Flinders Centre for Ageing Studies
Office for the Ageing

Ageing Well: Building Resilience in Individuals and Communities



Flinders University

Government of South Australia

Ageing Well: Building Resilience in Individuals and Communities

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Executive Summary

This research project, undertaken by the Flinders Centre for Ageing Studies with the support of the South Australian Office for the Ageing, provides insight into factors that act as resources for, or provide barriers to, resilience among older South Australians. The research aligns with the South Australian Government's strategic priorities outlined in the "Prosperity Through Longevity: South Australia's Ageing Plan 2014-2019, Our Action Plan"; in particular the broader vision concerned with enabling increasing participation and fostering well-being among older adults.

Current research has defined resilience in terms of processes that influence how well individuals cope with adversity. As older age is often associated with transitions and challenges, a primary goal of this project was the identification of specific life contexts and resources that contribute to, or undermine coping.

The present study's examination of resources underlying resilience was based on a survey of 263 community dwelling older South Australians, aged between 50 and 100 years. The specific focus was on the role of relevant psychological, social, and socio-economic *risk* and *protective* factors identified in the literature, and how these factors contribute to coping with recent negative life events, and poor functional health. In addition, older adults' were asked directly about the resources and circumstances they regarded as having the potential to enhance their coping ability.

Key findings.

Risk factors for psychological distress

- The majority of participants reported experiencing at least one negative life event (e.g., death of someone close, or deterioration in health) during the preceding 12

month period. The number of negative life events reported was not related to age of the participants.

- Experiencing a higher number of negative life events was related to higher levels of psychological distress
- There was a reliable association of poorer physical functioning with higher levels of psychological distress. Better physical health was identified by participants as the resource most likely to help them cope more effectively with challenges. This highlights that maintenance of good physical health in later life is central to maintaining quality of life, and providing a resource for coping and adaptation.

Resources for resilience

Psychological resources and resilience.

- Having a higher sense of purpose in life and more optimistic outlook both buffered against the association between negative life events and higher psychological distress. Optimism and sense of control also buffered the association between poorer physical functioning with higher levels of psychological distress.
- Individual coping styles appear to have a role in mitigating adverse effects on mental well-being resulting from life's challenges. People with more flexible coping styles who are able to both persist with attainable goals and redefine or replace unattainable goals, had lower levels of psychological distress irrespective of the number of negative life events they reported.

Social resources and resilience.

- Associations of the social resources for resilience with psychological distress were mixed. People with higher levels of social engagement, and more social support reported lower levels of psychological distress. However the social resources did not buffer associations of life events or physical functioning with distress.

Socio-economic resources and resilience.

- Of the socio-economic factors assessed, neighbourhood characteristics were most directly implicated in the resilience process. For those reporting few negative life events, the average level of psychological distress was similarly low across regions of varying SES. However, negative life events had a stronger association with psychological distress for older adults living in more socially disadvantaged areas.
- Subjective evaluations of the neighbourhood environment were also implicated in the resilience process. The relationship between poorer physical functioning and higher distress was less evident among participants who perceived their neighbourhoods as being more socially cohesive.
- Intercorrelations among risk factors, resources and psychological health point to a complex interplay of causal influences on the resilience process

Older adults' perceptions of resources for resilience

- When asked to identify the resources that would help them to cope better with challenges, having better physical health, and being more physically active were most commonly endorsed by participants. Analysis by age group showed that having better health, better access to transport, and more independence were more commonly endorsed by those aged 85 and older relative to the younger age groups.

Conclusion and Recommendations for Policy Development

The key findings from this report identified good functional health and psychological resources (optimism, sense of purpose, control beliefs, and the ability to flexibly manage goals) as factors associated with effective coping that are likely to promote resilient outcomes. In contrast, social disadvantage was identified as a key risk factor for resilience, with those living in lower SES areas more vulnerable to the effects of negative life events on psychological health. The report also found many of the factors associated with resilience were intercorrelated, highlighting interconnectivity among the factors implicated in successful coping.

Recommendations for policy arising from the study findings include:

- Developing primary prevention initiatives designed to promote physical activity and healthy lifestyles among older adults,
- Enhancing collaborative initiatives aimed at involving older adults in meaningful civic engagement
- Targeting future interventions to address the particular needs of socially disadvantaged older adults
- Taking an integrative lifespan approach to promoting resilient populations, including recognising how early life interventions can have implications for late life functioning.

1. Background

"Ageing Well: Building Resilience in Communities and Individuals" was a project undertaken by the Flinders Centre for Ageing Studies with the support of the South Australian Office for the Ageing. During late 2014, staff from the Flinders Centre for Ageing Studies and the SA Office for the Ageing met to develop this project with the aim of examining factors that act as resources for, or provide barriers to, resilience among older community dwelling South Australians.

It is widely recognised that throughout the lifespan, maintaining health and well-being depends on the ability to effectively manage stress arising from both commonly experienced daily hassles, and less common, but potentially more significant major life events. The ability to adapt, and to cope with changing life circumstances is brought into sharp focus in older adulthood when losses and transitions such as declining physical and cognitive health, widowhood, retirement, driving cessation, and residential relocation become more commonly experienced. This has led to an increasing focus on research into late life resilience, defined by the World Health Organisation (2002, p. 12) as "The process of optimising opportunities for health, participation and security in order to enhance quality of life as people age".

In recognising the importance of resilience processes to successful ageing, the team developed this study based on an ecological model of late life resilience recently proposed by Aldwin and Igarashi (2012). This model was well suited to a community-based investigation, as it (i) recognises the range of socio-cultural and contextual influences (e.g., social capital, family support, built environment), in addition to characteristics of individuals (e.g., health and coping resources) that impact on resilience, and (ii) outlines implications for public policy concerned with promoting resilience. The project was therefore designed to review current conceptualisations of late-life resilience and to obtain information about personal, social, and community resources to assist the Office for the Ageing to plan for programs and services aimed toward supporting and developing resilience among older South Australians at both individual and community levels.

2.Overview of Resilience

2.1 Introduction

Older age is a period marked by transitions and turning points in people's lives, with each potentially involving a unique set of challenges. The study of resilience in older adulthood is concerned with the factors that allow individuals to cope effectively with such challenges. In view of our rapidly ageing population, establishing a better understanding of late life resilience has become an important goal for researchers and policy makers. This report summarises the findings of a study designed to examine resilience among older South Australians. In the sections that follow, we review resilience in the context of the current literature and identify resources promoting resilient outcomes, before exploring how current public policy directives might be best tailored to promote resilience and well-being among older adults and their communities.

2.2 What is Resilience?

Resilience is a multidimensional and multi-determined concept (Walsh, 1998), the definition of which has been widely debated throughout the literature. Resilience has been variously described as a personality trait, an outcome, and a developmental process. Recent conceptualisations define resilience as a constellation of processes related to coping that enable persistence and the ability to bounce back in the face of adversity. As described by Masten & Wright (2010, p 10),

> *"Human resilience refers to the processes or patterns of positive adaptation and development in the context of significant threats to an individual's life or function".*

Encapsulated within this definition are three fundamental features; namely recovery, sustainability, and growth (Leipold & Greve, 2009; Zautra et al., 2008). These features imply that resilience is a process of coping with, and adapting to challenges, with positive outcomes being either stability or progressive change. A stable response to a challenge results in a return to pre-level functioning. Progressive change is a response encompassing positive growth and development (e.g., an improvement in aspects of physical or mental health) with enhanced potential of the individual. In contrast, a non-adaptive response may result in regressive change (e.g., declines in physical or mental health) accompanied by a decrease in the potential of the person to adapt to future challenges.

If we define resilience in terms of the processes that influence how well individuals cope with adversity, then a primary goal for researchers becomes the identification of the specific factors (e.g., the life contexts and resources) that contribute to, or undermine coping. These are often referred to as *protective* and *risk* factors. Protective factors facilitate adaptation and continued development of the individual across the lifespan. In contrast, risk factors increase vulnerability and the likelihood of a non-resilient response in the face of stress or challenge. Protective and risk factors can represent characteristics of individuals (e.g., aspects of personality), of social relationships (e.g., availability of a supportive social network) and aspects of the environment (e.g., age-friendly urban design; Zautra, Hall, & Murray, 2010). The identification of relevant risk and protective factors with implications for resilience was a central goal in the present study.

As outlined in subsequent sections, our approach to examining late life resilience is not based on attempts to identify individuals who are “more” or “less” resilient. Rather, we focused on *processes* related to resilience by (i) assessing exposure to potential stressors in the form of negative life events and poor functional health, (ii) establishing relationships between stress exposure and psychological distress, and (iii) identifying resources that could negate, or buffer against the effect of stress exposure on psychological health. We also assess directly older adults’ perceptions of the resources and circumstances that could

enhance their coping ability, adding to our understanding of what older adults themselves regard as important in enabling resilience.

In the sections that follow, we outline psychological, social, and socio-economic factors that have been identified in the literature as playing a role in facilitating, or inhibiting older adult's abilities to cope with threats to functioning. We have termed these factors *resources for resilience*, and it is the analysis of how these factors are implicated in coping that forms the basis of this report. Focusing policy efforts toward enhancing the availability of protective resources for older adults could ultimately play an important role in promoting resilience for older adults and their communities.

3.Resources for resilience: Psychological factors

3.1 Introduction

In this section we describe a number of individual difference factors believed to be of significance for promoting resilience in older adulthood. One of the conceptual challenges related to studying processes of resilience arises from the complex bi-directional causal interrelationships among aspects of biological, psychological, and social functioning, that are implicated in resilience. For example, declining physical health could represent a risk factor, an outcome, or a buffering resource implicated in the processes of adaptation that define resilient functioning, depending on context.

Resolving this conceptual complexity is beyond the scope of a single cross-sectional investigation. We therefore followed the approach taken in previous similar studies (Windsor, Anstey, Butterworth, & Rodgers, 2008) that have used self-reported experience of negative life events as a relatively objective marker of stress exposure, and focused on psychological distress- providing a general index of subjective well-being- as an outcome measure. We also examined functional health as a risk factor for psychological distress in light of increasing rates of disability with advancing age (ABS: Survey of Disability, Ageing, and Carers, 2011), and the importance of functional health for retaining independence and engagement (Depp & Jeste, 2006; Rybarczyk et al., 2012)

The individual difference characteristics described below represent aspects of personality and self-regulatory functioning included in the current analysis that are typically regarded as being relatively stable over time, and that have been identified as key coping resources (thereby promoting resilience) in previous research.

3.2 Optimism.

Optimism has been identified as a protective factor contributing to resilient outcomes (Jackson & Watson, 2004; Masten & Reed, 2002). Dispositional optimism reflects a general expectation that future outcomes will be positive, with this expectation extending across different life domains (e.g., health, work, and family; Scheier & Carver, 1985). In contrast, pessimism is a general negative expectation that things in the future will not go well. According to the adversity-belief-consequence model (Ellis, 1962) optimistic or pessimistic beliefs about a given event will determine an individual's interpretation of that event. Optimists attribute negative events to specific factors which can be changed and are often viewed as temporary in nature. In other words, those with a more optimistic outlook have a tendency to positively reframe negative situations. Optimists generally have lower levels of depression than those with a pessimistic disposition and optimism has been reported to moderate the relationship between life-stress and psychological adjustment, and between life-stress and global life satisfaction (well-being) in a sample of younger adults (Chang, 1998). Dispositional optimism has also been shown to predict well-being in younger, middle-aged, and older adults (Isaacowitz, 2004) and has been associated with proactive coping in older adults facing chronic illness (Rybarczyk et al., 2012).

3.3 Purpose in Life

A sense of purpose has been defined as a motivating factor that provides individuals with a sense of meaning in life (Frankl, 1959), the absence of which culminates in feelings of boredom, emptiness, and lack of purpose. Purpose in life has been linked to the concept of flourishing, defined as having good health and a general sense of well-being (Ryff & Singer, 1998). Ryff (1989) conceptualised individual well-being as being comprised of six core dimensions, including self-acceptance, purpose in life, personal growth, positive relations with others, environmental mastery, and autonomy. It has been argued that purpose in life provides a coherent sense of identity, which stimulates forming goals and goal directed

behaviour (McKnight & Kashdan, 2009). Indeed, having salient goals to pursue and a sense of coherence are positively correlated with a greater sense of purpose in life (Pinquant, 2002), and with a more positive view of the future (Rappaport, Fossler, Bross, & Gilden, 1993). Other studies have demonstrated health benefits associated with a greater sense of purpose. Higher levels of purposeful engagement have been associated with reduced levels of inflammatory response in a sample of 92 older women over the age of 65 years (Ryff, Singer, & Love, 2004), and with better perceived physical and mental health in a sample of oldest-old adults (Nygren, Jonsen, Gustafson, Norberg, & Lundman, 2005). A recent study using the Australian Longitudinal Study of Ageing (Windsor, Curtis, & Luszcz, 2015) found that purpose in life was associated with reduced mortality, and positive outcomes for health and cognition that were retained over an 18 year interval. The centrality of a sense of purpose to formulating and managing goals means that purpose could be a key psychological resource underlying active efforts toward coping with stressors (e.g., problem focused coping, Folkman & Lazarus, 1980).

3.4 Control beliefs

Self-efficacy, that is, a person's confidence in their ability to perform a task and their perception of controllability over the action required of the task (Bandura, 1977), was identified as a key component of resilience in early research (Gillespie et al., 2007; Jackson & Watson, 2004; Masten & Reed, 2002). Self-efficacy is conceptually similar to control beliefs, which encompass two related dimensions of personal mastery and perceived constraints (Lachman & Firth, 2004; Lachman & Weaver, 1998). Personal mastery embodies self-efficacy and the personal belief in one's competence and effectiveness in goal attainment. Perceived constraints, refers to the extent that people believe there are obstacles or factors beyond their control interfering in goal attainment and their capacity to meet or cope with challenges.

The literature generally suggests that those with higher levels of perceived control have higher levels of subjective well-being and in older adults, control is a protective buffer in times of stress, allowing people to view the world as predictable and controllable (Montpetit & Bergeman, 2007; Rodin & Timko, 1992; Wrosch, Heckhausen, & Lackman, 2006). Other studies have demonstrated that higher levels of mastery and lower perceived constraints are associated with better health, lower depressive symptoms, and greater satisfaction with life, regardless of income level (Lachman & Weaver, 1998). However higher levels of control may not always buffer against adversity. For example, Wortman et al. (1992) found widows with a higher sense of control and mastery did not cope as well with loss of their spouse compared to those with lower sense of control.

3.5 Self-regulation: Assimilative and accommodative coping

The dual-process framework of behaviour regulation (Brandtstäder & Renner, 1990) proposes that people monitor their behaviour, identifying discrepancies between their *actual* state (e.g., being overweight and lethargic), and their *desired* state (e.g., being fit and healthy) of being. Discrepancy reduction is achieved through the use of assimilative or accommodative self-regulatory coping processes. Assimilation is defined as a focus of attaining goals through the modification of the environment. This is achieved by engaging proactive and intentional behaviours and inhibiting goal irrelevant information (Brändstadter & Rothermund, 2002). For example, an individual with the goal of becoming healthier might employ assimilative coping efforts such as going to the gym and improving their diet. Goal attainment is associated with positive outcomes and increased motivation, improving self-efficacy and sense of control (Leipold & Greve, 2009), contributing to the fundamental building blocks of resilience.

Accommodation on the other hand, is the process whereby individuals reduce perceived discrepancies between the desired state and actual state by modifying goals and aspirations

(Brändstadter & Rothermund, 2002). Through this process, goals may be revised, with unattainable goals modified, downgraded, or abandoned. New goals may be substituted, a process defined as goal re-engagement (Carver & Scheier, 1998). For example, if a chronic illness prevents efforts at improving health through exercise, an individual might accept their current state of health as 'just the way it is for someone my age' and concentrate instead on goals around enhancing their social relationships.

Although processes of assimilative and accommodative coping are generally considered to be trait-like, that is relatively stable, the strategy directed at any one time toward discrepancy reduction may depend upon context, available resources, and environmental demands. Both processes are putatively adaptive and used by people of all ages. However, theory predicts that age differences in self-regulatory processes may be evident across age cohorts, with assimilative processes favoured by younger adults, and the use (and importance) of accommodative processes increasing with age. These methods of coping are likely to be most effective in promoting late life resilience when an individual is able to use them flexibly, exercising sound judgement with regard to whether persistence in goal striving or disengagement from goals will best serve developmental potential.

4.Resources for resilience: Social factors

4.1 Introduction

Social resources in terms of the structure of social networks and the characteristics of individual social ties within those networks have the potential to contribute to coping and to bolstering the capacity for resilience. Indeed, current research points to a positive and robust association between social relationships and health and mental well-being outcomes (Berkman et al., 2000; Cohen & Wills, 1985). Social networks have been defined as "the web of social relationships that surround an individual and the characteristics of those ties" (Berkman et al., 2000, p 847). This definition alludes to both the structure of social networks and the characteristics of individual ties within the network.

