented a high correlation ($\rho>.7$) over time,

whereas the remaining subscales presented weaker correlations between administrations ($\rho > .6$) (Table 77).

Table 77. Test-retest comparison of FF Cope (V2) Scale from Validity sample (Time 1) to Reliability sample (Time 2).

Time 2		FF Cope (V2)	C-Reassess	C-Perseverance	C-Ease	C-Alcohol
Time 1						
FF Cope (V2)	<i>rho</i>	.704**	.620**	.628**	.583**	.014
	p-value	.000	.000	.000	.000	.933
	N	35	35	37	38	38
C-Reassess	<i>rho</i>	.670**	.689**	.537**	.574**	.008
	p-value	.000	.000	.000	.000	.962
	N	39	39	41	42	42
C-Perseverance	<i>rho</i>	.551**	.473**	.643**	.342*	-.113
	p-value	.000	.002	.000	.025	.471
	N	40	40	42	43	43
C-Ease	<i>rho</i>	.572**	.427**	.455**	.609**	-.034
	p-value	.000	.007	.003	.000	.828
	N	39	39	41	42	42
C-Alcohol	<i>rho</i>	-.085	-.186	-.184	-.018	.747**
	p-value	.591	.239	.232	.904	.000
	N	42	42	44	45	45

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

9.3.2.4 Test-retest reliability of the FF Buffer Scale.

An examination of the correlation matrix between Time 1 and Time 2 indicated that the FF Buffer (1) scale ($\rho = .461$, $n = 37$, $p = .004$), the B-Farming Attractions ($\rho = .402$, $n = 40$, $p = .010$), and B-Pride in Identity ($\rho = .332$, $n = 43$, $p = .029$) had weaker test-retest reliability (Table 78). B-Family Commitment subscale presented a moderately high correlation ($\rho = .690$, $n = 43$, $p = .000$). The test-retest comparison for the second version of the FF Buffer (2) scale and subscales revealed similar Spearman correlations between Time 1 and Time 2 to the original version correlations (Table 79).

9.3.2.5 Test-retest reliability of the IF Impact Scale.

Scores on the IF Impact Scale at Time 1 and Time 2 presented a strong correlation ($\rho = .742$, $n = 34$, $p = .000$).

Table 78. Test-retest comparison of FF Buffer (1) Scale from Validity sample (Time 1) to Reliability sample (Time 2).

Time 2		FF Buffer (V1)	B-Pride in Identity (V1)	B-Farm Attractions (V1)	B-Family Commitment (V1)
Time 1					
FF Buffer (V1)	<i>rho</i>	.461**	.279	.412**	.414**
	p-value	.004	.077	.009	.009
	N	37	41	39	39
B-Pride in Identity (V1)	<i>rho</i>	.247	.332*	.093	.173
	p-value	.129	.029	.563	.280
	N	39	43	41	41
B-Farm Attractions (V1)	<i>rho</i>	.349*	.293	.402*	.064
	p-value	.032	.060	.010	.694
	N	38	42	40	40
B-Family Commitment (V1)	<i>rho</i>	.577**	.181	.489**	.690**
	p-value	.000	.234	.001	.000
	N	41	45	43	43

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Table 79. Test-retest comparison of FF Buffer (2) Scale from Validity sample (Time 1) to Reliability sample (Time 2).

Time 2		FF Buffer (V2)	B-Pride in Identity (V2)	B-Farm Attractions (V2)	B-Family Commitment (V2)
Time 1					
FF Buffer (V2)	<i>rho</i>	.530**	.296	.474**	.416**
	p-value	.001	.060	.002	.008
	N	38	41	39	40
B-Pride in Identity (V2)	<i>rho</i>	.192	.324*	.068	.139
	p-value	.236	.034	.674	.381
	N	40	43	41	42
B-Farm Attractions (V2)	<i>rho</i>	.446**	.396**	.422**	.126
	p-value	.004	.009	.007	.434
	N	39	42	40	41
B-Family Commitment (V2)	<i>rho</i>	.574**	.034	.600**	.665**
	p-value	.000	.826	.000	.000
	N	42	45	43	44

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

9.4. Discussion of Reliability Output

This chapter evaluated the reliability of the 5 newly developed farming family scales through assessing internal consistency from the total validity sample and the total reliability sample. Additionally, reliability was assessed through test-retest analysis by correlating responses from individuals who participated in both the validity and reliability study. The FF Role Impact Scale and subscales indicated good internal consistency for both the validity and reliability sample. However, within the reliability sample “Delegating” and “Time with family” did not present high item-total correlations ($>.3$). Yet, as this was not noted within the validity sample, and the items were not previously identified as problematic within Chapter 8, then it was concluded that the items were sound as they were not consistently unsuccessful in tests of validity or reliability. Test-retest analysis also indicated that the correlations were strong between test times, with the exception of RI-Facilitators which produced only a moderate correlation value. This could be a result of the scale theme which, as described previously, indicates that each item refers to factors that would help role completion if present. Therefore, consistency of item ratings could be affected by increased or decreased presence of those factors.

The FF Stressor Scale presented good internal consistency within both samples and presented a moderately high test-retest correlation value. The items identified within the validity study as possibilities for exclusion did not present poor statistics within the reliability study suggesting that the items have value within the scale. “Working with family”, “Changes in technology” and “Isolation” did not present adequate item-total correlations ($>.3$) within the reliability sample, however these findings were not found within the validity sample suggesting that perhaps the smaller sample size may have affected this result. Additionally, it was noted that “Working with

family” may not fit well within its assigned subscale of S-Future Concerns (as assessed in the internal consistency of the reliability sample), and indicated that perhaps a more appropriate place for the item would be in the S-Family subscale. However as this discrepancy was present only within the reliability sample, this did not constitute enough evidence to move the item to the S-Family subscale. The S-Financial, S-Family, and S-Future also produced high ($>.7$) test-retest *rho* values, further supporting reliability of the items.

The FF Cope Scale indicated good internal consistency within both the validity and reliability samples. C-Reassess, C-Positive Reframe, and C-Community indicated good internal consistency within the validity sample and C-Reassess, C-Positive Reframe, and C-Aware presented good internal consistency within the reliability sample. “Faith”, “Alcohol”, “Animals”, and “Flow” from within the validity sample and “Animals”, “Get away”, “Faith”, and “Alcohol” within the reliability sample produced low item to total correlations ($<.3$). These items, with the exception of “Alcohol” and “Flow”, were also identified within Chapter 8 as potentially problematic items. Test-retest analysis of the FF Cope scale was strong, supporting the reliability of the overall scale. The items “watching animals”, “faith”, and “get away” have been repeatedly identified with less rigorous validity and reliability. There was reluctance to withdraw “watching animals” and “get away” from the item set as they represented two-thirds of the C-Disengage subscale, which is an important subscale in identifying those individuals who may be using less effective methods for coping with stress and conflict. As these items are measuring less effective coping styles, they are therefore less likely to correlate highly with other items and scale total. “Watching animals” and “get away” are also distinct items from with the existing scale of the Brief COPE Inventory (Carver, 1997).

The FF Buffer scale and subscales of B-Farming Attractions and B-Family Commitments had good internal consistency in both the validity and reliability samples. “Landowner” did not correlate highly to scale total within the reliability sample, however as this item had not been previously identified within the validity study as an item of weaker psychometric properties, it was retained. Test-retest reliability for this scale was weaker in comparison to the other scales, yet was strongest for B-Family Commitment subscale. The limited test-retest reliability of this scale could be a reflection that this scale assesses factors which change and as a result is more sensitive to changes in external stressors than other subscales. This sensitivity to external changes may be exhibited in differential scoring on the scale which reflects the impact on the individual’s ability to effectively buffer the stressors and challenges of the farming lifestyle and protect their mental health.

The IF Impact scale produced good internal consistency within the validity and the reliability samples and also presented high test-retest reliability. The reliability sample did indicate that “Jealousy” and “Difference in workload” had a low item to total correlation ($<.3$), however as “Jealousy” had not been previously identified within the validity study as an item of weaker psychometric properties, this item was retained. “Difference in workload” was identified in Chapter 8 as a problematic item, however the value of the correlation coefficient was $r=.25$ as still an adequate correlation value. Additionally, “Difference in workload” presented a high item to total correlation within the validity sample ($>.4$), suggesting that this item still has credence for retainment.

In conclusion, over the past two chapters the farming family scales generated were assessed against validity and reliability criteria. This criteria included producing factor loadings $>.3$, significant criterion validity correlations that were $r<.8$, appropriate negative and positive relationships with scales of well-being (discriminative validity),

producing internal consistency Cronbach alpha coefficients $>.7$, and significant test-retest reliability correlations ($\rho >.6$). The farming family scales adequately satisfied the specified criteria for validity and reliability. Therefore, the resulting scales were produced: the FF Role Impact scale, the FF Stressor scale, the FF Cope scale, the FF Buffer scale, and the IF Impact scale (Tables 80-84). The following chapter will further examine the relationships between the variables within the study and determine which scales and items are predictive of farming family well-being.

Table 80. *FF Role Impact Scale item list post reliability study.*

R-Facilitators	<ol style="list-style-type: none"> 1. My management skills (e.g. planning and prioritising). 2. My enthusiasm or motivation for work. 3. The level of flexibility in my work. 4. Delegating duties to employed professionals. 5. Sharing my workload with others. 6. My level of rest and focus. 7. Having to attend educational courses, programs, and meetings.
R-Inhibitors	<ol style="list-style-type: none"> 8. When things go wrong or when other people make mistakes. 9. My financial situation. 10. The unpredictability of duties. 11. Being too emotionally drained from other jobs and responsibilities. 12. Being stressed or worried about some jobs and responsibilities. 13. The continuous work demand. 14. Spending time with family or recreational commitments or holidays. 15. The weather. 16. The availability and quality of employees.
R-Moderators	<ol style="list-style-type: none"> 17. Family tension or conflict. 18. The level of communication between family members.

Table 81. *FF Stressor Scale item list post reliability study.*

S-Financial/ External	1.	The price mark-up in supermarkets.
	2.	The amount of foreign products in the market.
	3.	The Australian public and Government do not value the industry enough.
	4.	Market control and its effect on product and income.
	5.	The cost-profit margin in farming in relation to the increase of price of inputs and the discrepancy between financial return and effort put in.
	6.	The future of the primary industry and what is going to happen to farming.
	7.	Economic stability.
	8.	The financial situation of the farm.
	9.	The price of land.
S-Family/ Relationship	10.	Trying to keep up with family duties and responsibilities (e.g. taking care of partner or children.).
	11.	Maintaining personal and family relationships.
	12.	Distance from children and family.
	13.	Isolation from people and services, such as health services, shops (e.g. groceries), social opportunities.
	14.	Unreliable communication technology, such as phone reception and internet service.
	15.	The health, safety and welfare of yourself or a family member as a result of the farm (e.g. risk of injury, effects of chemicals).
	16.	Providing sufficiently for family.
	17.	Feeling exhausted, having no energy, or not enthusiastic about work.
	18.	Talking about stress.
S-Future	19.	Concerns over retirement (e.g. if partner will retire, financial issues)
	20.	When to retire.
	21.	Succession issues involved with the process of passing on the farm and dividing the asset.
	22.	The constant change in technology is increasingly expensive or difficult to understand.
	23.	Working with family members.
S-Daily	24.	Difficulties surrounding the availability and quality of workers.
	25.	Workload that is increased or interrupted due to other people's errors.
	26.	Having too much to do for one person.
	27.	Getting services (such as mechanics, agronomists, product transport trucks, employees) out to the property.
S-Uncontrollable	28.	The amount of chemicals used in the industry.
	29.	Other farmers doing the right thing or having poor farming practices.

Table 82. *FF Cope Scale item list post reliability study.*

C-Reassess	<ol style="list-style-type: none"> 1. Commitment to responsibilities. 2. Compromising with each other. 3. Taking things one step at a time or prioritising. 4. Talk to partner or someone else. 5. If there is too much to do, delegate certain responsibilities or ask advice of professionals (e.g. agronomists, accountants, planters, workers, counsellor). 6. Accept responsibility and face the issue. 7. Open communication within the family. 8. Trust amongst each other (e.g. family).
C-Positive Reframe	<ol style="list-style-type: none"> 9. Recognising achievements. 10. Be positive and satisfied with life. 11. Enjoy work and have a lot of job satisfaction. 12. Remembering past difficulties or experience to help with current issues. 13. Having a good laugh at yourself.
C-Community Connect	<ol style="list-style-type: none"> 14. Share workload with others (e.g. partner or family). 15. Visit friends, family, neighbours, or socialise in general. 16. Not alone as other people are going through the same thing. 17. Take the opportunity to have a break by doing something else. 18. Faith or religious beliefs.
C-Aware	<ol style="list-style-type: none"> 19. Focus on dealing with this problem and, if necessary, let other things slide a little. 20. Just to go with the flow. 21. Exercise, such as going for walks. 22. Accept what you do and do not have control over.
C-Disengage	<ol style="list-style-type: none"> 23. To help you wind down you like to have a beer, wine, or other alcoholic drink. 24. Watching animals. 25. Get away to a different view, some location where the scenery is completely different from home.

Table 83. *FF Buffer Scale item list post reliability study.*

B-Farming Attraction	1. Enjoy working with animals or watching things grow and getting satisfaction from a good product.
	2. As a part of a farming family, you gain a lot of skills.
	3. Farming contributes to people in general.
	4. Enjoy the work and challenge of the farm.
	5. Farming is who you are.
	6. Like improving the land and having pride in its appearance.
B-Family Commitment	7. For the next generation so they can benefit from the farm in some way.
	8. The children are or will be encouraged to go into farming.
	9. The sentimental value of the farm, its tradition.
B-Pride in Identity	10. Being a land owner as you can do what you want when you want, within reason.
	11. Being down-to-earth.
	12. The surrounding environment and landscape of location.

Table 84. *IF Impact Scale item list post reliability (note no changes).*

1. There is a difference in the quality of work or perceived workload between family members.
2. Members have an equal say in what happens on and the direction of the farm and business.
3. Each member is committed to the business and farm – they want to be there.
4. Members have good relationships with each other.
5. There is open and honest communication between family members.
6. Each member has common goals, they all agree generally with the direction of the farm.
7. There is jealousy amongst siblings in terms of perceived favouritism.
8. There is central management, so all members have their responsibilities and live as separate families but there are one or two members who manage the business.
9. There is loyalty among family members.
10. There is a good and clear succession plan in place.
11. Members trust and accept decisions made by other members.

Chapter 10: Determining the Effect of the Farming Environment on Farming Family Well-Being

10.1 Context of Study

To this point, this thesis has focused on the development of the scales for stress, coping, role conflict, buffers, and intergenerational farming for farming families of Australia. However, an additional aim of the research was to develop a comprehensive understanding of the determinants of well-being of farming families. This chapter now draws upon the data generated from the developed farming family scales to identify the determinants of farming families' well-being.

It was predicted that the main determinants of well-being would be farming family relevant stressors and role interference, with mediating and moderating effects of the buffering characteristics of the farming family lifestyle, specifically the individual's commitment to farming and identification with farming (Chapter 5 outcome hypotheses). Scores on the FF Stressor and FF Role Impact Scales were thought to have a direct negative impact on well-being as measured by life satisfaction, psychological distress, and burnout, due to the compounding impact that multiple chronic stressors have on well-being (Xanthopoulou et al., 2007; Swatt et al., 2007; McMillan et al., 2004; Fox & Dwyer, 1999) and the positive relationship that role interference has with burnout (Westman et al, 2004; Schaufeli & Peeters, 2000; Xanthopoulou et al., 2007; Cordes & Dougherty, 1993; Maslach et al., 2001). Additionally, the negative impact of stress and role interference on well-being was hypothesised to be mediated and moderated by the scores on the FF Buffer Scale due to findings in the current research which indicated that the extent an individual was committed to or identified with

farming protected the individual from potential negative experiences that are a result of farming lifestyle challenges. These findings suggested that commitment to and identification with farming appears to be the key motivator to continue farming and manage stress despite the number of compounding stressors and interferences.

10.2 Method

10.2.1 Sample.

This chapter uses the data set from the Chapter 8 validity study sample (p.197).

10.2.2 Analysis

10.2.2.1 Data preparation.

The Structural Equation Modelling (SEM) was conducted through SPSS-AMOS. The first step in SEM is to ensure that the data is appropriate for analysis. Ideal sample size for Structural Equation Modelling (SEM) generally follows the N:q Rule, whereby the ideal ratio of number of cases to number of parameters/hypothesised pathways is 20:1, with a ratio < 10:1 implicating unreliable results (Kline, 2011). As, the validity study had a sample size of N=278, a maximum of 27 (10:1) parameters and a more ideal 14 (20:1) parameters would therefore be appropriate.

Data preparation requires assessment for multicollinearity, outliers, missing data, normality, linearity and homoscedasticity, and appropriateness of scales (Kline, 2011). Multicollinearity was assessed by examining the intercorrelations between variables and inspecting for values greater than $r=.9$ and by assessing the variance inflation factor (VIF), which is the ratio of the total standardised variance over the unique variance, with >10.0:1.0 indicating multicollinearity (Kline, 2011). Univariate and multivariate outliers were assessed by Malhalanobis distances with cases exceeding the chi square

critical value identifying the case as an outlier. Identified outliers were then removed from the data set. Missing data was accounted for by utilising pairwise deletion method. Normality was assessed through identifying skewed variables >3.0 and kurtosis levels $>.10 - >.20$ (Kline, 2011). Scatterplots were examined for non-linear relationships.

10.2.2.2. Inferential statistics.

Comparisons of means between each item were conducted using independent t-tests or one-way ANOVAs, utilising a 0.05 alpha level. Through this technique a ranking regarding stressors, role conflicts, coping resources, buffers, intergenerational practices, and personality traits were determined. Furthermore, a description of the current state of well-being was presented through the mean scores of the K10, Satisfaction with Life Scale, and Maslach's Burnout Inventory-General Survey. Finally, demographic information was assessed for differences in regards to the items relationships with each scale. Differences in scores on continuous variables were assessed using independent samples t-tests. Differences in scores on categorical variables were assessed using the appropriate nonparametric tests such as a chi-square test.

10.2.2.3. Profiling at-risk groups.

At-risk groups for poor mental health were profiled using K-means cluster analysis technique. K-means cluster analyses data by dividing data into a number (k) of groups. Factors cluster according to the distance to closest cluster centres, with means updated in regards to the other factors in the cluster (Tarpey, 2007).

10.2.2.4. SEM analysis process.

10.2.2.4.1 Model specification.

Post data preparation, the specification of the model needed to be undertaken. Model specification required the researcher to design a model based on a rationale that was theoretically sound. Furthermore, an appropriate number of degrees of freedom was required with degrees of freedom of the model represented as $df_M = p - q$, where p is the number of observations in the model and q is the number of estimated parameters. The number of observations in the model can be defined as v is the number of observed variables, then the number of observations $p = v(v + 1)/2$ when means aren't analysed (Kline, 2011).

10.2.2.4.2 Model identification.

Model identification was assessed by AMOS during analysis and was determined by the number of parameter constraints, such as constraints on variances and covariances that were specified in the model. Additionally, the model's degrees of freedom must be ≥ 0 . If the model is recursive then it is always identified (Kline, 2011).

10.2.2.4.3 Model estimation.

Estimation of the model was conducted by AMOS through techniques specified by the researcher. Model fit, direct and indirect effects, covariance, variances, and regression weights are some of the relevant statistics that will be provided to determine appropriateness of the model.

10.3 Results

10.3.1 Data Preparation

The major independent variables FF Stressor, Coping, Role Impact, Buffer, and IF Impacts scale totals were screened for multicollinearity, outliers, missing data, normality, and linearity and homoscedasticity with no violations observed. The five

proposed predictor scales presented inter-predictor correlation values $r < 0.33$ (with the exception of the Stressors scale and the Role Impact scale with an intercorrelation of 0.70), Tolerance levels $> .49$ and $VIF < 2.03$ indicating suitable multicollinearity statistics. The outcome variables of life satisfaction (SLS), psychological distress (K-10) and burnout components of cynicism (MBI-CY), emotional exhaustion (MBI-EE), and professional efficacy (MBI-PE) also presented suitable multicollinearity statistics, with Tolerance levels greater than .43 and VIF values less than 2.30. Missing data, as stated before, was accounted for using pairwise deletion. Each scale presented a degree of skewness or kurtosis however as this is not unusual within psychosocial scales and therefore is expected.

10.3.2. Role conflict and intergenerational farming inferential statistics.

Scores within the FF Role Impact Scale ranged from 1="Not at all" to 5="Most of the time". The items "weather" and "continuous work demand" were the highest rated interferences to role completion within the total sample (for means and standard deviations please refer to Table 85). The average rating for these items was significantly higher than that of the next most highly rated item of "my financial situation" ($t_{(267)} = 2.09, p = .04$). Men's ranking of interferences mimicked the pattern observed for the total sample. However women's leading interferences, while generally similar, also included "financial situation". Women were also significantly more likely than men to indicate "family tension or conflict" and "being emotionally drained" as a source of role interference

Table 85. Means and Standard Deviations of the FF Role Impact Scale for men and women.

Role Impacts	Total N	Total Mean	Total Std. Dev.	Men Mean	Men St. Dev.	Women Mean	Women St. Dev.
Rested	275	2.49	1.05	2.48	1.20	2.49	0.96
Enthusiasm	277	2.45	1.16	2.63	1.37	2.35	1.00
Delegating	272	1.81	0.99	1.89	0.97	1.76	1.00
Management Skills	277	2.36	1.15	2.40	1.25	2.34	1.09
Flexibility	277	2.42	1.13	2.55	1.12	2.34	1.13
Weather	277	3.18	1.13	3.29	1.14	3.12	1.12
Communication	274	2.58	1.22	2.44	1.16	2.66	1.25
Share Work	273	2.40	1.03	2.48	1.09	2.35	1.00
Work Demands	273	3.10	1.17	3.14	1.19	3.07	1.17
Unpredictability of Jobs	274	2.70	1.16	2.72	1.13	2.70	1.17
Courses/Meetings	274	2.11	0.95	2.10	0.97	2.11	0.93
Family Tension	275	2.25	1.14	2.07*	1.11	2.36*	1.14
Time with Family	277	2.35	1.10	2.25	1.09	2.40	1.11
Finances	273	2.95	1.16	2.94	1.18	2.96	1.16
Things Go Wrong	274	2.57	0.91	2.57	0.88	2.57	0.93
Employees	275	2.61	1.25	2.65	1.19	2.58	1.29
Emotionally Drained	273	2.46	1.13	2.22**	1.09	2.59**	1.14
Stressed	278	2.66	1.10	2.60	1.16	2.70	1.07

Asterix indicates significant gender difference at * $p < .05$ and ** $p < .01$

Scores on the IF Impact Scale ranged from 1=“Not at all” to 5=“Very much so”. The highest rated item from the total sample for the IF Impact Scale were “having common goals”, “being committed”, and “have a perceived difference in quality of work or workload” (for means and standard deviations please refer to Table 86). There was no significant difference between the scores on these 3 items. Women rated items similarly to the total sample as “common goals”, “being committed” and “perceived difference in quality of work or workload” were among the highly rated items for women. Men rated “common goals” and “committed” high, with “being committed” significantly higher than the next ranked item of “loyalty”, $t_{(46)}=2.05$, $p=.047$ (Table 86). There were no significant gender differences between intergenerational impact descriptors.

Table 86. Means and Standard Deviations of the IF Impact Scale for men and women.

IF Features	Total N	Total Mean	Total SD	Men Mean	Men SD	Women Mean	Women SD
Difference in Workload	154	3.58	1.38	3.40	1.43	3.67	1.35
Equal Say	154	3.23	1.15	3.48	1.09	3.12	1.17
Committed	153	3.75	1.22	3.83	1.03	3.71	1.29
Good Relationships	154	3.06	1.32	3.25	1.26	2.98	1.34
Open/Honest Communication	154	2.99	1.51	3.25	1.51	2.87	1.51
Common Goals	153	3.76	1.33	3.83	1.34	3.72	1.33
Jealousy	152	3.34	1.41	3.40	1.28	3.30	1.47
Central Management	154	2.51	1.49	2.29	1.37	2.60	1.54
Loyalty	154	3.31	1.26	3.50	1.24	3.22	1.27
Succession Plan	152	3.19	1.29	3.38	1.23	3.11	1.31
Trust	152	3.45	1.22	3.48	1.24	3.44	1.21

Scores on the Work-Family Conflict Scale ranged from 1=“Strongly disagree” to 5=“Strongly agree”. The type of conflict most highly rated by the total sample and by both men and women was time-based work to family conflict (for means and standard deviations please refer to Table 87). The total sample reported significantly more work-to-family conflict than family-to-work conflict, $t_{(260)}=10.78$, $p=.000$, which was similarly reported by men, $t_{(95)}=8.92$, $p=.000$ and women, $t_{(164)}=6.97$, $p=.000$ (Table 87). Time based conflict (regardless of direction of conflict) was reported significantly more than strain or behaviour based conflict, $t_{(261)}=5.48$, $p=.000$ and $t_{(260)}=4.07$, $p=.000$ respectively. There was no significant difference between levels of strain or behaviour based conflict. Women presented a similar trend with time based conflict the highest rated form of conflict over strain and behaviour based conflict, $t_{(165)}=3.62$, $p=.000$ and $t_{(164)}=3.91$, $p=.000$ respectively. Men reported significantly more time based conflict and behaviour based conflict than strain based conflict, $t_{(95)}=4.54$, $p=.000$ and $t_{(95)}=2.66$, $p=.01$ respectively. There was no significant difference between reported time and behaviour based conflict for men. There were no significant gender differences between conflict types.

Table 87. Means and Standard Deviations of the Work-Family Conflict Scales for men and women.

Role Conflicts	Total N	Total Mean	Total SD	Men Mean	Men SD	Women Mean	Women SD
Time-WFC	263	3.10	1.11	3.27	1.02	3.00	1.15
Strain-WFC	262	2.73	1.11	2.80	1.18	2.69	1.07
Behaviour-WFC	261	2.69	1.00	2.84	1.05	2.59	0.96
Time-FWC	262	2.34	1.01	2.24	0.88	2.40	1.08
Strain-FWC	262	2.19	0.96	2.08	0.82	2.25	1.03
Behaviour-FWC	262	2.34	0.96	2.40	0.91	2.30	0.99
Work-Family Conflict	261	2.84	0.85	2.97	0.82	2.76	0.87
Family-Work conflict	262	2.29	0.77	2.24	0.66	2.32	0.82
Time-conflict	262	2.72	0.81	2.76	0.65	2.70	0.89
Strain-conflict	262	2.46	0.83	2.44	0.79	2.47	0.86
Behaviour-conflict	261	2.51	0.85	2.62	0.82	2.45	0.86

10.3.3. Farm stressor inferential statistics.

The items receiving the highest endorsement from farming family members on the FF Stressor Scale (1="Not at all" to 5="Worries me a lot") were "the Australian public and government do not value the industry", "the cost-profit margin", "the amount of foreign products in the market", "the effect of market control on product and income", "the price mark-up in supermarkets", and "the future of farming and primary industry" (for means and standard deviations please refer to Table 88). Men's highly scored items were similar to the total sample, however women differed with "the cost-profit margin" and "the Australian public and government do not value the industry" scored more highly. These items were significantly higher than the next ranked item of "the amount of foreign products on the market", $t_{(177)} = 2.22$, $p = .03$ (Table 88). Men did not rate any of the stressors significantly higher than women. Women rated "unreliable communication technology", "isolation from people and services", "the health, safety, and welfare of self and family as a result of the farm", "family duties", "succession

issues”, “working with family members”, “economic stability”, and “the cost profit margin” significantly higher than men (Table 88).

Table 88. Means and Standard Deviations of the FF Stressor Scale for men and women.

