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**Satisfaction with Life and Social Comparison
among Older People**

A thesis presented in fulfilment of the requirements for the degree of
Doctor of Philosophy
in
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at Massey University, Manawatu,
New Zealand

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ABSTRACT

Introduction: In a rapidly greying world, successful ageing is an important concept and goal. While this remains poorly-defined in the literature, there is wide agreement that satisfaction with life is a major contributor, together with health and functional ability. It has been suggested that the perception of satisfaction with life might be affected by social comparison, but little is known about this relationship, particularly among older people. Consequently, this study investigates the impact of health-related and social comparison variables on the perception of satisfaction with life at various stages of old age.

Methods: A cross-sectional survey of 542 community-dwelling people aged 65+ was conducted to measure health (physical and mental), functional ability, satisfaction with life and social comparison dimensions. Participants were randomly selected from the general electoral role of the Manawatu region of New Zealand. The Short Form-12 Health Survey measured perceived physical and mental health, the Groningen Activity Restriction Scale measured functional ability, the Satisfaction With Life Scale measured life satisfaction and the Iowa-Netherlands Comparison Orientation Measure assessed social comparison. Additional demographic information was collected. Age groups (65-74, 75-84, 85+) were compared.

Results: A marked difference was found in satisfaction with life before and after age 85 years, that was not explained by health (physical or mental), functional ability, demographic factors or comparison frequency. The oldest participants (aged 85+) consistently reported the highest levels of satisfaction with life. This same group reported predominantly making downward social comparisons (with those doing worse).

Conclusions: Important links were found between satisfaction with life and downward social comparison. Better understanding of comparison drivers across older age will progress the discussion on what impacts the perceptions of satisfaction with life and contributes to successful ageing.

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TABLE OF CONTENTS

ABSTRACT	i
ACKNOWLEDGEMENTS.....	iii
Table of Contents.....	v
List of Tables	x
List of Figures.....	xii
List of Appendices.....	xiv
Chapter One: INTRODUCTION	1
1.1 Introduction and background to the study	2
1.2 Ageing in New Zealand	3
1.3 Conceptualisations of ageing	4
1.3.1 Old age and inevitable decline	4
1.3.2. Re-defining normal: Usual and successful ageing	5
1.3.3 Criticism of the Rowe and Kahn model	5
1.3.4 An alternative model of successful ageing	6
1.3.5 Successful ageing: a multi-dimensional construct	7
1.3.6. Conceptualising old age in the 21st century	9
1.4 Satisfaction with life	10
1.4.1 Factors affecting satisfaction with life.....	12
1.4.1.1. <i>Health and satisfaction with life</i>	13
1.4.1.2 <i>Functional ability and satisfaction with life</i>	14
1.4.1.3. <i>Mental health and satisfaction with life</i>	14
1.4.2. Summary: Satisfaction with life.....	16
1.5 Social comparison as an adaptive cognitive mechanism	16
1.6 Study objectives	20
Chapter Two: LITERATURE REVIEW	22
2.1 Introduction.....	23
2.2 Search strategy	23
2.3 Satisfaction with life: measures used.....	24
2.4 Factors affecting satisfaction with life among older people.....	30
2.4.1 Age and satisfaction with life	31
2.4.2 Physical health and satisfaction with life	37
2.4.2.1 <i>Objective physical health and satisfaction with life</i>	38

2.4.2.2	<i>Subjective (perceived) physical health and satisfaction with life</i>	38
2.4.3	Functional ability and satisfaction with life	41
2.4.4	Mental health and satisfaction with life	44
2.4.5	Demographic factors and satisfaction with life	48
2.5	Social comparison and satisfaction with life	48
2.5.1	Impact of social comparison direction on life satisfaction	49
2.5.2	Impact of social comparison orientation (frequency) on satisfaction with life	54
2.6	Summary of findings from the literature reviewed	56
2.7	Implications for current study	58
2.8	Research Assumptions and Hypotheses	59
2.9	Chapter conclusion	62
Chapter Three: METHODS AND STUDY DESIGN		63
3.1	Introduction	64
3.2	Participant characteristics	64
3.3	Method and study design	65
3.4.1	Sample size	66
3.4.2	Sample Selection	67
3.4.3	Criteria for Inclusion	68
3.4.4	Procedure	68
3.4.4.1	<i>Piloting the Questionnaire</i>	68
3.4.5	Data collection instruments - The Questionnaire	69
3.4.5.1	<i>The Satisfaction With Life Scale (SWLS)</i>	70
3.4.5.2	<i>The Short Form 12 Health Survey (SF12)</i>	71
3.4.5.3	<i>The Groningen Activity Restriction Scale (GARS)</i>	72
3.4.5.4	<i>Iowa-Netherlands Orientation Measure (INCOM)</i>	73
3.4.5.5	<i>Qualitative data: Participant comment</i>	75
3.4.6	Data collection process	75
3.5	Data management and analysis	76
3.6	Ethical considerations	77
3.6	Chapter conclusion	79
Chapter 4 - RESULTS		81
4.1	Introduction	82
4.2	Participants	82