Social networks are theorized by Cohen and Wills (1985) to influence health and mental well-being via two mechanisms. Firstly, social relationships are thought to have a direct and beneficial effect on well-being by influencing the size of a person's network, and thereby their level of social integration, availability of social support, and provision of support reciprocity. Secondly, social relationships are thought to contribute to well-being by moderating adverse effects of stress and adversity on well-being outcomes. Thoits (2011) argues the mechanisms by which social relationships exert this stress buffering influence is through enhancing purpose in life and self-esteem, and supporting a sense of control and mastery, indirectly supporting resilience.

The influence of social resources upon health and well-being is well established. For instance, smaller social networks have been associated with depressive symptoms (Barnett & Gotlib, 1988) and higher perceived social support has been shown as a major resource contributing to resilience after controlling for ethnicity and socio-economic status (SES: Schumm, Briggs-Phillips, & Hobfoll, 2006). Of particular relevance to older adults over the age of 65 years, lower levels of social participation, social engagement and smaller social

networks have been shown to predict dementia and cognitive decline (Kawachi & Berkman, 2001). In a wider context, social networks have been shown to contribute to the broader community, underpinning safe, cohesive neighbourhoods and environments, and providing opportunity for participation and engagement.

Social relationships are therefore an important buffer in times of adversity and are associated with both mental and physical health in times of stress and challenge (Walsh, 2003). As a significant protective factor in the interaction of processes and mechanisms that contribute to resilience, social resources have been included in the current study and are outlined in the following section.

4.2 Social resources

Social engagement and participation are cited in the WHO Active Ageing Framework (2002) as key factors contributing to productive older age and supporting ageing well.
Social engagement has been described as the social networks and social support resources available to an individual that provide a buffer in times of challenge (Netuveli et al., 2008). Social engagement can be characterised in terms of:-

1. Social network size: an individual's number of close contacts and the characteristics of the contacts
2. Social activity: the level of engagement in social activities
3. Social support: the evaluation of support that is transmitted among network members (Stine-Morrow & Chui, 2012)

Social engagement may be provided by 'inner circle' network members of close family and friends (see Antonucci, Akiyama, & Takahashi, 2004) or from wider social networks of friends, neighbours, and the community. Social support may be instrumental (tangible help

and assistance), emotional, or informational (e.g., providing information about relevant health services; Stewart, 1993). For older adults, emotional support and resilience are consistently related (Netuveli & Blane, 2008), and numerous studies have reported links between social support and enhanced well-being during times of adversity (e.g., Schumm, Briggs-Phillips, & Hobfoll, 2006; Orthner et al., 2004; Walsh, 2003), as well as lower mortality (S. Brown, Nesse, Vinokur, & Smith, 2003) and slower rates of cognitive decline (James, Wilson, & Barnes, 2011; Ertel, Glymour, & Berkman, 2008; Fratiglioni, Wang, Ericsson, Maytan, & Winblad, 2000).

Social networks are believed to contribute to health and well-being via several different mechanisms. For example, supportive social relationships reinforce positive norms (e.g., engaging in healthy behaviours), facilitate access to economic resources (e.g., enhancing job opportunities) and boost psychological resources like control beliefs (Berkman et al., 2000; Uchino, 2006; Thoits, 2011). In addition to these direct influences of social resources, social support is believed to be an important indirect coping resource under times of stress (e.g., Cohen & Wills, 1985; Windsor, Rioseco et al., 2015), thereby contributing directly to resilience. In the current study, social resources were operationalised as three separate variables. Social contact was defined as frequency of contact with relatives, friends, and younger people. Social engagement was active participation in more formal activities such as volunteering and attending social groups/organizations during the preceding 12 months. Social support was defined as the number of people in a person's social network available to provide various kinds of support.

4.3 Relationship status.

Emerging from the work in family-centred resilience, marriage or intimate partner relationships have been identified as protective factors influencing resilient outcomes. Within families, resilience is fostered by the co-operation and mutual support of intimate partners or confidants, especially when tackling adversity or negative life events (Walsh,

2003). The values, structure and resources available within a family facilitate resilience by allowing for the re-appraisal of negative life events and in the provision of support to re-invest in life pursuits. In addition, stable relationships and high-quality communications between intimate partners have been shown to foster healthy development of family members (Katz & Gottman, 1993). Several studies have shown marriage and intimate partnerships to foster resilience. For example, Pinquant (2002) examined the relationship between purpose in life and general well-being in a sample of older adults. In this sample, being married was related to having a higher sense of purpose in life. Other studies have shown that intimate partners play an important role in social, and instrumental support and facilitate coping in times of social and economic stress (Conger & Conger, 2002; Van Doesum et al., 2005). Marriage has also been identified as a protective factor for immigrant couples in coping with the stress of unfamiliar cultures and environments (Cheung, 2008).

Relationship status is therefore a pertinent factor when considering coping and the formal and informal support available to support resilience in later life. Older women tend to live longer than men resulting in a demographic trend for widowed women to live alone in their final years. Women are also less likely to re-marry after the loss of a spouse compared to older men (Walsh, 2012). Decreased family support may also result from the high divorce rate and for those who have never married. There is also an emerging trend for older people to be in a committed relationship but choose to live separately, or 'living apart together' (Cherlin, 2010). This is especially so for many widowed women who choose not to re-marry, especially if they have been immersed in end-of-life caring responsibilities and are reluctant to take on the role again in the future. There is some mixed evidence concerning the effect of widowhood, with research indicating that women in particular tend to recover more readily than men after an initial drop in well-being following loss of their partner (see Windsor,2016) Relationship status is therefore a fundamental factor that may either support resilience in older age or may exacerbate negative outcomes.

4.4 Religious and spiritual involvement

Religion and spirituality are important contributors to well-being for many older adults. Spirituality has been described as the "cognitive, affective, and relational experiences, both individual and communal, that are interpreted as self-transcendence" (Ramsey, 2012, p 133). As noted by Ramsey, religion can provide a sense of meaning and control in people's lives. Religion and spirituality have been attributed with providing comfort and support in times of adversity across demographic boundaries and in spite of limited social support (Rybarczyk et al., 2012). Religion can also confer a sense of connectedness and experience with the past, thereby aiding in identity construction and the sense of self (Sinnott, 2009). Sixty-three per cent of South Australians reported having some religious affiliation compared to 28.1% without in the General Social Survey (ABS: GSS, 2011). Across age groups, older adults are more likely than younger adults to identify as religious and to use religion as a source of coping (Ramsey, 2012). Levin and Chatters (2008) found those for whom religion was important had better psychological well-being when faced with illness and disability. In a further study, older HIV positive men with higher levels of spirituality exhibited higher resilience, lower anxiety, and better ability to cope with impending death (Brennan, 2008).

Religious participation can also foster social support for many older adults through engagement with a spiritual community. As summarised by Ramsey (2012, p 146),

> *"[older adults] see a profound connection between their ability to cope with personal losses and the resources they have been given, and the contributions they have made, as members of spiritual communities".*

The contribution of older adults to both spiritual and wider communities is reflected in a robust relationship between religion and volunteering. Lyons and Nivison-Smith (2006)

found the volunteer rate for those identifying as religious was 43.8% with an average of 146 hours given annually per person, compared to those identifying as non-religious (34.5%), giving 107 hours of volunteering annually. This in comparison to the rate of volunteering for the general population of 38% (ABS: GSS, 2011). Thus religion may not only provide a source of coping and meaning for older adults, but also be a source of social support and social reciprocity.

5.Resources for resilience: Socio-economic factors

5.1 Introduction

The factors contributing to resilience may be found at an individual level and within a person's social network of family and friends as previously outlined. However the resources supporting resilience may also be found in the socio-cultural profiles of the local (neighbourhood) and wider (community) environment in which a person resides (Zautra, Hall, & Murray, 2010). This *Person x Environment* model positions resilience as an integrative construct between the bio-psycho-social resources of the individual and the characteristics of the multiple layers of their environment (Bronfenbrenner, 1977).

Leipold and Greve (2009) favour such a socio-ecological model of resilience. They propose it is the interaction of coping processes with individual personal capital, social-cultural resources, and contextual frameworks that determine resilience and resilient outcomes. Using a Person X Environment model as a reference, a review of the literature has allowed the identification of factors and mechanisms contributing to resilience in terms socio-economic resources and community factors (Aldwin & Igarashi, 2012; Leipold & Greve, 2009). The socio-economic factors included in this study are summarised in the following section.

5.2 Socio-economic status.

Socio-economic status is one of the strongest predictors of mental and physical health, with lower SES individuals tending to fare worse (Gallo & Mathews, 2003). The relationship of SES to health and well-being can be conceptualised using the Conservation of Resources Theory (COR: Hobfoll, 1989). According to COR theory, people strive to retain, foster, and protect the things that they value. These valued entities include regulation of the self (e.g., Vohs & Baumeister, 2011), one's social relations, and how a person fits into the wider context of organisations, their communities, and culture. Central to the maintenance of valued entities is the availability of resources, such as time, money, and social networks. Consequently, people organize their lives in ways that protect against resource loss, allow recovery from loss, and facilitate resource gain. It follows that those with fewer resources are more vulnerable to resource loss and less capable of resource gain.

According to Hobfoll (2011) the extent to which individuals and families can accumulate and maintain resources is strongly influenced by external factors including the culture, and resources into which they are born. For example, safe and livable environments, health care, availability of good employment, good schools, and relative wealth are typically factors given rather than chosen. Wealth fosters good education, safety, and networks through bolstering cultural capital. Similarly from a wider perspective, wealthier communities support better schools, neighbourhoods, and services. Thus, from the COR perspective, the resources conferred by socio-economic advantage result in less exposure to stress, and greater flexibility in methods of coping, making SES a central component of resilience.

Whereas the impact of several of the socio-economic factors mentioned above on physical and mental health outcomes is most obvious in childhood, the effects of socio-economic disadvantage are cumulative, with early hardship resulting in restricted opportunities and health disadvantages that remain evident into later life (Ben-Schlomo & Kuh, 2002). We controlled for education as an indicator of SES established earlier in the lifespan, and focused our analysis on whether contemporaneous socio-economic resources buffered the

association between exposure to stress and psychological distress. Specifically we focused on the experience of current financial hardship, which has been associated with lower well-being in previous studies (Islam, Wills-Herrera, & Hamilton, 2009; Mullis, 1992; Reich & Zautra, 1983). Financial strain and poverty increase vulnerability to environmental conditions (e.g., reduced access to health care, Walsh, 2012), which in turn increase risk of illness and disability, early mortality, and may promulgate care-giver strain.

Finally, we considered both subjective measures of neighbourhood quality, and an objective index of relative social advantage/disadvantage as possible factors that could buffer the associations of negative life events and poor health with psychological distress.
A neighbourhood is a community of location, traditionally defined by its physical location and geography (Black & Hughes, 2001). The social interconnections and physical boundaries of a neighbourhood interact to impact on the health of the community by influencing the level of civic engagement and social capital available to people. Social capital encompasses both the essential infrastructure within a community and the distribution and flow of social resources that contribute toward building full community capacity. Social capital is therefore an important community resource that fosters resilience. For instance, positive physical indicators in a healthy community promote social connectivity and communication, reduce isolation, and promote trust and reciprocity (Langdon, 1997). Moreover the characteristics of a neighbourhood and the influence of place on the individual have been documented as important determinants of health and well-being (Bowling & Stafford, 2007; Fitzpatrick & LaGory, 2003; Ziersch, Baum, MacDougall, & Putland, 2005).

As an objective measure of neighbourhood and SES, we looked at people's access to material and social resources, and their ability to participate in society using the Index of Relative Socio-economic Advantage and Disadvantage (IRSAD) from the Socioeconomic Indexes for Areas (SEIFA: ABS, 2011). Postcode areas were given a ranked score from the IRSAD with lower scores indicating that an area is relatively more disadvantaged compared to an area with a higher score.

6.The Present Study

This report summarises results of a questionnaire-based study conducted to examine processes of resilience among older South Australians. We focused first on whether the experience of more negative life events, and more serious limitations in physical functioning were related to psychological distress. We also assessed the extent to which participants had access to the various psychological, social, and socio-economic resources for resilience reviewed above, and whether relatively greater access to these resources buffered against detrimental effects of negative events and poor functional health on psychological health. Finally, we asked the older participants themselves to rate the extent to which they believed greater access to a variety of resources would be likely to enhance their ability to cope with stressful events.

6.1 Approach and Method: Participants

The “Ageing Well: Building Resilience in Individuals and Communities” survey was distributed during mid May to the end of July 2015, and was made available for completion either on-line or in hard copy form. The on-line version could be accessed via the Flinders Centre for Ageing Studies web-page (www.flinders.edu.au/sabs/fcas) or by direct link to the survey on information flyers distributed electronically.

Participants were recruited from community and Government agency on-line networks, including the Seniors Card network via advertisement in the WeekendPlus on-line magazine, the Australian Association of Gerontology (AAG), Council of the Ageing (COTA), SA Office for the Ageing networks, and Local Council community on-line engagement web-sites, and HACC groups. Groups and organisations were forwarded electronic and hard-copy flyers detailing the purpose of the survey and calling for participants over the age of 60 years to

undertake the survey. Promotion of the survey was also undertaken via interview on local radio and through the Flinders University Twitter account. In addition, participants were invited to take part in the survey via an invitation sent to eligible adults registered on a research database held by the Flinders Centre for Ageing Studies.

The online study was commenced by 194 people, with 160 surveys completed. Data from seven surveys completed by younger people (all aged under 50) were excluded from analyses. Hard copies were received from 103 people. This resulted in a sample of 263 participants aged 60 and older (69% completing the online survey, and 39% the paper-and-pencil survey) who provided data that were used in the current report. Characteristics of the study sample are described below.

6.2 The Questionnaire

The questionnaire was designed to capture a range of individual characteristics, experiences and resources believed to be involved in processes of resilience, as determined by a review of the relevant literature (e.g., Leipold & Greve, 2009; Aldwin & Igarashi, 2012). The measures included risk factors (e.g., experience of recent negative life events, health limitations), resources potentially contributing to resilience (psychological, social, and socio-economic factors) and a measure of psychological distress that was used as a general indicator of subjective well-being. Details of the measures included in the survey are provided in Appendix 1.

7. Results

7.1 Sample characteristics

Age and gender. As shown in the following graphs, the majority of respondents who completed the survey were female and aged between 65 and 74 years. The mean age of participants was 73.2 years (SD = 11.7), with ages ranging between 50 and 100 years. Although females significantly outnumbered males almost three to one, there were no significant differences between men and women on measures of health and well-being, or psychological resources.

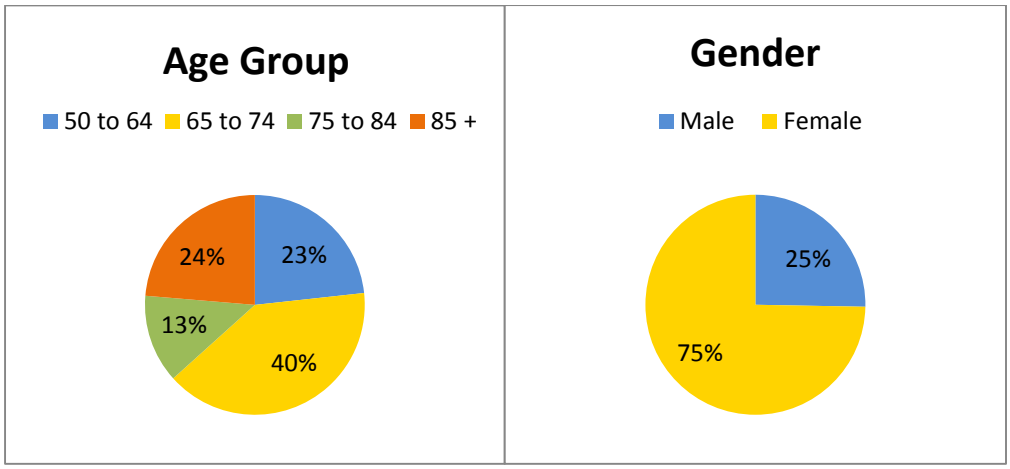

Figure 1. The left panel shows the percentage of participants aged 50 to 64, 65 to 74, 75 to 84, and 85 and older. The right panel shows the breakdown of men and women.

Country of Birth and Language. Respondents were predominantly born in Australia (71%) followed by the UK (18%), Europe (6.5%), and other countries (5%) including the USA, Asia, India, South Africa, New Zealand and Fiji. Only one respondent identified as being of Aboriginal or Torres Strait Islander origin. English was the main language spoken in the home. Six respondents (2%) were bi-lingual, and one respondent indicated Korean to be their first language.