Stressors	Total N	Total Mean	Total SD	Men Mean	Men SD	Women Mean	Women SD
Services	278	2.37	1.14	2.31	1.13	2.40	1.15
Unreliable Communications	278	2.76	1.33	2.49*	1.35	2.91*	1.29
Isolation	277	2.34	1.28	1.96**	1.20	2.55**	1.28
Exhausted	277	2.53	1.15	2.51	1.13	2.55	1.16
Talking about Stress	276	2.13	1.07	2.05	1.05	2.18	1.08
Health of Family	276	2.68	1.25	2.40**	1.24	2.83**	1.24
Distance from Family	273	2.25	1.25	2.08	1.19	2.34	1.28
Family Duties	276	2.74	1.27	2.40**	1.21	2.93**	1.27
Maintaining Relationships	275	2.82	1.24	2.64	1.23	2.92	1.24
Providing for Family	276	2.85	1.33	2.77	1.47	2.89	1.25
When to Retire	276	2.47	1.43	2.30	1.42	2.57	1.42
Concerns over Retirement	275	2.59	1.44	2.44	1.43	2.67	1.44
Succession Planning	277	2.56	1.49	2.30*	1.42	2.70*	1.51
Working with Family	277	2.13	1.28	1.92*	1.11	2.25*	1.35
Employees	276	2.69	1.36	2.66	1.36	2.70	1.36
Workload	277	3.10	1.28	2.94	1.32	3.19	1.25
Others Errors	277	2.35	1.20	2.45	1.24	2.29	1.17
Chemicals	275	2.52	1.34	2.34	1.29	2.62	1.36
Other Farmers	273	2.57	1.20	2.47	1.19	2.62	1.20
Future of Industry	277	3.75	1.28	3.64	1.41	3.81	1.20
Aus. Public and Government lack of Value	278	4.17	1.16	4.07	1.21	4.23	1.14
Market Control	277	3.95	1.13	3.77	1.24	4.06	1.06
Supermarket	276	3.87	1.28	3.67	1.39	3.98	1.20
Foreign Products	278	4.04	1.23	3.95	1.34	4.08	1.17
Financial Farm	275	3.44	1.35	3.25	1.41	3.55	1.30
Economy	277	3.49	1.27	3.26*	1.35	3.62*	1.21
Cost-Profit Margin	278	4.14	1.06	3.97*	1.18	4.24*	0.98
Price of Land	273	3.37	1.34	3.27	1.45	3.42	1.27
Changes in Technology	278	2.81	1.21	2.84	1.25	2.80	1.19

Asterix indicates significant gender difference at * $p < .05$ and ** $p < .01$

The Farm Stress Survey (1=“Not at all” to 7=“Worries me a lot”) subscales which presented the highest scores were general economic conditions and personal finances (for means and standard deviations please refer to Table 89). The highest rated individual stressors by the farming family sample were “market prices for

crops/livestock” and “inadequate/or too much rainfall”, which was rated significantly higher than the next highly rated stressor “having too much to do in too little time”, $t_{(252)}=2.40$, $p=.02$ (Table 89).

Table 89. Means and Standard Deviations of the Farm Stress Survey for men and women.

Stressors	Total N	Total Mean	Total SD	Men Mean	Men SD	Women Mean	Women SD
Crop Handling	256	2.80	1.79	3.01	1.82	2.68	1.76
Equipment	256	3.46	1.77	3.47	1.84	3.46	1.73
Chemicals	256	3.52	1.75	3.53	1.74	3.51	1.76
Operating Machinery	255	3.64	1.76	3.47	1.83	3.74	1.71
Equipment Noise	255	3.25	1.67	3.27	1.65	3.24	1.69
Dust, powders	252	3.61	1.81	3.49	1.87	3.68	1.77
Removal of Safety Devices	254	3.01	2.11	2.92	2.12	3.06	2.11
Distant Neighbours	252	2.02	1.51	2.04	1.65	2.01	1.43
Social Opportunities	255	2.50	1.65	2.49	1.82	2.50	1.54
Hospital & Services	254	2.94	1.92	2.49**	1.91	3.20**	1.88
Shopping	254	2.45	1.73	2.20	1.68	2.60	1.74
Public Services	256	2.66	1.82	2.26**	1.72	2.90**	1.84
Farm Loans	254	3.85	2.24	3.62	2.23	3.99	2.24
Market Prices	254	4.97	1.62	4.81	1.71	5.06	1.57
Financing Retirement	255	4.10	2.03	3.79	2.06	4.29	1.99
Farm Future	255	4.40	1.97	4.17	2.13	4.54	1.85
Land Prices	251	3.15	1.97	3.09	2.07	3.19	1.91
Time	254	4.45	1.87	4.28	2.03	4.55	1.77
Man Power	254	3.70	1.88	3.54	1.93	3.79	1.85
Hurry through Work	256	3.32	1.86	3.40	2.01	3.28	1.77
Workload	252	4.10	1.97	3.87	2.09	4.24	1.88
Rainfall	256	4.75	1.81	4.48	1.85	4.92	1.78
Frost	255	3.02	1.91	2.83	1.88	3.13	1.92
Wind Erosion	256	2.28	1.57	2.05	1.41	2.41	1.64
Soil Moisture	256	3.82	1.95	3.72	1.82	3.89	2.03
Government Price	254	3.94	2.12	3.72	2.25	4.07	2.04
Support							
Export Policy	254	4.27	2.09	4.09	2.27	4.38	1.97
Budget Deficit	255	4.38	2.07	4.18	2.18	4.50	2.00

Asterix indicates significant gender difference at * $p<.05$ and ** $p<.01$

This pattern of ranking was the same for men and women, though there was no significant difference between “inadequate/or too much rainfall” and “having too much to do in too little time” (Table 89). Men did not rate any of the stressors significantly

higher than women. Women rated “distance from doctors and hospitals” and “the lack of or limited public services” significantly higher than men (Table 89).

10.3.4 Coping and buffer inferential statistics.

Scores on the FF Cope Scale ranged from 1=“Not at all” to 5=“Helps me a lot”. The items “prioritising”, “remaining positive”, “recognising achievements” and “enjoying work” were the highest rated coping behaviours or strategies used by the total sample (for means and standard deviations please refer to Table 90).

Table 90. Means and Standard Deviations of the FF Cope Scale for men and women.

Cope Sources	Total N	Total Mean	Total SD	Men Mean	Men SD	Women Mean	Women SD
Accept Control	276	3.60	1.12	3.47	1.23	3.67	1.04
Accept Responsibility	277	3.77	0.96	3.78	1.08	3.76	0.89
Enjoy Work	278	4.04	0.94	4.25**	0.91	3.92**	0.93
Remember Past	271	3.86	1.01	3.98	1.00	3.80	1.02
Positive	276	4.13	0.86	4.20	0.83	4.09	0.88
Recognise	277	4.11	0.87	4.14	0.82	4.09	0.90
Achievements							
Socialise	276	3.94	1.05	3.78	1.04	4.03	1.05
Faith	277	2.56	1.53	2.44	1.62	2.63	1.47
Share Work	276	3.52	1.18	3.55	1.22	3.51	1.16
Open Communication	275	3.88	1.10	3.98	1.07	3.82	1.12
Not Alone	277	3.51	1.15	3.41	1.21	3.56	1.12
Alcohol	276	2.82	1.41	3.13**	1.50	2.65**	1.34
Laugh	277	3.68	1.10	3.67	1.11	3.68	1.10
Animals	273	3.55	1.24	3.45	1.25	3.61	1.24
Get Away	277	3.74	1.26	3.58	1.38	3.84	1.19
Exercise	277	3.34	1.33	2.75**	1.37	3.67**	1.18
Let Other Things	276	3.32	1.02	3.18	1.11	3.40	0.96
Slide							
Flow	273	3.03	1.17	2.77**	1.24	3.17**	1.10
Break	276	3.45	1.19	3.25*	1.13	3.56*	1.20
Trust	275	4.00	1.10	4.13	1.07	3.93	1.12
Commitment	271	4.00	0.91	4.21**	0.85	3.89**	0.93
Compromise	275	3.76	1.00	3.87	0.94	3.70	1.02
Prioritise	278	4.15	0.89	4.18	0.83	4.13	0.93
Professional Help	273	3.54	1.17	3.71	1.17	3.45	1.16
Talk	276	4.01	1.04	4.27**	0.89	3.87**	1.10

Asterix indicates significant gender difference at * $p < .05$ and ** $p < .01$

Men presented a different pattern of coping behaviours or strategies as they rated “talking to partner or someone else”, “enjoying work”, “being committed to responsibilities” and “being positive” more highly than other coping behaviours. There were no significant differences found between these items. Women highly rated “prioritising”, “being positive”, “recognising achievements”, and “socialising” coping behaviours, though no significant differences found between the ratings of these items (Table 90). Men were more likely than women to use “enjoying work”, “using alcohol to wind down”, “being committed to responsibilities”, and “talking to partner or someone else” as coping behaviours or strategies. Women were more likely than men to use “exercise”, “go with the flow” and “the opportunity to have a break” as coping behaviours or strategies.

Scores on the FF Buffer Scale (1=“Not at all” to 5=“Very much so”) indicated that the higher rated items were “improving the land”, “enjoying working with animals or product”, “the surroundings” and “enjoying the work” (for means and standard deviations please refer to Table 91).

Table 91. Means and Standard Deviations of the FF Buffer Scale for men and women.

Buffers	Total N	Total Mean	Total SD	Men Mean	Men SD	Women Mean	Women SD
Enjoy Working with Animals/Product	277	4.44	0.86	4.63**	0.75	4.33**	0.91
Enjoy Work	277	4.24	0.91	4.48**	0.77	4.11**	0.95
Land Owner	275	3.95	1.15	4.18**	0.99	3.81**	1.22
Down to Earth	275	4.15	0.99	4.27	0.82	4.08	1.07
Improving Land	277	4.44	0.78	4.66**	0.64	4.32**	0.82
Surroundings	277	4.37	0.84	4.49	0.78	4.30	0.86
Skills	277	3.90	1.11	3.94	1.08	3.87	1.14
Contributes to People	276	4.13	0.99	4.22	0.93	4.08	1.03
Who I Am	277	3.74	1.33	4.08**	1.18	3.54**	1.38
Children’s Future	276	3.39	1.43	3.40	1.44	3.39	1.42
Children Encouraged	278	2.50	1.36	2.43	1.37	2.53	1.35
Sentimental	277	3.16	1.51	3.10	1.54	3.19	1.50

Asterix indicates significant gender difference at * $p < .05$ and ** $p < .01$

Men presented a similar pattern to the total sample of highly scored items, however women presented a different pattern as they rated “enjoying working with animals or product” higher than “improving the land” (Table 91). Women did not rate any of the FF Buffer items significantly higher than men. Men rated significantly higher than women the items “enjoying working with animals or product”, “enjoying the work”, “being a landowner”, “improving the land” and “it’s who I am” (Table 91).

Farming family members rated (0=“I haven’t been doing this at all” to 3=“I’ve been doing this a lot”) planning, active coping, acceptance, and positive reframing higher than other coping behaviours or strategies on the Brief COPE inventory (for means and standard deviations please refer to Table 92).

Table 92. Means and Standard Deviations of the Brief COPE Inventory for men and women.

Cope Styles	Total N	Total Mean	Total SD	Men Mean	Men SD	Women Mean	Women SD
Active Coping	259	2.64	0.87	2.54	0.93	2.70	0.84
Self-Distraction	255	1.95	0.69	1.77**	0.64	2.04**	0.70
Denial	255	1.34	0.57	1.34	0.59	1.35	0.55
Substance Use	259	1.34	0.62	1.42	0.72	1.29	0.55
Emotional Support	258	2.08	0.78	2.07	0.84	2.09	0.75
Instrumental Support	256	2.06	0.87	1.92*	0.85	2.14*	0.87
Behavioural Disengagement	256	1.33	0.56	1.31	0.50	1.34	0.59
Vent	255	1.88	0.65	1.79	0.69	1.93	0.63
Positive Reframe	256	2.39	0.81	2.10	0.80	2.55	0.77
Planning	252	2.76	0.89	2.63	0.99	2.84	0.82
Humour	253	1.87	0.79	1.81	0.84	1.90	0.75
Accept	257	2.60	0.81	2.50	0.88	2.66	0.76
Religion	254	1.69	0.95	1.56	0.93	1.76	0.96
Self-Blame	259	1.84	0.70	1.82	0.78	1.85	0.66

Asterix indicates significant gender difference at * $p < .05$ and ** $p < .01$

Planning was rated significantly higher than the next highest ranked Brief COPE subscales, $t_{(249)}=3.24$, $p=.001$. This pattern of ranking by the sample total was synonymous for both men and women, however only women rated planning significantly higher than active coping [$t_{(157)}=3.12$, $p=.002$] (Table 92). Men’s scores on

the Brief COPE subscales were not significantly higher than women. Women rated self-distraction and instrumental support significantly higher than men.

10.3.5. Personality trait inferential statistics.

Farming family sample total scored higher (1=“Strongly disagree” to 5=“Strongly agree”) on the trait of conscientiousness than the other traits of agreeableness, openness to experience, extraversion and neuroticism (for means and standard deviations please refer to Table 93). Scores on the conscientiousness trait were significantly higher than agreeableness, which was the next highly scored trait, $t_{(266)}=3.17$, $p=.002$. Participants scored significantly higher on the trait of extraversion than the next ranked trait of neuroticism, $t_{(266)}=8.72$, $p=.000$. Similar trait patterns as the total sample were found for men, who scored more highly on the trait of conscientiousness than the next highly scored trait of agreeableness, $t_{(95)}=4.13$, $p=.000$. Men also scored higher on extraversion than the lowest scored trait neuroticism, $t_{(95)}=4.96$, $p=.000$. Women did not score significantly differently on conscientiousness and agreeableness but did score the agreeableness trait items significantly higher than openness to experience, $t_{(170)}=3.86$, $p=.000$. Women agreeableness scores were significantly higher than men (Table 93).

Table 93. Means and Standard Deviations of the Big Five for men and women.

Personality Traits	Total N	Total Mean	Total SD	Men Mean	Men SD	Women Mean	Women SD
Conscientiousness	267	3.76	0.45	3.83	0.45	3.73	0.45
Agreeableness	267	3.64	0.49	3.56*	0.50	3.68*	0.47
Openness	267	3.50	0.51	3.52	0.48	3.50	0.53
Extraversion	267	3.31	0.68	3.25	0.59	3.34	0.72
Neuroticism	267	2.71	0.68	2.73	0.71	2.70	0.67

Asterix indicates significant gender difference at * $p<.05$ and ** $p<.01$

10.3.6. Psychological health and well-being.

The results indicated a K-10 total mean of $M=16.60$ ($SD=5.18$), a median score of 16, and a non-significant difference between men and women's scores (for means and standard deviations please refer to Table 94). These scores fall into the low (10-19) level of psychological distress. Of all scores, 47.6% fell below 15 and 2.8% of scores were greater than 30 for the total farming family sample, compared to Andrew and Slade's (2002) data where in their sample of the general Australian population, 67.5% scored less than 15 and 2.2% scored greater than 30. Participants rated significantly higher on the psychological distress component of fatigue than motor agitation, depressed mood, anxiety and worthlessness, $t_{(260)}=7.85$, $p=.000$. There were no gender differences in the ranking of components of psychological distress with both men and women also reporting significantly higher levels of fatigue than motor agitation, $t_{(89)}=4.11$, $p=.000$ and $t_{(170)}=6.70$, $p=.000$ respectively (Table 94).

Table 94. Means and Standard Deviations of the Satisfaction with Life Scale, the K-10, & the Maslach Burnout Inventory for men and women.

Well-being Indicators	Total N	Total Mean	Total SD	Men Mean	Men SD	Women Mean	Women SD
SLS total	249	25.16	6.47	25.20	6.25	25.14	6.63
K10 total	252	16.91	5.65	17.47	6.40	16.60	5.18
K-Depressed Mood	266	1.65	0.68	1.72	0.74	1.61	0.65
K-Fatigue	270	2.11	0.82	2.15	0.86	2.09	0.80
K-Motor Agitation	262	1.71	0.72	1.79	0.77	1.67	0.69
K-Anxiety	269	1.51	0.65	1.55	0.68	1.49	0.64
K-Worthlessness	266	1.43	0.73	1.41	0.74	1.44	0.73
MBI-Professional Efficacy	171	5.73	1.08	5.81	1.12	5.68	1.04
MBI-Emotional Exhaustion	177	3.64	1.71	3.69	1.83	3.60	1.62
MBI-Cynicism	169	2.93	1.38	2.91	1.35	2.95	1.40

According to the MBI_GS, burnout is indicated by high levels of emotional exhaustion and cynicism, and low levels of perceived professional efficacy (Maslach et

al., 1996) (Table 95). Participants indicated high levels of emotional exhaustion, cynicism, and professional efficacy, with no significant difference between the scores of men and women (Table 94). Satisfaction with life was assessed using the Satisfaction with Life Scale (SLS) (Diener et al., 1985). The mean score on this scale was $M=25.16$ ($SD=6.47$), with no significant gender difference in scores (Table 94).

Table 95. *Score ranges indicating burnout – the Maslach Burnout Inventory-General.*

Burnout Factors	Low Risk	Moderate Risk	High Risk
MBI-Professional Efficacy	≥ 5.00	4.01 – 4.99	≤ 4.00
MBI-Emotional Exhaustion	≤ 2.00	2.01 – 3.19	≥ 3.20
MBI-Cynicism	≤ 1.00	1.01 – 2.19	≥ 2.20

10.3.7. Profiles of at-risk groups for psychological distress.

Profiles of at-risk groups were also generated using the K-means Cluster analysis technique. Factors were included based on the strength of the correlation with the K-10, with $r > .5$ correlated factors selected (only subscales were included where possible for a more comprehensive profile). The number of clusters generated was initially three to indicate low, medium, and high risk groups for psychological distress. However due to minimal observable differences between the three groups, this was then changed to 2 groups indicating low vs. high risk of psychological distress. Factors that were highly correlated with scores on the K-10 were the RI-Inhibitors, strain conflict, S-Family stressors, and emotional exhaustion (MBI-GS). All factors were entered into the cluster analysis initially, at which point observable and statistically significant differences between groups were considered, with those factors that did not present a difference removed from the profile and the analysis rerun. The cluster for the total farming family population did not require any removal of factors. The final profile for high risk for

psychological distress included RI-Inhibitors, strain conflict, S-Family stressors, and emotional exhaustion (MBI-GS) (Table 96 and Table K2 [Appendix K]).

Table 96. *Profile of at-risk groups for psychological distress within the farming family sample.*

Risk Factor	Total Sample		Men Profile		Women Profile	
	High Risk	Low Risk	High Risk	Low Risk	High Risk	Low Risk
MBI-Emotional Exhaustion	5.54	2.58	5.10	2.61	5.30	2.74
RI-Inhibitor	3.34	2.53	3.27	2.44	3.30	2.60
Strain conflict	3.15	2.15	3.17	2.05	3.04	2.25
S-Family Concerns	3.29	2.30	3.13	2.13	3.25	2.51
Satisfaction with Life	n/a	n/a	17.81	28.95	n/a	n/a
Self-Distracton	n/a	n/a	2.33	1.57	n/a	n/a
Work-Family Conflict	n/a	n/a	3.59	2.59	n/a	n/a
MBI-Cynicism	n/a	n/a	n/a	n/a	4.48	2.24
K-10 Score						
Mean	22.43	15.01	24.08	14.28	20.83	15.25
Standard Deviation	6.35	3.89	5.94	4.03	6.20	3.97

A one-way ANOVA indicated that there was a significant difference on K-10 scores between the high and low-risk clusters [$F_{(1,70.85)} = 76.05, p = .000$]. This procedure was repeated to specify profiles for men and women. The final cluster output for men indicated a high risk for psychological distress indicated by low satisfaction with life, high emotional exhaustion, a high use of self-distracton, work-family conflict, strain conflict, S-Family Stressors, and high role inhibitors. A one-way ANOVA indicated the high-risk group was significantly different to the low-risk group on scores of the K-10, $F_{(1,39.09)} = 59.11, p = .000$ (Table 96 and Table K2 [Appendix K]). The final cluster output for women indicated a high risk for psychological distress was indicated by high emotional exhaustion, cynicism, strain conflict, S-Family stressors, and role Inhibitors. A one-way ANOVA indicated the high-risk group was statistically significantly

different to the low-risk group on scores of the K-10, $F_{(1,31.98)} = 22.45$, $p = .000$ (Table 96 and Table K2 [Appendix K]).

10.3.8. Model specification rationale: Exploring determinants of well-being.

10.3.8.1. Demographic indicators.

There were significant gender relationships identified, with women (coded value = 2) more likely than men (coded value = 1) to present with high scores of FF Stressors, the personality trait agreeableness and the Brief COPE subscales self-distraction, instrumental support, and positive reframe (Table 97). Age presented a significant negative relationship with the Work/Family Conflict total score and the Venting subscale of the Brief COPE. Age presented a significantly positive relationship with scores on the IF Impact and Denial and Religion Brief COPE subscales (Table 97). Participants from Queensland ($M = 18.95$, $SD = 6.07$) were more likely to report higher levels of psychological distress than NSW [$M = 15.25$, $SD = 4.74$; $F_{(7,59.20)} = 3.81$, $p = .001$], and participants from NSW ($M = 3.88$, $SD = 2.15$) were more likely than those from WA ($M = 2.37$, $SD = 0.68$) to use religion as a coping resource ($F_{(7, 245)} = 2.21$, $p = .034$).

Length of relationship was significantly negatively related to Work/Family Conflict total score and venting and positively related to denial and behavioural disengagement (Table 97). The number of children was significantly positively related to agreeableness and negatively related to the humour coping subscale. The number of financially dependent children or number of children living at home was significantly positively related to Work/Family Conflict total score and negatively related to openness to experience (Table 97). The number of financially dependent children was significantly negatively related to religion and number of children living at home positively related to self-blame (Table 97).

Table 97 . Correlation matrix between demographic variables and determinants of well-being.

	FF Stressor	WFC Total	IF Impact	Agreeable	Openness	Self- Distraction	Denial	Instrumental Support	Behavioural Disengage	Vent	Positive Reframe	Humour	Religion	Self Blame
Sex	.137*	.	.	.125*	.	.188**	.	.127*	.	.	.267**	.	.	.
Age	.	-.155*	.228**	.130*	.182**	.	.135*	.	.	-.190**	.	.	.137*	.
Length Relationship	.	-.150*	.	.	.	.	.210**	.	.172**	-.139*	.	.	.	.
N Children152*	.	.	.	.	.	.	.	-.142*	.	.
N Financial Dependents	.	.154*	.	.	-.158*	.	.	.	.	.	.	.	-.150*	.
N Dependents at Home	.	.179**	.	.	-.173**	.	.	.	.	.	.	.	.	.141*

*. Correlation is significant at the 0.05 level (2-tailed).

** . Correlation is significant at the 0.01 level (2-tailed).

Levels of education ranged from 1=“Did not complete Year 10 High School” to 7=“Completed a Postgraduate Degree”. Higher levels of education were significantly positively correlated to high scores on agreeableness, extraversion and openness to experience personality traits and the Brief COPE subscales of instrumental support, positive reframe, humour and acceptance (Table 98). Higher levels of education were significantly negatively correlated to high scores on the Farm Stress Survey subscales of general economic conditions and hazardous working conditions, the FF Buffer Scale and subscales B-Farming Attractions and B-Family Commitment, the FF Role Impact subscale RI-Facilitators, the FF Stressor subscales S-Financial and S-Future Concerns, the MBI-GS subscale emotional exhaustion and the K-10 subscale depressed mood (Table 98).

Table 98. *Correlation matrix (Pearson's r) between education level and personality traits, coping behaviours, stressors, role impacts, and indicators of well-being.*

	Education Level
Agreeableness	.126*
Extraversion	.199**
Openness	.199**
Instrumental Support	.184**
Positive Reframe	.190**
Humour	.180**
Accept	.153*
FSS-Hazardous	-.183**
FSS-Economy	-.212**
FF Buffer Total	-.186**
B-Farming Attraction	-.205**
B-Family Commitment	-.180**
RI-Facilitator	-.155*
S-Financial	-.170**
S-Future	-.157*
MBI-Emotional Exhaustion	-.228**
K10-Depressed Mood	-.146*

*. Correlation is significant at the 0.05 level (2-tailed).

** . Correlation is significant at the 0.01 level (2-tailed).

Broadacre production was significantly negatively related to psychological distress. Horticultural producers well-being was most at risk with significant positive correlations with psychological distress, emotional exhaustion, cynicism, and negative correlations with instrumental support and watching animals (C-Disengage item) ($r=-.175$, $n=272$, $p=.002$). Horticultural producers were more likely to score higher on the trait of conscientiousness. Beef producers were more likely to have good well-being with significant negative correlations with psychological distress, work/family conflict, emotional exhaustion, cynicism and substance use. Beef producers were also more likely to use “watching animals” coping behaviour ($r=.129$, $n=272$, $p=.034$) (C-Disengage item) (Table 99).

The number of years farming was significantly positively related to FF Buffer total, IF Impact total and professional efficacy (Table 100). Work roles were also related to indicators of well-being, with those who were owners or managers more likely to have high scores of FF Buffer total and high professional efficacy. Furthermore, those who managed employees were more likely to report higher levels of psychological distress and professional efficacy. Those who had an off-farm job reported lower levels of life satisfaction and had lower scores on the FF Buffer Scale (Table 100).

Table 99. Correlations between Producer Types and scales/indicators of well-being.

	K-10	MBI-EE	MBI-CY	FF Role Impact	IF Impact	FF Buffer	C-Reassess	C-Disengage	FSS	WFC	Self-Distract	Substance Use	Emotional Support	Instrumental Support	Positive Reframe	Planning	Conscientious	Extraversion	Openness	
Broad-acre	-.176**	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Horticulture	.205**	.205**	.173**	.	.	.	.126**	.	.	.	.	.	.	-.157**	.	.	.142**	.	.	.
Sugar	.	.	.	.133*	.	.	.	.	.	.	.	.	.	.	.	-.141*	.	.	.	.
Wool	-.135*	.	.	.	.	.	.	.	.166*	.	.	.	.152*	.157*	.	.	.	.	.	.
Sheep Meat	-.177**	-.168*	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Beef	-.206**	-.208**	-.166**	.	.	.	.	.	.	-.162**	.	-.173**	.	.	.	.	.	.	.	.

*. Correlation is significant at the 0.05 level (2-tailed).

** . Correlation is significant at the 0.01 level (2-tailed).

Table 100. *Correlation matrix between demographic variables and determinants of well-being.*

	SLS Total	K10 Total	FF Role Impact	WFC Total	IF Impact	FF Buffer	MBI-PE	Self-Distracton	Denial	Self-Blame
Year Farming263**	.202**	.208**	.	.	.
Farm Owner	.	.	.137*	.	.	.161**	.191*	.	.148*	.176**
Farm Manager196**	.202**	.	.	.
Manage Employees	.	.133*	.	.124*	.	.	.158*	.	.	.
Off Farm Job	-.142*	.	.	.	.	-.132*	.	.191**	.	.

*. Correlation is significant at the 0.05 level (2-tailed).

** . Correlation is significant at the 0.01 level (2-tailed).

10.3.8.2. Relationships of self-reported mental health history.

Indicators of a history of mental health conditions (depression, anxiety, suicidal thoughts) included producer type, FF Stressors, FSS, FF Role Impact, inter-role conflict, FF Cope styles, negative Brief COPE strategies, IF Impact scale, and personality traits (extraversion, neuroticism, conscientiousness) (Table 101).