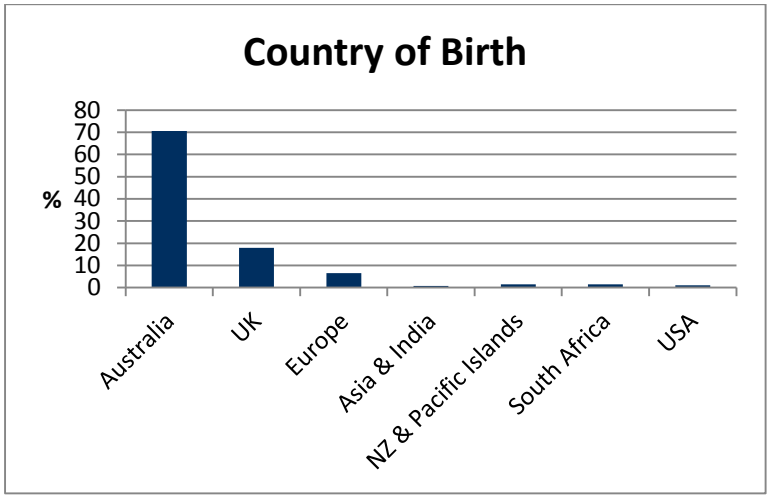

Figure 2. Most participants were born in Australia, followed by the UK and Europe.

Relationship status. The majority of respondents were either married or in a de facto relationship, with 2 percent being in a committed relationship but living apart. Those who were widowed represented 28 percent of the sample, with 16 percent either divorced or separated. Ten respondents (3.8%) had never married.

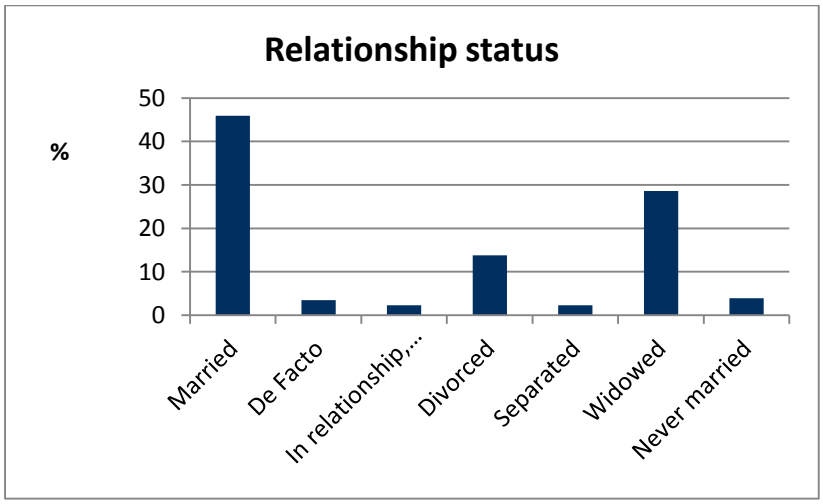

Figure 3. Almost half participants were married, with being widowed the next most common relationship status

Education and Employment. Forty-one percent of respondents had completed a postgraduate degree/diploma or bachelor degree. Certificate/diploma qualifications were held by 19 percent and 5 percent reported having completed a trade or apprenticeship. Secondary school education was completed by 25 percent, 12 percent had some secondary schooling, and 3 percent reported 'other' schooling, for example private tutoring, 'School of the Air', primary school, and no formal schooling.

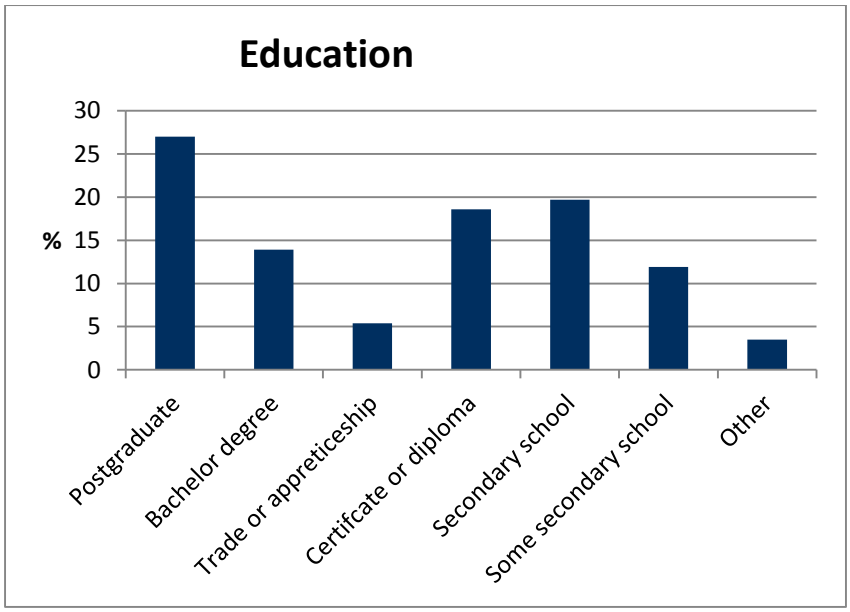

Figure 4. Percentages of participants having completed different levels of education

The majority of respondents were retired from the workforce (65%). Ten percent were in full-time employment, 9 percent in part-time employment and 3 percent reported casual employment. Home duties were indicated by 7 percent of those surveyed, with 5 percent unable to work or unemployed.

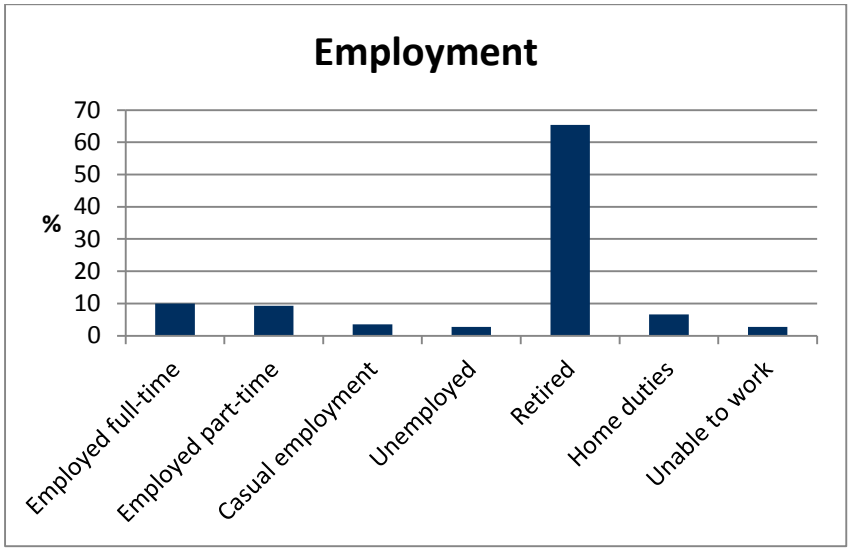

Figure 5. Percentages of participants engaged in different types of employment

Chronic health conditions. Participants indicated whether or not they suffered from various commonly experienced chronic health conditions (see Appendix 1). The total number of conditions reported by respondents ranged from 0 to 7 (*M* = 1.96, *SD* = 1.34), with 12 percent of respondents reporting no chronic ailments. Over half (58%) had one or two chronic conditions and 25 percent had three to four complaints. Twelve respondents reported having between five and seven chronic conditions.

The most common conditions were arthritis or some form of bone/joint complaint (60.2%), and hypertension (35.2%). The incidence of osteoporosis was almost 19 percent with a similar incidence (12%) for both diabetes, and cancer or some form of malignant tumour. Sixty percent of respondents reported having an additional chronic condition. These included bowel complaints, fibromyalgia, depression and anxiety disorders, chronic allergies, renal disease and macular degeneration.

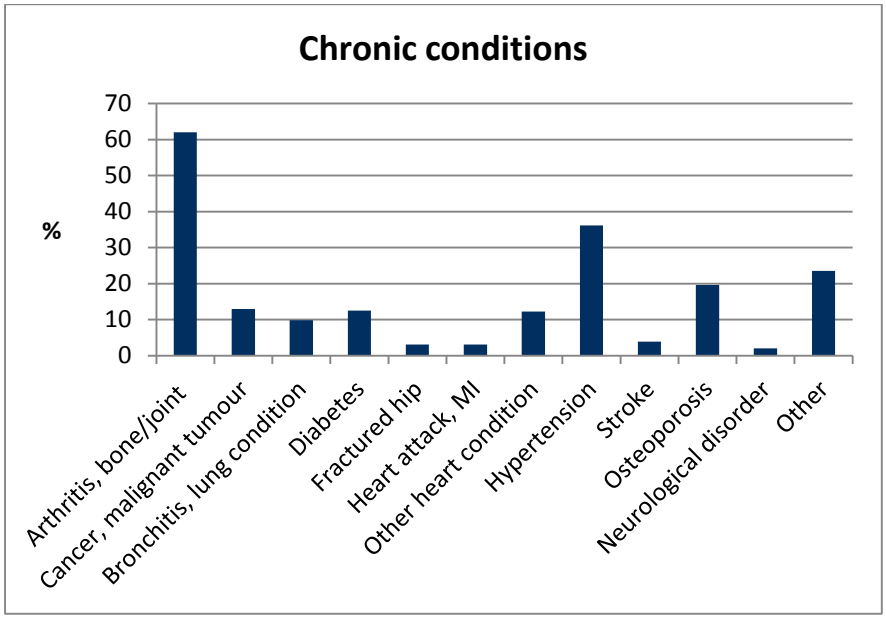

Figure 6. Proportion of the sample reporting different chronic health conditions

Housing tenure and occupancy. Freehold home ownership was reported by the majority (72%) of participants, with a further 12 percent having a mortgage. Six percent rented private housing and 4 percent rented public housing, with 6 percent living in alternative accommodation (e.g., living rent free, boarding). Most lived either alone (42%) or with one other person (48%). Living with two or more people was reported by 10 percent of respondents.

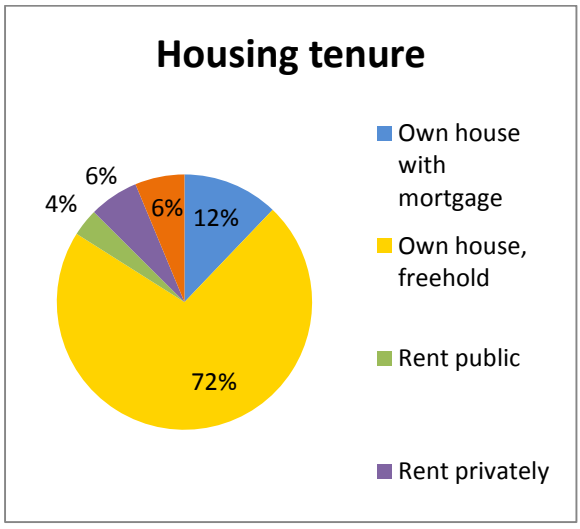

Figure 7. Breakdown of home ownership of the sample

Driving and Distance to Services. The majority of respondents were current drivers with only 12 percent having given up driving and a further 5 percent reporting having never driven. Shops and services were within 1 km for 45 percent of respondents and between 1 to 3 kms for 43 percent. Eight percent had 3 to 5 kms to travel to access services and 4 percent were more than 5 kms away from services.

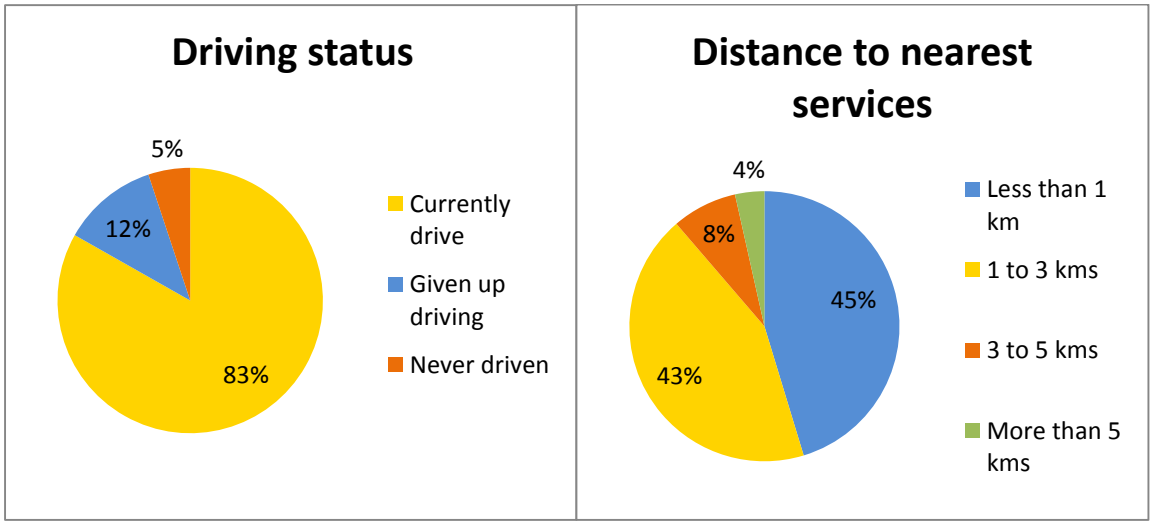

Figure 8. The left panel shows the proportion of current drivers in the sample. The right panel provides a breakdown of the distance respondent have to travel to access their nearest shops and services

7.2 Comparison of the study sample with the older South Australian population

The following section compares the study sample with the older South Australian population on several socio-demographic characteristics. Overall the study sample comprised a higher proportion of females relative to the population, and reported higher levels of post-school qualifications. Relationship status was comparable to the general population.

Age and Gender. In 2011 the proportion of South Australians over the age of 65 years represented 16 percent of the State population, 2.3 percent of whom were aged 85 years or over. The proportion of males to females across all age groups was 49 percent and 51 percent respectively. However with advancing age, females outnumbered males across age groups, reflecting a global trend for older age populations to have a higher proportion of women across age groups. In our sample there was an overall ratio of women to men of almost 3:1 indicating our sample was over-represented by female respondents. The following table compares the proportion of women to men across older age groups in our sample with those in SA from the 2011 census.

Table 1. Comparison of sex ratios across age groups for the study sample and the older SA population. Females were over-represented in our sample, however this was less evident in the oldest age group.

	2011 SA Census		Survey Sample	
	Female (%)	Male (%)	Female (%)	Male (%)
60 – 64 years	-	-	81.6	18.3
65-74 years	51.9	48.1	73.5	26.5
75 – 84 years	55.4	44.6	75.6	24.2
85+ years	65.9	34.1	68.9	31.2

Marital Status. The marital status of respondents in our survey was comparable to the South Australian 2011 Census data for older adults over the age of 65 years. Almost half of the respondents in our sample were married or in a de facto relationship (49.4%) in comparison to 58 percent reported in the Census. Sixteen percent of those surveyed were separated or divorced compared to 11.4 percent in the census Data. Similarly, the proportion of widows (28.6%) and people who had never married (3.9%) in our sample was comparable to the census data (26.8% and 3.7% respectively).

Education. Our sample differed from older South Australians over the age of 65 years in terms of educational qualifications. There were higher proportions of those holding a non-school qualification compared to the data reported in the 2011 South Australian Census. The following table presents a comparison of highest education qualifications between our survey respondents and people aged 65 years plus in SA.

Table 2. Comparison of education qualifications for the study sample and South Australians aged 65 + years

Qualification	SA Census 2011 %	Survey Sample %
Certificate (including trade/apprenticeship)	59.8	5.4
Advanced diploma/Diploma	12.4	18.6
Bachelor degree	12.4	13.9
Post-graduate degree/Grad diploma/Grad Certificate	5.1	27.0

8. Analysis of the resilience process.

8.1 Buffering effects of psychological, social, and socio-economic resources.

The focus of our analyses of resilience processes was on examining whether the key resources for resilience outlined in earlier sections were implicated in buffering the association of risks with mental health. To examine these buffering effects, we conducted a series of multiple regression analyses (for details on this approach see Cohen, Cohen, West & Aiken, 2013). Briefly, regression approaches allow the assessment of the degree to which a set of predictor variables (e.g., negative life events, optimism) are reliably associated with an outcome variable (e.g., psychological distress). For example, do people who experience more negative life events also, on average, tend to experience higher psychological distress? Here, we assessed associations of two sources of risk- (i) the experience of negative life events (a likely source of stress) and (ii) poor functional health, as predictors of psychological distress.

By including tests of moderation, or 'buffering' effects (statistical interactions) in our analysis, we were able to examine whether adverse effects of the risk factors on psychological health were, on average, experienced to a lesser degree by participants who possessed higher levels of resilience-related resources. Put more simply, these analyses provided a direct means of addressing questions such as, "Are older adults who experience high levels of negative life events (a risk factor) less likely to experience psychological distress (the outcome) if they also possess a strong sense of purpose (the moderating resource)"? If the answer to this question is "yes", then the results would support the role of having a sense of purpose as contributing to processes involved in resilience.

To summarise, the analyses that follow will address the following questions:

(i) Are risk factors (negative life events, poor functional health) associated with higher levels of psychological distress?

(ii) Are resources for resilience (psychological, social, and socio-economic) associated with lower levels of distress?

(iii) Are the associations of risk factors (negative life events, poor functional health) with psychological distress less evident among older adults who possess relatively higher levels of resources for resilience?

In the sections that follow, we first provide descriptive information on the risk factors that were a focus of our analysis (negative life events and poor functional health) before summarising the main findings of our analysis of resilience processes. Details of the regression models are provided in Appendix 2.

8.1.1 Risk factors for psychological distress – negative life events.

Participants were asked to indicate whether or not they had experienced any of a series of significant life events during the previous 12 months. Several events reflected experiences likely to be positive (e.g., got married, became a grandparent); however most represented events that could be objectively regarded as negative (e.g., death of a family member, worsening of a health condition). The list of life events assessed is included in Table 3. The number of negative life events reported was summed to provide an overall index of exposure to stressful events in the previous 12 months.

Participants reported experiencing, on average, just over one negative life event (*M* = 1.38, *SD* = 1.51) during the preceding 12 months. Thirty-five percent of respondents did not report any negative life events, with 55 percent experiencing between 1 and 3 events. A further 10 percent experienced between 4 and 10 negative events. The following figure shows the predicted level of psychological distress associated with different levels of negative life events.

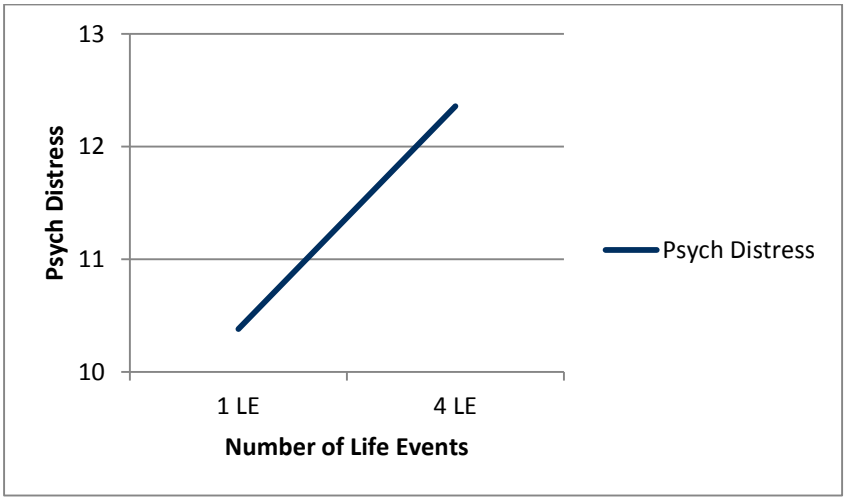

Figure 9. Predicted level of psychological distress at different levels of negative life events

The frequency with which participants reported experiencing the different life events is shown in Table 3 and Figure 10. Death of a close friend was the most frequently reported life event (31%). Health issues followed with 26 percent reporting worsening of a chronic health condition during the last year, and 17 percent being diagnosed with a chronic health condition. Serious personal injury was sustained by 8 percent of respondents and 11 percent witnessed serious injury to a significant other. Age was not correlated with the number of life events reported by respondents.

"Other" negative life events listed in response to an open-ended question included:

- Detrimental changes to landscaping and environment around home unit
- Having a minor traffic accident
- Suicide of significant other suffering with chronic neurological condition
- Family dying interstate
- Deteriorating mobility

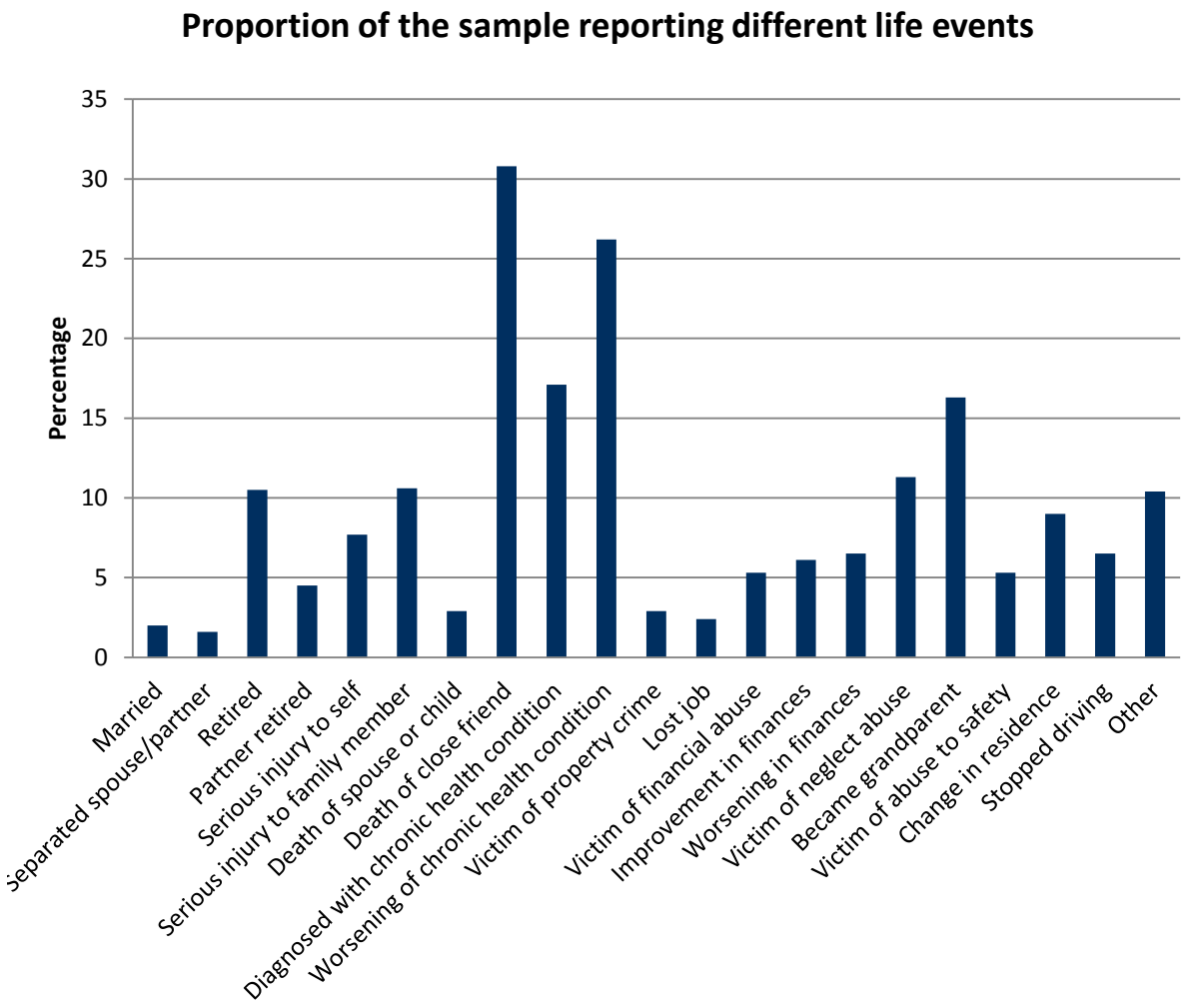

Figure 10. Frequency of reported significant life events during the preceding 12 months

Table 3. Reported frequency of significant life events during the preceding 12 months.

Life Event	Yes		No	
	N (%)		N (%)	
Married	5	2.0	241	98
Separated from spouse/partner	4	1.6	243	98.4
Retired self	26	10.5	221	89.5
Retired partner	11	4.5	235	95.5
Serious injury self	19	7.7	227	92.3
Serious injury other	26	10.6	219	89.4
Death child or spouse	7	2.9	237	97.1
Death close friend	76	30.8	171	69.2
Diagnosed chronic health condition	42	17.1	203	82.9
Worsening chronic health condition	65	26.2	183	73.8
Victim property crime	7	2.9	238	97.1
Lost job	6	2.4	240	97.6
Victim financial abuse	13	5.3	234	94.7
Improvement in finances	15	6.1	230	93.9
Worsening in finances	16	6.5	230	93.5
Victim of neglect abuse	28	11.3	219	88.7
Became grandparent	40	16.3	205	83.7
Victim of personal safety abuse	13	5.3	231	94.7
Change in residence	22	9.0	227	91.0
Stopped driving	16	6.5	227	93.4
Other	24	10.4	206	89.6

8.1.2 Risk factors for psychological distress - physical functioning.

Functional decline increases with age (Lachman & Weaver, 1998a) and disability has been associated with poorer outcomes for mental health among older adults in various studies (Huppert, 2005; Morrow & Durso, 2011). Consequently we considered (poor) physical functioning as a risk factor for psychological distress in our analysis. Physical functioning was assessed using a well-established measure (the PF-10 from the SF-36; Ware et al., 1992, see Appendix 1), that assessed the degree to which participants were restricted in performing everyday activities such as lifting groceries or climbing stairs. Scores on our index were standardized to a range of 0 - 100, with higher scores corresponding to better functioning/lower levels of disability (i.e., 100 = excellent no functional disability, 0 = very poor functional ability).

8.1.3 Direct associations of risk factors with psychological distress.

As a first step in our analysis of resilience processes, we examined whether the two identified risk factors- negative life events and physical disability- were each independently associated with psychological distress (assessed using the K-6; see Appendix 1). We examined the associations using a regression analysis with psychological distress as the outcome, and the two risk factors as predictor variables. We also included age, gender, and education in the model as covariates, so that the associations of negative life events and physical disability with psychological distress could be considered independently of these background characteristics.

Results of the analysis (see Appendix 2 for details) showed statistically reliable associations of both negative life events and physical disability with psychological distress. Standardised regression coefficients indicated that experiencing relatively more negative life events (β= .235), and poorer functional health (i.e., higher disability; β = -.362) each corresponded with higher levels of distress. Figure 11 shows predicted values for psychological distress for those reporting high and low levels of physical function, and for those reporting low compared to high levels of negative life events during the preceding year.

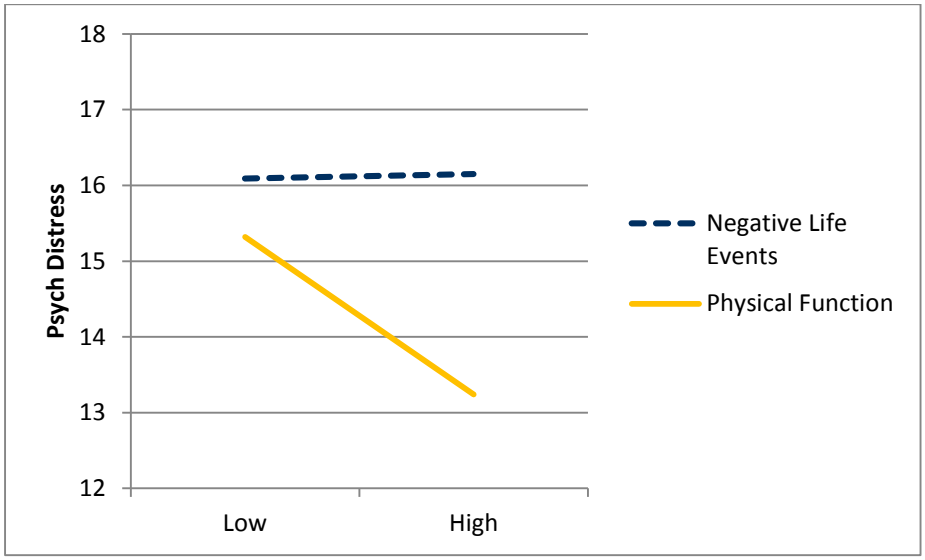

Figure 11. Predicted values for psychological distress associated with high and low exposure to negative life events, and associated with high and low levels of physical function.

Having established statistically reliable associations of the risk factors with distress, the next step was to examine the extent to which these direct associations varied according to the availability of resources for resilience. Results of these analyses are summarised in the following sections.

8.2 Resources for resilience: Psychological factors

8.2.1 Purpose in life

The regression models that formed the basis of our moderation analyses were specified in 3 steps. The covariates (age, gender, education) and risk factors (negative life events and physical disability) were included in the model at a first step. The moderating resource variable (e.g., sense of purpose) was added next at a second step. This provided a test of the nature, and statistical reliability of the direct association of the resource with psychological distress (e.g., is a higher sense of purpose, on average, associated with lower levels of distress?). Interaction terms (life events x resource, and physical disability x resource) were added at a third and final step to test moderating effects.

Our analysis of sense of purpose as a resource variable implicated in the resilience process revealed a statistically reliable association of sense of purpose with psychological distress (Step 2, see Appendix 2). The relationship was negative (β= -.261) indicating that older adults who reported a higher sense of purpose, on average, reported lower levels of psychological distress.

The third step of the model revealed a small but statistically reliable interaction, indicating that the relationship between negative life events and psychological health varied as a function of purpose in life. The nature of the moderating effect of purpose in life is displayed in Figure 12. For older adults with a relatively high sense of purpose, levels of psychological distress tended to remain generally lower on average - irrespective of exposure to negative life events. However, for those with a relatively low sense of purpose, having higher exposure to negative events was associated with greater psychological distress. This finding supports a buffering role of purpose in life. More specifically, having a strong sense of meaning associated with one's daily activities could be protective against the detrimental effects of adverse life events on psychological health. Thus our results support the role of purpose in life as a resource for resilience- at least in the context of experiencing adversity. The results did not provide support for purpose buffering the association of functional health with psychological distress.

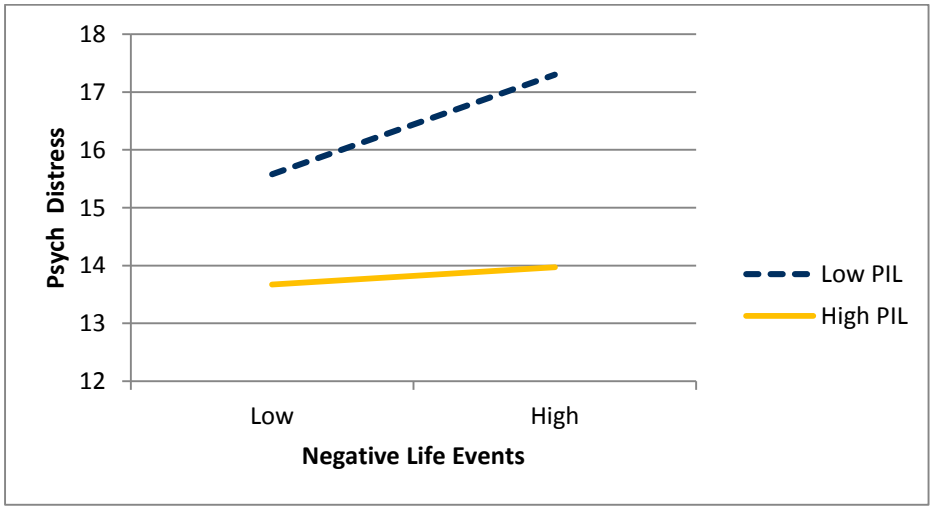

Figure 12. Moderating effect of purpose in life upon negative life events with psychological distress

8.2.2 Optimism

Next, we examined optimism as a psychological resource that could be implicated in the resilience process. The analysis revealed a statistically reliable direct association of optimism with psychological distress (β= -.275), with older adults who reported higher optimism also tending to report lower levels of psychological distress.

The moderation analysis revealed an interaction between negative life events and optimism, and between physical disability and optimism in predicting distress. The nature of the moderating effects are shown in Figures 13 and 14. Older adults with higher levels of optimism had lower levels of psychological distress regardless of the number of negative life events they reported experiencing during the preceding year. For those with lower levels of optimism, higher psychological distress was associated with higher levels of negative life events (although as shown in Figure 13, this effect was small). Further, among older adults with higher optimism, levels of psychological distress tended to remain generally low, whether or not they also reported higher or lower levels of disability. However, for those with low optimism, having poorer functional health was associated with greater psychological distress. As was the case with purpose in life, the moderation analysis for optimism supports its role as a protective psychological resource that could enhance resilience among older adults in poorer health.