Table 101. *Indicators of Mental Health History in Farming Family Population.*

	Suicidal				
	Depression	Anxiety	Thoughts	No History	Other
No. Financially Dependent Children	-.076	-.115	.009	.146*	-.121
Sugar Producer	.185**	.229**	-.043	-.162**	-.055
Work/Farm Role: Final Decision	.089	.166**	-.028	-.136*	.111
Work/Farm Role: Manage Employees	.073	.125*	.041	-.116	.098
Work/Farm Role: Finances	.015	.084	-.009	-.141*	.164**
Work/Farm Role: Family Employee	.062	.070	.128*	-.060	-.083
Work/Farm Role: Educational Programs	.034	.138*	.007	-.119	.051
Work/Farm Role: Off-farm Volunteer	-.025	.125*	-.018	-.100	.088
Intergenerational Farm Business	-.050	-.155*	-.114	.148*	-.039
RI-Facilitators	.164**	.213**	-.012	-.239**	.029
RI-Inhibitors	.266**	.320**	.088	-.365**	.031
RI-Moderators	.057	.211**	.157**	-.162**	-.004
FF Role Impact	.229**	.299**	.063	-.345**	.032
IF Impact	-.189*	-.246**	-.045	.226**	.010
Work-Family Conflict	.318**	.264**	.240**	-.316**	.058
Family-Work Conflict	.158*	.203**	.108	-.250**	-.007
Strain conflict	.368**	.351**	.213**	-.451**	.060
Behaviour conflict	.232**	.239**	.212**	-.266**	-.012
S-Financial	.122	.220**	.050	-.219**	.023
S-Family	.319**	.326**	.202**	-.392**	-.004
S-Future	.175**	.270**	.157**	-.317**	.026
S-Daily	.218**	.305**	.181**	-.331**	.148*
FF Stressor	.204**	.339**	.168**	-.358**	.040
FSS-Isolation	.144*	.145*	.065	-.131*	-.006
FSS-Personal Finances	.206**	.242**	.151*	-.268**	.059
FSS-Time Pressures	.211**	.291**	.139*	-.303**	.140*
FSS-Economy	.048	.115	.002	-.146*	.038
FSS Total	.151*	.198**	.119	-.221**	.080
C-Reassess	-.135*	.024	-.061	.068	-.108

Table 101. *continued....*

	Suicidal				
	Depression	Anxiety	Thoughts	No History	Other
C-Positive	-.206**	-.078	-.096	.114	-.027
C-Community	-.086	.033	-.168**	.008	-.033
C-Aware	-.174**	-.049	-.032	.092	-.057
Active Cope	.048	.136*	.024	-.148*	.086
Self-Distracton	.223**	.204**	.118	-.241**	-.040
Denial	.152*	.163**	.019	-.165**	-.001
Substance Use	.299**	.268**	.393**	-.288**	-.038
Emotional Support	.173**	.315**	.006	-.265**	.147*
Instrumental Support	.088	.188**	.008	-.159*	.065
Behavioural Disengage	.227**	.208**	.279**	-.219**	.021
Vent	.122	.228**	.020	-.197**	.031
Planning	.084	.138*	.053	-.126	.096
Self-Blame	.174**	.231**	.117	-.267**	.011
Conscientious	.049	-.133*	.002	.075	-.068
Extraversion	-.255**	-.191**	-.071	.280**	-.013
Neuroticism	.386**	.375**	.153*	-.509**	.135*
Life Satisfaction	-.261**	-.240**	-.147*	.315**	-.084
K10 Psychological Distress	.389**	.392**	.162*	-.502**	.053
MBI-Emotional Exhaustion	.467**	.364**	.121	-.481**	.023
MBI-Professional Efficacy	.191*	.032	.058	-.083	-.031
MBI-Cynicism	.219**	.229**	-.037	-.303**	-.084

*. Correlation is significant at the 0.05 level (2-tailed).

** . Correlation is significant at the 0.01 level (2-tailed).

10.3.8.3. Relationships of self-reported physical health history.

Indicators of a history of physical health conditions (cancer, heart disease, high blood pressure, workplace injury) included sex, age, number of dependent children, producer types, some work and home roles, FF Role Impacts, strain conflict, FF Stressors, FSS stressors (excluding hazardous working conditions), C-Positive and C-Aware, negative coping styles, personality traits, decreased life satisfaction, psychological well-being, and increased burnout (Table 102).

Table 102. *Indicators of Physical Health History in Farming Family Population.*

	High Blood					
	Cancer	Pressure	Heart	Injury	No History	Other
Sex	-.057	-.035	-.138*	-.135*	.166**	.064
Age	.072	.188**	.227**	.123	-.283**	.160**
Length Relationship	.095	.164**	.134*	.035	-.160**	.066
N Financial Dependents	-.054	-.101	-.037	-.099	.189**	-.121
N Children at Home	-.076	-.061	-.060	-.056	.134*	-.081
Broadacre Producer	-.074	.006	-.009	-.109	.148*	-.107
Horticulture Producer	.068	-.024	.041	.102	-.126*	-.065
Sheep Meat Producer	-.118	-.041	-.090	-.068	.131*	-.075
Other Producer	.014	.167**	.091	.045	-.110	.132*
Work/Farm Role: Owner	-.060	.081	.157**	.125*	-.148*	.027
Work/Farm Role: Final Decision	-.029	.110	.057	.124*	-.178**	.075
Work/Farm Role: Manager	-.021	.028	.044	.172**	-.152*	.003
Work/Farm Role: Manage Employee	.094	-.005	-.020	.163**	-.131*	.031
Work/Farm Role: Labourer	-.025	.065	-.044	.178**	-.113	.028
Work/Farm Role: Finances	-.048	.129*	.034	.069	-.090	.045
Work/Farm Role: Off-farm Volunteer	.097	.145*	-.031	.028	-.108	.098
Home/Family Role: Family Carer	.011	-.018	-.169**	-.067	.077	.073
Home/Family Role: Breadwinner	-.037	-.036	.143*	.158**	-.098	.005
Home/Family Role: House	.064	-.039	-.179**	-.109	.084	.122
Home/Family Role: Family Happy	.039	-.045	-.157*	-.046	.077	.085
Home/Family Role: Other	.069	.147*	-.098	-.045	-.044	.138*
Years Farming	.103	.050	.100	.102	-.204**	.191**
RI-Inhibitors	-.056	.054	.116	.141*	-.163*	.103
RI-Moderators	.057	.077	.151*	.028	-.125*	.080
FF Role Impact	-.005	.082	.121	.097	-.133*	.079
S-Family	-.024	.125	.086	.128*	-.167**	.053
S-Future	.053	.101	.200**	.099	-.198**	.052
S-Daily	.066	.083	.095	.188**	-.208**	.088
S-Uncontrollable	-.044	.156*	.060	-.020	-.111	.189**
FF Stressor	.017	.095	.134*	.151*	-.177**	.091
FSS-Personal Finances	.113	.111	.134*	.090	-.187**	.000
FSS-Time Pressures	.033	.033	.003	.139*	-.144*	.084
FSS-Economy	.157*	.139*	.040	.038	-.169**	.037
FSS	.096	.159*	.110	.065	-.179**	-.034
C-Aware	.077	.037	-.152*	-.096	.118	-.049
Self-Distracton	-.021	-.063	.145*	-.109	.087	-.018
Denial	.026	.118	.161*	.004	-.093	.082
Behavioural Disengage	.058	.121	.144*	.091	-.200**	.180**
Humour	.167**	-.013	-.083	.036	.014	.056
Religion	.082	.057	.035	.112	-.142*	-.035

Table 102. *continued...*

	High Blood					
	Cancer	Pressure	Heart	Injury	No History	Other
B-Farming Attraction	-.003	.046	.003	.128*	-.141*	.041
Agreeable	.006	-.059	-.135*	.074	.009	.018
Conscientious	.062	-.055	.155*	.178**	-.105	-.005
Extraversion	.132*	.043	-.141*	.032	.048	-.056
Neuroticism	.015	.003	.170**	-.036	-.042	.064
Openness	.164**	.124	-.027	.110	-.158*	.116
Life Satisfaction	-.009	-.044	-.130*	-.010	.105	-.054
K10 Psychological Distress	.053	.023	.190**	.116	-.150*	.073
MBI-Emotional Exhaustion	.180*	.115	.163*	.149	-.271**	.078
MBI-Professional Efficacy	.066	-.044	.059	.237**	-.152	-.106
MBI-Cynicism	.062	.144	-.006	.245**	-.271**	-.061

*. Correlation is significant at the 0.05 level (2-tailed).

** . Correlation is significant at the 0.01 level (2-tailed).

10.3.8.4. Relationships of life satisfaction.

Indicators of life satisfaction within the farming family population included not having an off-farm job, low FF Role Impacts and inter-role conflict, low FF Stressors and FSS Stressors, high FF Cope styles and low negative Brief COPE styles, high farming commitment, good intergenerational structure, and personality traits (agreeableness, extraversion and low neuroticism) (Table 103).

10.3.8.5. Relationships of psychological distress.

Factors related to psychological distress in the farming family population included producer types, manager of employees, high FF Role Impacts and inter-role conflicts, high FF Stressors and FSS Stressors, low C-Positive and C-Aware, high utilisation of Brief COPE styles, poor intergenerational structure, and low extraversion (Table 103).

Table 103. *Indicators of Life Satisfaction and Psychological Distress in Farming Family sample.*

	K-10	SLS
Broadacre Producer	-.176 ^{**}	.038
Horticulture Producer	.205 ^{**}	-.045
Wool Producer	-.135 [*]	.084
Sheep Meat Producer	-.177 ^{**}	.078
Beef Producer	-.206 ^{**}	.113
Work/Farm Role: Off-farm Job	-.012	-.142 [*]
Work/Farm Role: Manage Employees	.133 [*]	-.076
RI-Facilitators	.409 ^{**}	-.208 ^{**}
RI-Inhibitors	.507 ^{**}	-.405 ^{**}
RI-Moderators	.378 ^{**}	-.292 ^{**}
FF Role Impact	.527 ^{**}	-.357 ^{**}
Work-Family Conflict	.483 ^{**}	-.446 ^{**}
Family-Work Conflict	.375 ^{**}	-.292 ^{**}
Time conflict	.268 ^{**}	-.242 ^{**}
Strain conflict	.543 ^{**}	-.430 ^{**}
Behaviour conflict	.449 ^{**}	-.419 ^{**}
S-Financial	.319 ^{**}	-.248 ^{**}
S-Family	.562 ^{**}	-.478 ^{**}
S-Future	.432 ^{**}	-.365 ^{**}
S-Daily	.383 ^{**}	-.270 ^{**}
S-Uncontrollable	.151 [*]	-.146 [*]
FF Stressor	.538 ^{**}	-.421 ^{**}
FSS-Hazardous	.189 ^{**}	-.073
FSS-Isolation	.110	-.191 ^{**}
FSS-Personal Finances	.365 ^{**}	-.264 ^{**}
FSS-Time Pressures	.357 ^{**}	-.192 ^{**}
FSS-Economy	.149 [*]	-.159 [*]
FSS Total	.303 ^{**}	-.227 ^{**}
C-Reassess	-.062	.305 ^{**}
C-Positive	-.192 ^{**}	.362 ^{**}
C-Community	-.083	.335 ^{**}
C-Aware	-.146 [*]	.204 ^{**}
Active Cope	.228 ^{**}	-.065
Self-Distracton	.435 ^{**}	-.312 ^{**}
Denial	.407 ^{**}	-.312 ^{**}
Substance Use	.434 ^{**}	-.246 ^{**}
Emotional Support	.243 ^{**}	.024
Instrumental Support	.167 ^{**}	.024
Behavioural Disengage	.409 ^{**}	-.296 ^{**}
Vent	.358 ^{**}	-.076
Planning	.244 ^{**}	-.089

Table 103. *continued...*

	K-10	SLS
Self-Blame	.426**	-.154*
B-Pride Identity	-.071	.263**
B-Family Commitment	.003	.155*
FF Buffer	.002	.207**
IF Impact	-.270**	.283**
Agreeable	-.113	.131*
Extraversion	-.213**	.196**
Neuroticism	.590**	-.278**
SLS- Life Satisfaction	-.450**	-
K10- Psychological Distress	-	-.450**
MBI-Emotional Exhaustion	.687**	-.400**
MBI-Cynicism	.492**	-.336**

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

10.3.8.6. Relationships with burnout.

Factors related to burnout in the farming family population included producer types, years farming, work/farm roles especially managing roles, high FF Role Impact and inter-role conflict, high FF Stressors and FSS stressors, low FF Cope styles, both positive and negative Brief COPE styles, personality traits (conscientiousness, extraversion, neuroticism, openness), and low life satisfaction and high psychological distress (Table 104)

Table 104. *Indicators of Burnout in Farming Family Population.*

	MBI-EE	MBI-PE	MBI-CY
Horticulture Producer	.205**	.130	.173*
Sheep Meat Producer	-.168*	-.070	-.081
Beef Producer	-.208**	-.032	-.166*
Years Farming	.080	.208**	-.009
Work/Farm Role: Owner	.059	.191*	.092
Work/Farm Role: Final Decision	.081	.205**	.008
Work/Farm Role: Manager	.016	.202**	.002
Work/Farm Role: Manage Employees	.150	.158*	.116
Work/Farm Role: Labourer	.162*	.223**	.137
Work/Farm Role: Finances	-.018	.192*	.101
Work/Farm Role: Collaborate with	.048	.181*	-.020
Government Programs			
Home/Family Role: Outside	.163*	.061	.145
RI-Facilitators	.399**	-.056	.294**
RI-Inhibitors	.533**	.028	.388**
RI-Moderators	.334**	.033	.246**
FF Role Impact	.523**	-.038	.387**
Work-Family Conflict	.600**	.082	.403**
Family-Work Conflict	.258**	-.176*	.325**
Time conflict	.273**	-.017	.293**
Strain conflict	.547**	.067	.428**
Behaviour conflict	.476**	-.160*	.365**
S-Financial	.413**	.179*	.289**
S-Family	.548**	-.025	.371**
S-Future	.487**	.057	.426**
S-Daily	.421**	.056	.296**
S-Uncontrollable	.216**	.019	.155
FF Stressor	.578**	.079	.430**
FSS-Hazardous	.178*	-.014	.165*
FSS-Isolation	.070	-.158	.190*
FSS-Personal Finances	.421**	.133	.372**
FSS-Time Pressures	.486**	.119	.377**
FSS-Climate Conditions	.241**	.012	.196*
FSS-Economy	.258**	.123	.206**
FSS Total	.411**	.072	.332**
C-Reassess	-.060	.234**	-.214**
C-Positive	-.165*	.220**	-.290**
C-Community	-.012	.226**	-.033
C-Aware	-.162*	.096	-.083

Table 104. *continued...*

	MBI-EE	MBI-PE	MBI-CY
Active Cope	.243**	.115	.130
Self-Distracton	.362**	.025	.249**
Denial	.305**	.033	.270**
Substance Use	.389**	-.004	.172*
Emotional Support	.207**	.097	.066
Behavioural Disengage	.378**	-.007	.321**
Vent	.322**	-.038	.184*
Positive Reframe	.165*	.204**	.127
Planning	.294**	.268**	.124
Religion	.044	.162*	.156
Self-Blame	.271**	-.079	.226**
B-Farming Attraction	.187*	.194*	-.023
Conscientious	.234**	.349**	.016
Extraversion	-.215**	.017	-.211**
Neuroticism	.462**	-.131	.321**
Openness	.085	.214**	-.038
SLS- Life Satisfaction	-.400**	.108	-.336**
K10- Psychological Distress	.687**	-.046	.492**

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

10.3.8.7 Predictor relationships of complete farming family well-being.

In consideration of the correlation matrix presented in Table 105, it can be seen that the leading contributors to overall farming family well-being (i.e. SLS, K-10, and MBI) are FF Stressors, FF Role Impacts, and C-Positive Reframing (see Table K3 in Appendix K for the complete set of correlation values). Additionally, FF Stressors, FF Role Impact, C-Positive Reframing, FF Buffers, and IF Impact are all inter-related, suggesting that there may be grounds for moderating and mediating relationships, such as FF Buffers mediating and moderating impacts on life satisfaction and C-Positive or IF Impact moderating or mediating FF-Role Impacts on well-being.

Table 105. Correlations between predictor variables, well-being variables, and personality traits.

	FF Stressors	FF Role Impact	FF Cope	FF Buffer	IF Impact	SLS	K-10	MBI-EE	MBI-PE	MBI-CY	A	C	E	N	O
FF Stressors	1	.697**		.176**		-.421**	.538**	.578**		.430**		.180**	-.147*	.349**	
S-Financial	.839**	.475**		.196**		-.248**	.319**	.413**	.179*	.289**		.239**		.208**	
S-Family	.841**	.660**			-.299**	-.478**	.562**	.548**		.371**				.337**	
S-Future	.792**	.518**			-.193*	-.365**	.432**	.487**		.426**			-.164**	.329**	
S-Daily	.745**	.563**		.142*		-.270**	.383**	.421**		.296**				.222**	
S-Uncontrollable	.554**	.275**		.189**		-.146*	.151*	.216**		.155*				.151*	.226**
FF Role Impact	.697**	1		.153*	-.229**	-.357**	.527**	.523**		.387**			-.153*	.368**	
RI-Facilitators	.527**	.874**		.129*		-.208**	.409**	.399**		.294**				.306**	
RI-Inhibitors	.717**	.910**			-.191*	-.405**	.507**	.533**		.388**		.167**	-.159*	.331**	
RI-Moderators	.474**	.628**			-.287**	-.292**	.378**	.334**		.246**				.213**	
FF Cope			1	.257**	.293**	.315**			.238**	-.181*	.277**		.238**		.296**
C-Reassess			.828**	.186**	.282**	.305**			.234**	-.214**	.136*	.158*	.208**		.255**
C-Positive		-.135*	.822**	.291**	.328**	.362**	-.192**	-.165*	.220**	-.290**	.208**		.199**	-.207*	.246**
C-Community			.826**	.230**	.343**	.335**			.226**		.254**		.181**		
C-Aware			.711**			.204**	-.146*	-.162*			.185**	-.175**	.168**	-.143*	.133*
C-Disengage	.207**		.452**	.255**										.146*	.176**
FF Buffer	.176**	.153*	.257**	1	.329**	.207**						.124*			
B-Pride			.276**	.735**	.176*	.263**									
B-Attract	.168*	.160*	.294**	.891**	.234**			.187*	.194*			.200**			
B-Family	.153*	.133*		.742**	.403**	.155*									
IF Impact		-.229**	.293**	.329**	1	.283**	-.270**					.168*		-.222**	

** . Correlation is significant at the 0.01 level (2-tailed). * . Correlation is significant at the 0.05 level (2-tailed). SLS=Life Satisfaction, K-10=Psychological Distress, MBI-EE=Emotional Exhaustion, MBI-PE=Professional Efficacy, MBI-CY= Cynicism, A=Agreeableness, C=Conscientiousness, E=Extraversion, N=Neuroticism, O=Openness

10.3.9. Selecting relationships: Farming Family Well-Being Model

specification.

Correlation matrices were generated to assist in the specification of the model. Based on this output, as well as findings reported in previous chapters and research (McShane & Quirk, 2009), a number of factors were identified as possible predictors of well-being (as assessed by the SWLS, K-10, and MBI-GS scales). These factors included Farming Family Stressors, Farming Family Role Impacts, Intergenerational Farming Impacts, Farming Family Buffers, Farming Family C-Positive Reframe, Mental Health History, and Producer type (i.e. Horticulture, Beef, Sheep, or Wool). The model specified was recursive and involved both direct and indirect effects of the exogenous factors on the endogenous factors.

Scores on the FF Stressor scale were predicted to have a direct negative relationship with scores on the Satisfaction with Life Scale and a direct positively relationship with scores on the K-10 (psychological distress), MBI-Emotional Exhaustion, and MBI-Cynicism. Additionally, scores on the FF Stressor scale were predicted to have an indirect relationship with scales of well-being factors via a positive mediating relationship with scores on the FF Role Impact scale and responses on the demographic items of Mental Health History and Producer Type and via negative mediating relationships with scores on the FF Buffers and C-Positive Reframe subscale.

Scores on the FF Role Impact Scale were predicted to have a direct negative relationship with scores on the Satisfaction with Life Scale and a direct positive relationship with scores on the K-10 (psychological distress), MBI-Emotional Exhaustion and MBI-Cynicism. Scores on the FF Role Impact scale were predicted to have an indirect relationship with scales of well-being via a negative mediating

relationship with scores on the IF Impact Scale and be moderated by scores on the FF Buffer Scale.

Scores on the IF Impacts and FF Buffer Scale were predicted to have a positive direct effect on scores of Satisfaction with Life Scale and a direct negative effect on scores of the K-10 (psychological distress). Scores on the C-Positive Reframe subscale were predicted to have a direct positive effect on scores of the Satisfaction with Life Scale and MBI-Professional Efficacy as well as have a direct negative relationship with scores on the K-10 (psychological distress), MBI-Emotional Exhaustion and MBI-Cynicism. Responses from the self-reported Mental Health History were predicted to have a direct negative relationship with scores on the Satisfaction with Life Scale and a direct positive relationship with scores on the K-10 (psychological distress), MBI-Emotional Exhaustion and MBI-Cynicism. The produce type of horticulture was predicted to have a direct negative relationship with scores on the Satisfaction with Life Scale and a positive direct relationship with scores on the K-10 (psychological distress), MBI-Emotional Exhaustion and MBI-Cynicism. The produce type of beef was predicted to have a direct positive relationship with scores on the Satisfaction with Life Scale and a negative direct relationship with scores on the K-10 (psychological distress), MBI-Emotional Exhaustion and MBI-Cynicism. The produce type of sheep and wool production was predicted to have a negative direct relationship with scores on the K-10 (psychological distress) and MBI-Emotional Exhaustion.

10.3.10. Model output

After testing various versions of the hypothesised model, a model of good fit was produced. This model excluded IF Impacts, Mental Health History, and Producer types as the inclusion of these models led to poor identification of the model and therefore poor fit. Additionally, an earlier version of the model presented a significant direct

affect of FF Stressors on FF Role Impacts ($FFRI \leftarrow FFS$, $C.R.= 15.05$), which also therefore mediated the relationship between FF Stressors and Psychological Distress and Emotional Exhaustion. However, as it was also found that FF Role Impacts significantly predicted FF Stressors ($FFS \leftarrow FFRI$, $C.R. 15.17$), it was therefore determined that these two factors were best identified as a co-varying relationship. The resulting model (Figure 16) is presented below:

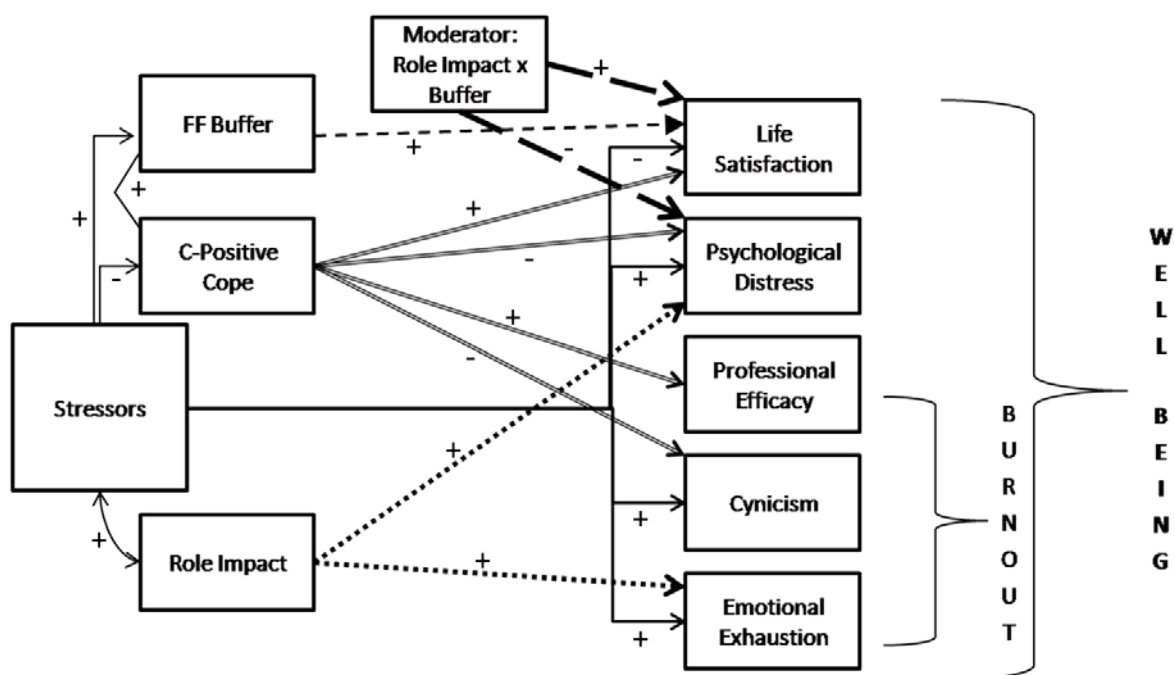


Figure 16. Path Model of factors specific to farming family lifestyle that impact on well-being.

The model generated was recursive, utilising a sample size of $N=278$, 8 observed endogenous variables [Satisfaction with life (SLS), psychological distress (K-10), Professional Efficacy (MBI-PE), Cynicism (MBI-CY), Emotional Exhaustion (MBI-EE), Buffers (FFB), and Positive Reframe (C-PR)]. There were three observed exogenous variables [Stressors (FFS), Role Impacts (FFRI), and Moderator-RIxB (M-RIxB)], and 7 unobserved exogenous variables (Residuals 1-7). The model was identified and achieved minimisation, and presented overall good model fit $\chi^2 (18) =$

23.98, $p=.156$. All pathways in the model presented in Figure 16 were significant, indicating direct positive effects of Stressors on Buffers (FFB \leftarrow FFS, C.R.=2.72), Cynicism (MBI-CY \leftarrow FFS, C.R. = 5.76), Emotional Exhaustion (MBI-EE \leftarrow FFS, C.R.= 5.31), and psychological distress (K-10 \leftarrow FFS, C.R.=4.46). Additionally, significant negative direct affects of Stressors on Positive Reframe (C-PR \leftarrow FFS, C.R.= -2.13) and Satisfaction with Life (SLS \leftarrow FFS, C.R.= -7.86) were identified. FF Role Impacts had significant positive direct effects on Emotional Exhaustion (MBI-EE \leftarrow FFRI, C.R.=1.96) and Psychological Distress (K-10 \leftarrow FFRI, C.R.=4.01). The impact of FF Role Impacts on Psychological Distress was significantly moderated by FF Buffers (K-10 \leftarrow M-RIxB, C.R.= -2.96). FF Buffers had a significant positive direct effect on Satisfaction with Life (SLS \leftarrow FFB, C.R.= 4.00) which was in turn negatively moderated by FF Role Impacts (SLS \leftarrow M-RIxB, C.R. = 2.98). C-Positive Reframe had a significant positive direct effect on Satisfaction with Life (SLS \leftarrow C-PR, C.R. = 4.02) and Professional Efficacy (MBI-PE \leftarrow C-PR, C.R.= 3.30), and a significant negative direct effect on Cynicism (MBI-CY \leftarrow C-PR, C.R.= -2.80) and Psychological Distress (K-10 \leftarrow C-PR, C.R.= -2.58). Additionally, there were a number of significant covariance's produced, such as between FF Stressors and FF Role Impacts (FFS \leftarrow FFRI, C.R. =9.12) and scales of well-being (Table 106).

To assess model fit, the following approximate fit indices were used: the Comparative Fit Index (CFI; where values $> .90$ implies best fit), the Minimum Discrepancy / Degrees of Freedom Ratio (CMIN/DF; where a ratio value close to 1 implies best fit), the Normative Fit Index (NFI; where values $> .90$ implies best fit), the Incremental Fit Index (IFI; where values $> .90$ implies best fit), and the Root Mean Square Error of Approximation (RMSEA; parsimony adjusted index which assesses non-central chi-square distribution, where values close to 0 indicate best fit). A model

fit summary indicated that the CFI, NFI, and IFI values were $>.90$, the CMIN/DF ratio was 1.33, and the RMSEA =.035, overall indicating a good fit model.

Table 106. *Specified parameter covariances in Model 1.*

Variable 1	Variable 2	C.R.	P
Residual-FFB	<--> Residual-C-PR	4.971	***
FFRI	<--> FFS	9.122	***
Residual-SLS	<--> Residual-K-10	-2.900	.004
Residual-K10	<--> Residual-MBI-PE	-.255	.799
Residual-MBI-CY	<--> Residual-MBI-PE	.365	.715
Residual-MBI-EE	<--> Residual-MBI-CY	4.884	***
Residual-MBI-EE	<--> Residual-MBI-PE	3.206	.001
Residual-K10	<--> Residual-MBI-EE	6.127	***
Residual-SLS	<--> Residual-MBI-PE	1.151	.250
Residual-SLS	<--> Residual-MBI-CY	-1.184	.236
Residual-K-10	<--> Residual-MBI-CY	3.914	***
Residual-SLS	<--> Residual-MBI-EE	-1.988	.047

Note: Critical Ratio value is represented as C.R.

*** indicates significant value $< .000$

The hypothesised model (Model 1) was compared with an alternative model (Model 2) to investigate whether Model 1 should be retained as the best fit model. Model 2 was theoretically derived using alternative scales of stress, conflict, and coping (the Farm Stress Survey, the Work-Family Conflict Scales, and the Brief COPE Inventory). Scores on these scales were inter-correlated to determine the relationship the factors may have with scales of well-being (Table 105). As a result of this analysis, and with support from the literature, Model 2 was specified. Model 2 however was indicated to lack identification, therefore through a series of model changes and parameter adjustments, Model 3 was produced (Table 107).

This model presented 10 observed endogenous factors, 1 observed exogenous factor, and 10 unobserved exogenous factors. The model was identified, achieved minimisation, but did not present overall good model fit $\chi^2 (28) = 158.20$, $p=.000$,

though all pathways presented in the model were significant (Table 107). Appropriateness of fit measures further indicated a poor fit model (Table 108).

Table 107. *Regression weights of variables within Model 3.*

Endogenous	Exogenous	C.R.	P
Denial	<--- FSS	2.880	.004
Self-Distracton	<--- FSS	4.292	***
WFC	<--- FSS	5.303	***
Planning	<--- FSS	3.791	***
Substance-Use	<--- FSS	2.342	.019
SLS	<--- WFC	-6.819	***
K-10	<--- WFC	5.802	***
K-10	<--- Self-Distracton	2.522	.012
K-10	<--- Denial	4.646	***
K-10	<--- Substance-Use	5.157	***
MBI-EE	<--- FSS	3.847	***
K-10	<--- FSS	2.428	.015
SLS	<--- Denial	-3.334	***
MBI-PE	<--- Planning	3.983	***
MBI-CY	<--- FSS	3.370	***
MBI-CY	<--- WFC	4.606	***
MBI-EE	<--- WFC	5.510	***
MBI-EE	<--- Planning	3.102	.002
MBI-EE	<--- Substance-Use	3.704	***

Note: *** indicates significant value < .000

Table 108. *Comparison of hypothesised model (1) and equivalent test model (2) regarding model fit statistics.*

	CFI	NFI	IFI	CMIN/DF	RSMEA
Model 1	0.99	0.96	0.99	1.33	0.035
Model 2	n/a	n/a	n/a	n/a	n/a
Model 3	0.80	0.78	0.82	5.55	0.13
Model 4	0.99	0.99	0.99	1.11	0.019

Due to the poor fit of the model, parsimony was considered and the model was simplified until a good fit was achieved, producing alternative Model 4 (Figure 17).

This model contained only 6 observed endogenous variables, 2 observed exogenous variables, and 6 unobserved exogenous variables. The model was identified, achieved minimisation, and presented overall good model fit $\chi^2 (6) = 6.63$, $p = .357$, with all specified pathways significant (Table 109). Appropriateness of fit measures were satisfied, indicating a good fit model (Table 108).

Table 109. *Regression weights of variables within Model 4.*

Endogenous	Exogenous	C.R.	P
Planning	<--- FSS	3.473	***
SLS	<--- WFC	-7.548	***
K-10	<--- WFC	8.337	***
MBI-EE	<--- WFC	6.733	***
MBI-CY	<--- WFC	4.593	***
MBI-EE	<--- FSS	3.487	***
MBI-EE	<--- Planning	3.750	***
MBI-PE	<--- Planning	3.963	***
K-10	<--- Planning	3.127	.002
MBI-CY	<--- FSS	3.007	.003
K-10	<--- FSS	2.096	.036

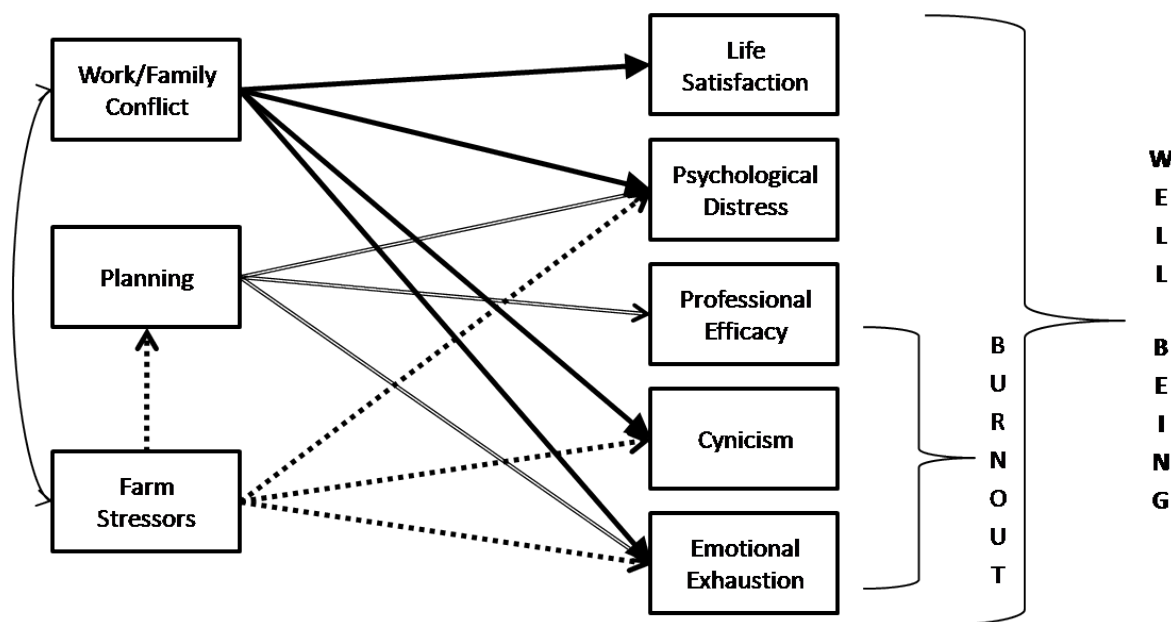


Figure 17. Alternative pathways Model 4.

10.4. Conclusion

Through Structural Equation Modelling techniques a workable model of indicators of well-being was generated. In determining whether to retain the hypothesised Model 1 or the alternative Model 4, not only do the fit statistics need to be considered but also the complexity of the models. Though parsimony is generally preferred to an overly complex model, the researcher also needs to consider the theoretical constructs underpinning the model. For instance, Model 1 is more complex but is also specific in its predictors of well-being. Model 4 is simple, satisfying the rule of parsimony, however its variables only became suitable for prediction when the model was overly simplified and it is not specific in its predictors of well-being. That is, Model 4 indicated that Planning as a coping style mediated Farm Stressors and predicted well-being. However a good model fit would have also been achieved if Substance Use or Denial were retained in the model instead of Planning, indicating that within the model coping styles were not explicit in prediction. Furthermore, the critical ratio values

within Model 1 are stronger than in Model 4. Therefore, Model 1 offers a more inclusive and specific model of Farming Family Well-Being.

Based on this hypothesised model, the main determinants of well-being appeared to be FF Stressors, FF Role Impacts, FF Buffers, and C-Positive Reframing. Specifically, FF Stressors and FF Role Impacts had direct effects on well-being with increased stressors leading to greater psychological distress, lower satisfaction with life, and increased risk of burnout (through high levels of emotional exhaustion and cynicism). Increased levels of FF Role Impacts also led to higher levels of psychological distress and partially to burnout (through increased levels of emotional exhaustion). The negative effect of FF Role Impacts on well-being was moderated by high levels of FF Buffers, indicating that though demands on role completion lead to psychological distress, this impact was lessened through high commitment/identification with farming, resulting in a limited impact on levels of psychological distress. Additionally, the protective effect of buffers on life satisfaction was also moderated by results on the FF Role Impact scale. Though high levels of role impact reduced the protective effect of buffers on life satisfaction the reduction was only partial and a positive effect was still present. The impact of FF Stressors on well-being was also dependent on (mediated by) the extent to which the individual commits/identifies with farming and the extent to which the individual used positive coping styles. Specifically, within the model, stressors were mediated by buffers impact upon life satisfaction, with individuals requiring high levels of buffers in order for stressors to have no negative impact upon life satisfaction. Stressors were also mediated by positive coping styles, with high levels of positive coping required to avoid stressors leading to burnout, specifically in relation to cynicism and professional efficacy.

Despite the relationships between demographic variables such as produce type, health history, and work and home roles, these factors did not contribute to clear model identification and good model fit and were therefore excluded from the final model. Nonetheless, these factors should not be abandoned entirely as determinants of well-being and perhaps should be used as a screening tool for identifying an at-risk population. The profiling of at-risk groups for poor mental health suggests that men are especially sensitive to inter-role conflict, role interference and family satisfaction whilst women present clusters that emphasise the impact of burnout on mental health. The following chapters will discuss the implications of the findings from this chapter as well as the overall implications of the developed scales for the farming family population, health professionals and the farming industry.

Chapter 11: What Does this Mean for Farming Families?

This chapter aimed to provide an overview of the scale development process and the generated model of Farming Family Well-being as presented in Figure 16. This chapter also aims to evaluate and integrate the findings in light of the research aims and previous research. The implications of this research for farming families will be discussed in relation to balancing work-home roles and responsibilities, predominant stressors, differential coping methods, and the farm itself as a buffer. The chapter will conclude with a profile of the type of person who becomes and remains a farmer and a member of a farming family. The profile will draw upon personality traits, values, and lifestyle characteristics.

11.1 Summary of Scale Development

The primary aim of this research was to determine the affect of the farming work environment and lifestyle on the well-being of farming families of Australia. In order to achieve this outcome, this research set out to develop a set of contextually relevant scales which assessed the stressors, role interferences, and coping styles used by farming families of Australia. The rationale for developing farming family specific scales was due to current scales for work-family conflict, coping, and farm stress being limited in their applicability to this population. The current research proposed that the interaction between the farming families work and home environment was different to other work and home interfaces due to the fused nature of the work and home domains and thus the increased ambiguity of roles within the home and the farm. The development of a scale to assess stressors including factors relevant to both the family

and the farmer was thought necessary due to the hypothesised fused nature of the work and home environments (McShane & Quirk, 2009). The development of a scale of coping behaviours and strategies was driven by the limited availability of psychometrically sound scales which have been designed to be contextually-relevant for Australian farming families. On the basis of this rationale for scale development, and in search of a comprehensive understanding of Australian farming family well-being, seven steps were undertaken in three phases to develop scales of coping, stress and role interference (Figure 10). Through these seven steps, a set of farming family scales were developed. These scales included the FF Role Impact Scale, the FF Stressor Scale, the FF Cope Scale, FF Buffer Scale and the IF Impact Scale.

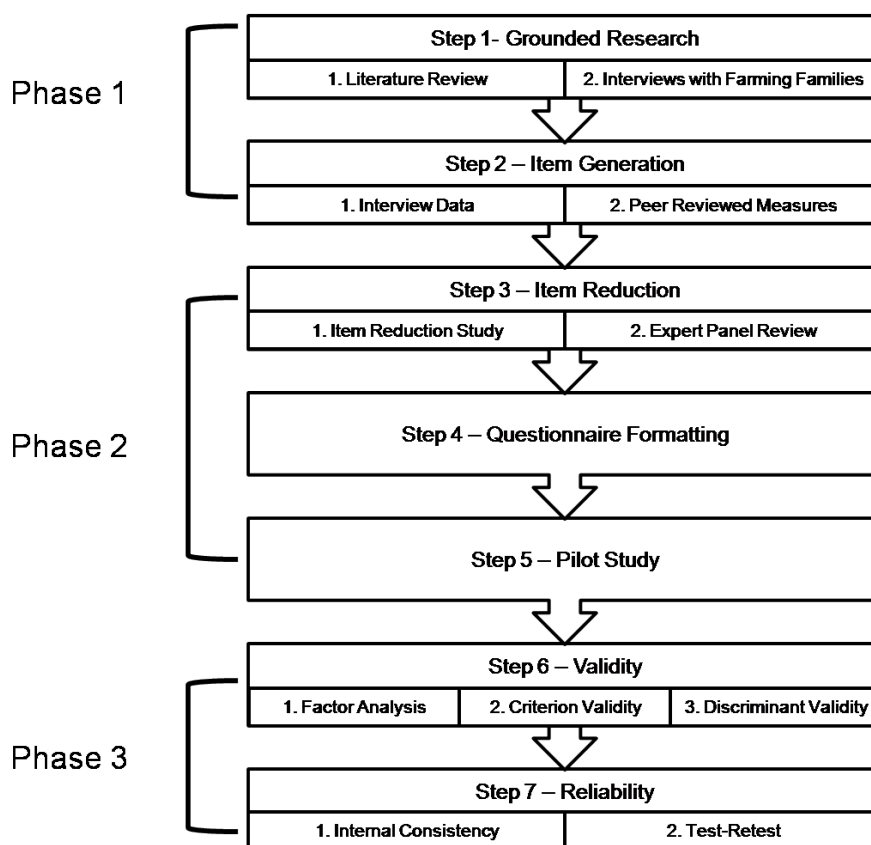


Figure 10. Overview of the process of the development of the Farming Family scales.

11.1.1. Farming Family Role Impact Scale.

In the initial interviews, the complexity of the structure of the work and home environment of farming families was demonstrated through the commitment of roles to multiple domains, role ambiguity and lack of role recognition. For example, women indicated responsibility for roles within the home, for the farm, and also within an off-farm job and yet still had the key unrecognised role of the “helper” or “supplementary worker”. This role meant women provided support (e.g. physical labour, errands, or administrative work) when the farm required it regardless of any prior commitments. This role was an expected and accepted part of women’s life on the farm however it wasn’t personally identified as a key contribution. Men and women also revealed that conflicts were not always negative which appeared to be due to the perception of the farm system as a permanent system (Stafford et al., 1999). The permanence of the farm system suggested that demands and interferences from the work domain were perceived as more acceptable (Clark & Morgan, 2010). As outputs of the interview step (Step 1 & 2) four scales were generated which assessed Work Roles (15 items), Home Roles (9 items), Assistance to Role Completion (33 items), and Interferences to Role Completion (54 items). Evaluation of responses (Step 3) indicated that the majority of Work and Home Role items were of a demographic nature and were therefore removed and transferred to the demographic section for the subsequent pilot, validity, and reliability studies (Steps 5-7). The Assistance and Interference to Role Completion scales remained separate until the pilot study (Step 5) where they were re-evaluated due feedback from participants regarding the clarity of item scaling. As a result the two scales were transformed into a single scale that assessed interference, renamed the Farming Family Role Impact Scale (18 items). Factor analysis was used to assess the

construct validity of the scale and to identify the underlying structure of each scale (Step 6) (Table 110).

The criterion for factor analysis was satisfied and 3 distinct subscales were produced. These subscales included the RI-Facilitators (7 items), RI-Inhibitors (8 items), and RI-Moderators (3 items). RI-Facilitators included items that referred to factors that should have assisted in role completion but were in deficit. The RI-Inhibitors included factors that interfered with or prevented role completion. RI-Moderators included items which identified factors that would further increase role interference such as family tension. The Farming Family Role Impact Scale and subscales satisfied criteria for concurrent and discriminant validity (Step 6) as well as tests for internal consistency and test-retest reliability (Step 7) (Table 110).

Table 110. *Reliability and validity of the Farming Family Role Impact Scale.*

Factor Loadings (>.3)	Validity		Reliability	
	Criterion FFRI (p<.05, r<.8)	Discriminant FFRI (p<.05)	Internal Consistency FFRI (Cronbach>.7)	Test Retest (Good: rho>.7 Mod.: rho>.6)
RI-Facilitator: .34-.81	WFC: r=.44	K-10: r=.53	Time 1=.89	FFRI: rho=.62
RI-Inhibitor: .47-.74	Work-Family: r=.44	SLS: r=-.36	Time 2=.89	RI-Facilitator: rho=.39
RI-Moderator: .67-.75	Family-Work: r=.31	MBI-EE: r=.52		RI-Inhibitor: rho=.65
	Time: r=.29	MBI-CY: r=.39		RI-Moderator: rho=.64
	Strain: r=.46			
	Behaviour: r=.35			

Note: K-10 = psychological distress; SLS = Life satisfaction; MBI-EE = Burnout-Emotional Exhaustion; MBI-CY = Burnout-Cynicism

The scale was significantly correlated with the Work-Family Conflict Scales (WFC) (Carlson et al., 2000) however was also distinctly different as it presented a multi-dimensional framework for role interference. Factors that contributed to the multi-dimensional framework included personal dispositions, relationships, uncontrollable

factors (weather patterns), and the work and home domains. Additionally, the FF Role Impact Scale differed from the WFC Scales as the scale was more an assessment of factors that interfered with role completion rather than a conflict of role responsibilities and demands. These differences supported the utility of the scale as it provided a more comprehensive description of the impact of the farming work and home environment on farming family well-being.

11.1.2. The Farming Family Stressor Scale.

Throughout the scale development process there seemed to be clear differences between the existing scale of farm stress (the Farm Stress Survey, Eberhardt & Pooyan, 1990) and the items identified by interview participants. Further, there were also differences in responses between the farmer and the family members. For instance, in the interview stage there were multiple stressors identified regarding family, relationships, and personal states (i.e. level of sleep, exhaustion, or motivation) that had not been previously identified or addressed in the Farm Stress Survey (Eberhardt & Pooyan, 1990). From the interview data, three scales of stressors were generated due to an apparent distinct cluster of categories of stressors (Step 1 & 2). The three clusters included Major Stressors (80 items) which included items referring to the overarching chronic stressors of the farming family working environment. The Daily Stressor (53 items) scale included items about the temporary and less stressful factors of farming life but these stressors were encountered often. The Increaseers of Stress (69 items) scale included items about factors that moderated stress levels.

During the following process of item reduction (Step 3) these three scales of stressors were collapsed into a single scale. These scales of stressors were collapsed due to a lack of support from responses as well as from analysis of the item reduction data which indicated that these scales weren't assessing distinct constructs. The final scale

included items merged from the previous three item sets. Criteria for factor analysis were achieved with 5 underlying structures identified for the Farming Family Stressor Scale (29 items) (Step 6). These subscales included S-Financial Concerns (9 items), S-Family Concerns (9 items), S-Future Concerns (5 items), S-Daily Concerns (4 items), and S-Uncontrollable Concerns (2 items). The S-Financial Concerns subscale included items about the concerns relative to financial security, including stressors related to assets and factors that would impede upon financial growth. The S-Family Concerns subscale included items about the relationships of farming family members and individual and family health and well-being. The S-Future Concerns subscale included items about the issues that would impact upon the stability of the industry or personal future. The S-Daily Concerns subscale included items about the issues one would encounter on a day to day basis, such as workload and services. The S-Uncontrollable Concerns subscale included items about the factors that were completely outside of the individuals control such as the amount of chemicals in the industry or practices of other farmers.

The Farming Family Stressor Scale and subscales satisfied criteria for discriminant and criterion validity (Step 6), internal consistency and test-retest reliability (Step 7), demonstrating sufficient psychometric properties (Table 111). The FF Stressor Scale was significantly correlated with the Farm Stress Survey (Eberhardt & Pooyan, 1990) but the scale was also distinctly different ($r=.7$, recommended $r<.8$ for criterion validity; Streiner & Norman, 1989). Additionally, the FF Stressor Scale had identified new items specific to family concerns. The FF Stressor Scale also had different themes to Weigel et al.'s (1987) scale of farm family stress as this existing scale focused more on intergenerational relationships. Therefore, the FF Stressor Scale contributed to a greater understanding of the well-being of farming families of Australia

as the scale included items specific to this population which had not been previously identified within existing scales.

Table 111. *Reliability and validity of Farming Family Stressor Scale.*

Factor Loadings (>.3)	Validity		Reliability	
	Criterion FFRI (p<.05,r<.8)	Discriminant FFRI (p<.05)	Internal Consistency FFRI (Cronbach>.7)	Test Retest (Good: rho>.7 Mod.: rho>.6)
S-Financial: .49-.84	FSS: r=.73	K-10: r=.54	Time 1=.94	FFS: rho=.66
S-Family: .39-.77	Hazardous: r=.46	SLS: r=-.42	Time 2=.90	S-Financial: rho=.74
S-Future: .40-.76	Isolation: r=.37	MBI-EE: r=.58		S-Family: rho=.73
S-Daily: .41-.75	Finances: r=.70	MBI-CY: r=.43		S-Future: rho=.78
S-Uncontrol: .70-.73	Time: r=.62			S-Daily: rho=.54
	Climate: r=.41			S-Uncontrol: rho=.68
	Economy: r=.58			

Note: K-10 = psychological distress; SLS = Life satisfaction; MBI-EE = Burnout-Emotional Exhaustion; MBI-CY = Burnout-Cynicism

11.1.3. Farming Family Cope Scale.

The strong themes of resilience, perseverance, and hardiness were clearly identified in the coping behaviours and strategies reported by farming families within the interview process (Step 1 & 2). Possibly as a result of the restrictiveness of the farm lifestyle, many coping styles identified were resources or buffers that the individual would draw upon to help them through each day and weather the stressors and challenges of the farm. For example, ‘knowing others were going through the same thing’ or ‘watching animals’. Nonetheless, there were still practical strategies outlined, such as prioritising or sharing workload. The process of item generation from the interviews resulted in the development of two scales (Step 2). One of these scales focused on the individual coping behaviours and strategies (63 items) and the other on

the family coping behaviours and strategies (39 items). The item reduction process resulted in the amalgamation of these two scales due to an overlap between items in each scale (Step 3). The item set was further reduced through the deletion of items that did not adequately fulfil the criteria for inclusion such as a sufficient level of relevance and importance to the population or low internal consistency. The final version of the Farming Family Cope Scale (25 items) had 5 subscales identified by factor analysis and reached reasonable levels of validation and reliability (6 & 7) (Table 112).

These subscales included C-Reassess (8 items), which involved coping behaviours and strategies where the individual was aware of the stressors and re-evaluated their current position to determine the best course of action. For example, the individual may use talking to others, professional help, or reaffirming their commitment to farm and family as a means of coping. C-Positive Reframe (5 items) referred to coping behaviours or strategies that indicated the individual would try to view the situation more positively, for example through recognising achievements or enjoying their work. C-Community Connectedness (5 items) referred to coping behaviours or strategies where the individual needed to have a connection to others. For example, the individual would socialise, have a psychological sense that they were a part of something, or would rely on religious faith to cope with challenges. The C-Aware (4 items) subscale included items about coping behaviours or strategies where the individual was aware of and preoccupied with a problem but could not address the concern. For example, the individual may accept the lack of control they have in relation to the stressor, engage in exercise, or let other things slide in their preoccupation with the problem. The C-Disengage subscale (3 items) included items about coping behaviours or strategies where the individual was mentally or physically distracted from the stressor. These

coping behaviours included using alcohol to wind down, watching animals, or getting away from the farm.

Table 112. *Reliability and validity of Farming Family Cope Scale.*

Factor Loadings (>.3)	Validity		Reliability	
	Criterion FFRI (p<.05,r<.8)	Discriminant FFRI (p<.05)	Internal Consistency FFRI (Cronbach>.7)	Test Retest (Good: rho>.7 Mod.: rho>.6)
C-Reassess: .57-.79	Active: r=.21	K-Depressed Mood: r=-.15	Time 1=.89	FFC: rho=.74
C-Positive: .49-.71	Emotional Support: r=.21	K-Worthless: r=-.19	Time 2=.88	C-Reassess: rho=.61
C-Community: .49-.65	Instrumental Support: r=.19	SLS: r=.32		C-Positive: rho=.58
C-Aware: .43-.66	Positive Reframe: r=.22	MBI-PE: r=.24		C-Community: rho=.75
C-Disengage: .49-.63	Humour: r=.16 Acceptance: r=.14 Religion: r=.18 Behavioural Disengage: r=-.28	MBI-CY: r=.19		C-Aware: rho=.48 C-Disengage: rho=.64

Note: K-10 = psychological distress; SLS = Life satisfaction; MBI-PE = Burnout-Professional Efficacy; MBI-CY = Burnout-Cynicism

This scale and the way the subscales clustered were in some aspects similar to the existing scale of the Brief COPE Inventory as well as Weigel et al.'s (1987) scale of farm family coping. Nonetheless, the current developed Farming Family Cope Scale was also distinctly different from the Brief COPE Inventory, as the farm family scale emphasised the importance of community-connectedness as well as the lack of control involved with the farming lifestyle. The FF Cope Scale differed from Weigel et al.'s (1987) scale as this later scale was more specific for managing stressors in an intergenerational farming environment whereas the FF Cope Scale included behaviours and strategies that individuals used to cope with the challenging lifestyle of farming in general. Unique coping items in the FF Cope Scale included watching animals, knowing you're not alone (i.e. other people are facing similar challenges), and being committed

to work. Some items retained in the final scale demonstrated less rigorous validity and reliability, such as watching animals, faith, and get away to somewhere. Despite this, these items had considerable face validity from the interview process and were distinct from the Brief COPE Inventory (with the exception of 'faith') so the decision was made to retain them (Streiner & Norman, 1989). Further, two of the items identified with less rigorous validity and reliability contributed to two-thirds of the subscale C-Disengage, which identified maladaptive coping behaviours and strategies.

11.1.4. Farming Family Buffer Scale.

The Farming Family Buffer Scale was generated after discrepancies between the extent of stressors and degree of satisfaction with life and work were recognised in the interview stage (Step 1 & 2). That is, despite the numerous stressors and role impacts identified, farming men and women were generally satisfied with their life and work, which lead the researcher to question what it was about farming that persuaded the individual to persevere in an industry full of challenges. The answer appeared to cluster around two themes of commitment to farming and identification with farming. These two themes were developed into item content contributing to two scales of Commitment to Farming (34 items) and Identification with Farming (24 items). During the item reduction stage (Step 3) these item sets were reduced through assessing item relevancy and importance to population, level of internal consistency, item redundancy, and item discrimination. The item sets of commitment to farming and identification with farming were merged as both sets were assessing buffering characteristics and thus was renamed the FF Buffer Scale (12 items). The factor analysis conducted as a part of the validity study (Step 6) identified three distinct subscales, indicating what contributed to the protection of well-being.

These subscales included the subscale B-Farming Attractions (6 items), which referred to the positive aspects of the farming lifestyle. These lifestyle characteristics included enjoying the work or the product and the belief that farming directly contributed to people's lives (i.e. through food production). These factors were congruent with important values of farming families. B-Family Commitment (3 items) included items which referred to commitment to farming for the family such as sentimental value of the farm or the farm being for future generations. B-Pride in Identity (3 items) included items about the connection of farming to identity. For example the individual was proud to be a farmer as it indicated land ownership or that they were a down to earth person. The FF Buffer Scale satisfied criteria for validity and reliability (Step 6 & 7) (Table 113). Comparison of the FF Buffer Scale with the FF Cope Scale and Brief COPE Inventory demonstrated that the scales were related but distinctly different with low-moderate correlation levels ($r < .25$) for most items of the FF Buffer Scale. Additionally, the FF Buffer Scale exclusively referred to the farming lifestyle and its value to the individual whilst FF Cope focused more on how the individual faced and managed stressors, conflicts, and challenges in the context of farming.