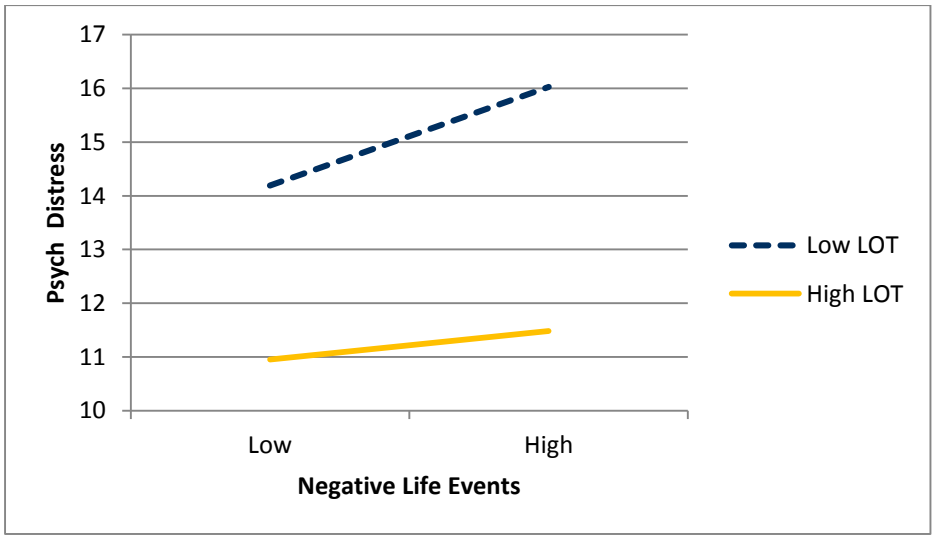

Figure 13. Moderating effect of optimism upon negative life events and psychological distress

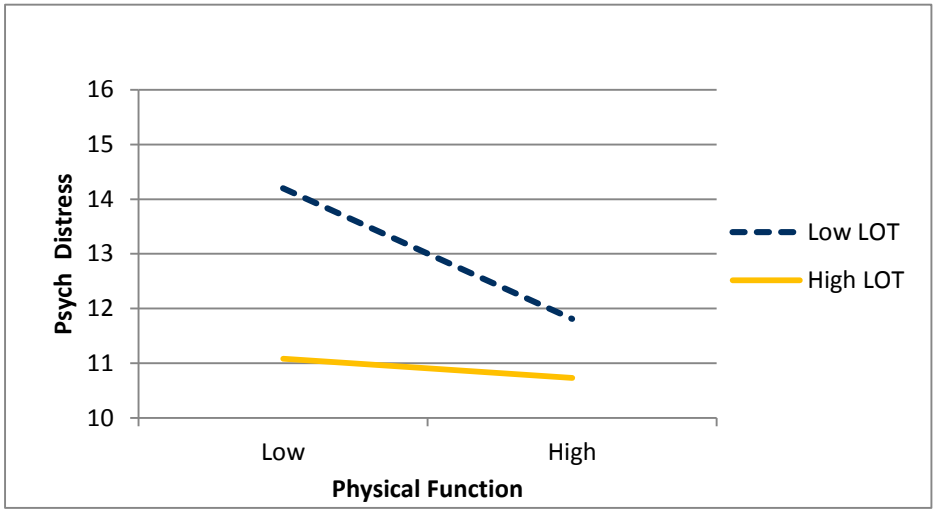

Figure 14. Moderating effect of optimism upon physical functioning with psychological distress

8.2.3 Control beliefs

The effect of personal control upon levels of psychological well-being in the context of resilience was examined next. There was a statistically significant direct association of personal control with psychological distress (β= .273). Older adults who reported lower levels of personal control (e.g. higher perceived constraints over the capacity to exercise control) reported higher levels of psychological distress.

Analysis of the moderation between control and mental well-being showed a small interaction between physical health and psychological well-being. Figure 15 displays the nature of the moderating effect. Older adults reporting higher overall levels of control (i.e., having lower constraints in perceived control) tended to have generally lower levels of psychological distress regardless of their level of physical health. In contrast, for those with lower control (i.e., high perceived constraints), poorer physical health was associated with higher levels of psychological distress. Thus, the results suggest that having higher levels of control in one's life could provide a buffer between the adverse effects of poorer health and functional limitations upon psychological well-being. The results did not reveal a trend for control buffering the effects of negative life events on psychological well-being.

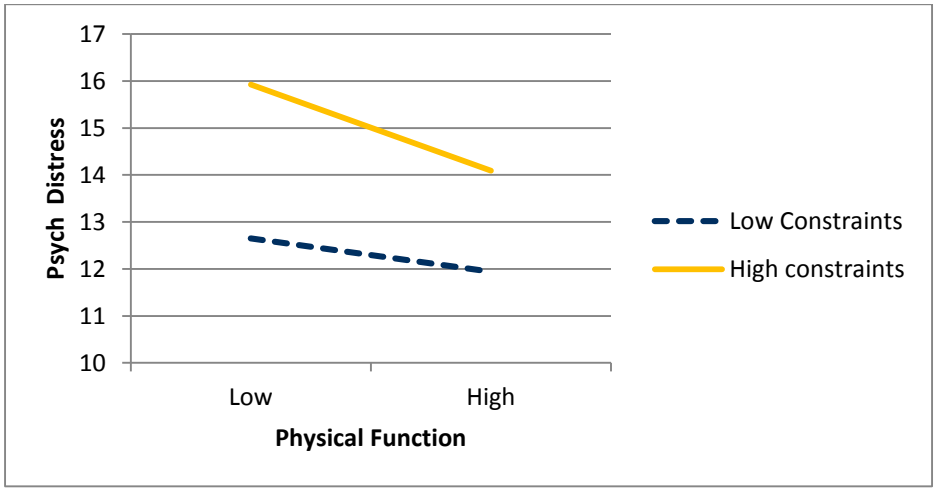

Figure 15. Moderating effect of constraints in control upon negative life events with psychological distress

8.2.4 Self-regulatory flexibility (assimilative and accommodative coping)

Of interest to late life resilience is whether being able to effectively and flexibly manage one's goal-directed behaviour across different life contexts facilitates effective coping. More specifically, we were interested in whether people's ability to engage in both the tenacious pursuit of goals (assimilative coping), and disengagement from unachievable goals (accommodative coping) was implicated in the resilience process.

Both forms of coping are regarded as important resources for resilience, depending on context. For example, when a goal is important and achievable, it is (generally speaking) worth pursuing, whereas when a goal is not achievable, or its pursuit comes at too great a cost to resources, disengaging from that goal represents a more promising strategy. Thus, rather than considering each coping method independently, we constructed an index of self-regulatory flexibility based on a combination of measures of assimilative and accommodative coping (see Appendix 1) using the minimum of the two scores (see Ersner-Hershfield, Mikels, Sullivan, & Carstensen, 2008; Kaplan, 1972).

There was a small direct effect of coping flexibility upon psychological well-being (β= -.075). Older adults reporting a more flexible style of coping generally displayed better mental well-being with lower levels of psychological distress.

There was also evidence of an interaction between self-regulatory flexibility and negative life events in the prediction of psychological distress, shown in Figure 16. Older adults who were higher in coping flexibility had lower levels of psychological distress, whether or not they reported experiencing negative life events. In contrast, higher levels of psychological distress were reported by those who experienced more negative life events, and had lower self-regulatory flexibility. Our results suggest that the ability to cope with challenges is enhanced for older adults who are able to flexibly engage with, or disengage from different goals in ways that align with the resources that are available to them.

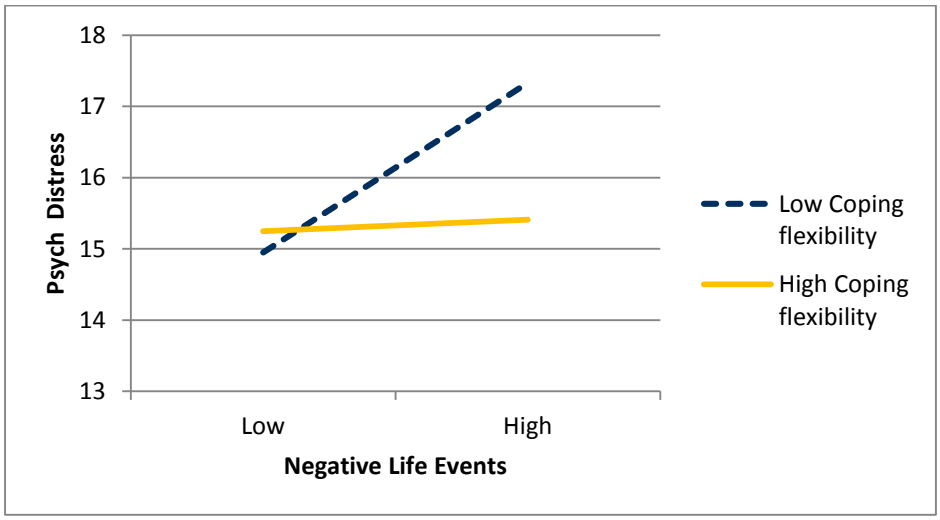

Figure 16. Moderating effect of self-regulatory flexibility upon physical health with psychological distress

8.3 Resources for resilience: Social factors

Our analysis of social network resources as buffers of the association between risk factors and psychological distress initially considered social engagement (volunteering and participation in social groups, see Appendix 1.), social contact (frequency of contact with family, friends, and younger people) and social support (See Appendix 1.).

Social engagement had a statistically reliable association with psychological distress (β= -.542). Generally, older adults with higher levels of social engagement reported lower levels of psychological distress compared with those having lower levels of social engagement. However, our tests of interactions did not reveal any evidence for social engagement buffering the associations of negative life events or physical functioning with distress. Frequency of social contact was not related to psychological distress, and did not emerge as a buffer. Higher levels of social support were related to lower levels of psychological distress (β= -.154), although once again, there was no evidence of moderating effects.

8.3.1 Partner status

The role of intimate relationships as a resource supporting resilience was examined, however there was no significant association between a person's relationship status and their level of psychological well-being.

8.3.2 Religiosity

There was no direct association of religiosity/spirituality with psychological distress. Moderation analyses also did not provide evidence for religiosity buffering the association of the risk factors with psychological distress.

8.4 Resources for resilience: Socio-economic factors

8.4.1 Financial hardship

Our analyses did not reveal a statistically reliable association between financial hardship and psychological distress. Financial hardship also did not emerge as a buffer in our analysis of moderation.

8.4.2 Index of Relative Socio-economic Advantage and Disadvantage (IRSAD)

The level of relative social advantage or disadvantage of the area in which respondents resided was examined next. The IRSAD had a small but statistically reliable association with psychological well-being (β= -.154), indicating that participants who resided in more socially advantaged areas (as indexed by postcode) on average reported lower psychological distress.

The IRSAD was also found to moderate the relationship between negative life events and psychological distress, as shown in Figure 15. Older adults who resided in more socially advantaged areas recording a higher IRSAD rating, generally had lower levels of psychological distress, whether or not they also reported experiencing negative life events. In contrast, those living in less advantaged areas reported substantially higher levels of distress if they also reported multiple negative life events. The results suggest that older adults living in socially disadvantaged areas may be particularly vulnerable to negative effects of changing life contexts on mental health.

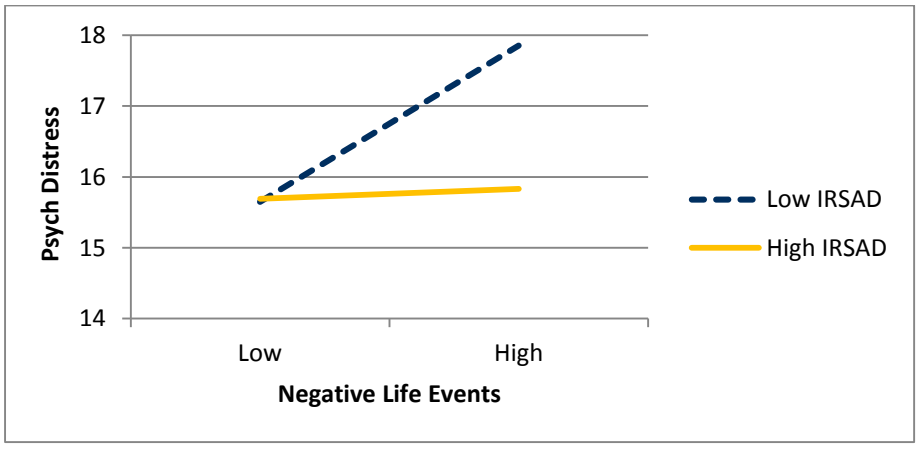

Figure 17. Moderating effect of the social advantage/disadvantage of area of residence (IRSAD) upon negative life events with psychological distress

8.4.3 Neighbourhood characteristics

Finally, the implications of neighbourhood characteristics for resilience processes were examined using the two sub-scales of the Neighbourhood Disorder and Social Cohesion (NDSC) scale. Perceptions of neighbourhood disorder (e.g., poorly maintained areas, and unsupportive neighbours) were not associated with psychological distress in our sample. However, perceptions of neighbourhood social cohesion revealed scores on this scale to be reliably associated with psychological well-being (β= .068).

There was also a small interaction between physical functioning and neighbourhood social cohesion, shown in Figure 16. The social cohesion sub-scale was coded so that higher scores represented lower perceptions of social cohesion. Older adults who rated their neighbourhood as more socially cohesive had a generally lower level of psychological distress, regardless of the level of physical function. Lower levels of physical health were associated with marginally higher levels of psychological distress for those perceiving their neighbourhood to be less socially cohesive.

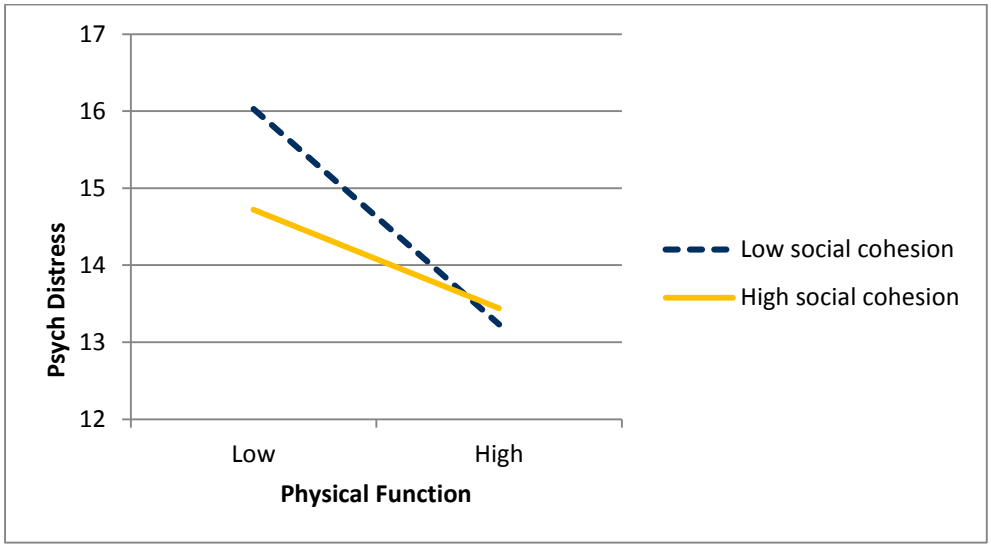

Figure 18. Moderating effect of perceived neighbourhood social cohesion upon physical health with mental well-being

8.5 Interrelationships among risk factors, resources, and psychological distress

As was touched on in the overview, the risk factors and resources for resilience that form the basis of this report are characterized by complex, multidirectional causal relationships. For example, physical health might be legitimately conceptualized as a risk factor (in the case of declining health), a moderator (those with better health may be better placed to cope with stress) or an outcome (stressful life circumstances can impact negatively on health) in the resilience process. Untangling this complexity is not possible in a single cross-sectional study. However, it is important to acknowledge this degree of interrelatedness among variables when considering the relevance of different resources. For example, our results showed that social contact frequency was not directly related to psychological distress, and did not emerge as a buffer of the associations of risk factors with distress. However, it is possible that social contact makes an indirect contribution to resilience by strengthening other resources such as sense of purpose or optimism. Following this reasoning, social contact might have a less immediate impact on the resilience process than some other resources (based on our findings reported above), but nevertheless may contribute more broadly to resource acquisition, which in turn enables resilience. In the following section we provide a brief overview of general interrelationships among the various risk and resource factors, in order that our specific findings regarding patterns of moderation can be interpreted within a broader context.

Our analyses revealed that many of the factors included in this study were interrelated, as shown by the correlations presented in Table 4. For example, as alluded to social engagement and social support were correlated with physical and mental well-being outcomes. Being socially engaged and having a larger support network were positively correlated with purpose in life, optimism, personal control, and with overall satisfaction with one's social life. Those reporting more frequent contact with others demonstrated better mental well-being, although this was more strongly evident for contact with friends rather than relatives.

Social contact was also related to physical health. For instance those reporting poorer self-rated health and more functional disability had lower levels of social engagement and less frequent contact with younger people. It is evident from the multiple interrelationships among the risk factors and resources assessed in this study that multiple factors are likely to interact, contributing both directly and indirectly to resilience processes.