Table 113. *Reliability and validity of Farming Family Buffer Scale.*

Factor Loadings ($>.3$)	Validity		Reliability	
	Criterion FFRI ($p < .05, r < .8$)	Discriminant FFRI ($p < .05$)	Internal Consistency FFRI (Cronbach $>.7$)	Test Retest (Good: $\rho >.7$ Mod.: $\rho >.6$)
B-Pride Identity: .66-.78	FFC: $r = .26$	K-Worthless: $r = -.14$	Time 1 = .85	FFB: $\rho = .46$
B-Farm Attract: .58-.71 B-Family Commit: .78-.81	Planning: $r = -.14$	SLS: $r = .21$	Time 2 = .79	B-Pride Identity: $\rho = .33$ B-Farm Attract: $\rho = .40$ B-Family Commit: $\rho = .69$

Note: K-10 = psychological distress; SLS = Life satisfaction

11.1.5. The Intergenerational Farming Impact Scale.

The Intergenerational Farming Impact Scale was generated from sections of the interviews which assessed the farming working environment (Step 1 & 2). It became increasingly clear that the intergenerational aspect for some farm families was a separate component from the general conflicts that were experienced for role completion within the farming environment in general. This distinction was made as not all farming families contributing to the research had experienced intergenerational farming in the sense that multiple generations/families operated the same farming business. Intergenerational farming was both a concern and a desire for some farming families and therefore the underlying concept of this scale was different to the other farming family scales. That is, the IF Impact Scale considered what contributed to a successful intergenerational farm environment.

The items relating to intergenerational farming generated from the interviews were originally divided into two separate scales. One of these item sets included factors which contributed to a poor intergenerational farming environment (20 items) and the other included factors which contributed to a successful intergenerational farming environment (26 items) (Step 2). The item reduction process which included assessing items for relevance and importance to population, item discrimination and internal consistency, resulted in the amalgamation of these two scales (Step 3). This process resulted in the generation of the IF Impact Scale (11 items) which included non-directional items (neither negatively nor positively worded). The If Impact Scale demonstrated good psychometric properties during the validation and reliability stages (Step 6 & 7) (Table 114).

Table 114. *Reliability and validity of Intergenerational Farming Impact Scale.*

Factor Loadings (>.3)	Validity		Reliability	
	Criterion FFRI (p<.05,r<.8)	Discriminant FFRI (p<.05)	Internal Consistency FFRI (Cronbach>.7)	Test Retest (Good: rho>.7 Mod.: rho>.6)
IFI: .54-.88	FFRI: r=-.23 RI-Inhibitors: r=-.19 RI-Moderators: r=-.29 WFC: r=-.24 Work-Family: r=-.23 Strain: r=-.23 Behaviour: r=-.22	K-10: r=-.27 SLS: r=.28	Time 1=.76 Time 2=.81	IFI: rho=.74

Note: K-10 = psychological distress; SLS = Life satisfaction

Factor analysis indicated that the IF Impact Scale was unifactorial, which was theoretically consistent as the scale assessed a single specific construct. Items included common directions for the farm, equal say, commitment, trust, and loyalty. Some of the item content can be related to similar themes within Weigel et al.'s (1987) scale of farming family stress, for example communication, teamwork, and authority. However, the scales are distinct due to the differences in the underlying construct of the scales, that is one is measuring stress and the other a successful working environment. As the IF Impact Scale is a scale of factors considered to contribute to a successful intergenerational farming environment, the scale was negatively related to work/family conflict and FF Role Impact Scale which are scales that assess factors likely to be contributing to a poor working environment and its consequences. Overall, the scale satisfied criteria for validity and reliability and contributed to an increased understanding of farming family well-being in Australia due to the scale identifying factors which appeared to protect family harmony.

11.2. Farming Family Work/Family Environment (Hypotheses 1-3)

Findings from this research supported Hypotheses 1-3. Specifically, Hypothesis 1 predicted that the farming work-home environment would be unique from other work-home environments as it would not be bi-directional in conflict. That is there would be not only work-home and home-work interference but interference would come from a third domain which is uncontrollable, such as external interference from government, and weather/climate issues). Hypothesis 2 predicted that domain conflict would be observed both between and within domains (i.e. farm and home). Hypothesis 3 predicted that conflict or interference of roles would not always have a negative impact on well-being.

Hypothesis 1 was supported as the scale of work-family interference developed from this research, the FF Role Impact Scale, was structurally different to the generic assessment of work-family conflict by Carlson et al. (2000). The construct being measured by the FF Role Impact Scale is different from that being measured by the Work-Family Conflict (WFC) scale as the term 'inter-role' conflict does not cleanly apply to this population as the farming family interface does not have the distinct directions and sources of conflict that are present within a generic work-home interface. Thus, the FF Role Impact scale did not assess 'inter-role conflict' but instead assessed those factors that prevented or interrupted role completion and this widening of focus increased the possibility of sources that could impact role completion. The numerous sources of interference, including work, home, environmental factors and personal characteristics, were identified within the Interview stage findings and thus formed the basis of the FF Role Impact Scale.

Support for Hypothesis 1 can also be derived from the underlying structures of the FF Role Impact Scale as these subscales identified factors which were specific to the

farming family work-home environment. The FF Role Impact scale consisted of three subscales, RI-Facilitators, RI-Inhibitors, and RI-Moderators. The RI-Facilitators subscale contained items describing characteristics that would have assisted role completion if the individual possessed these characteristics to the full extent. These characteristics included management skills, enthusiasm, flexibility, delegating duties, sharing workload, being well-rested, and attending courses and meetings. The possession of these characteristics would most likely lead to lower role interference and reduce the impact of role interference on well-being. The RI-Inhibitors subscale contained items that were related to negative effects on role completion. These items included things going wrong, finances, unpredictability of jobs, being emotionally drained, being stressed, work demand, time with family, weather, and employees. Therefore the presence of these factors directly contributed to increases in role conflict which could subsequently negatively impact on the well-being of individuals within farming families. The RI-Moderator subscale consisted of two factors, family tension and level of communication, which would theoretically influence the extent to which role interference was experienced. For example, the extent to which increased work demand or lack of enthusiasm would impact on role completion may be heightened by the presence of family tension. Results from data in Chapter 9 and 10 demonstrated that the FF Role Impact scale identified factors that contributed to poor well-being through increased job demands (indicated by high levels of RI-Inhibitor factors and low possession of RI-Facilitator characteristics) (Peeters et al., 2004).

Hypothesis 1 stated that the farming family work-home environment would be distinct from other work-home interfaces as it would not be bi-directional in the source of role interference. As can be seen from the characteristics of factors associated with role completion listed above, this prediction was supported as sources of interference

originated from multiple domains and personal characteristics. The source of interference included home/family responsibilities and relationships, farm responsibilities, external impacts such as weather and finances, personal skills, and personal states (e.g. enthusiasm, rested, stressed, emotionally drained). These factors have contributed to the development of a hypothesised model of role interference for this population, The Farming Family Model of Role Interference (Figure 18).

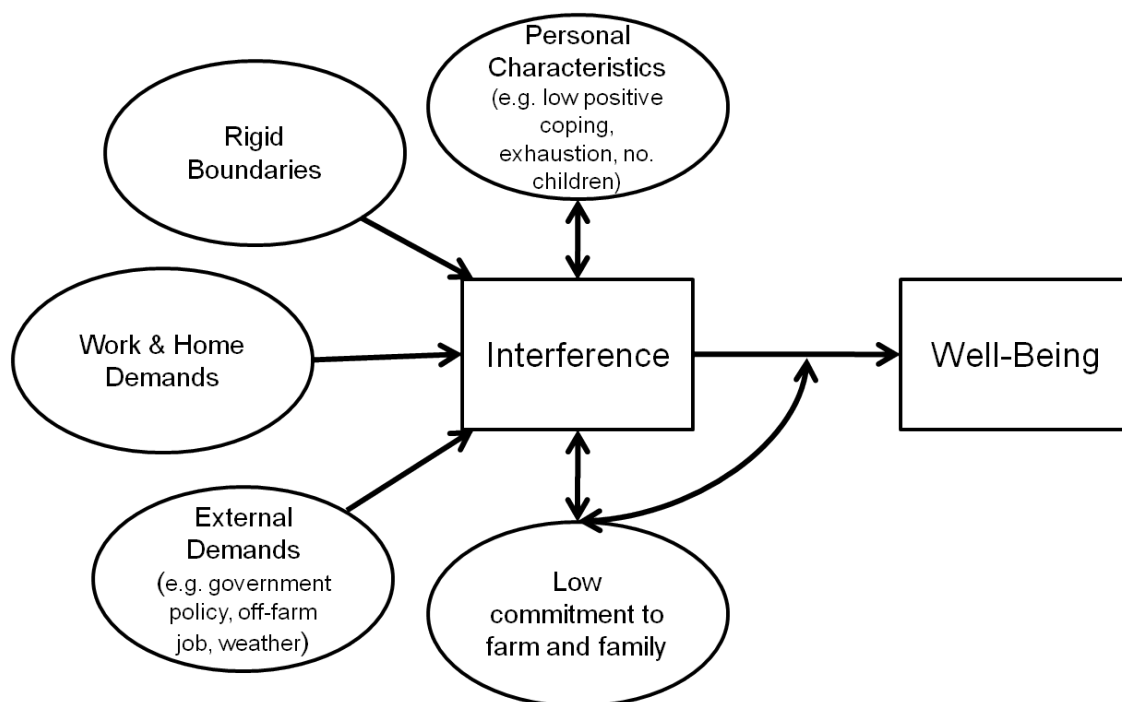


Figure 18. Hypothesised multi-dimensional model of Farming Family Role Interference.

This model implies that interference to role completion originates from multiple sources and also incorporates Hypothesis 2 as interference can be seen as being generated from both within and between domains. The key contributors to high levels of interference and, indirectly, poor well-being include personal characteristics (poor coping behaviour, level of exhaustion, the number of dependent children), rigid boundaries within the work-home interface, the demands and responsibilities within the work and home environments, external demands from uncontrollable sources, and low

commitment to farm and family (Chapter 9 & 10). This model proposes some distinct characteristics of interference for farming families that have not been identified by previous models such as those proposed by Carlson et al. (2000), Greenhaus and Beutell (1985) or Pocock et al. (2009).

Greenhaus and Beutell's (1985) unidirectional model of inter-role conflict considered the impact of the work environment on home life in relation to three sources of conflict, specifically time, strain, and behaviour. The Work Family Conflict (WFC) scale also considers conflict from the three sources of time, strain and behaviour (Carlson et al., 2000). However, this model was a 6-dimensional construct as it assessed conflict bi-directionally between the home and work domains (Carlson et al., 2000). It can be argued that these two models are similar to the Farming Family Model of Role Interference as both possess characteristics that contribute to strain (personal dispositions) and time (work demands, time with family, flexibility). However, there is no clear alignment to the behaviour facet (with the exception of management skills) of the WFC scale. Additionally, the WFC scale cannot account for interferences like weather, finances, and employees which are identified within the FF Role Impact Scale. Further, Greenhaus and Beutell's (1985) model only consider role conflict from one source and not the multiple sources identified in the farming family model.

A closer comparison can be made with Pocock et al.'s (2009) model of work-life balance, as it presents a broader conceptualisation of factors contributing to poor work-life balance. Pocock et al. (2009) identified sources of conflict that included personal characteristics (age, gender), workplace/job characteristics (work hours, industry, work demand), household characteristics (care responsibilities), spatial characteristics (traffic, rural/urban location), and community characteristics (support services). Clear similarities can be seen between the two models in their consideration of work and

home demands, external demands, and personal characteristics. However, there are also clear differences between the two models, with the Farming Family Model of Role Interference including a strong psychological component of role interference. For example, Pocock et al.'s (2009) model and the farming family model both refer to personal characteristics. However Pocock et al. (2009) refer to personal characteristics as objective observable characteristics whilst the farming family model conceptualisation of personal characteristics further includes subjective beliefs and attitudes which can sometimes be observed in behaviour. Additionally, the current model emphasises the importance of commitment to farm and family as a moderator of the impact of interference as well as the importance of flexible boundaries. This is not emphasised in Pocock et al.'s (2009) model.

Support for Hypothesis 2, which predicted that domain conflict would be observed both between and within domains (i.e. farm and home), can be identified in the results. The current research reported that both men and women identified multiple home and work roles and responsibilities, with neither men nor women responsible for only farm or home roles. This blurring of roles and responsibilities resulted in less distinct boundaries between the domains of home and work which resulted in sources of interferences occurring from both within the same domain as well as from additional external domains and sources. Maintaining distinct boundaries between the work and home has been repeatedly reported as key to preventing conflict between domains (Mirchandani, 2000; Westman et al., 2004; Rothbard et al., 2005). Conversely, current findings suggest that blurred boundaries may not necessarily lead to increased conflict and poor well-being as the flexibility of these boundaries allow for the fluidity of the roles to exist without repeated conflict (Zody et al., 2006) (Figure 18). The IF Impact Scale measured characteristics which contributed to a successful and adaptive

intergenerational farming family working environment. Underlying constructs of this scale suggested commitment, trust, and communication were sufficient to override the potential negative impact of rigid boundaries. This was proposed as commitment, trust, and communication were negatively related to role interference and positively related to well-being. Support for the positive impact of fluid boundaries is further emphasised through findings in the FF Role Impact Scale which identified flexibility as a source of interference within the subscale of RI-Facilitator. This suggests that reduced flexibility within the work/home/other domains interrupted role completion (Figure 18).

Support for Hypothesis 3, which predicted that conflict or interference of roles would not always have a negative impact on well-being, can also be identified within the results of the validity data analysis and the inferential analysis of the potential determinants of well-being. The development process of the FF Role Impact Scale identified that there were clear demands on role completion and clear facilitators that could assist in the process of role completion. The conflict exists both within and between domains for the individual (Hypothesis 2). However such interference is not necessarily perceived as always having a negative impact. This is consistent with Segmentation theory (within domain interference) and Spillover theory (positive and negative between domain interference) (Michel & Hargis, 2008; Hammer et al., 2005; Gryzwacz et al., 2002). Conflicts or interference that are not necessarily perceived as negative included time spent with family, Additionally, weather did not contribute to any form of work-family conflict, and delegating, management skills, and attending courses and meetings did not significantly negatively impact on satisfaction with life. These examples indicate that though these factors interfere with role completion, this does not necessarily indicate it is a negative conflict (positive spillover), and nor does it indicate a negative effect on life satisfaction. This lack of negative interference may be

a result of the strong emphasis on the concept of family as a key value for farming families, as Fox and Dwyer (1999) have suggested that high valuing of the family domain may change the perception of negative interference to non-negative interference.

The presence of multiple domains and sources of conflict (Hypotheses 1 & 2) can be further explored within the demographic data. Findings from within the demographic data indicated that over one third of women (35.4%) had an off-farm job and also identified as the farm helper (35.4%). These results indicate the possibility of a blurring of roles and responsibilities between the farm and home domains if the woman also identified the home domain as a primary responsibility. Theoretically, if the separation between the home and work domain is less well defined, then women should experience more family-to-work conflict (Golden et al., 2006). Additionally, the strong presence of the home environment also implies that men's role conflict should be more representative of family-to-work conflict, as found in research on dual-income couples that indicated men were more sensitive to this form of conflict (Hammer et al., 2005). However current findings indicated that there were no gender differences in conflict types as a predictor for well-being with both men and women indicating impacts of work-family and family-work conflict on well-being. Furthermore, both men and women experienced more work-to-family conflict than family-to-work conflict. The theoretical discrepancy of direction of conflict has been recognised by other research which suggests that individuals within family-owned businesses are more likely to experience increased work-family conflict (Parasuraman & Simmers, 2001). As men and women within the current research present similar patterns of conflict despite identifying with different dominant domains, this provides further support for the concept of domain fusion and the presence of domestic psychological transference and

negative and positive spillover (Fletcher, 1991; Edwards & Rothbard, 2000; Gryzwacz et al., 2002). These findings further support Hypothesis 2 due to the spillover effect between domains as men and women report interference from non-dominant domains. Support is also provided for Hypothesis 3 as positive spillover occurred which reinforces the idea that interference can have non-negative impacts on well-being.

An additional finding within the farming family work-home environment which is congruent with previous research is findings regarding the poor work-family balance that is reported by women within family businesses. These women have been labelled in the literature as “invisible women”, who are women that have played critical roles within the business though the role was not acknowledged, compensated, titled, or valued (Gillis-Donovan & Moynihan-Bradt, 1990; Hollander & Bukowitz, 1990). This description is consistent with the role of “helper” for farm women in the present research, which was identified within the interview stage as a significantly undervalued role by both men and women. Though men did acknowledge the role of “helper” there was more an expectation that these duties should be performed. This expectation was reinforced by the women themselves, with women deferring to their partner in relation to positions of ownership and farm decision making responsibilities (as identified as major roles in Chapter 5 & 8). The role of the ‘helper’ or ‘invisible woman’ was represented by a woman who constantly sacrificed time and family duties in order to complete farm roles that received little recognition or acknowledgement. This was demonstrated through themes generated from interview content which identified both an awareness of the farm demand on family and an acceptance of this demand. Past research has also identified that family businesses have a greater impact on family satisfaction as the family is constantly making sacrifices for the business, for example

through giving up time spent with family to satisfy the demands of the business (Danes & Morgan, 2004; Moshavi & Koch, 2005).

As previously described, the current research also generated an additional scale of the work-home environment, the Intergenerational Farming (IF) Impact Scale. This scale was more positively framed than the FF Role Impact Scale and assessed the extent to which an individual engaged in adaptive responses and possessed characteristics that were beneficial to the maintaining a positive and advantageous intergenerational farming environment. Assessment of an intergenerational farming environment using responses from the IF Impact Scale could lead to recommendations on what aspects of the intergenerational farming environment are impacting on well-being. According to current findings, higher levels of commitment to the farm and family and having open and honest communication between family members (items of the IF Impact Scale) were associated with higher levels of life satisfaction and lower levels of psychological distress and emotional exhaustion (Figure 18).

The IF Impact Scale also included the item 'there is jealousy amongst family members in relation to perceived favouritism', which at face value appears to be a negative characteristic of an intergenerational working environment. However, high levels of jealousy present within the intergenerational family business were also associated with increased life satisfaction, decreased depressed mood and decreased feelings of worthlessness. This finding was unusual but perhaps could be representative of justice conflict whereby there are concerns of compensation, quality of treatment, and division of resources between members (Danes et al., 1999). However this indicates that jealousy would have to present similar patterns to the IF Impact Scale items of central management (i.e. quality of treatment) and difference in workload (i.e. division of resources or compensation). This was not the case as central management and

difference in workload were not significantly related to life satisfaction, depressed mood, or feelings of worthlessness. Further, central management and difference in workload were positively related to role interference as indicated by the FF Role Impact Scale and subscales of RI-Inhibitors and RI-Moderators, whilst jealousy was negatively related to role interference (as indicated by Work-Home Interference). The positive contribution of jealousy could be better explained by process conflict where the specific talents of each family member are utilised (Jehn, 1997; Kellermanns & Eddleston, 2004). Process conflict may therefore result in jealousy due to differences in positions or types of work yet the overall impact of the business structure is still positive as the jealousy is an outcome of a positive component of the business structure.

Major themes of the IF Impact Scale, such as equality in decision making, communication, and trust, are similar to those found in research which has indicated that equality in decision-making and overall increased efficacy is beneficial to a family business (Jehn, 1997; Kellermanns & Eddleston, 2004). For example, reports of 'Equal say', 'open and honest communication', and 'trust' were related to higher reported levels of life satisfaction and lower reported levels of psychological distress. The importance of equality and efficacy within family businesses was also reflected in the positive relationship between those intergenerational farms that were centrally managed (that is, each family/generation has allotted farms which are managed overall by one family) and increased conflict. The underlying theme of central management suggests decreased efficacy and equality in decision making (Figure 18). This is also supported by Maslach et al. (2001) who indicated that individuals with low autonomy and limited involvement with decision making were more likely to experience higher levels of burnout. Findings by Crosby (1998) have also suggested that a key contributor to

farming family breakdown and disharmony is poor communication, supporting the inclusion of these factors within the IF Impact scale.

The current research has identified key differences between the scales and models of the interaction between the work and home environment of farming in comparison to more generic models of the work-home interface. Specifically, the generated data reported differences in the functioning of the farming family work and home environment and the differential impact this has on well-being. The scales of the FF Role Impact Scale and the IF Impact Scale are distinct from existing scales, such as the Work-Family Conflict Scale (Carlson et al., 2000). Further, the generated model of Farming Family Role Interference also differed from existing models of role conflict such as models proposed by Carlson et al. (2000), Greenhaus and Beutell (1985), and Pocock et al. (2009). To conclude, this section found support for Hypothesis 1 in that the farming work-home environment was different from other work-home environments as it is associated with more than two directions of interference. Hypothesis 2 was supported as domain conflict was observed both within and between domains. Finally, Hypothesis 3 was supported as role interference was not always perceived by respondents as having only negative impacts.

11.3. Predominant Stressors for Farming Families (Hypothesis 4)

As the predominant aim of the current research was to determine the impact that the farming work environment had upon farming family well-being, an associated objective was to develop a scale of farming family stressors. The development of a farming family stressor scale was also indicated as previous scales do not identify stressors that are contextually-specific for farming families. Hypothesis 4 predicted that the stressors identified within an Australian farming family sample would differ to those

identified within previous scales, such as the Farm Stress Survey (Eberhardt & Pooyan, 1990). As noted in a previous section in this chapter, the FF Stressors Scale successfully met the predetermined criteria for satisfactory levels of validity and reliability as it correlated with the Farm Stress Survey (FSS) (Eberhardt & Pooyan, 1990) at a level which indicated that the two scales were related but distinctly different. The subscales of the FSS assess stressors relating to hazardous working conditions, geographic isolation, personal finances, time pressures, climate conditions, and general economic conditions (Eberhardt & Pooyan, 1990). All these stressors are specifically farm related, whereas the stressors identified by Australian farming families in the current research clustered around themes of external/financial pressures, family or relationship concerns, future changes, daily hassles, and external uncontrollable concerns. These themes not only included stressors relevant to farm work, but also included stressors relevant to the family, personal states, future uncertainty, and perceptions/interactions with others. Stressors unique to the FF Stressors Scale (Eberhardt & Pooyan, 1990) included unreliable communication technology, exhaustion, talking about stress, distance from family, family duties, maintaining relationships, when to retire, succession planning, working with family, others errors, other farmers, future of industry, Australian public and government lack of value of farmers/industry, price mark up in supermarkets, amount of foreign products on the market, and changes in technology. The FSS also had unique items not included in the FF Stressor Scale including handling and crop storage, government farm price supports, and government export policy (Eberhardt & Pooyan, 1990). These item themes were included in the earlier stages of the development of the FF Stressor Scale but were not identified as important or relevant by participants and therefore were excluded from the final item set. These findings support Hypothesis 4 as stressors identified by the FF Stressor Scale were not represented within existing scales.

The leading stressor identified by farming families in the current study was the perceived “lack of care by the public and government”. The rating of “lack of care from public and government” suggests feelings of being undervalued, which was articulated in the interview content and has been identified in previous research as a key stressor (Gunn, 2008; Alpass et al., 2004). Themes within the interview content operationalised this stressor to include factors such as lack of understanding, false perceptions of wealth, education level, environmental vandalism, and an over-emphasis on an easy, idealistic country life. These factors are argued to be part of the stereotypical view of the farming and grazier family in Australia, as the public perception of country and farming life has not adjusted to reflect the directions the industry has taken (Davidson & Brodie, 2005; Pritchard & McManus, 2000; Cocklin, 2005). The potential impact of this stressor on well-being can be compared to previous research which has shown that lack of reward for effort can often contribute to burnout (Maslach et al., 2001).

Though men and women provided similar descriptions of the most significant stressors of financial and future concerns, the reason why these items caused concern differed between men and women. That is, in the interview phase it was noted that men and women identified similar stressors, yet men were more concerned about outcomes for the farm whilst women were mainly concerned with impacts upon family well-being and lifestyle. This further supports the concept of a fused, although gendered, work-family environment that is subject to spillover and psychological domestic transference (Edwards & Rothbard, 2000; Gryzwacz et al., 2002; Fletcher, 1991). That is, despite differences in the domain that the individual identified as their primary responsibility, the farm itself was still the principal source of stressors on life and well-being. Women were more likely than men to identify unreliable communication technology, isolation from people and services, health/safety/welfare of self or family as result of farm,

succession issues, working with family, economic stability, and the cost-profit margin. Many of these items clustered within the family/relationships concern subscale, supporting the suggestion that women were more focused on the impact of farm stressors on family well-being.

There was some consistency with previous research as participants in this study identified the same stressors as in past research. These included personal finances, heavy workload, time pressure, and climate conditions (Keating, 1987; Eberhardt & Pooyan, 1990; Alpass et al., 2004; Firth et al., 2007). However this list did not encompass all of the most highly rated stressors identified in the current research. Glasscock et al. (2006) identified role conflict, administrative burden, unforeseen errors, and work delays as key themes of stressors for farmers. These stressors were also reflected in some stressors identified within the FF Stressor scale such as unpredictability of jobs (unforeseen errors, work delays), others errors (unforeseen errors), working with family (role conflict), or maintaining relationships (role conflict). Additionally, Gunn (2008) and Clarke and Morgan's (2010) research into Australian farmers has identified stressors such as government regulations, isolation, climate conditions, role conflict, financial pressures, workload, strain on relationships, family involvement in business, and external pressures from 'outsiders'. These findings are congruent with many stressors identified within the FF Stressor Scale, particularly the S-Family subscale and the perceived lack of care or value by the public and government as the most highly rated stressor. Gunn's (2008) identification of the farmer's perceived external pressure from 'outsiders' relating to their understanding of farming life resonates with major themes presented within the interview content. This demonstrates support for content validity of the FF Stressor Scale as the scale includes a number of items which have been previously separately identified by different researchers.

In relation to the impact of stressors on psychological well-being, previous research has suggested that men may be more sensitive to economic change than women and therefore financial stressors should have a greater impact on men's well-being than women's well-being (Swami et al., 2008; Sher, 2006). This was inconsistent with the findings from the current research which indicated that though financial-related items were ranked higher by both men and women of farming families, items relating to family or future concerns had a stronger negative impact than financial concerns on well-being (i.e. life satisfaction, psychological distress, and burnout) regardless of gender. The items with a strong relationship to scales of well-being included "maintaining relationships", "providing for family", "exhaustion", "talking about stress", "concerns over retirement", "workload", and "when to retire". "Maintaining relationships" and "providing for family" demonstrated a strong negative relationship with life satisfaction. This relationship between stressors and well-being is representative of the fusion between the two domains of home and farm as it implies the importance of minimising or modifying the impact of the challenges of farming life on family well-being. These concerns are also in accordance with the observation that the family system is a permanent system to which individuals have high emotional attachment (Stafford et al., 1999). However, the fusion of the two domains indicated that the farming business system is also a permanent system which engenders high emotional attachment, which is in opposition to Stafford et al. (1999) findings. This difference in perception of the business system by farming families can be demonstrated through the strong attachment to the farm that was identified in items within the FF Buffer scale.

The relationship between the items "maintaining relationships", "concerns over retirement", "workload", "talking about stress" and "exhaustion" with the emotional

exhaustion component of Maslach's Burnout Inventory-General Survey (MBI-GS) is consistent with previous research. That is, previous research has indicated that high job demand in terms of emotional demand, work overload, role ambiguity, and role conflict has a direct relationship with burnout (Schaufeli & Peeters, 2000; Xanthopoulou et al., 2007; Cordes & Dougherty, 1993; Maslach et al., 2001). The relationships between the items of 'when to retire' and 'concerns over retirement' with the cynicism component of the MBI-GS is also reflective of a major theme identified within the interview phase. Findings from the interview phase suggested that those respondents who were less satisfied with their life or work roles were more likely to be older. This age trend was thought to be a result of individuals nearing retirement and having regrets regarding the next generation not entering the farming business or the uncertainty involved in financially managing retirement. As a result, the individual may then develop a cynical attitude towards farming due to a perceived lack of appreciation or compensation for years of hard work or the commitment and connection of the family to the farm.