Table 4. Correlation matrix showing associations between major variables

	LE	Age	Educ	PF-10	K6	Soc Sup	Soc Cont	Soc Eng	Relig	PIL	LOT	Cont	Cope Flex	NDSC	IRSAD	SES
LE[1]	1															
Age[2]	-.038	1														
Educ[3]	.001	.413**	1													
PF-10[4]	-.329**	-.546**	-.340**	1												
K6	.362**	-.128**	.077	-.283**	1											
Soc Sup[6]	-.108	-.057	-.079	.065	-.199**	1										
Soc Cont[7]	-.080	.027	-.186**	.113	-.110	.198**	1									
Soc Eng[8]	-.255**	-.037	-.125*	.266**	-.399**	.382**	.254**	1								
Relig[9]	-.134**	-.239**	-.157*	.118	-.060	-.038	.001	-.121	1							
PIL[10]	-.179**	-.142*	-.162**	.281**	-.465**	.338**	.201**	.498**	-.056	1						
LOT[11]	-.101	-.038	-.221**	.191**	-.457**	.252**	.166**	.342**	.003	.501**	1					
Cont[12]	.263**	.150	.293**	.321**	.575**	.247**	-.189**	-.497**	-.014	-.559**	-.548**	1				
Cope Flex[13]	-.102	-.041	-.111	.080	-.277**	.158*	.048	.249**	.068	.291**	.227	-.307**	1			
NDSC[14]	.207**	-.023	.087	-.103	.213**	.207**	-.172**	-.157**	.044	-.161*	-.268**	.232**	-.207**	1		
IRSAD[15]	-.058	.027	-.172**	-.007	-.129*	.030	.110	.092	.014	.063	.289**	-.151*	.130*	-.315**	1	
SES[16]	-.308**	.188**	-.052	.061	-.259**	.105	-.014	.109	.131*	-.011	.052	-.184**	.155*	-.141*	.140*	1

Note: [1] LE is Negative Life Events, [2] Age is age of participant at survey, [3] Educ is highest level of education, [4] PF-10 is Physical Function,[5] K6 is Psychological distress, [6] Soc Sup is Social support, [7] Soc Cont is Social Contact, [8] Soc Eng is Social Engagement, [9] Relig is importance of religious beliefs, [10] PIL is Purpose in Life, [11] LOT is Optimism, [12] Cont is Control, [13] Cope Flex is Coping, [14] NDSC is Neighbourhood Disorder & Social Cohesion scale, [15] IRSAD is Index of Relative Socioeconomic Advantage & Disadvantage, [16] SES is Index of household financial strain. * $\rho < .05$, ** $\rho < .01$

8.6 Older adults' perceptions of factors promoting resilience

Our analysis of resources contributing to resilience processes reported above was based on a review of conceptual models of resilience in the literature (e.g., Aldwin & Igarashi, 2012; Leipold & Greve, 2009). However, in addition to 'top-down' approaches that consider processes related to ageing from lifespan developmental theoretical frameworks, an invaluable perspective can also be developed by taking a 'bottom-up' approach that considers the views of older adults themselves (e.g., Depp & Jeste, 2006).

We aimed to provide unique insights for informing policy by directly assessing older adults' perceptions of the resources that could help them to cope more effectively with challenges and problems that they face in their lives. Participants rated the extent to which better access to resources including better mental and physical health; more social activity and engagement; security; purpose and control in life; independence; mobility; access to various services; community, neighbourhood, and residential resources, would be likely to enhance their own ability to cope with challenges.

The relative importance of the resources as rated by our older participants are summarised in Table 4 and Figure 17. Having better physical health, being more physically and socially active, having a wider range of hobbies and interests, and being able to let go of the unimportant things in life were the resources ranked as most important. Interestingly, having better access to health, and community resources were not commonly endorsed as being likely to improve coping ability.

The relative importance of the resources to participants in our study, were also examined by age group to establish if priorities change with advancing age. Results are presented in Table 5 and Figure 19. Responses showed that physical health, physical activity and maintaining independence increased in importance with increasing age. Older age was also associated with seeing the potential value in having more control in their lives and more community

interest in their views and opinions. All of these interrelated factors contribute to the maintenance of independence and to the ability to cope with challenges associated with ageing. Transport was also an important issue for oldest-old adults in our survey. Relatively few young-old adults saw better transport as likely to enhance their coping, whereas almost a quarter of the oldest respondents saw improved transport as likely to be of benefit.

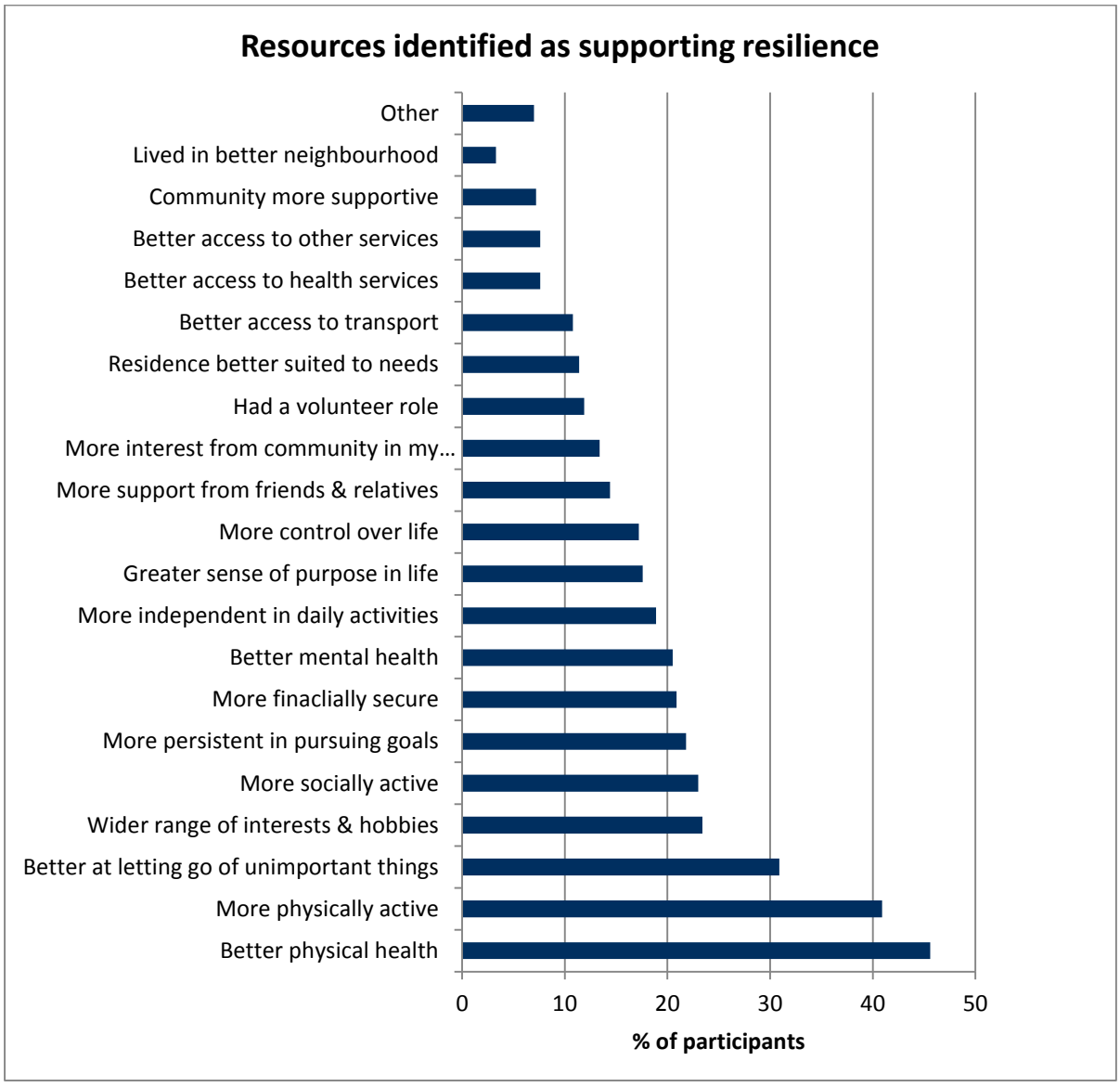

Figure 19. Resources identified by older adults as important for helping people cope with challenge and change. Percentages represent the proportion of respondents who endorsed "agree" or "strongly agree" in response to the question of whether having better access to these resources would enhance their coping

Table 5. Importance of resources for helping older adults cope with change and challenges in later life rated by age group

Resource	Agree/Strongly Agree (%)				
	60 - 64 years	65 - 74 years	75 - 84 years	85 + years	All P's
Better physical health	37.2	39.0	48.4	63.3	45.6
More physically active	43.1	31.6	42.5	55.1	40.9
Better t letting go of things not important to me	36.0	23.2	30.3	37.7	30.9
Wider range of interests & hobbies	23.3	18.9	15.1	26.7	23.4
More socially active	34.0	18.9	21.2	21.3	23.0
More persistent in pursuing goals	19.6	23.2	15.2	25.0	21.8
More financially secure	29.4	21.1	9.1	18.3	20.9
Better mental health	29.4	15.9	9.1	26.7	20.5
More independent in daily activities	13.8	11.8	15.1	35.0	18.9
Greater sense of purpose in life	27.4	24.9	9.1	18.3	17.6
Had more control over life	23.5	10.6	12.1	25.0	17.2
Friends & relatives more supportive	23.5	11.7	9.4	14.0	14.4
Community more interested in my views & opinions	9.8	10.5	12.5	21.3	13.4
Had a volunteer role	11.8	9.5	9.1	17.0	11.9
Residence better suited to needs	22.4	8.5	6.1	8.3	11.4
Better access to transport	2.0	6.3	9.4	24.6	10.8
Better access to health care	10.0	4.2	6.0	8.5	7.6
Better access to services	7.9	5.3	9.1	10.0	7.6
Community more supportive	7.8	4.2	9.1	10.2	7.2
Lived in better neighbourhood	5.9	3.2	3.0	0	3.3
Other	3.0	4.4	25.0	25.0	7.0

8.7 Summary of main findings

8.7.1 Risk factors for psychological distress

- The majority of participants reported experiencing at least one negative life event during the preceding 12 month period. The number of negative life events reported was not related to age of the participants.
- Negative life events were related to higher levels of psychological distress
- Older adults with poorer physical functioning reported higher levels of psychological distress.

8.7.2 Resources for resilience

- A higher sense of purpose in life and more optimistic outlook both buffered against associations of negative life events with higher psychological distress. Optimism and sense of control also buffered the association of poorer physical functioning with higher distress.
- Individual coping styles appear to have a role in mitigating adverse effects on mental well-being resulting from life's challenges. People with more flexible coping styles who are able to both persist with attainable goals and redefine or replace unattainable goals, had lower levels of psychological distress irrespective of the number of negative life events they reported.
- Associations of the social resources for resilience with psychological distress were mixed. People with higher levels of social engagement, and more social support reported lower levels of psychological distress. However the social resources did not buffer associations of life events or physical functioning with distress.
- Of the socio-economic factors assessed, neighbourhood characteristics were most directly implicated in the resilience process. For those reporting few negative life events, the average level of psychological distress was similarly low across regions of varying SES. However, negative life events had a stronger association with psychological distress for older adults living in more socially disadvantaged areas.

- Subjective evaluations of the neighbourhood environment were also implicated in the resilience process. The relationship between poorer physical functioning and higher distress was less evident among participants who perceived their neighbourhoods as being more socially cohesive.
- Intercorrelations among risk factors, resources and psychological health point to a complex interplay of causal influences on the resilience process

8.7.3 Older adults' perceptions of resources for resilience

- When asked to identify the resources that would help them to cope better with challenges, having better physical health, and being more physically active were most commonly endorsed by participants. Analysis by age group showed that having better health, better access to transport, and more independence were more commonly endorsed by those aged 85 and older relative to the younger age groups.

9. Discussion of findings and implications for policy

Both our overview of the literature, and our empirical findings highlight the complex array of bio-psychosocial factors that contribute to differences in older adults' capacities to respond to transitions and challenges, and to flourish into late life. Our study focused on older adults' mental health (measured using an index of psychological distress) as a marker of resilient functioning, although we also acknowledge that the ability to maintain good physical and cognitive health, and to remain actively engaged with life (e.g., Rowe and Kahn, 1987) despite ageing-related challenges also represent critical indicators of late life resilience.

Despite the considerable breadth and complexity of factors implicated in the resilience process, our findings offer some promising insights into the types of resources used by older South Australians to cope with negative events and limits to physical functioning in ways that promote good outcomes for mental health. Our respondents' views on the resources that would be most helpful in promoting their own resilience also offers a valuable perspective on the priorities of older adults' themselves around enabling effective coping.

In the following final section of the report, we identify and discuss emergent themes arising from both the present study, and the literature on late life resilience. We also consider these themes in the context of current policy priorities related to ageing. To this end, we refer to the South Australian Government's strategic priorities outlined in the "Prosperity Through Longevity: South Australia's Ageing Plan 2014-2019, Our Action Plan" (referred to hereafter as "South Australia's Ageing Plan 2014-2019"). Here, we focus on the most relevant strategies, and discuss how the current policy context might best create opportunities for enhancing the resilience of individuals and communities.

South Australia's Ageing Plan 2014-2019 aims to galvanise community and all levels of Government to create an all-ages-friendly State. The Action Plan has three areas of priority for intervention, namely (i) Health, well-being and security, (ii) Social and economic productivity, and (iii) All-ages-friendly communities. Our findings suggest that each priority

area and the associated key directives offer opportunities for contributing to the resilience of older South Australians.

9.1 Physical health and resilience

Our results showed a reliable association of poorer physical functioning with higher levels of psychological distress. Moreover, having better physical health was identified by participants as the resource most likely to help them cope more effectively with challenges. Taken together, the findings highlight the maintenance of good physical health in later life as central to maintaining quality of life, and providing a resource for coping and adaptation.

These results are not surprising, as good health fosters social engagement, activity, and integration. Biological ageing inevitably brings about changes in physiological and cognitive function that increase vulnerability to illness, disease, and functional limitations. Lachman and Weaver (1998a) estimated 7% of people in their early 40's have a reported disability but this percentage increases with advancing age. In Australia in 2009, 40% of people over the age of 60 reported a disability (ABS: 2009) and those aged between 65 and 75 years are twice as likely to be admitted to hospital compared to younger adults. In 2011, the average number of Medicare services processed in South Australia was 14.4 per person, however this increased to 34.7 services per capita for people aged 65 years and over (ABS: Australian Social Trends, SA Summary, 1998-2011). Further, across Australia, 19% of those in the 65 year+ age group reported having a profound or severe disability (ABS: Survey of Disability, Ageing, and Carers, 2011) and disability rates increased with age.

Good health has been associated with high levels of competence (Pinquant, 2002), and our results also indicated that better physical functioning was associated with psychological resources for coping (See Table 3). Good health is also recognised as underpinning ageing well. For example, Depp and Jeste (2006) conducted a literature search of studies examining factors supporting successful ageing in adults 60 years or older. Across 29 studies meeting the authors' definition of successful ageing, maintaining good physical functioning was consistently identified as a central characteristic.

Promoting active and healthy ageing is a key directive of South Australia's Ageing Plan 2014-2019, with the acknowledgement that *Good health and wellbeing enables South Australians of all ages to have a fulfilling, active, and enjoyable life* (p. 18). Our analysis suggests that successful interventions are likely to not only have a direct impact on quality of life for older South Australians, but also to enhance their capacities for resilience. Actions outlined in the ageing plan focus on improving various services including quality of food in aged care settings, services for those with dementia and their carers, continuity of care between the aged care and public hospital systems, falls prevention, and improving services for veterans. These actions highlight important areas of opportunity to improve health outcomes for older South Australians; however from the specific perspective of promoting resilience, more general primary health interventions could represent an approach of particular promise. For example, features of the neighbourhood built environment influence physical activity including walking, which is the commonest type of moderate exercise chosen by older adults (Clarke, 2013). Ensuring the provision of adequate neighbourhood green spaces and public amenities with shaded resting spaces and safe, even footpaths will promote physical activity and enhance healthy lifestyles (Turrell, 2013). Age-friendly urban design is a key prerogative outlined in the state ageing plan, many of the recommendations and actions of which are currently being implemented. For example, the South Australian Age Friendly Neighbourhoods Guidelines and Toolkits was distributed to five new councils during 2013-14 for consideration and implementation. Thus, continued support for, and implementation of, policies that focus on promoting active ageing through age-friendly urban design are recommended, in addition to primary health interventions that promote healthy lifestyles at the population level.

9.2 The centrality of psychological resources for resilience

A notable finding to emerge from our study concerned the centrality of psychological resources to processes associated with resilience. Our results showing that optimism, a sense of purpose, and a sense of control were each associated with lower levels of psychological distress are consistent with a well-established literature concerned with the role of psychological characteristics in promoting mental health (e.g., Lachman & Weaver,

1998; McNight & Kashdan, 2009). However, more significant were the findings pointing to the psychological resources moderating associations of risk factors (life events and poorer physical functioning) with mental health. These results- consistent with recent perspective on socio-emotional ageing (see Charles & Carstensen, 2010) - indicate that well-being in older adulthood is not closely connected to normative ageing related losses in physical functioning- at least prior to the few years preceding death (e.g., Gerstorf et al., 2010).

Significantly, our findings suggest that older adults who maintain a sense of purpose, control, and an optimistic outlook, are well placed to avoid symptoms of poor mental health- even in the context of physical health declines and negative life events. Self-regulatory flexibility (the ability to adaptively pursue attainable goals, and disengage from unattainable goals) also emerged as a moderator of the association between negative life events and psychological distress. This is consistent with Leipold & Greves (2009) model of the resilience process, which emphasises processes of assimilative and accommodative coping as being fundamental in underlying resilience. Indeed, the importance of flexible goal adjustment was also acknowledged by older adults themselves, who endorsed being "better at letting go of the unimportant things in life" as being likely to enhance their coping more frequently than all other resources with the exception of better health, and more physical activity.