Across all of the developed scales, the professional efficacy component of burnout did not present many or strong relationships with other scale totals or subscales. However, the few stressors that professional efficacy did correlate with included "isolation from people and services", "future of industry", "market control", "foreign products on the market", "farm financial situation", and the subscale S-Financial Concerns. "Isolation from people and services" was the only stressor that negatively correlated with professional efficacy. This suggests that social or community connection is important for protecting individuals from burnout (i.e. cynicism and emotional exhaustion) perhaps by increasing the individual's sense of value, control and personal capabilities within their work. This may be the case as greater access to services, health services, and social interactions may reaffirm the individual's sense of value and place

within the community. This also suggests that diminished connectedness may increase the risk of experiencing burnout as increased professional efficacy helps protect against the negative experiences of emotional exhaustion and cynicism (Maslach et al., 2001). The other stressors, “future of industry”, “market control”, “foreign products on the market”, “farm financial situation”, and the subscale S-Financial Concerns, were positively correlated with professional efficacy and these mostly centred on financial stressors which were outside of individual control and a permanent part of a farming lifestyle. In order for the individual to perceive farming as a viable way of life, the individual would have to acknowledge this permanency, accept the level of control or lack of control over some stressors and elements of the lifestyle, and have a tendency to place greater value in their work. Research has indicated that lack of perceived control can result in poor coping behaviours and poor health outcomes (Kopp & Re`thelyi, 2004). However, the associations between the aforementioned stressors and professional efficacy suggest that these negative outcomes can be moderated or mediated by appropriate management behaviours, such as accepting the lack of control. These findings are consistent with the finding that interference is not always negatively experienced as scores on the S-Financial Concerns scale had weaker correlations with indicators of well-being (i.e. life satisfaction, psychological distress, and burnout) than scores on other stressor subscales. This pattern suggests that awareness of the stressors or conflicts may result in greater acceptance of the stressors and a decreased negative impact of those stressors on well-being (Clarke & Morgan, 2010; Nomaguchi, 2009).

Those who reported a higher level of physical health history, such as workplace injury or heart disease, also reported higher levels of S-Future and S-Daily Concerns the emotional exhaustion and cynicism subscales of the MBI-GS, suggesting a high risk of burnout. The positive relationship between stressors and poor physical health,

particularly a history of heart disease or high blood pressure, is congruent with previous research regarding stress and its effect on physical health (Kouvonen et al., 2005; Lallukka et al., 2008; Fletcher, 1991; Smith et al., 2009; Kopp & Re`thelyi, 2004; Kiecolt-Glaser et al., 2002). For example, research has indicated chronic stress results in an increased risk of cardiovascular disease (McEwan, 2004). Those who reported higher levels of a history of mental health problems, such as depression, anxiety, or suicidal thoughts, also reported higher levels on the FF Stressor Scale, particularly S-Family, S-Future and S-Daily Concerns and the Farm Stress Survey, particularly for stressors relevant to personal finances and time pressures. Those who had higher reported levels of a history or mental health problems also had higher levels of psychological distress, and the emotional exhaustion and cynicism components of burnout as well as lower levels of life satisfaction. Previous research lends support to this observed pattern with life satisfaction and depression reported to have a strong negative linear relationship (Koivumaa-Honkanen et al., 2004).

This section has discussed the psychometric properties of the Farming Family Stressor scale along with its relationship with other variables within the current study and with findings within the literature. The relationship between mental health and the experience of stressors emphasises the impact that work stress has on mental health and well-being (Maslach et al., 2001; Xanthopoulou et al., 2007; Swatt et al., 2007; McMillan et al., 2004; Fox & Dwyer, 1999). This observed relationship reiterates the importance for future research with farming families to focus on these factors. Additionally, this section also outlined the support for Hypothesis 4.

11.4. Differential methods of coping (Hypothesis 5)

Hypothesis 5 predicted that the Australian farming family sample would identify coping behaviours or strategies that would be different in nature and effectiveness than other methods of coping identified in the literature for the general population. As previously stated in outlining the development of the Farming Family Cope Scale, the coping themes identified within the FF Cope scale were different from those within the Brief COPE Inventory (Carver, 1997). Within the FF Cope Scale, participants indicated prioritising, remaining positive, recognising achievements, and enjoying work as some of the most useful coping strategies. This is, to some degree, similar to the coping behaviours and strategies such as planning, active coping, acceptance, and positive reframing endorsed by respondents to the Brief COPE Inventory, however there were differences. The FF Cope Scale included subscales that predominantly had a different focus than the subscales of the Brief COPE. The subscales of the FF Cope Scale referred to coping behaviours and strategies where the individual was aware of the stressors and re-evaluated their current position to determine the best course of action (C-Reassess), the individual would try to view the situation more positively (C-Positive Reframe), the individual needed to have a connection to others (C-Community Connectedness), the individual was aware of and preoccupied with a problem but could not address the concern (C-Aware), or where the individual was mentally or physically distracted from the stressor.

Unique coping items were also generated within the FF Cope Scale, such as 'watching animals', 'knowing you're not alone', 'commitment to work', 'go with the flow', 'enjoy work', and 'remembering the past situations'. Items within the FF Cope scale assessed an overall theme of farming commitment and sense of community in terms of their utility as an important coping resource. This approach is consistent with

previous research which identified a sense of community as an important buffer against stress and depressed mood (Hobfoll et al., 2002). There were also a number of Brief COPE Inventory strategies that did not have any strong relationships, positive or negative, with the themes of the final content of the FF Cope, such as venting, planning, and acceptance (Carver, 1997).

Further support for the uniqueness of the FF Cope scale is found in the cross-correlations with subscales of the Brief COPE inventory. The nature of these correlations demonstrates that each FF Cope subscale could not be fully explained by an individual existing coping strategy identified in the Brief COPE. For instance, those who scored higher on C-Reassess coping attitudes and behaviours were more likely to use active coping, emotional support, instrumental support and planning, and less likely to use self-distraction, denial, and behavioural disengagement. These relationships between C-Reassess and the Brief COPE subscales suggest that C-Reassess may represent an active or problem-focused style of coping for this population (Morrison et al., 2008). Those who used the C-Positive Reframe coping styles were more likely to use active coping, positive reframing, and humour, and less likely to use self-distraction, behavioural disengagement, and self-blame coping styles from within the Brief COPE. This pattern of coping behaviours and strategies could be representative of dispositional optimism and hardiness as protective factors against stressors and challenges (Jones & Creedy, 2008; Kobasa, 1979). The comparison to hardiness is emphasised in the components of each factor, for example hardiness involves focusing on the positive aspect of the lifestyle and C-Positive Reframe included the item “enjoy work” (Leipert & Reutter, 2005). Those who scored higher on C-Community Connect were more likely to use active coping, emotional support, instrumental support, and religion, and less likely to use behavioural disengagement coping strategies and

behaviours from the Brief COPE. This pattern of coping behaviour could be representative of hardiness and attentional coping as those who scored higher on C-Community were also likely to engage in active and instrumental coping strategies (Jones & Creedy, 2008; Kobasa, 1979; Morrison et al., 2008). Additionally, this pattern of coping behaviour could also reflect the collectivist nature of rural communities as higher levels of a psychological sense of community have been shown to be a buffer against stress (Roussi et al., 2006; McMillan & Chavis, 1986; Kashima et al., 2004).

The patterns of coping behaviours and strategies associated with the C-Reassess, C-Positive Reframe and C-Community Connect subscales suggest that these farming family specific coping strategies are adaptive strategies and, as a result, those who utilise these methods are more likely to have better well-being. This can be supported by the correlations of these three subscales with increased life satisfaction and increased sense of professional efficacy (the protective component of the MBI-GS). Previous research has shown that a shared sense of self-efficacy within communities, social support, community connectedness, and perceived control are important factors in the protection against the impacts of chronic stressors on physical and mental health and well-being (Boyd et al., 2008; Hobfoll et al., 2002; Piko, 2006a; McMillan & Chavis, 1986; Kopp & Re`thelyi, 2004). The negative linear relationships between C-Reassess, C-Positive Reframe, and C-Community Connect and self-distraction, behavioural disengagement and denial also reflect findings from previous research. Specifically, researchers have suggested these maladaptive coping strategies and behaviours have a significant negative impact on quality of life and increased risk of depressive symptoms and psychological distress in patients with heart complications as well as in farming populations (Klein et al., 2007; Gunn, 2008). Therefore, engaging in C-Reassess, C-

Positive Reframe, and C-Community Connect may be protective for physical health and well-being.

Those who use C-Reassess coping behaviours also reported lower levels of psychological distress and burnout specifically in relation to depressed mood, worthlessness, and cynicism. Further those who used C-Reassess coping behaviours were more likely to have a lower incidence of self-reported history of depression. Such a relationship is supported by previous research which has reported that those who use active and problem-focused coping strategies were more likely to have a better quality of life than those who did not use these coping strategies (Fritzsche et al., 2007). The C-Positive Reframe coping behaviours and strategies had the strongest relationship with well-being as C-Positive Reframe additionally related to decreased psychological distress, decreased likelihood of developing burnout (lower levels of emotional exhaustion and cynicism), and decreased likelihood of reporting a history of heart disease or depression. Again these relationships reflect previous findings from research on hardiness. Hardiness is connected to C-Positive Reframe as the C-Positive Reframe coping behaviours are directed towards making the best of a situation despite challenges. Research around hardiness has reported that high levels of hardiness are related to lowered rates of illness in situations where the individual is experiencing high levels of stress (Kobasa, 1979). Additionally, the relationship between C-Positive Reframe and indicators of well-being is also related to research that identifies the protectiveness of dispositional optimism against the experience of burnout, role conflict and poor physical health outcomes (Makikangas & Kinnunen, 2003; Scheier et al., 1989).

Those who scored higher on C-Aware were more likely to use positive reframe and religion, and less likely to use self-blame and substance use coping strategies. The

coping strategies that were associated with C-Aware suggested that individuals who use these behaviours or strategies were more likely to accept their situation but less likely to actively engage in coping methods to address the challenges or stressors. As a result, the individual would be more likely to 'wait out' the stressor or 'go with the flow'. This description suggests that C-Aware is less of an active or problem-focused coping behaviour or strategy and more of an emotion-focused coping strategy (Morrison et al., 2008). The items of this subscale suggest that the individual is employing these strategies or behaviours due to a perceived lack of control of the stressor. This is reflected in the subscale content which included the item "accept level of control" and is consistent with previous research that indicated that emotion-focused coping is most appropriate when the stressor is meaningful and not controllable (Carver et al., 1989). The C-Aware subscale demonstrated beneficial relationships with well-being in the associated increased satisfaction with life and decreased risk of psychological distress and emotional exhaustion. Additionally, the C-Aware subscale was also associated with lower rates of a previous self-reported history of heart disease or depression. These relationships were consistent with previous research which suggested that positive emotion-focused coping is associated with good emotional well-being and quality of life (Fritzsche et al., 2007).

Those who scored higher on C-Disengage coping strategies and behaviours were more likely to use self-distraction, substance use, venting, self-blame, and humour coping strategies from the Brief COPE. Additionally, those who used C-Disengage were more likely to place their well-being at greater risk, with the coping behaviours suggesting key themes of distraction, disengagement, and lack of acceptance. These associated themes suggest that the C-Disengage subscale may be representative of an avoidant coping style (Morrison et al., 2008). Previous research has suggested that

individuals who use disengaging, avoidant or distracting coping styles are more likely to present with depressive symptoms, have a poorer quality of life, and engage in riskier behaviours such as drug/alcohol use than those who don't (Klein et al., 2007; Stein & Nyamathi, 1999). The findings of Gunn (2008) from an Australian farming sample suggest that farmers who used behavioural or mental disengagement, venting, suppression of competing activities, and substance use as coping strategies were more likely to report higher levels of psychological distress. However, in the present sample, the C-Disengage coping subscale was only significantly related to an increase in motor agitation (subscale of K-10), possibly suggesting that those utilising this coping behaviour have become frustrated. The negative impact of C-Disengage coping behaviours on well-being may have been lowered by the "watching animals" item of this subscale as this item appears to be a protective factor due to its relationship with the humour coping behaviour and may be buffering the impact of the other two items. Therefore, the C-Disengage subscale may measure both positive and negative disengagement.

The relationship between the C-Disengage subscale and the outcome of motor agitation may be supported by the relationship between C-Disengage and stressors. C-Disengage was the only coping subscale that positively correlated with all five FF Stressor subscales. Specifically, C-Disengage was positively related to the stressors "isolation", "market control", "others errors", "other farmers", "Australian public and government lack of care", and "chemicals in the industry". This implied that as the number of stressors increased, particularly those where the individual has limited control over the outcome, there is likely to be an increased sense of frustration. This increased sense of frustration is possibly due to the limited opportunity for addressing these challenges and may result in the individual having to disengage in order to cope.

This hypothesis is consistent with previous research which suggests that uncontrollable stressors can result in withdrawal and learned helplessness (Kopp & Re`thelyi, 2004). The outcomes of learned helplessness and withdrawal may be relevant for those who persistently disengage without drawing upon other adaptive coping behaviours to address challenges.

This pattern of relationships provides support for the second part of Hypothesis 5 which stated that coping strategies employed by farming families would be different in their effectiveness compared to other identified methods of coping. In this case, the perceived maladaptive coping strategy of disengaging behaviour can have both positive and negative outcomes. That is, though self-blame and self-distraction are generally regarded as maladaptive coping styles that negatively impact well-being (Klein et al., 2007), this may not be the same for the disengaging behaviours described in the FF Cope subscale. That is, the C-Disengage behaviours may be useful in a farming family context as it allows the individual to manage the uncontrollable stressors and challenges that exist within farming life. Nonetheless, C-Disengage is likely only to be useful temporarily as items of this subscale still contributed to poorer well-being. That is, C-Disengage included the item “use alcohol to wind down”, which is related to a self-reported history of suicidal thoughts and is demonstrated by previous research to be associated with work stress, low autonomy, depressive symptoms and decreased life satisfaction (Swatt et al., 2007; Weisner et al., 2005; Frone, 2008; Koivumma-Honkanen et al., 2004). Additionally, the item “get away” was associated with increased cynicism, placing the individual at possible increased risk of burnout (Maslach & Jackson, 1981).

Individual items of the FF Cope Scale that were significantly correlated with well-being included “enjoy work” and “professional help” (this was not necessarily a health

professional but could be an agronomist or an accountant). Specifically, enjoy work and professional help were associated with increased life satisfaction and decreased levels of psychological distress, burnout (negatively relating to emotional exhaustion and cynicism and positively relating to professional efficacy), and a decreased self-reported history of depression, with “enjoy work” additionally related to a decreased history of heart disease. This reflected themes of hardiness and social support as the individual is persevering despite challenges due to their enjoyment in their work (hardiness) and as the individual is seeking assistance (social support). Both hardiness and social support have been consistently associated with better levels of well-being and are especially valuable attributes and resources in rural communities (Kobasa, 1979; Hobfall et al., 2002; Leipert & Reutter, 2005; Boyd et al., 2008). Gender differences were also noted between different coping behaviours, with women more likely than men to use “have a break”, “go with the flow”, “exercise”, self-distraction, and instrumental support coping behaviours. This is consistent to some extent with previous research which suggested women were more likely than men to use avoidant coping strategies. However if men were to employ avoidant strategies they were more likely than women to use alcohol or other drugs (Stein & Nyamathi, 1999). This was consistent with findings within the current research which reported men were more likely to use “alcohol to wind down” than women. With the exception of this avoidant coping behaviour, the coping behaviours men were more likely to use than women were adaptive behaviours such as “enjoying work”, “being committed to responsibilities”, and “talking to partner”.

Overall the strongest relationships between the Brief COPE Inventory coping strategies and the FF Cope Scale were the negative relationships between the FF Cope subscales and the maladaptive coping strategies of the Brief COPE Inventory (that is self-distraction, behavioural disengagement, denial, and self-blame) (Carver, 1997).

This suggests that the FF Cope may reflect the underlying attitudes and values of the farming family population, such as those relevant to hardiness and resilience which emphasise acknowledging challenges and continuing despite adversity. A sense of belonging, community, and value in work seemed to increase resilience against stress and burnout suggesting that there may be an additional buffering component directly related to the farming lifestyle. The current section has provided evidence that the generated scale of farming family coping behaviours and strategies was contextually unique to existing scales. This demonstrated support for Hypothesis 5 as identified coping behaviours were both unique and differential in effectiveness to traditional coping strategies.

11.5. The farm as a buffer (Hypotheses 7 & 8)

The protective buffering component of the farming lifestyle was identified as a key theme within the interviews, resulting in the generation of Hypotheses 7 and 8 (Chapter 5). Hypothesis 7 predicted that lowered connection to farm (lowered commitment) will have a negative impact on well-being. Hypothesis 8 predicted that low levels of commitment to or identification with farming would moderate the relationship between negative role interference and well-being, resulting in poorer outcomes of well-being in comparison to those who have high levels of commitment to or identification with farming. In order to determine support for these hypotheses, the relationships between the FF Buffer Scale and the other scales of coping, stress, role interference, and well-being will first be discussed.

To assess the effect of commitment and identification to farming on well-being, items related to these themes were generated and resulted in the production of the FF Buffer Scale. Factor analysis of this item set produced three subscales, namely B-

Farming Attractions, B-Family Commitments, and B-Pride in Identity. These factors explained why a person continued farming despite stressors, conflicts, and other challenges. B-Farming Attractions and B-Pride in Identity were positively related to the FF Cope subscales of C-Reassess, C-Positive, C-Community, and C-Disengage, whilst B-Family Commitments only corresponded positively with C-Community and C-Disengage. Thus, all three subscales of the FF Buffer Scale positively correlate with C-Community, which includes characteristics of “knowing you’re not alone” and ‘belonging to a group’. Also, all three subscales of the FF Buffer Scale positively correlate with C-Disengage coping subscale. This subscale of coping involves both positive and negative forms of disengaging that are likely to be employed in response to uncontrollable stressors. The strong relationships with C-Community Connect and C-Disengage emphasises the similarities of the underlying structures of the FF Buffer Scale with a sense of community and belonging (C-Community) and the need to continue despite adversity (C-Disengage) being important buffers for people of rural communities (McMillan & Chavis, 1986; Boyd et al., 2008; Kashima et al., 2004; Roussi et al., 2006). Additionally, the relationship with disengaging coping behaviours suggested that there are other elements of the farming lifestyle that allow the individual to remain committed to farming despite the lack of control.

All three buffer components were positively associated with the FF Stressor subscale of S-Uncontrollable Concerns, with B-Farming Attractions and B-Family Commitments also positively related to S-Financial and S-Daily Concerns. This finding also lends support to the suggestion that the lack of control and acceptance of the lifestyle requires a strong commitment and identification with farming (Kobasa, 1979). B-Farming Attractions and B-Family Commitment also helped buffer the negative effects of FF Role Impact and all three buffer characteristics were associated with a

better intergenerational farming environment. This may indicate that high career and family involvement act in a way so as to buffer the impact of role conflict or interference (Parasuraman et al., 1996; Fox & Dwyer, 1999; Greenhaus et al., 2001) (Figure 19). The FF Buffer scale and subscales did not relate to any facet of work/family conflict, possibly indicating that the WFC scale does not provide an accurate depiction of the farming family work-home environment. The lack of relationship with the WFC scale could also indicate that inter-role conflict between work and family domains was an expected part of the farming lifestyle and therefore had little bearing on the motivations for continuing farming (Nomaguchi, 2009).

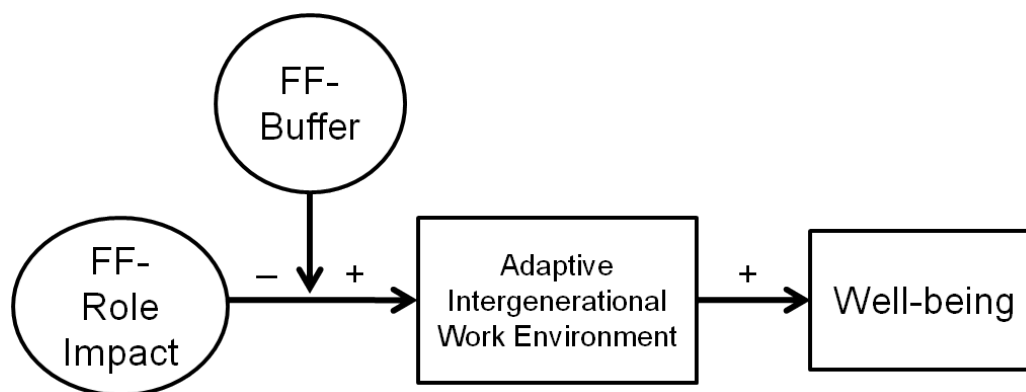


Figure 19. The role of the FF-Buffer Scale in improved working environment and farming family well-being.

The interpretation of the relationships of the FF Buffer Scale with coping behaviours, stressors, and role interference suggests that continuing farming and coping with farming does not always follow a rational pathway. For example, though the underlying factors of the FF Buffer Scale were positively related to adaptive and protective coping behaviours (i.e. C-Community Connect), these factors were also positively related to stressors (i.e. S-Uncontrollable, S-Financial, and S-Daily). This suggests that high levels of commitment and identification with farming protects well-being but also places well-being at risk. This suggestion further supported by the relationships of the buffers to the Brief COPE Inventory coping behaviours and

strategies, with the FF Buffer subscales negatively related to positive coping styles and positively correlated to negative coping styles. Specifically, high levels of B-Pride in Identity were associated with low levels of active coping. B-Family Commitment was associated with high levels of denial and low levels of acceptance. B-Pride in Identity and B-Family Commitment were also associated with low levels of planning. These relationships suggest that those who presented high levels of buffering characteristics were more likely to be in denial and employ avoidant coping styles, which research has shown to have negative impacts on well-being (Gunn, 2008; Klein et al., 2007; Stein & Nyamathi, 1999; Fritzsche et al., 2007). Beneficial associations were also noted, such as B-Pride in Identity being related to low levels of behavioural disengagement and B-Farming Attractions being related to low levels of venting. The conflicting relationships of the buffer characteristics with both adaptive and maladaptive coping behaviours and strategies continued in relationships to indicators of well-being. For example, higher levels of the FF Buffer total, B-Pride in Identity, and B-Family Commitment was associated with higher life satisfaction, higher levels of B-Pride in Identity and Buffer total related to lower levels of worthlessness, and higher levels of B-Farming Attractions were associated with higher levels of professional efficacy (a protective factor for burnout). However, higher levels of B-Farming Attractions were also related to higher levels of emotional exhaustion (component of burnout). These relationships are consistent with research regarding hardiness and resilience, in that previous research has defined hardiness as an individual who would continue despite adversity, had a sense of commitment to the lifestyle, and focused on the positive aspects of the lifestyle. These characteristics of hardiness are hypothesised to contribute to resilience building processes (Leipert & Reutter, 2005).

The apparent irrational pathway or conflicting relationships which were associated with the FF Buffer Scale can be further recognised through the individual item relationships with scales of well-being. Individually, the strongest buffer items for indicators of well-being were 'being a landowner' and 'enjoying work', as both factors strongly related to increased life satisfaction, decreased psychological distress, and higher levels of 'enjoying work' were related to lower levels of burnout (high professional efficacy, low cynicism). The individuals 'pride in ownership' was found to be a strong buffer against poor well-being this is supported by past research which has indicated that a connection to land is a component of building resilience in rural communities (Hegney et al., 2007). In contrast to these positive and protective relationships, though the buffer item '[farming] contributes to people' was associated with higher levels of professional efficacy, this item was also positively related to higher levels of emotional exhaustion. Further, the item 'who I am' was the only buffer item that positively related to psychological distress. This suggested that individuals who strongly endorsed this item may experience cognitive dissonance as a result of their belief that farming is a part of who they are while they simultaneously struggle to cope with the stressors and challenges of the industry. This is consistent with the suggestion that unlike other family businesses, the farming business is considered a permanent system like the family system (Stafford et al., 1999) which is why a dissonance may occur. That is, though the person perceives the business system to be a permanent system, the challenges of the industry which negatively impact the success of the business dispute this perception. Another notable relationship was that of the item "children encouraged into farming", which was associated with increased life satisfaction. This was consistent with a strong theme presented within the interview phase where those individuals that seemed less satisfied and committed to farming,

particularly women, were strongly opposed to their children being involved in the farming industry and actively encouraged them not to enter the family business. This would have implications for the women's' resilience and hardiness as a function of these beliefs they expressed attitudes that suggested low commitment and identification with farming. The positive relationship of the item "children encouraged into farming" to life satisfaction may be explained by the negative relationship of this item with planning, acceptance, and active coping behaviours. This again suggested that the decision to continue farming does not necessarily follow a rational pathway. That is, people may continue to farm and wish future generations to continue due to the connection to the land and farm rather than by consideration of the costs and benefits of the lifestyle that they, themselves, experience (Hegney et al., 2007). The pathway may also be irrational as though the primary motivation to participate in a farming family business is for improved family lifestyle, it is often the family who make sacrifices (e.g. time spent together) for the benefit of the business. This observation is consistent with other research on family businesses (Parasuraman & Simmers, 2001; Danes & Morgan, 2004; Moshavi & Koch, 2005). Additionally, the apparent negative impact on health and well-being of the buffering characteristics could also be reflective of rural communities conceptualising health differently, for instance perceiving a healthy individual as one who is productive, a strong role performer, and stoic (Taylor et al., 2008).

All this suggests that the content of the FF Buffer Scale reflects characteristics which contribute to the hardiness and resilience of the farming family population. This is demonstrated through Leipert and Reutter's (2005) definition of building resilience and hardiness which can be achieved through perseverance, continuing despite adversity, focusing on positive aspects of lifestyle, and a sense of commitment to

difficult lifestyle. These factors which define hardiness and resilience are represented within the farming lifestyle and the values and attitudes of the farming family population. Overall, the content of this scale includes factors that seem to be protective as research has indicated that developing resilience and high levels of hardiness are important components in moderating the negative effects of stress (Kobasa, 1979, Hegney et al., 2007; Leipert & Reutter, 2005). It can be understood that the components of the FF Buffer scale indicated why, for some, it is worth continuing to farm. Specifically, the sense of belonging and value of work and how this sense of value contributes to greater life satisfaction appears to buffer some of the negative aspects of the farming lifestyle. As McCann stated in Davidson and Brodie (2005), farming families remain in the industry despite it being considered an industry in decline. One factor that enables this to happen is probably the importance of farming to the identity of a farmer. This identity may arise from the concept of heroism associated with battling a hard land or difficult environment, which aligns with the view of the pioneers of rural Australia (McCann in Davidson & Brodie, 2005).

This section has described findings that constitute partial support for Hypotheses 7 as although high scores on the FF Buffer Scale were related to good well-being, characteristics of the FF Buffer Scale was also positively related to emotional exhaustion (component of burnout) and the presence of farm family stressors. These relationships were identified as reflecting an irrational pathway for committing to and identifying with farming as buffering characteristics both protected and placed well-being at risk. Partial support was also identified for Hypothesis 8 as scores on the FF Buffer Scale and subscales were negatively related to scores on the FF Role Impact Scale, suggesting the commitment to and identification with farming protected farming families against role interference. Full support for this hypothesis regarding the

moderating effect of the FF Buffer Scale will be discussed in Chapter 12. Overall, this section contributed to a greater understanding of motivations for farming which is important knowledge for hypothesising steps towards improved well-being.

11.6. What type of person becomes and remains a farmer? (Hypothesis 6)

Hypothesis 6 predicted that those high in conscientiousness, openness to experience and agreeableness and low in neuroticism would report better well-being than those that did not have these characteristics. Support was found for this hypothesis as the farming men and women in this sample reported high levels of the traits of conscientiousness and agreeableness, with conscientiousness significantly higher than openness to experience and neuroticism. All this is consistent with previous research on farmers (Judd et al., 2006; Austin et al., 2005). Previous research has suggested that lower levels of neuroticism and openness could be indicative of resilience, high levels of attitudinal barriers to seeking help, and lower levels of family-to-work conflict (Judd et al., 2006; Austin et al., 2005; Wierda-Boer et al., 2009). This is supported by the current research which found that higher levels of family-to-work conflict are associated with higher levels of neuroticism. Nonetheless, though farming families rated openness to experience significantly lower than conscientiousness, the reported level of openness to experience suggested a moderate presence of this trait in this population.

Participants who reported higher levels of conscientiousness were less likely to report experiencing family-to-work conflict but more likely to report experiencing demands on their role completion (possibly as a result of a sense of duty), a well structured intergenerational farming business (as measured by the IF Impact Scale), strong commitment to farming, and using commitment and acceptance of responsibilities to cope with stress/challenges. Previous research has also suggested that

highly conscientious individuals are more likely to resolve conflicts, have good business management, use duty to cope, and have a strong sense of commitment (Judd et al., 2006; Austin et al., 2005; Kobasa, 1979). Additionally, participants who scored more highly on agreeableness in the present study were less likely to experience behaviour-based conflict and more likely to accept responsibility, which is also consistent with previous research (Van de Vliert & Euwema, 1994). Higher traits of conscientiousness and agreeableness were positively related to life satisfaction, professional efficacy, and being less likely to report a history of poor mental health. However, higher traits of conscientiousness and agreeableness were also positively related to increased emotional exhaustion and an increased likelihood of reporting a history of poor physical health. This is inconsistent with previous research which suggests those low in agreeableness and conscientiousness are more likely to perform risky health behaviours (Vollrath et al., 2002). However, Vollrath et al. (2002) also stated that people high in agreeableness and conscientiousness were also more likely to be optimistic about future health outcomes, perceiving that they had lower susceptibility for poor health outcomes. Therefore, as the current sample predominantly rated high in traits of agreeableness and conscientiousness then perhaps the sample was also unrealistically optimistic about health outcomes. This perception of lower susceptibility to poor health outcomes may mean that the individual would continue working without appropriate precaution and thus result in the poor health outcomes reported by those high in conscientiousness and agreeableness.

The description of the personality characteristics of farming family participants in this research is congruent with the farming families' concepts of what constituted a successful farmer (Chapter 5). Specifically, respondents reported that they perceived a successful farmer to be an individual who accepted limitations, was adaptable,

committed, educated or experienced, enjoyed the work, behaved ethically, was hard working, managed for the future, was multi-skilled, persevered, was progressive, respected the environment or land or wildlife, and understood their product. This persona would require high levels of conscientiousness as the individual is committed to work and demonstrates good management skills. Further, this description suggests that a successful farmer is thought to have a combination of specific personality characteristics, coping styles, buffers, and demographic characteristics. Within this description of a successful farmer, similarities could be seen between the characteristics of a successful farm work environment (as indicated by items within the IF Impact Scale and FF Role Impact Scale) and particular coping behaviours and strategies (as indicated by items within the FF Cope Scale). For example, the profile of a successful farmer as identified within the Interview stage included qualities of accept control, accept responsibility, being committed, and enjoy work, which were all strongly utilised coping strategies and behaviours within this sample. Further, the FF Buffer Scale items of “enjoy working with animals or product”, “enjoy work”, “land owner”, “down-to-earth”, “improving land”, “surroundings”, “develops skills”, and “children or next generations future” were reflected in the conscientious characteristics of the successful farmer. These characteristics included enjoy work, hard working, behaved ethically, multi-skilled, manage for future, educated or experienced and respected the land or environment. Additionally, these characteristics are also similar to positive intergenerational farming descriptors such as commitment and succession planning.

The impact of the lifestyle of farming can also be seen through a comparison of factors identified in the interview stage and the outcomes from the analysis of the quantitative data in the validity study. Farming family members initially indicated that the surroundings, open spaces, being their own boss, and freedom of the job were the

key positive elements of the farming lifestyle. Negative elements of the lifestyle included income and weather with women further identifying lack of social opportunities and the farm taking priority over family needs as significant stressors. The positive elements of lifestyle were reflective of buffer items such as surroundings and being a landowner, with landowner being a determinant of increased well-being (as indicated by high levels of life satisfaction and low psychological distress). Furthermore, the negative elements of lifestyle are congruent with key stressors or role impacts identified within the respective scales. For example, frequently mentioned and highly rated negative elements of lifestyle included financial limitations and that the farm always took priority over family needs.

This section has provided a profile of characteristics that were thought desirable by respondents in order to be a successful and adaptive farming family member. The key characteristics of this profile included a commitment to work, a high value on family, and a high enjoyment of work. These characteristics may then facilitate perseverance and resilience against the challenges of the industry and lifestyle. This section also provided support for Hypothesis 6, which stated that farming families would present higher levels of the traits of conscientiousness, agreeableness, and openness to experience than the trait of neuroticism.

11.7. Conclusion

This chapter summarised the development of the farming family scales and addressed the degree of support found for the hypotheses of the research. A number of key points can be drawn from this chapter. First, the farming family work environment did not appear to be consistent with previous models of role interference and a new model of role interference was proposed. Secondly, though financial stressors were

rated the highest concerns by family families in the interview stage, from the quantitative data it was the future and family stressors which had the greater impact on well-being. Coping behaviours and strategies used by farming families demonstrated overarching themes of commitment and hardiness. Additionally, due to the uncontrollability of some stressors, disengaging coping behaviours (such as watching animals) appear to be beneficial. Finally, perseverance and commitment demonstrated paradoxical relationships to well-being. However, as the items and relationships of the FF Buffer Scale suggest that this scale includes characteristics similar to hardiness and resilience, it was then proposed that the commitment to farming and family were the foundation for building resilience and hardiness within this population. Therefore, commitment to farming and identification with farming is hypothesised to be necessary for protecting well-being. The following chapter will discuss the implications for farming family well-being and outline recommendations for future research.

Chapter 12: Implications and Future Directions for Research

This chapter will discuss the impact of the unique working environment of farming and other indicators of well-being for the farming family population and the implications of these findings. Furthermore, recommendations will be made for future directions in relation to policy and program development, the need for development of a risk assessment tool, and directions for health promotion in this population.

12.1. Indicators of the Working Environment and Lifestyle Factors on Well-being

12.1.1. Demographic descriptors of poor health and well-being.

The self-report data on history of health from the validity study (Chapter 8) indicated that approximately 51% of men and 34% of women had experienced a serious physical illness (most frequently high blood pressure and workplace injury) within the past 10 years. These physical health trends could be representative of the poorer physical health status generally reported by individuals living outside of major cities (AIHW, 2003, 2008). Research on mortality trends has indicated that people living outside of major cities had a higher proportion of deaths due to heart disease and workplace injury than those living within major cities (AIHW, 2003). Within the current research, those who were more likely to present poorer physical health histories were men and individuals who identified as farm owners, particularly in relation to heart disease and injury which is congruent with the Australian data trends (AIHW, 2003). As men's most frequently identified role on the farm was being the farm owner (67%), this could explain the observed relationship between gender and ownership with heart

disease and injury. The impact of this work role on physical health is consistent with previous research which has connected high job strain and work stress to over-eating, physical inactivity, and cardiovascular disease (Kouvonen et al., 2005; Fletcher, 1991; Lallukka et al., 2008).

For the self-reported data on mental health history (refer to Table 32), approximately 49% of men and 48% of women identified as having experienced poor mental health (mainly depression and anxiety) and approximately a quarter of men and women reported taking medication for mental health problems (usually anti-depressant medication) within the past 10 years. These rates are comparable to rates of referral to a medical or allied health professional for farming family participants involved in the Sustainable Farming Family program (Brumby et al., 2008). Gender differences in reported history of suicidal thoughts indicated that women reported higher levels of such ideation than men (5.1% and 1.0% respectively), however men more frequently than women reported a history of depression (35.0% and 28.1% respectively). A greater percentage of men reported taking multiple medications (anti-depressants, anti-anxiety, sleeping tablets) than women (9.0% and 3.4% respectively). These trends may reflect previous research which suggests that women are more likely to think about suicide but not complete, whereas men are more likely to complete suicide (Canetto & Sakinofsky, 1998; Wright, 2009; Stack, 2004; Denning, et al., 2000). This suggests that men are more at risk of masking the experience of strain and depression causing it to 'internally compound' until the individual reaches a breaking point (Wright, 2009). An internal compounding of the male experience of depression may be expressed through avoiding the issue via increasing involvement in work, dulling the feelings through increased alcohol intake or through heightened self-reliance.

Those whose roles included making the final decision and attending educational courses and programs were more likely to have a self-reported history of mental health problems, particularly anxiety. This may represent the pressure of decision making and the relationship of role interference with decreased well-being (Peeters et al., 2004; Frone et al., 1996; Hammer et al., 2005). The relationship between mental health history and roles of high decision making is supported by the positive effect of intergenerational farming on well-being. For instance, those who were involved in an intergenerational farm were more likely to report never having experienced mental health problems, particularly anxiety, than those who were not a member of an intergenerational farm (Table 101). This relationship may come about as intergenerational farming allows for an increased distribution of responsibilities and better access to experience and utilisation of skills from a number of members of the farm family business (i.e. process conflict) (Kellermanns & Eddleston, 2004; Jehn, 1997).

A history of suicidal thoughts was more likely to be reported by those whose role was being a family employee (Table 101). Such a relationship is supported by other findings that indicate that low professional efficacy and control in decision-making contribute to poorer well-being (i.e. lower life satisfaction, higher levels of psychological distress) through increased experience of role interference and stressors. This relationship is consistent with research which indicates that low job control, low decision making, and low efficacy contribute to burnout (Maslach et al., 2001). The impact of lower perceived control and efficacy may also be reflected in the negative relationship observed between having an off-farm job and lower levels of life satisfaction. This could have additionally indicated that those who work in an off-farm job were doing so because there were financial issues associated with the farm which

required additional income sources. Alternatively, the relationship between off-farm work and lower life satisfaction may be due to the individual not being committed to farming, or that having to work off-farm decreased satisfaction as it was an added and unwanted role. Those who managed employees or physically worked the farm (provided labour) reported high levels of emotional exhaustion, possibly an indication of time pressures and workload (Schaufeli & Peeters, 2000; Xanthopoulou et al., 2007; Cordes & Dougherty, 1993; Maslach et al., 2001). Those who were in roles that were positions in control of duties, such as owner, manager, final decision, employee manager, labourer, or reported a greater number of years farming also tended to present with higher levels of professional efficacy and which may have thus buffered the experience of burnout (Maslach et al., 2001; Cordes & Dougherty, 1993). Though the position of labourer may not initially appear to be a position of high control, the labour was usually provided by men (29%) who were also more likely to be farm owners. Additionally, physical work may be perceived as more controllable than other characteristics of the farm working environment, such as administrative work (e.g. industry regulation requirements) or managing financial responsibilities.

Simple correlational analysis indicated that sugar producers reported high levels of a history of mental illness, particularly depression and anxiety. Those involved in broadacre cropping or the production of sheep meat, wool, or beef reported lower levels of psychological distress (as measured by the K-10) whilst horticultural farmers and those who managed employees were likely to report high levels of psychological distress. The link between produce type and mental health could be indicative of the potentially low levels of autonomy within horticultural and sugar production in comparison to broadacre cropping and livestock production. For example, both horticulture and sugar production involved either, a large number of employees

(horticulture) or required working in co-operation with other farmers to harvest the crop (sugar). In both these cases there is a high level of dependency on the performance of others, whereas livestock or broadacre cropping do not necessarily involve a large number of people to produce the product. This makes successful performance within these industries more directly related to individual effort. This hypothesis was supported by data trends where horticulture and sugar were more likely to rate the stressor “other’s errors” as a high concern and beef, wool, and sheep producers were more likely to rate “other’s errors” as a low concern. The negative impact of low levels of autonomy on well-being is supported by previous research which reported work stress to result in outcomes of work strain and heavy alcohol intake (Weisner et al., 2005; Frone, 2008).

Correlational analysis also suggested that horticultural farmers had greater levels of risk and beef producers lower levels of risk of burnout. The association of produce type with burnout is consistent with research on animal-assisted therapy where mental health and well-being is improved through the human-animal connection and with research which suggests farming health is dependent on mental, physical, social, and veterinary health (Morrison, 2007; Frewin & Gardiner, 2005; Donham & Thelin, 2006). Specifically, Morrison (2007) reviewed literature on animal-assisted therapy and found strong support for improved mental health outcomes in terms of depression, anxiety, and loneliness after participating in animal-assisted therapy. Whilst farming is obviously not animal-assisted therapy, this literature may account for the trends in the current data which indicated beef producers were likely to use watching animals as a coping behaviour or strategy and the positive relationship between the item “watching animals” and scales of well-being. The positive relationship between watching animals and producing animal products with well-being from the Validity study is inconsistent with findings from the Interview study which suggested that beef or livestock producers

would be at greater risk for poorer well-being due to the significant distress experienced with animal death (as a result of drought, flood, or extreme temperature conditions). However, the current findings suggest that the potential negative impact of producing this produce type would be minimal and the protective factors of this produce type would supersede this potential negative impact.

A self-reported history of suicidal thoughts was found to be positively correlated to being a family employee, experiencing role interference through family tension, having unexpected things going wrong, having employees, or feeling stressed. A self-reported history of suicidal ideation was also related to higher scores on the RI-Moderator subscale, work-to-family conflict or strain or behaviour based conflict. Additionally, a self-reported history of suicidal thoughts was related to the stressors of feeling exhausted, family duties, maintaining relationships, providing for family, when to retire, succession planning, working with family, continuous workload, other peoples errors, economy, S-Family based stressors, S-Future based stressors, S-Daily based stressors, high levels of farm family stressors overall, or the farm stressors of personal finances or time pressures. Many of the factors associated with suicidal thoughts centred on family stressors or conflicts and lowered levels of control and autonomy. This may be important in identifying risk factors for the high suicide rates within the farming populations. These factors have often been cited in literature as leading contributors to poor mental health and well-being (Weisner et al., 2005; Frone, 2008; Peeters et al., 2004; Frone et al., 1996; Hammer et al., 2005; Maslach et al., 2001; Golden et al., 2006; Karimi, 2009). The impact of the family-related stressors and conflicts on well-being may be heightened due to the value placed on family satisfaction by the farming family. Those who were less likely to share workload, have open communication, laugh, have a break, trust, talk, and score high on C-Community Connect were more likely to have a

self-reported history of suicidal thoughts. This trend was consistent with previous research findings which have emphasised the importance of social support as a buffer against stress and depression, especially for men (Swami et al., 2008; Falk et al., 1992). Additionally, those more likely to use alcohol, substance use or behavioural disengagement, or present high in neuroticism were also more likely to have a self-reported history of suicidal thoughts. These factors are consistent with research which suggests that disengaging (withdrawing from support) and higher levels of substance use are symptomatic of depression, itself a risk factor for suicide (Wright, 2009).

12.1.2. Specific profiles of risk factors for psychological distress in men and women.

The reports of high suicide rates in rural and farming communities highlighted that the mental health and well-being of farming families is of particular concern and therefore was a primary motivation for undertaking the current research (Andersen et al., 2010; Page & Fragar, 2002; Caldwell et al., 2004). Though the high suicide rates are more pronounced for males, women who live in rural areas and are farming/agricultural workers also present higher suicide rates in comparison to other occupations and urban individuals (Caldwell et al., 2004; Andersen et al., 2010). To determine risk factors for poor mental health and a possible pathway to increased risk of suicidal thought or suicidal behaviour, profiles for at risk-groups of psychological distress were generated. Findings from the current research suggested that indicators for psychological distress included role interference (as measured by RI-Inhibitors and strain conflict), family stressors (as measured by S-Family), and high levels of emotional exhaustion (as a component of burnout) (Figure 20).

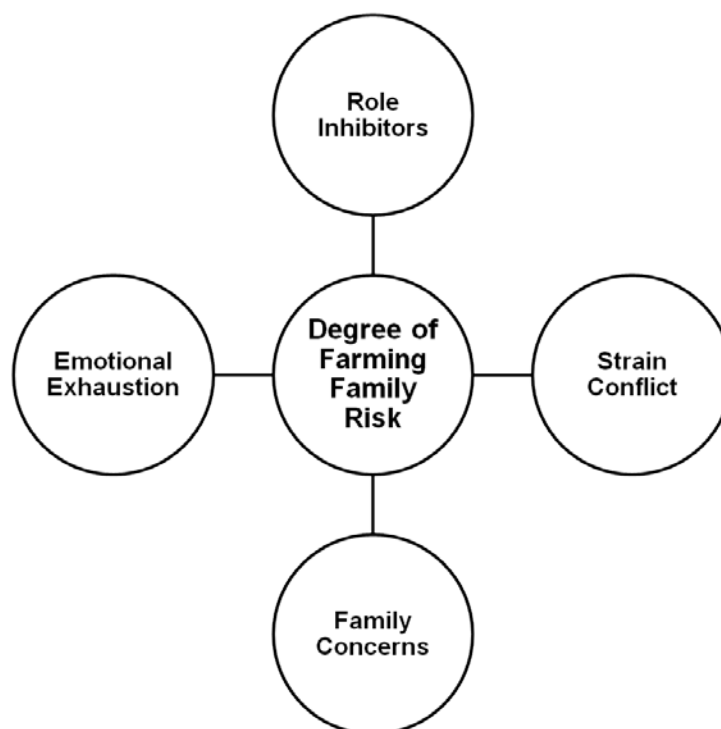


Figure 20. Profile of farming family sample risk factors for psychological distress.

These identified stressors and role impacts represent the extent to which the farm impacts upon family satisfaction and the importance of a successful fusion or integration of the family and business systems. Previous research has indicated that a family business is more likely to benefit from fluid boundaries rather than rigid, defined boundaries between the work and home domains, with the latter associated with poorer well-being (Zody et al., 2006). This profile for those who are at-risk of psychological distress suggested that those most at-risk were those who weren't balancing or fusing the two domains effectively and therefore were experiencing the impact of role interference and conflict.

Risk factors for psychological distress identified for men of farming families included poor life satisfaction, self-distracting coping behaviours, and high work-family conflict (Figure 21). The link to family well-being and satisfaction, which represented a need to protect and provide for family, also ties in with previous research on masculinities which reports that men are more sensitive to threats related of financial

provision than women (Swami et al., 2008; Sher, 2006). As the profile indicated, men at a higher risk of psychological distress in the current research were more likely to use self-distraction to cope (Figure 21). Self-distraction was related within the data to low ratings of “enjoy work”, “remembering past difficulties”, “open communication”, “trust”, “commitment”, “compromise”, “talk”, C-Reassess, and C-Positive Reframe and high ratings of “get away”, “exercise”, and “C-Disengage” (Chapter 8, Table 45). These relationships were an appropriate reflection of self-distraction and complimented findings that indicated the use of strategies assessed within the C-Reassess and, especially C-Positive Reframe scales was related to better well-being. Possible important factors encompassed by the C-Reassess scales may be the characteristics of social support. Previous research has suggested that withdrawal from social support is associated with an increased risk of suicide. This is particularly so for men as this group rated social support as a strong buffer (Stack, 2004; Denning et al., 2000; Swami et al., 2008; Falk et al., 1992). Therefore, the withdrawal from social support for this population group may result in men using self-distracting behaviour as a maladaptive coping strategy and therefore being less likely to engage adaptive and protective coping strategies (i.e. C-Reassess or C-Positive Reframe). This suggests that self-distraction may be a risk factor for decreased mental health (Swami et al., 2008; Falk et al., 1992).

Also, though men were less likely to use instrumental support than women in Chapter 10, men also rated “talk to partner or someone else” significantly higher than women as a type of coping they endorsed. This emphasises the relevance and importance of talking to others for men’s adaptive coping strategies. Additionally, women often reported in the interview stage about their concern with the impact that the lack of social opportunities had on their partner’s well-being. The profile of risk factors for men was also consistent with findings by Wright (2009) who suggested that the

increased risk of depression for men was compounded by avoidant behaviours, decreased involvement in social activities, self-medicating, and increased involvement in work (Figure 21). Wright's (2009) findings are also consistent with current data which found that men reported a higher percentage of multiple medication use for mental health purposes. Additionally, Wright's (2009) research supports the current findings that suggest commitment to farm and high involvement in work can be protective factors as they buffer stressors and role interferences. However, work involvement can also be a risk factor if men use work involvement to dull or avoid the stressors (Wright, 2009).

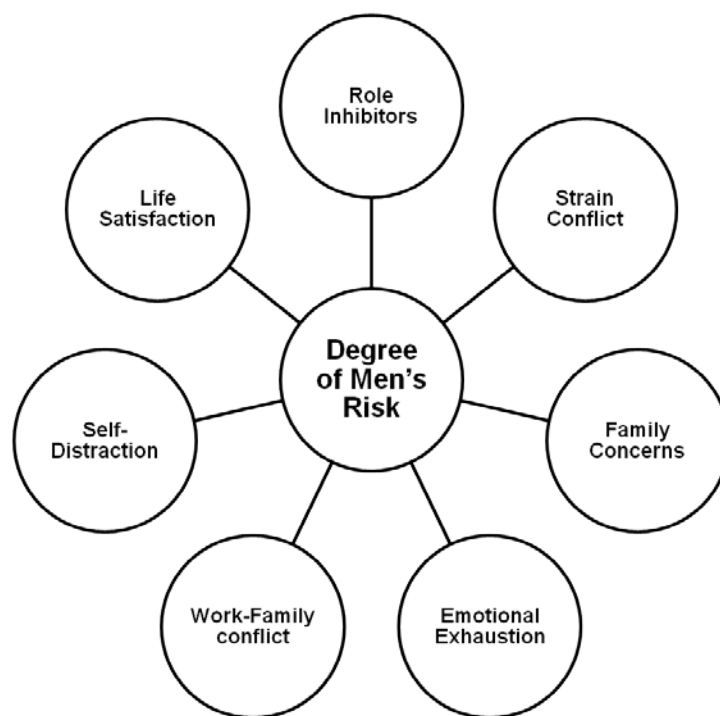


Figure 21. Profile of men's risk factors for psychological distress in a farming family population.

These identified risk factors should therefore be considered alongside those presented in Figure 9, which showed potential risk factors for suicide in men suggested by previous research. These risk factors were categorised as being either static, stable, dynamic, or future risk factors for suicide and included isolation, traditional concepts of masculinities, stigma about mental health, limitations regarding diagnostic tools, access

to lethal means of suicide, and sensitivity to changes in financial status (Bouch & Marshall, 2005; Wood & Good, 1995; Kilmartin, 2005; Rochlen et al., 2010, Wright, 2009; Swami et al., 2008; Gregoire, 2002; Booth et al., 200; Canetto & Sakinofsky, 1998; Judd et al., 2006). The risk factors for psychological distress for men in farming families as identified within Figure 21, could be categorised as dynamic or future risk factors due to the variable intensity of the experience of these factors (Bouch & Marshall, 2005).

Elements associated with women's psychological distress included high levels of emotional exhaustion, cynicism, strain conflict, family-based stressors, and role inhibitors (Figure 22). These indicators for women suggest that although women in the study were predominantly concerned with family well-being their greatest risk of psychological distress, and therefore increased risk of mental health disorders, was the strain and exhaustion of maintaining and completing roles and responsibilities. The identification of cynicism and emotional exhaustion as risk factors is reflective of themes within the interview content (Chapter 5) where women more often than men expressed discontent in association with continuing farming due to the strain it placed on family well-being. This was proposed to result from family conflicts and financial strain. Additionally, the qualitative data from the interview content also highlighted the ambiguous and often under identified role of the 'helper' which is also reflected in the description of the "invisible woman" (Gillis-Donovan & Moynihan-Bradt, 1990; Hollander & Bukowitz, 1990). As contributions to work stress and burnout include role ambiguity and lack of recognition of contribution or poor effort-reward ratio, then these factors may explain the key indicators of a high-risk profile of greater psychological distress in women.

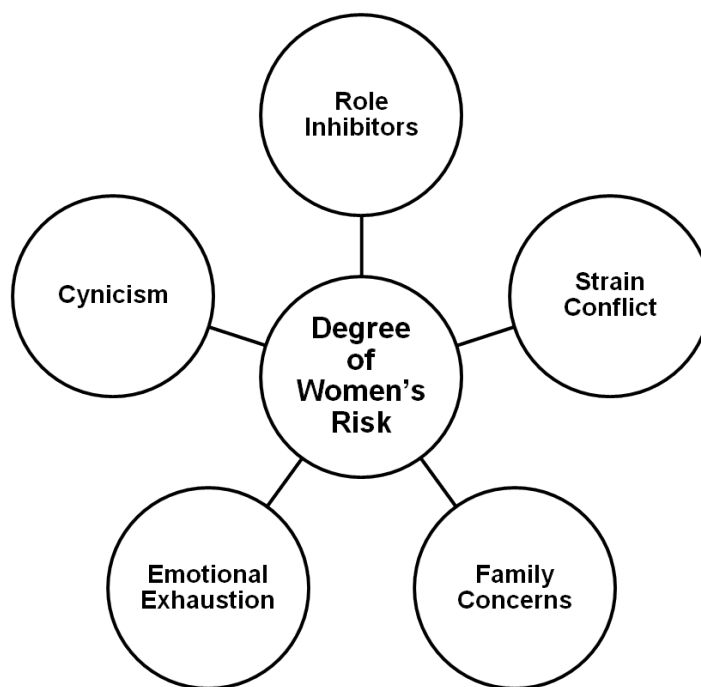


Figure 22. Profile of women's risk factors for psychological distress in a farming family population.

Overall, when considering the three profiles of risk factors for greater psychological distress in the farming family population, it can be seen that the key contributors were low family satisfaction, role interference or conflict, and work-related burnout. This emphasises the importance and value of family and the impact that the working environment has on farming family well-being.

12.1.3. Pathways to poor well-being for farming families.

Based on the model produced in Chapter 10, the main determinants of well-being were the factors assessed by the FF Stressors, FF Role Impacts, FF Buffers, and C-Positive Reframing scales (Figure 16). Specifically, stressors and role interference had direct and indirect effects on well-being. Increased stressors lead to psychological distress, low satisfaction with life, and increased risk of burnout (through high levels of emotional exhaustion and cynicism). Stressors were mediated by levels of life satisfaction (assessed on the FF Buffer Scale), with individuals requiring high levels of

farm family buffers in order for stressors not to have a negative impact on life satisfaction. Stressors were also mediated by positive coping styles, with high levels of positive coping needed to protect against burnout, specifically in relation to high cynicism and low professional efficacy. Using positive coping styles bolstered professional efficacy (i.e. enjoy work, positive outlook), which research has shown to be important in moderating the impact of burnout (Maslach et al., 2001). The relationship between the items of positive disposition within the C-Positive Reframe subscale to scales of well-being is consistent with previous research which has shown that optimism buffered the impact of job insecurity, time pressures, and other work stressors on mental health (Makikangas & Kinnunen, 2003).

It appears that increased levels of role interference lead to psychological distress and partial burnout (through increased levels of emotional exhaustion). However, the degree to which these factors impacted on well-being was dependent on the individual's commitment to farming (FF Buffer scale) and utilisation of positive coping behaviours. For example, higher levels of buffering characteristics resulted in a reduced effect of role conflict on psychological distress. This finding provides full support for Hypothesis 8 which predicted that buffering characteristics would moderate the impact of role interference on well-being. This was consistent with findings by Greenhaus et al. (2001) who suggested that those with high career involvement would persevere despite experiencing work-home interference. However, the FF Buffer Scale did not appear to have a significant relationship with the Carlson et al.'s (2000) WFC scale, which is inconsistent with Parasuraman et al. (1996) who suggested that high career involvement would also result in higher family-work conflict. Further, this finding is also inconsistent with Greenberger and O'Neil (1993) who suggested increased career involvement would result in increased strain and depression in men. In the current

study's population, high levels of farming commitment and identity could be considered to be representative of high career involvement, with these characteristics more likely to be protective rather than harmful to well-being (Greenhaus et al., 2001).