Our findings, as well as the existing literature on ageing, psychological resources and self-regulation (Brandstädter & Rothermund, 2002; Lachman & Weaver, 1998) are clear in pointing to the importance of psychological resources in promoting resilience. However, possible ways to promote or support psychological resources among older adults through policy initiatives are less obvious. Two indirect means through which South Australia's Ageing Plan 2014-2019 stands to make a contribution to the psychological resources of older adults include (i) the creation of collaborative initiatives that aim to involve older adults in meaningful civic engagement, and (ii) fostering productive social and economic engagement by facilitating opportunities for work and volunteering. Civic engagement helps develop resilient outcomes at both the individual and community level. The level of

civic engagement and social capital within a community contribute to the health of the community and its members. As argued by Hall and Zautra (2010, p. 351),

> *"From the perspective of resilience, a key domain of interest is how communities further the capacities of their constituents to develop and sustain wellbeing, and partner with neighbouring communities of location and interest to further the aims of the whole region"*

Community resilience often centres on infrastructure or the built environment. However, it is not only facilities and services that contribute to community capacity for resilience, but also multiple community domains including social, civic, economic, environmental, and human connections. In general, the literature suggests that communities actively build capacity to respond to, and thrive in, the face of change and build resilience by engaging community resources (Berkes et al., 2003; Colussi, 2000; Smit & Wandel, 2006). This process is developed through strategic planning, collective action, and innovation and is facilitated by the development and engagement of a range of diverse community resources, including the active participation of community members. In terms of psychological resources supporting resilience, civic engagement is believed to support meaning, purpose, and the collective value of community (Zautra & Reich, 2011, p 179) and may, therefore, provide a sense of empowerment and control for both individuals and communities.

Productive engagement in defined work and volunteer roles represent important contexts for maintaining a sense of self-identity across adulthood. Consequently, facilitating older adults' productive engagement is likely to enhance resilience through contributing to material resources (in the case of paid employment) as well as fostering social connections and psychological resources such as a sense of purpose. Volunteering is of particular interest in the context of later life, given that most adults eventually retire, and many seek

out productive engagement through formal voluntary activities. Volunteering contributes to the building of cohesive communities as well as the economy. Social engagement and physical and cognitive activity are also beneficial outcomes of volunteering. Further, volunteering has been associated with increased self-esteem and increased purpose in life (The National Survey of Volunteering Issues: Volunteering Australia, 2011). Sense of identity and purpose in life are enhanced through the sharing of life experiences, knowledge, and skills. The National Survey of Volunteering Issues (Volunteering Australia, 2011) reported that 20% of older people engaged in unpaid voluntary work in an organisation or group during the previous 12 months (21% women, 19% men). Although the highest rate of volunteering was in the 45 to 54 year age group, 24% of those aged 65 to 69 years volunteered, 24% of 70 to 74 year olds volunteered, and 4.3% of those aged 90 years plus gave of their time. Volunteering for welfare and community groups was the most frequent form of volunteering in the older age groups and nine out of ten volunteers found their experience satisfying. The majority were motivated to volunteer for the difference they could contribute to society and for the sense of self that volunteering provided, highlighting the potential for volunteer roles to help imbue life with a sense of meaning.

9.3 Social disadvantage and resilience

There is strong evidence in the research literature that lower socio-economic status is related to a variety of poor health outcomes. Significantly, social inequalities in health are also consistently evident in countries that have universal health care systems (e.g., Gallo, Chen). One of the findings to emerge from our examination of resilience, was that higher SES, as objectively determined according to postcode, was protective against the association of negative life events with poorer psychological health.

Our results are consistent with Conservation of Resources theory (COR: Hobfoll, 1989) which provides a perspective on mechanisms that link SES with the capacity for resilience. According to the Conservation of Resources theory, higher socio-economic status affords greater opportunities to accumulate and maintain stress buffering resources, such as

supportive social networks, and psychological resources. Importantly, lower SES can also have a direct negative impact on health by exposing individuals to more frequent threatening or harmful situations.

Several initiatives that form part of South Australia's Ageing Plan 2014-2019 could play a role in enhancing resilience among socially disadvantaged communities. Addressing disadvantages in Aboriginal health by facilitating direct engagement of Aboriginal Elders, and providing targeted funding for programs involving Aboriginal seniors represents one such priority area. Improving community infrastructure and connectivity in collaboration with state and local government, and residential developers via the *South Australian Age-Friendly Neighbourhoods Guidelines and Toolkit* (based on the WHO's guidelines for age-friendly cities) represents a promising approach, particularly where these guidelines are taken up by local councils representing lower SES areas. An additional relevant directive is concerned with promoting the safety and security of older adults in the context of ageing in place. In addition to the current priorities around preventing elder abuse, ensuring cyber safety, and subsiding the installation of personal alert systems, future research and policy developments might benefit from focusing on the specific challenges to security and community cohesion faced by older adults living in socially disadvantaged areas. As well as using this knowledge to identify potential areas for specific policy intervention, resilience research could also benefit from identifying the characteristics of older adults who have successfully maintained high quality of life despite the disadvantages to resource accumulation that are believed to result from social disadvantage (see Chen, 2012, shift and persist model).

9.4 Taking a lifespan approach

Age differences emerged when older adults were asked to identify the factors that would be likely to enhance their abilities to cope and adapt to change. Among the oldest-old participants, almost two-thirds identified better health as a factor likely to enhance their coping, whereas only around one third of those aged in their early sixties endorsed better health as a key resource. Oldest-old adults were also more likely to point to more independence in their daily activities, and better access to transport as important for coping

relative to the younger groups. These findings highlight the heterogeneity that characterises older adulthood. Baltes & Smith (2003) emphasise the distinction between the common "successful ageing" of the "third age" (e.g., ages 64-75) where relatively good health and productive engagement is evident among a large proportion of the population. In contrast, the "fourth age" represents a time of more significant vulnerability, when physical, social, and cognitive losses present greater challenges for maintaining quality of life.

Considering late-life heterogeneity raises some interesting issues for policy development and research related to resilience. First, the most effective policy interventions are likely to be those that recognise this heterogeneity, and are tailored accordingly. The different requirements of individuals and groups of older adults are explicitly recognised in South Australia's Ageing Plan 2014-2019, through an emphasis on *respecting diversity*, and designing programs that are inclusive and accessible to all. Second, the vulnerabilities unique to oldest-old adulthood means that this group has both the greatest potential need for resilience, and at the same time a declining array of psychosocial coping resources to draw from. It is likely that the relevance of particular resources for resilience changes across older adulthood, for example psychological resources such as control beliefs and sense of purpose may be relatively more important among young-old adults, whereas compensatory resources offered by supportive social network members may take on increasing importance among oldest-old adults. There is still relatively little known about how the efficacy of different methods of coping change in late life, and characteristics of resilience among the oldest-old represent a potentially fruitful avenue for future research.

Whereas there could be some shifts in emphasis on the resources needed to enable resilience across older adulthood, it is also the case that many of the resources associated with resilient functioning in later life are shaped by events and experiences that occur much earlier in the lifespan. Consequently, the most valuable policy approaches to promoting late life resilience in the population might ultimately be those that take a lifespan perspective. The findings of the UK Foresight Project on Mental Capital and Wellbeing (Beddington et al., 2008) provide a valuable framework for guiding policy approaches to enhancing cognition,

mental health, and the capacity for resilience at the population level, from childhood through to late life. A key theme is concerned with how negative influences on biological and psychosocial functioning experienced in childhood and adolescence have cumulative effects over the lifespan, contributing to poorer outcomes in later life.

The Foresight Project highlights the potential for interventions targeting various age groups to enhance well-being of individuals and populations. For example, promoting lifelong learning (a goal shared with South Australia's Ageing Plan 2014-2019) is recognised as a key means for promoting cognitive health and engagement among older adults. However, it is also the case that some of the most significant interventions for promoting late life well-being might be those that target early detection and treatment of mental disorders, and that build the skills needed for resilient functioning (e.g., psychological resources) among children and adolescents. Because coping skills learned early in life exert a cumulative effect on future development (e.g., children who cope better are more likely to thrive across different life contexts and build resources for the future), resilient children and young people are those most likely to become higher functioning, more resilient older adults in decades to come. Recent initiatives of the South Australian Health and Medical Research Institute aimed to establish a *State of Wellbeing* are adopting a lifespan perspective, *(http://www.wellbeingandresilience.com/)* that includes a particular focus on programs concerned with building resilience in schools. Ultimately, a collaborative, integrated, lifespan approach, that brings together researchers and policy makers from different organisations with the mutual goal of promoting resilience at the population level could represent the most promising way forward.

9.5 Conclusions and future directions

This report provides an overview of the various factors likely to contribute to resilient functioning among older adults, and provides a discussion of promising initiatives in the context of current policy priorities. The key findings identified physical functioning and psychological resources (optimism, sense of purpose, control beliefs, and the ability to flexibly manage goals) as important factors related to effective coping. It was also the case that many resources associated with resilience were intercorrelated (e.g., individuals who had higher sense of purpose also tended to have better health, more optimism, and to be more socially engaged), highlighting interconnectivity among the factors likely to enhance coping potential. Our study was limited, in that the sample was relatively small and high functioning, and was therefore not representative of the broader South Australian older population. Despite this, we were able to identify the relevance of social disadvantage for resilience in our sample, with those living in lower SES areas more vulnerable to the effects of negative life events on psychological health. Our consideration of the current policy context suggests that many of the initiatives that form part of South Australia's Ageing Plan 2014-2019 are likely to have positive implications for resilient functioning among older South Australians. We also recommend (i) primary prevention initiatives designed to promote physical activity among older adults, (ii) collaborative initiatives aimed toward involving older adults in meaningful civic engagement, (iii) targeting interventions to address the particular needs of socially disadvantaged older adults, and (iv) taking an integrative lifespan approach to promoting resilient populations, including recognising how early life interventions can have implications for late life functioning.

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Appendix 1: Measures used in the study.

Socio-demographic variables.

Single items were used to assess a person's age, gender, ethnicity, language, highest education level, as well as their relationship and current employment status.

Resources for resilience: Psychological factors

Purpose in life. The Life Engagement Test (LET: Scheier, Wrosch, et al., 2006), is a 6-item scale designed to measure purpose in life. Respondents indicated the extent of their agreement with statements such as "To me, the things I do are all worthwhile", and "There is not enough purpose in my life", on a 5-point scale from (0) strongly disagree, to (4) strongly agree. After reverse coding negatively worded items, items are summed to produce a score between 0 and 24, higher scores indicating a higher level of purpose in life. The LET has a one factor structure across different age, gender and ethnic samples, with good psychometric properties. The scale reports good reliability with Cronbach alphas ranging between .72 and .87, and moderate test-retest reliability. Convergent validity has been reported with measures of dispositional optimism, life satisfaction, general health, and self-esteem, and positive correlation with subjective well-being (Scheier et al., 2006).

Optimism. The Life Orientation Test Revised (LOT-R: Scheier, Carver, & Bridges, 1994) was used to measure optimism and pessimism. The test is comprised of ten items, six items assessing dispositional optimism-pessimism, and four filler items. For brevity, filler items were removed from the instrument. The extent of agreement with statements such as "In uncertain times, I usually expect the best", and "I hardly ever expect things to go my way" was indicated on a 5-point scale from (1) strongly disagree, to (5) strongly agree. Items were summed after reverse coding the pessimism items, to provide an overall score ranging from 0 to 30, with higher scores reflecting a tendency toward a more optimistic orientation.

The LOT-R has good reported psychometric properties. In screening a large sample (N = 2,372) of adults aged between 18 and 93 years with the LOT-R, (Glaesmer et al., 2012) optimism and pessimism were negatively correlated, and displayed convergent validity with indicators for depression, satisfaction with life, and with self-rated health. In addition the LOT-R has adequate reliability (standardized Cronbach's alpha of .68) with younger adults (Scheier et al., 1994).

Control. Perceived constraints in personal control were assessed using four selected items from the 12-item Lachman and Weaver mastery and control Scale (Lachman & Weaver, 1998; Pearlin & Schooler, 1978). Items included, "There is little I can do to change many of the important things in my life", "I often feel helpless in dealing with the problems in my life", "Other people determine most of what I can and cannot do", and "What happens in my life is often beyond my control". Respondents indicated the extent of their agreement or otherwise on a 7-point scale anchored from (1) strongly disagree, to (7) strongly agree. Scores range from 0 to 24, with higher scores indicative of higher perceived constraints and less perceived personal control.

Self-regulatory flexibility (assimilative and accommodative coping). Goal regulation processes and typical goal management orientation were assessed in the current study using scales devised by Haratsis, Creed, & Hood (2014). The instrument is comprised of two, 10-item scales measuring assimilative and accommodative resources available to people in their pursuit of goals. Items included statements such as, "In general, when it turns out that I cannot do something that's really important to me, I usually think about other things that I could focus on instead" (accommodative goal pursuit) and "In general when I have to do something that's really important to me, and it's really difficult, I usually invest more of my time and energy towards it" (assimilative goal pursuit). Responses were rated on a 6-point scale, ranging from (1) strongly disagree, to (6) strongly agree. An index of self-regulatory flexibility based on a combination of measures of assimilative and accommodative coping was computed using the minimum of the two scores (see Ersner-

Hershfield, Mikels, Sullivan, & Carstensen, 2008; Kaplan, 1972). Scores range from 10 to 60 for each scale with higher scores representing higher coping flexibility.

The scales were developed in response to a substantial body of literature questioning the psychometric properties associated with more traditional and previously widely employed scales, such as the 30-item Tenacious Goal Pursuit and Flexible Goal Adjustment scales (TGP and FGA: Brändstadter & Renner, 1990), and the Goal Re-engagement and Goal Disengagement scales (Wrosch, Scheier, Carver, & Schulz, 2003). The accommodation and assimilation scales were devised in consultation with scale development experts and underwent stringent factor analysis. The scales were found to have good construct and discriminate validity, correlating with measures of goal engagement, disengagement, and life satisfaction. The scales also demonstrated a satisfactory 2-factor structure, and high internal consistency.

Resources for resilience: Social factors

Social resources. *Social contact* was assessed using items based on the Lubben Social Network Scale-Expanded (LSNS-18: Lubben, Gironda, & Lee, 2001). Frequency of face-to-face, or remote contact (telephone/email/internet) with at least one friend or relative was indicated on a 6-point scale from (1) every day, to (5) every couple of months, to (6) less often.

Social engagement was computed using two items, the number of groups and organisations attended during the last year, and volunteer status during the preceding year. Overall subjective satisfaction with social activity was rated on a 5-point scale, from being (1) very dissatisfied, to (5) very satisfied with one's social life.

Social support. Social support was measured using five items listing situations in which people might need help from their friends, family or acquaintances (Martin, Distelberg, Palmer, & Jeste, 2015). Support was operationalised as instrumental (practical

help, ability to borrow money), emotional (help with a personal problem and/or decision), and information (advice or information about health or managing finances). Respondents indicated how many people they could ask for support in each situation on a 4-point scale from none, to more than 5. In addition, respondents commented on how many of these people resided within their neighbourhood, and the frequency of reciprocity in providing support to friends, relatives, or acquaintances.

Intergenerational engagement. Frequency of intergenerational contact (with people more than 20 or so years younger) was measured with an item developed and framed as for the social engagement questions. The frequency with which respondents have the opportunity to pass on knowledge and experience to younger people was rated from (1) once a week or more, to (6) never. Respondents were asked to comment on their preference for spending more or less time with younger people than current, rated on a 5-point scale from (1) I would prefer to spend much less time with younger people, to (5) much more time with younger people.

Relationship status. Respondents were asked to indicate their relationship status on a single item. Responses included married, de facto, in committed relationship but living apart, separated, divorced, widowed, never married, or other.

Religious and spiritual involvement. Religious belief systems were assessed using a single item asking the importance of religion in guiding one's life. This was rated on a 3-point scale from (1) very important, to (3) not at all important.

Resources for resilience: Socio-economic factors

Housing tenure. Dwelling tenure was assessed with a single item, asking respondents to indicate their current housing situation. The number of people living with the respondent was answered on a single item as either live alone, live with one other person, or live with two or more people.

Social Capital. *Neighbourhood Disorder and Social Cohesion.* Neighbourhood characteristics were assessed with the Neighbourhood Disorder and Social Cohesion Scale (NDSCS: Stafford, McMunn, & De Vogli, 2011). The NDSCS is a measure of an individual's level of subjective well-being and satisfaction with their local place of residence. Neighbourhood was defined as a person's local area, that is, within a 20 minute walk or one kilometre radius from their residence. The 8-item instrument comprises scales assessing neighbourhood community cohesion, neighbourhood characteristics, and safety. Respondents indicated the extent of their agreement with statements such as, "I really feel part of this area", or "I feel that I don't belong in this area" on a 7-point bi-polar scale.

Index of Relative Social Advantage or Disadvantage (IRSAD). Postcodes were recorded each assigned an IRSAD rating score published in the Socioeconomic Indexes for Areas database (SEIFA: ABS, 2011). The IRSAD index ranges from 1 to 10, higher numbers representing areas with relative higher social advantage.

Socio-economic status. Socio-economic status was measured using a single item asking the extent of household financial strain, i.e., how easily the household is able to make ends meet on a monthly basis. Responses were indicated on a 4-point scale, from (1) with great difficult, to (4) easily.