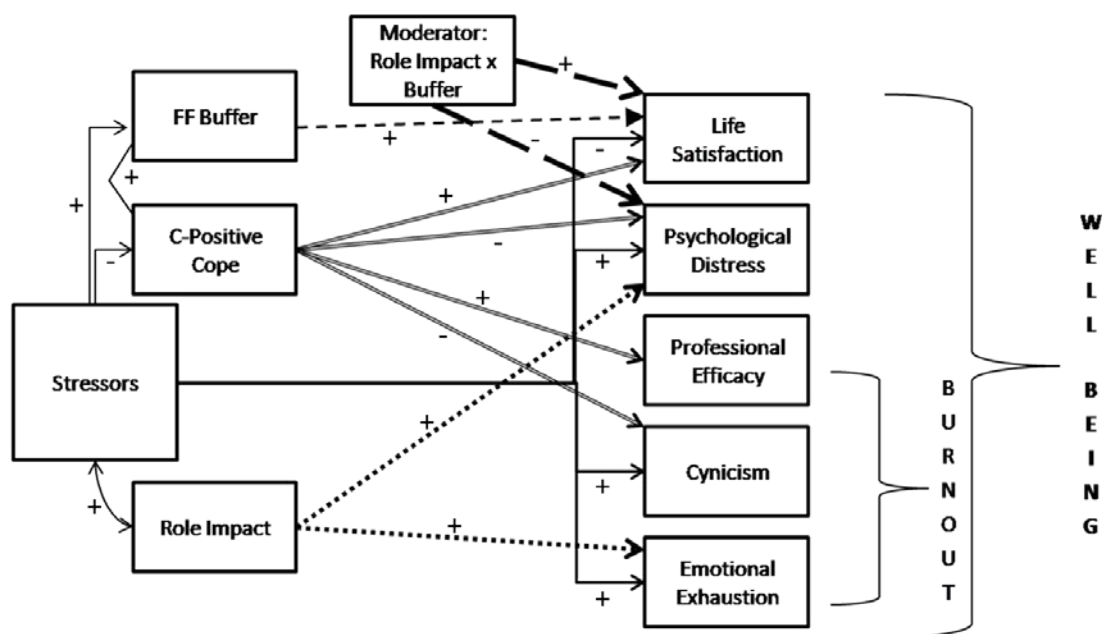


Figure 16. Path Model of factors specific to farming family lifestyle that impact on well-being.

12.2 Immediate Outcomes and Implications

Immediate outcomes of this research include a proposed model of role interference (Figure 18) which will contribute to the body of knowledge on the sources and directions of role interference in specific work environments and business structures. To date, the research has been presented at eight conferences (five domestic conferences and three international conferences) and has been accepted in an additional conference (one international conference) (Appendix L). The presentation of findings at conferences has contributed to research outcomes as it has raised awareness of the current issues affecting the health and well-being of farming families of Australia. This is the first step in the dissemination of information to the appropriate organisations,

bodies, and researchers who can use the current findings to advocate for improved well-being of farming families. As the conferences which have been attended vary in theme and research focus, this will increase the exposure of the current findings to a wider population. For example, findings have been accepted at conferences which are centred on rural and remote health, farming family health and safety, stress and coping, work stress and role conflict, agricultural workplace health and safety, social sustainability, and organisational psychology. To further add to this outcome, journal articles are also being prepared for submission, with acceptance received for a chapter proposal for an online publication on public health (Appendix L).

An executive summary of the key findings of the research and an outline of the scales and models developed will be produced upon completion of the current research. The executive summary will be provided to organisations, community groups, researchers, and participants who were involved (either through participation or recruitment facilitation) in the research process. Additionally, an executive summary will be forwarded on to researchers, academics, and institutions who demonstrated an interest in the study outcomes, for example the Centre for Rural and Remote Mental Health Queensland and the Mental Health Advisory Group. Subsequent outcomes include the availability of the farming family scales to researchers and practitioners to provide the opportunity for further test the applicability of the scales in additional communities and demographic profiles of farming families in order to add to the body of data on the validity and reliability of the scales.

12.3. Future Implications for Improved Well-Being of Farming Families

The findings from this research suggest that those circumstances and characteristics such as the type of coping, produce, or level commitment to farming may

have a negative or protective influence on well-being. The interaction of these factors emphasised that the pathways to increased risk of poor well-being are distinctive in this sample in comparison to research regarding generic family businesses or work-home interfaces. It was also considered important to recognise that the impacts on well-being and how these challenges were managed varied by gender, age, type of producer, and mental and physical health history. The principal finding of the current research was that stressors relating to the business structure of farming, the work environment and the conflicts between work and family were the leading contributors to poor well-being.

Role interference was a key contributor to psychological distress and work burnout and these two negative impacts were tempered by positive coping styles and sense of purpose, commitment and personal value associated with farming. This was reflected in the evaluation of well-being, with assessment of psychological distress suggesting that, as a group, the farming family members presented scores that were in the normal-mild range of psychological distress, though the mean score was higher in comparison to the normative data collected from a sample of the Australian general population (Andrews & Slade, 2001). This contrasted with the high levels of emotional exhaustion and cynicism (indicators of burnout) within the farming sample compared to normative samples (Maslach et al., 2001). Despite this, the farming family sample reported slightly satisfied to satisfied levels of life satisfaction, which was congruent with normative data of general population in the United States (Parvot & Diener, 1993).

These results, along with the positive relationships of the FF Buffer scale with life satisfaction, FF Stressors and FF Role Impact (with stressors and role interference mediated and moderated by the buffers), suggest that successful management of stressors and successful coping with the farming lifestyle is centred on an individual's value of and connection to farming. That is, an individual who had strong connection to

farming and perceived value in what they do would have a stronger satisfaction with life and greater professional efficacy, which in turn facilitates the creation of a protective barrier for mental health and well-being against farm challenges. However, as stated, the FF Buffer Scale was also positively related to stressors and role interference. Stressors which decreased autonomy, devalued work and originated from the family sector may shake the foundation of the resilience building factors of commitment, value and connection to farming. Therefore, these stressors jeopardise the protection provided by the characteristics of the FF Buffer Scale and may then result in the full impact of the stressors being experienced.

Stressors and conflicts which impacted on family well-being were a key risk factor for psychological distress as 'family' emerged as being the predominant value of the farming family (Chapter 5). Further, the value of the family extended into motivations for continuing farming and also into what farming meant to the individual (underlying principles of the FF Buffer scale). The Intergenerational Farming Impact Scale is also a good indication of how the family working environment impacts on well-being, with poorer intergenerational working environments being predictive of psychological distress in men. The application of this increased knowledge and understanding of the impacts of the farming work environment and the interaction with determinants of farming family health and well-being could be beneficial for policy and program development, the adaptation and development of a risk assessment tool for psychological distress, and in the design and implementation of health promotion campaigns addressing characteristics of poor working environments at a population and individual level.

12.3.1. Assist policy development.

Findings from this research could contribute to policy development through a variety of avenues. Government or organisational bodies that write policy and legislation which affect the availability of services, increase costs of inputs (e.g. employee costs or the transport of produce), administrative burden (e.g. record keeping for chemicals, fertiliser, rain fall, irrigation, or pests), availability of subsidies or funding, or to improve the sustainability, productivity, or environmental impact of the farm should consider what motivates the behaviour within the farming population. These motivations include commitment, connection, and personal value of family, farm, and lifestyle.

For example, policies and legislation which increases costs of inputs and administrative burden in turn decreases the sustainability of family farms due to the small cost-profit margin and the lack of available workers. These increases in costs of inputs and the administrative burden are in some cases a result of policies or the availability of new technology which aims to increase the productivity and decrease the environmental impact of the farm. Yet the costs of implementing some of these strategies may be too high or the access to respective funds too restrictive for the farming family. Such factors result in it being more difficult to run a sustainable family business and remain in the farming industry. This would likely result in farming families feeling stressed and perceiving a lack of care from government and industry bodies in regards to the challenges they face as a family and as an industry. This is evidenced in the results of the current research which identified “perceived lack of care from government and public” and S-Financial Concerns as leading stressors for this population. As a result of this, the farming family may then feel resentment towards government and organisations who they perceive to be contributing to their difficult

lifestyle. These attitudes would not be conducive to an efficient industry that would work towards common goals shared by industry relevant government bodies and organisations. As previously noted, commitment to farming for the farming family does not necessarily follow a rational pathway as farming families will attempt to remain in the industry despite adversity with little consideration of industry viability (Chapter 11; Pritchard & McManaus, 2000; Davidson & Brodie, 2005). This commitment and connection with farming is a valuable and inexhaustible resource for improving productivity if the farming business remained sustainable for the farming family. Therefore, policies, legislation, and regulations need to consider what motivates behaviour in order to be effective and produce better future outcomes for the industry and the Australian economy.

For this outcome to be achieved, findings and implications of the current research needs to be disseminated and made known to groups and organisations who can, in turn, lobby policy-writers and government departments. This process has already been undertaken by the current researcher through attendance at conferences, both international and domestic, and through the peer-reviewed publications of the research findings. By presenting research findings or networking at conferences, this exposes representatives of farming, rural, or health organisational bodies to the advances in knowledge of the determinants of farming family well-being. Further, an executive summary of the current research will be distributed to industry relevant organisations like Growcom (Australian horticultural organisation) and the National Farmers Federation (Australian farmers' union). This summary provides these organisations with data which they can use to petition state and federal government departments. Recommendations could be provided to government or organisational bodies in relation to improving the communication between government and organisational bodies with

the farming family population. For example, if changes are made to industry regulation or production procedures, the reasons for these changes need to be effectively and clearly communicated with the farming family population. In fact, if farming families were consulted prior to the implementation of industry changes directly affecting the operation of the farming business this may decrease feelings of neglect and increase perceived control within the work environment (Maslach et al., 2001) and improve trust between the farming family and government or organisational bodies.

An important factor for improving trust between government bodies and the farming population is likely through improving the perception and education of the public towards the value of the industry. This outcome could be achieved through a focus on food security (ensuring that there is enough food in the future to provide the growing population) and food sovereignty (each country should have the right to the capacity to develop and maintain its own food supply) (Menzes, 2001). Approaches to food security and sovereignty includes ensuring farmers receive appropriate and fair financial returns, establishing regional and local markets and stabilising domestic production. Such a change in focus would benefit the farming families through increased well-being due to decreased stress as major stressors identified by farming families within the current research included foreign products on the market, perceived lack of care, and future viability of industry. Furthermore, the change in focus would also benefit the government and Australian public through future economic stability from improved farming productivity.

Another recommendation made by lobbying groups could be to agricultural departments regarding how the increasing administrative burden, changing technology and increasing costs of inputs are negatively impacting upon farming family mental and physical well-being. As a result of such practices, the poorer health status of farming

families in turn further decreases farm family business sustainability and productivity. A review of industry relevant regulations, policies and production procedures should be undertaken to identify which of these are repetitive or redundant and unnecessarily increase workload. As can be evidenced in the findings of the current research, farming is a high stress industry and this places farming families at an increased risk of burnout. Burnout is often a result of high workload and a lack of control (Maslach et al., 2001), both of which are characteristic of the farming family work environment.

Consideration of the motivations to continue farming for the farming family in regards to improved productivity and sustainability is supported by previous research by Cocklin and Dibden (2005). These researchers reported that the lack of recognition of the interaction between social, economic, and ecological systems ultimately undermined the effectiveness of some policies for improving rural sustainability (Cocklin & Dibden, 2005). This is connected to the current research as though policies may be aimed at improving sustainability of farms, for example through diversification, this may not be effective unless it is conducive to a sustainable lifestyle for farming families. For instance, sustainability could be achieved in part by improving community connectedness through social infrastructure, which was identified in the current research as part of the positive lifestyle of farming and contributes to the motivation to remain in the farming lifestyle. Recommendations from Cocklin and Alston (2002) stated that to ensure sustainability of rural communities, social (community connectedness) and human capital (relative to professional efficacy which emphasises skills, abilities, and capacity) must be taken into account.

In order to improve sustainability of rural communities through increasing the social and human capital of these communities, rural health organisation should be targeted to lobby government. For instance, Centre for Rural and Remote Mental Health

Queensland or Country Health South Australia could use information obtained from the executive summary, publications, or conference presentations to address state and federal health departments on key determinants of poor well-being. These key determinants include the depletion of protective resources such as community-connectedness. Community-connectedness is likely being directly affected by the trends of population migration to urban centres due to reduction in stable employment opportunities in rural areas (Garnaut et al., 2001). Therefore, primary services should be decentralised so that each rural community has access to sufficient healthcare services, educational institutions, sanitation services, and safety services (fire brigade, police force). This would increase stable employment opportunities and encourage young people to remain in rural communities, therefore increasing sustainability. Further, if the cost-profit margin of farming was improved or increased access to funding was made available which increased the opportunity for farmers to apprentice young people would result in changes to the employment profile of agricultural work. This would improve the perception of working in agriculture as the individual would perceive it to be a viable and reliable career option.

The connection between family well-being and productivity has been previously identified within the Sustainable Farming Families program (Brumby et al., 2008) and therefore emphasises the need to consider farming family health and well-being in policy development. This recommendation has been cited by previous research regarding the need for increased active involvement from a federal government level to address the sustainability issues of rural communities, and not simply guide or encourage programs/policies or rely on local government (Tonts in Pritchard & McManus, 2000). Therefore, an important factor to consider in the development of a more productive, sustainable and economically viable and valuable industry is the

support provided to farming families that emphasises their strengths and motivation to farm. The current research findings and scale development can contribute to policy and program development as it has increased awareness, understanding and knowledge of the determinants of health and well-being within the farming family population. This type contribution is supported by research that suggests building knowledge and awareness is the initial step in developing effective policy and programs (Dibden in Cocklin & Dibden, 2005).

12.3.2. Development of a risk assessment tool.

Further research is recommended to generate additional validity and reliability data to confirm the relationships found in this research between stressors, the working environment, coping behaviours, and buffering characteristics with indicators of well-being (e.g. life satisfaction, burnout, and psychological distress). Following this, another recommendation for future research is to use the current scales and findings to develop a risk assessment tool for psychological distress, burnout, and suicidal ideation that could assist in the process of diagnosis of mental health conditions in farming families. Risk assessment tools could be developed which aim to identify individuals within the population as most at risk or target specific groups identified as high risk groups such as farm men, young women/men marrying into farming (low commitment), family employees (low control), and horticultural or sugar farmers. Targeting potential high risk groups such as young people marrying into farming or family employees is especially important as their management of farm stressors and lifestyle can have a particular impact on family and business functioning. For example, young people entering into farming without previously being a part of a farming family will not have the connection and commitment to family and farm which is essential in buffering stressors. Additionally, the low connection/commitment to farming of the new entrants

to the family business is inconsistent with the other family members' motivation for farming. This discrepancy with other family members could result in conflict due to differences in goals and perceived direction of the farming business.

The risk assessment tool would incorporate key factors that decreased the sense of value, purposefulness, commitment, and connection to farming and the farming family lifestyle. These would include the stressors of perceived lack of care from the public and government, high family and future related concerns, high number of role inhibitors, low positive and high disengaging cope styles, poor intergenerational working environment, and low levels of conscientiousness. The screening of the farming family population to identify those individuals who are at risk for psychological distress and potential subsequent burnout or mood disorders is an important component in the implementation of health programs and health promotional campaigns.

12.3.3. Health promotion and program development.

As mentioned previously, the promotion, prevention, and intervention for health challenges within the farming population should be inclusive in design and approach. As stated in Chapter 1, most farming health programs are domain specific, focusing more often on the individual rather than the family. Further, these programs often arise due to specific challenges (e.g. drought, climate change) rather than taking a broader approach that reaches farming families in general. It should be understood that leading contributors to poor well-being are not the episodic environmental events but the more stable and consistent factors that are a part of farming lifestyle. This focus is being initiated by the Centre for Rural and Remote Mental Health Queensland.

The current research found that work-family conflict, role ambiguity, family tension, and inequality in workload are leading contributors to a poor farming workplace structure and result in poor life satisfaction and psychological well-being (as

indicated by psychological distress and burnout). This would suggest that a campaign aimed at providing information and raising awareness of the importance of succession planning and understanding the needs and motivation of other stakeholders within the business might be beneficial of reducing the negative impact of the working environment. For example, key components of the campaign could centre on recognising what is important to the individual; what they value; are the family's goals being met or have they changed; is the farm still benefiting the family the way they wanted it to; does everyone in the family have similar goals and future directions for the farm.

Organisations or researchers could source funding or lobby government to develop a campaign aimed at increasing awareness of burnout. Such a campaign may focus on the importance improving working relationships within the family business in order to reduce risk of burnout. The campaign could be conducted on a population and individual level. Specifically, a series of promotional advertisements could initiate the campaign at a national level. The message of these advertisements could outline the risk factors for burnout and demonstrate the impact that burnout has on family harmony and farm sustainability and productivity. Another advertisement would then focus on outlining the steps an individual or family could take to improve family harmony and protect against burnout. The advertisements could also link to resources that the farming family could contact for more information or assistance as well as identify upcoming community programs. The community program could reach the farming families at an individual level. The awareness raised by the advertisements, as well as fliers and posters distributed throughout specific communities, may increase the likelihood that families who have identified risk factors present in their farming environment to attend information and training workshops. These workshops could include sessions aimed at

building strategies for managing risk factors, building effective communication skills, and educating farming families on the importance of clearly identifying future goals and plans for the farming business.

Alternatively, a mental health approach need not be taken and instead a link between business skill-building workshops with succession planner lawyers or financial counsellors could be established. This strategy would reduce the barrier between mental health and help-seeking behaviours within the farming population (Judd et al., 2006b) and allow farming families to more clearly perceive the benefits of effective communication and business skills. It should be noted that for the most part, farming families do not undergo any formal or accredited business training and usually undertake the farming business solely on skills learnt from the previous generation. Though, as the current research has evidenced, skills learnt from the previous generation is important, it is also important to interlink these family learnt skills with formal business management skills.

The process through which these health promotion campaigns could be achieved is in consideration of past program development. Organisations which develop programs for rural or farming mental health tend to focus on intervention and treatment through raising awareness of mental health symptoms and increasing accessibility to services (NSW Department of Health, 2008; Toon, 2010; CRRMHQ, n.a.). There are some programs that focus on prevention of poor mental health outcomes through increasing awareness of a need for lifestyle balance or community-connectedness (Saal & Bowers, 2010; Brumby et al., 2009). However, these programs are not necessarily reaching the at-risk groups such as those with poor work-family environment or newcomers into an intergenerational business. Additionally, these programs may have

high costs involved in relation to time and money (Storey, 2009) or the campaign message does not reach the wider farming population.

Donham and Thelin (2006) suggested that farmer health is an integration of workplace safety, mental health, physical health, and agricultural and veterinary health. This suggests that perhaps a new campaign solely focusing on the impact of the farming environment on farming family well-being may be limited. What should be undertaken instead is integration, or a linkage, of the current research findings to existing farming family health campaigns. The knowledge and practices of the available community systems and networks should be integrated with the new knowledge and understandings generated from the current research and scales. As an immediate outcome of this research involved the sharing of new knowledge at domestic and international conferences, this process of disseminating information is underway. This procedure was used by existing research and mental health programs such as the NSW Drought Mental Health Assistance Package, who demonstrated the effectiveness of applying a multi-agency approach with clear communication and coordination between government and non-government sectors (NSW Department of Health, 2008). Programs which are community operated and maintained, such as the successful Mental Health First Aid program, are more cost-effective and sustainable and as a result the effectiveness of the program is increased.

12.3. Limitations

The major limitations identified in this research were the representativeness of the sample, the definition of the farming family in this research, the sensitivity of this population to scales of well-being used, and the Global Financial Crisis.

A possible limitation was the representativeness of the samples within each study. Though steps were taken to strengthen the reliability of the results by utilising a proportionate and representative sample, this could not be ensured. Within the interview study (Chapter 5), the sample consisted mainly of Queensland based farming families due to accessibility of potential participants, though three of the most predominant produce types were represented relatively proportionately (Horticulture 22.6%; Livestock 58.5%; Cropping 22.6%). The Item Reduction Study was far more representative of the Australian farming family population (Chapter 6), however the most representative samples were found within the validity and reliability studies (Chapter 8 and 9). According to the National Farmers Federation, a higher proportion of farmers were from New South Wales (31.2%), Victoria (24.6%), and Queensland (20.8%), (NFF, 2010). The current validity study presented a higher proportion of farming family members from Queensland (37.9%), followed by New South Wales (30.0%), and Victoria (16.2%). This outcome was achieved as particular organisations were targeted as well as representative sample of potential participants were accessed via the mailing list purchased from a mailing list company, and state/territory specific organisations being targeted. The resulting sample was to a satisfactory level of representativeness of the Australian farming population, though horticultural and Queensland producers exceeded targeted numbers. This was likely a result of perceived relevance and accessibility to participants, for instance the location of the researcher was in Queensland and as a result more media interest was generated in the local area of the researcher.

The representativeness of the findings may have also been affected by the small sample size, particularly in the item reduction stage, pilot stage, and reliability stage. The item reduction study (Chapter 6) presented challenges with a large item pool over-

burdening participants, resulting in incomplete data and low response rate. This problem was foreseen and countered by the inclusion Expert Review Panel in the scale development methodology. The Expert Review Panel combined quantitative and qualitative methods to reduce the item pool. This method was successful and was recommended by previous research as an appropriate technique for item reduction (Davis, 1992). Pilot study sample size requirements are not usually explicit as requirements are variable depending on the type of analysis. Requirements centre on a smaller number of participants being sourced from the total projected sample pool (Streiner & Norman, 1989). As the current research analysis requirements for the pilot study was predominantly qualitatively with face validity being assessed, the sample size of N=14 was sufficient. Further, feedback from participants was considered in conjunction with participant feedback and data output from the previous stages of scale development. In regards to the arguably small sample size of the reliability study sample (N=53), Morrow and Jackson (1993) state that though larger sample sizes (>50) are preferred, a minimum of 30 subjects who are representative of the population is suitable.

The size of samples within the current research was impacted by the difficulties in recruiting potential participants within the farming family population. The challenges of acquiring large samples from within this population can be evidenced in the number of recruitment techniques and sources that were used and by the low response rate in the current research. Specifically, methods used within the current research to recruit potential participants were through advertisements in industry-related magazines and e-newsletters, rural newspapers, industry-relevant websites, attendance at field days and rodeos, focus groups, media coverage, a facebook community page, a mail drop to 953 potential participants (addresses acquired from a mailing company), and emails

distributed through networks. Difficulties in recruiting from farming populations has also been previously reported in other research and may be due to the stigma the farming population associates with mental health issues (McShane & Quirk, 2009; Judd et al., 2006b; Storey, 2009).

The criteria used to define the farming family for this research may be a limitation. The term farming family was defined as any member of a family who are growers (a person who grows plants), graziers (a person who grazes livestock, such as cattle or sheep, for market), or farmers (a person who operates a farm or cultivates land). The criteria additionally included those members who were currently involved in the farm in some way, for example through labour, management, or administrative or financial duties. Therefore the size of the farm, how many days the individual worked the farm, whether the individual lived on farm, or if the individual had an off-farm job were not central characteristics in the definition of a farming family member. It was assumed that if the individual perceived themselves to be an active member of a farming family then it is likely that the individual would also hold similar values, perceptions of farming, identity with farming, stressors, and role conflicts to other farming families.

As noted in the literature review, identifying the farming men's prevalence of mental health disorders, particularly depression and suicide risk, may have been underestimated due to the diagnostic tools employed not necessarily being as sensitive to different patterns in the manifestation of depressive symptoms in men, particularly rural men (Wright, 2009). However, a scale of psychological distress or depression more specific to rural men or farming families had not been developed at the commencement of the current research. Thus, the Kessler-10 was thought to be the most useful tool for assessing psychological distress in this farming population as it had been used in an Australian rural setting in previous research (e.g. Stain et al. 2008). However, during

data collection in the validity study (Chapter 8) it was felt that the Kessler-10 may not be gathering a comprehensive description of the state of farming family mental health. The current researcher thought that the stigma towards mental health within this population may have been affecting completion rates (Judd et al., 2006), which was evident in the feedback from participants in previous steps which suggested a sensitivity towards mental health terms (e.g. stress, depression). Additionally, it was thought that a more work focused scale of well-being would provide a more comprehensive assessment of farming family well-being. Therefore it was resolved that the Maslach Burnout Inventory-General Survey (Maslach et al., 2001) would be included as an additional assessment of well-being. This tool was thought appropriate to include as work-related chronic stressors and role conflict and interferences were being assessed, with work burnout being a common outcome of these factors (Bakker et al., 2008; Maslach et al., 2001; Peeters et al., 2005). The inclusion of the MBI_GS resulted in a portion of the sample (24.8%) not completing this scale and therefore may have implications towards the reliability of findings regarding this scale.

Towards the end of the interview stage, and the beginning of the Item Reduction Study, the Global Financial Crisis had its major impacts in Australia. Though it is unlikely that this would have affected the outcomes of the interview stage, it may have had some bearing on the Item Reduction Study, resulting in stressors relative to finance and the economy being more prevalent. Alternatively, due to Australia reportedly being one of the only Western nations not severely impacted by the GFC (Lunn, 2011; Joye, 2010), there may have been limited influence on farming family responses. Additionally, it was actually noted by a few participants within the interview stage that a GFC would benefit farmers as it would emphasise the importance of food production.

12.4. Conclusion

The farming family population has been in steady decline, particularly over the past 20 years. This is due to a variety of changes in the industry that has resulted in a reduction in the farming work force required to operate larger farms, in turn limiting opportunities for younger people. Regardless of the growing challenges, farming is still so much more than an occupation for those who continue in the industry. It is a community, a connection, an identity, a lifestyle, and a family. Though this continuing commitment is apparently irrational in the face of objective economic, social, and environmental challenges, it is also one of the tools that farming families use to maintain resilience and hardiness to enable them to cope with their demanding lifestyle and work environment. However, this resilience, as characterised by commitment and identification with farming, is under threat with growing perceptions of neglect and lack of value from the general public and government. This perceived neglect was the leading stressor for farming families in this research. When tension is present within the family and there is a lack of control and autonomy there is an increased likelihood that the impacts of the challenges of the lifestyle are more keenly felt.

Overall, this research has demonstrated that the work environment of farming families may have a significant impact on well-being and understanding the unique stressors associated with farming and being a member of a farming family may offer insight into factors which contribute to negative impacts on well-being and increased risk of suicidal ideation. The outcomes of this research emphasise the importance of maintaining health within a biopsychosocial framework. For example, in how the negative impact of chronic social/environmental stressors (working environment) on health can be reduced by psychological qualities of resilience and hardiness (commitment and connection to farm). Future research, campaigns, and initiatives

should continue to consider the inherent risks to well-being associated with the unique work environment of farming and the influence of the motivations and commitment to farming on health outcomes. Current findings suggest that future research should approach the farming family population as a high stress industry, which would assist in the recognition of the considerable impact that this working environment has on family well-being. Most important is the identification of groups and individuals who are most at risk of losing the components which foster resilience; those who risk losing their commitment to farming and family, their connection to community and their enjoyment of their work and lifestyle.

The aim of the current research was to determine the impact of the farming working environment of farming family well-being through the development of contextually-specific scales of the work-home interface, stressors, and coping strategies of farming families of Australia. These aims were achieved with 5 farming family scales developed which provided a more comprehensive understanding of the determinants of farming family well-being. The outcomes of this research has benefited the farming family population of Australia as it has informed and provided the foundations for the wider academic and research community, rural health professionals and organisations to work towards a healthier future for the farming family population.

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