Predictor variables

Negative Life Events. The occurrence of major life events was measured using an adapted scale from the Social Readjustment Rating Scale (SRRS: Holmes and Rahe, 1967; Woodend, Freidin, & Watson, 2002) and the Elders Life Stress Inventory (ELSI: Aldwin, 1990). Unlike the scale originally employed by Holmes and Rahe, the life events scale did not measure magnitude of the event but the occurrence or otherwise of the event during the preceding twelve month period. Items selected for inclusion represented significant social or interpersonal transactions and dynamic life events deemed most likely to occur with advancing age. They included items representing family constellations, events occurring in the lives of close friends or relatives, marriage, personal losses, occupation and retirement, residence, financial change, driving cessation, safety, and health. Respondents indicated *yes* or *no* as to whether any of twenty events had occurred. In addition, to address insensitivity inherent in a scale presenting only specified events, respondents could list other life event(s) of personal significance. The number of objective negative life events reported was summed to provide a simple count of negative events giving a range between 0 – 15 events.

Physical functioning. Physical health was measured using the Physical Functioning Sub-scale (PF-10), from the Medical Outcomes Study 36-Item Short-Form Health Survey (MOS SF-36: Ware & Sherbourne, 1992). The sub-scale comprises 10 items assessing both the level and type of functional limitation experienced with typical daily activities, answered on a 3-point scale from (1) limited a lot, to (3) not limited at all. Items included limitations in participating in activities including exercise, walking, climbing stairs, bending or kneeling, lifting groceries, and limitations in bathing and/or dressing. Self-report health questions have test stability across short and longer intervals (two years), and good validity indicated by high correlation with longer health scales (McDowell, 2010). Convergent correlation with measures of life satisfaction, anxiety and depression scales, and general health indices have also been reported (McDowell).

Outcome Measure.

Psychological well-being. Psychological well-being was assessed using the 6-item Kessler Psychological Distress Scale (K6: Kessler et al., 2002), a screening scale of psychological distress developed for the US National Health Interview Survey. Respondents were asked to rate the degree to which they had experienced different emotions during the preceding month, including, depression, motor agitation, fatigue, worthless guilt, and anxiety. Questions were rated on a 4-point scale from (1) most of the time, to (4) none of the time. Scores were summed, giving a range from 6 to 24. Lower scores represent higher levels of psychological distress. The K6 has been shown to have consistent psychometric properties across multiple surveys, and good discriminant validity across major socio-demographic sub-samples (Kessler et al., 2002) and between different screening instruments (Gill, Butterworth, Rodger, & MacKinnon, 2007).

Older adults' perceptions of resources for resilience.

Self-report perceptions of factors and resources supporting resilience were examined with 20-items based on those used by Jopp et al. (2015). Respondents were asked if it would be easier for them to cope with challenges and problems they may face in life, if various resources were available to them. Resources included better mental and physical health; social activity and engagement; security; purpose and control in life; independence; mobility; access to various services; community, neighbourhood, and residential resources; and goal adjustment capacity. Respondents were also given the opportunity to specify and comment on any other resources of importance. Each item was rated on a 5-point scale from (1) strongly disagree to (5), strongly agree.

Appendix 2. Results of Hierarchical Multiple Regression Analyses

Table 6. Results of HMR Analysis of Negative Life events, Physical Function, and Purpose in Life with Mental Well-being

Purpose in Life, Negative Life Events, and Physical Function					
Predictor		**B**	**SE**	***β***	***ρ***
Step 1	Constant	16.122	1.794		.000
	Age	-.082	.018	-.337	.000
	Gender	-.213	.386	-.032	.582
	Education	.167	.094	.111	.079
	LE	.465	.124	.235	.000
	Phys Func	-.041	.009	-.362	.000
		R^2 = .233, F(5,237) = 14.361, ρ = .000			
Step 2	Constant	15.996	1.628		.000
	Age	-.082	.016	-.336	.000
	Gender	-.326	.351	-.049	.354
	Education	.124	.086	.083	.150
	LE	.366	.113	.184	.001
	Phys Func	-.031	.008	-.278	.000
	PIL	-.261	.036	-.392	.000
		R^2_{change} = .14, F_{change}(6,236) = 23.71, ρ = .000			
Step 3	Constant	15.132	1.635		.000
	Age	-.075	.016	-.307	.000
	Gender	-.257	.347	-.039	.460
	Education	.121	.085	.081	.155
	LE	.334	.113	.169	.003
	Phys Func	-.029	.008	-.253	.000
	PIL	-.306	.067	-.458	.000
	LE * PIL	-.055	.026		.036
	Phys Func*PIL	.001	.001		.277
		R^2_{change} = .02, F_{change}(8,234) = 18.87, ρ = .000			

Note: LE is negative life events, Phys Func is physical function, PIL is Purpose in Life

Table 7. Results of HMR Analysis of Negative Life events, Physical Function, and Optimism with Mental Well-being

Optimism, Negative Life Events, and Physical Function					
Predictor		**B**	**SE**	***β***	***ρ***
Step 1	Constant	16.050	1.796		.000
	Age	-.082	.018	-.335	.000
	Gender	-.220	.388	-.033	.570
	Education	.178	.095	.118	.063
	LE	.455	.124	.230	.000
	Phys Func	-.041	.009	-.363	.000
		R^2 = .23, F(5,234) = 14.04, ρ = .000			
Step 2	Constant	14.374	1.653		.000
	Age	-.065	.017	-.265	.000
	Gender	.047	.355	.007	.894
	Education	.053	.089	.035	.554
	LE	.412	.113	.208	.000
	Phys Func	-.032	.008	-.287	.000
	LOT	-.275	.039	-.384	.000
		R^2_{change} = .13, F_{change}(6,233) = 22.32, ρ = .000			
Step 3	Constant	13.162	1.596		.000
	Age	-.055	.016	-.226	.001
	Gender	.123	.342	.019	.718
	Education	.049	.085	.033	.563
	LE	.392	.108	.198	.000
	Phys Func	-.027	.008	-.235	.001
	LOT	-.485	.077	-.678	.000
	LE * LOT	-.054	.025		.033
	Phys Func*LOT	.005	.002		.001
		R^2_{change} = .06, F_{change}(8,231) = 21.50, ρ = .000			

Note: LE is negative life events, Phys Func is physical function, LOT is optimism (Life Orientation Test)

Table 8. Results of HMR Analysis of Negative Life events, Physical Function, and Control with Mental Well-being

Control, Negative Life Events, and Physical Function					
Predictor		**B**	**SE**	***β***	***ρ***
Step 1	Constant	16.235	1.797		.000
	Age	-.083	.018	-.340	.000
	Gender	-.225	.390	-.034	.564
	Education	.165	.096	.109	.086
	LE	.443	.124	.224	.000
	Phys Func	-.041	.009	-.364	.000
		R^2 = .23, F(5,235) = 13.69, ρ = .000			
Step 2	Constant	15.965	1.514		.000
	Age	-.075	.015	-.307	.000
	Gender	-.348	.329	-.052	.291
	Education	-.019	.083	-.013	.816
	LE	.233	.107	.118	.030
	Phys Func	-.030	.007	-.264	.000
	Control	.273	.028	.524	.000
		R^2_{change} = .23, F_{change}(6,234) = 32.030, ρ = .000			
Step 3	Constant	14.762	1.538		.000
	Age	-.067	.015	-.272	.000
	Gender	-.236	.327	-.035	.472
	Education	-.008	.081	-.006	.918
	LE	.217	.106	.110	.041
	Phys Func	-.025	.007	-.223	.001
	Cont	.336	.050	.646	.000
	LE * Control	.028	.016		.092
	Phys Func*Control	-.002	.001		.050
		R^2_{change} = .02, F_{change}(8,232) = 26.24, ρ = .000			

Note: LE is negative life events, Phys Func is physical function, Control is perceived control constraints

Table 9. Results of HMR Analysis of Negative Life events, Physical Function, and Coping Flexibility with Mental Well-being

Coping Flexibility, Negative Life Events, and Physical Function					
Predictor		**B**	**SE**	***β***	***ρ***
Step 1	Constant	16.518	1.829		.000
	Age	-.085	.018	-.345	.000
	Gender	-.291	.397	-.043	.464
	Education	.167	.097	.110	.085
	LE	.437	.125	.221	.001
	Phys Func	-.042	.009	-.365	.000
		R^2 = .23, F(5,230) = 13.59, ρ = .000			
Step 2	Constant	16.061	1.771		.000
	Age	-.083	.018	-.334	.000
	Gender	-.088	.386	-.013	.821
	Education	.131	.094	.086	.165
	LE	.390	.122	.197	.002
	Phys Func	-.041	.008	-.358	.000
	Cope Flex	-.075	.018	-.237	.000
		R^2_{change} = .05, F_{change}(6,229) = 15.01, ρ = .000			
Step 3	Constant	15.738	1.747		.000
	Age	-.080	.018	-.321	.000
	Gender	-.090	.380	-.013	.812
	Education	.127	.092	.084	.168
	LE	.422	.120	.213	.001
	Phys Func	-.040	.008	-.345	.000
	CopeFlex	-.044	.030	-.139	.148
	LE *CopeFlex	-.040	.013		.002
	Phys Func*CopeFlex	-.001	.001		.278
		R^2_{change} = .03, F_{change}(8,227) = 12.89, ρ = .000			

Note: LE is negative life events, Phys Func is physical function, CopeFlex is coping flexibility

Table 10. Results of HMR Analysis of Negative Life events, Physical Function, and Social Engagement with Mental Well-being

Social Engagement, Negative Life Events, and Physical Function					
Predictor		**B**	**SE**	***β***	***ρ***
Step 1	Constant	16.704	1.774		.000
	Age	-.089	.016	-.364	.000
	Gender	-.188	.385	-.028	.626
	Education	.151	.095	.100	.113
	LE	.425	.123	.213	.001
	Phys Func	-.043	.009	-.377	.000
		R^2 = .23, F(5,241) = 14.24, ρ = .000			
Step 2	Constant	15.537	1.718		.000
	Age	-.079	.017	-.322	.000
	Gender	-.075	.370	-.011	.804
	Education	.110	.091	.073	.227
	LE	.362	.119	.182	.003
	Phys Func	-.035	.008	-.305	.000
	Soc Eng	-.542	.115	-.270	.000
		R^2_{change} = .07, F_{change}(6,240) = 16.66, ρ = .000			
Step 3	Constant	15.135	1.735		.000
	Age	-.074	.018	-.302	.000
	Gender	-.120	.370	-.018	.747
	Education	.117	.091	.078	.201
	LE	.330	.120	.166	.006
	Phys Func	-.034	.009	-.295	.000
	SocEng	-.458	.240	-.228	.058
	LE *Soc Eng	-.126	.072		.080
	Phys Func*Soc Eng	-.001	.005		.780
		R^2_{change} = .01, F_{change}(8,238) = 12.96, ρ = .000			

Note: LE is negative life events, Phys Func is physical function, SocEng is social engagement

Table 11. Results of HMR Analysis of Negative Life events, Physical Function, and Social Contact with Mental Well-being

Social Contact, Negative Life Events, and Physical Function					
Predictor		**B**	**SE**	***β***	***ρ***
Step 1	Constant	16.704	1.774		.000
	Age	-.089	.016	-.364	.000
	Gender	-.188	.385	-.028	.626
	Education	.151	.095	.100	.113
	LE	.425	.123	.213	.001
	Phys Func	-.043	.009	-.377	.000
		R^2 = .21, F(5,241) = 14.24, ρ = .000			
Step 2	Constant	16.657	1.781		.000
	Age	-.088	.018	-.360	.000
	Gender	-.194	.386	-.029	.616
	Education	.144	.097	.096	.137
	LE	.423	.123	.212	.001
	Phys Func	-.043	.009	-.374	.000
	Soc Cont	-.012	.033	-.022	.710
		R^2_{change} = .00, F_{change}(6,240) = 11.85, ρ = .000			
Step 3	Constant	16.356	1.791		.000
	Age	-.086	.018	-.352	.000
	Gender	-.188	.386	-.028	.628
	Education	.160	.097	.107	.100
	LE	.400	.124	.201	.001
	Phys Func	-.041	.009	-.362	.000
	SocCont	-.051	.077	-.091	.503
	LE *SocCont	-.019	.020		.351
	Phys Func*SocCont	.001	.001		.448
		R^2_{change} = .01, F_{change}(8,238) = 9.22, ρ = .000			

Note: LE is negative life events, Phys Func is physical function, SocCont is social contact

Table 12. Results of HMR Analysis of Negative Life events, Physical Function, and Social Support with Mental Well-being

Social Support, Negative Life Events, and Physical Function					
Predictor		**B**	**SE**	***β***	***ρ***
Step 1	Constant	16.269	1.830		.000
	Age	-.084	.019	-.339	.000
	Gender	-.157	.397	-.023	.693
	Education	.187	.099	.122	.060
	LE	.429	.127	.215	.001
	Phys Func	-.044	.009	-.312	.000
		R^2 = .23, F(5,227) = 13.87, ρ = .000			
Step 2	Constant	16.501	1.803		.000
	Age	-.086	.018	-.345	.000
	Gender	-.173	.390	-.026	.658
	Education	.167	.097	.109	.088
	LE	.401	.126	.201	.002
	Phys Func	-.044	.009	-.374	.000
	Soc Sup	-.154	.053	-.167	.004
		R^2_{change} = .03, F_{change}(6,226) = 13.34, ρ = .000			
Step 3	Constant	16.217	1.828		.000
	Age	-.083	.019	-.334	.000
	Gender	-.138	.391	-.021	.724
	Education	.160	.098	.105	.101
	LE	.390	.126	.195	.002
	Phys Func	-.043	.009	-.366	.000
	SocSup	-.012	.126	-.013	.927
	LE *So Sup	-.040	.035		.250
	Phys Func*SocSup	-.003	.003		.448
		R^2_{change} = .01, F_{change}(8,224) = 10.27, ρ = .000			

Note: LE is negative life events, Phys Func is physical function, SocSup is social support

Table 13. Results of HMR Analysis of Negative Life events, Physical Function, and Index of Relative Social Advantage and Disadvantage (IRSAD) with Mental Well-being

IRSAD, Negative Life Events, and Physical Function					
Predictor		**B**	**SE**	***β***	***ρ***
Step 1	Constant	16.679	1.784		.000
	Age	-.088	.018	-.362	.000
	Gender	-.196	.389	-.029	.615
	Education	.155	.095	.103	.106
	LE	.430	.124	.215	.001
	Phys Func	-.043	.009	-.374	.000
		R^2 = .23, F(5,239) = 14.19, ρ = .000			
Step 2	Constant	16.711	1.778		.000
	Age	-.087	.018	-.355	.000
	Gender	-.204	.388	-.030	.600
	Education	.123	.097	.082	.205
	LE	.415	0124	.208	.001
	Phys Func	-.044	.009	-.382	.000
	IRSAD	-.101	.062	-.094	.108
		R^2_{change} = .08, F_{change}(6,238) = 12.34, ρ = .000			
Step 3	Constant	16.256	1.764		.000
	Age	-.079	.018	-.324	.000
	Gender	-.223	.384	-.033	.562
	Education	.099	.097	.066	.306
	LE	.389	.123	.195	.002
	Phys Func	-.044	.008	-.384	.000
	IRSAD	-.186	.127	-.172	.146
	LE *IRSAD	-.128	.051		.012
	Phys Func*IRSAD	.001	.002		.573
		R^2_{change} = .03, F_{change}(8,236) = 10.48, ρ = .000			

Note: LE is negative life events, Phys Func is physical function, IRSAD is Index of Relative Social Advantage and Disadvantage

Table 14. Results of HMR Analysis of Negative Life events, Physical Function, and Social Cohesion sub-scale of the Neighbourhood Disorder and Social Cohesion scale (NDSC) with Mental Well-being

Neighbourhood Social Cohesion, Negative Life Events, and Physical Function					
Predictor		**B**	**SE**	***β***	***ρ***
Step 1	Constant	16.900	1.806		.000
	Age	-.092	.018	-.376	.000
	Gender	-.245	.382	-.038	.522
	Education	.136	.094	.091	.150
	LE	.432	.121	.222	.000
	Phys Func	-.040	.009	-.355	.000
		R^2 = .23, F(5,237) = 13.65, ρ = .000			
Step 2	Constant	16.278	1.820		.000
	Age	-.085	.018	-.349	.000
	Gender	-.191	.380	-.029	.617
	Education	.128	.093	.086	.172
	LE	.392	.122	.202	.002
	Phys Func	-.039	.009	-.344	.000
	Soc Coh	.068	.034	.120	.043
		R^2_{change} = .01, F_{change}(6,236) = 12.21, ρ = .000			
Step 3	Constant	16.136	1.821		.000
	Age	-.084	.018	-.343	.000
	Gender	-.160	.379	-.025	.672
	Education	.142	.093	.095	.130
	LE	.390	.123	.201	.002
	Phys Func	-.040	.009	-.351	.000
	SocCoh	.189	.066	.332	.005
	LE *Soc Coh	-.018	.022		.414
	Phys Func*Soc Coh	-.003	.001		..035
		R^2_{change} = .01, F_{change}(8,234) = 9.82, ρ = .000			

Note: LE is negative life events, Phys Func is physical function, SocCoh is perceived social cohesion from the Neighbourhood Disorder and Social Cohesion Scale