4.3	Associations between diagnosed chronic health conditions, physical health, mental health, functional ability, satisfaction with life and age.	84
4.3.1	Satisfaction with life and age	87
4.4	Comparisons across the age cohorts on demographic variables (gender, partnered status, residential area, educational status)	90
4.4.1	The impact of age on satisfaction with life, controlling for gender	91
4.4.2	The impact of age on satisfaction with life, controlling for education	92
4.5	Satisfaction with life and downward social comparison	93
4.5.1	Satisfaction with life and downward social comparison (direction)	93
4.5.2	Satisfaction with life and social comparison orientation (frequency) of downward comparers	95
4.6	Age and social comparison.....	96
4.6.1	Age and downward social comparison.....	97
4.6.2	Age and social comparison orientation (frequency)	98
4.7	Summary of Findings	102
	Chapter Five: DISCUSSION	105
5.1	Introduction.....	106
5.1	Participants.....	106
5.3	Satisfaction with life	107
5.4	Satisfaction with life and increasing age.	107
5.5	Associations between increasing age and health-related variables (number of diagnosed health conditions, physical health, functional ability and mental health)108	
5.5.1	Increasing age and physical health (objective and subjective)	109
5.5.2	Increasing age and functional ability.....	110
5.5.3	Increasing age and mental health	111
5.5.4	Associations between increasing age and health-related factors that might explain the change in satisfaction with life at age	112
5.6	Associations between satisfaction with life and demographic factors.....	112
5.6.1	Demographic factors and satisfaction with life.....	112
5.7	Social comparison and satisfaction with life	115
5.7.1	Downward social comparison and satisfaction with life.....	116
5.7.2	Social comparison orientation (frequency) and satisfaction with life	117
5.7.3	Age and downward social comparison.....	118
5.7.4	Age and social comparison orientation (frequency)	119
5.7.5	Prediction of downward social comparison	120

5.7.6 Summary: Downward social comparison and satisfaction with life	120
5.8 Summary of study findings	121
5.9 Implications and Recommendations	121
5.10 Future research directions	124
5.11 Limitations of this study	125
5.12 Conclusion	126
References	128

LIST OF TABLES

Table 2.1	<i>Old age and satisfaction with life</i>	26
Table 2.2	<i>Social Comparison and satisfaction with life</i>	50
Table 4.1	<i>Demographic details of participants</i>	82
Table 4.2	<i>Diagnosed chronic health conditions</i>	83
Table 4.3	<i>Mean, standard deviation and range of study variables</i>	84
Table 4.4	<i>Pearson’s product-moment bivariate correlations between age, health conditions, physical health, mental health and functional ability</i>	85
Table 4.5	<i>Pearson’s product-moment bivariate correlations between satisfaction with life , health conditions, physical health, mental health and functional ability</i>	86
Table 4.6	<i>Comparison across three age groups on satisfaction with life scores</i>	88
Table 4.7	<i>Comparison across the age groups on satisfaction with life scores</i>	89
Table 4.8	<i>Comparison across two age groups on gender, marital status, residential area and education</i>	91
Table 4.9	<i>Comparison across groups on satisfaction with life, age and gender</i>	91
Table 4.10	<i>Comparison across groups on satisfaction with life, age and education</i>	92
Table 4.11	<i>Comparison across three social comparison directions on satisfaction with life scores</i>	94
Table 4.12	<i>Comparison across satisfaction with life groups for social comparison direction (SCD)</i>	94
Table 4.13	<i>Comparison across satisfaction with life groups on social comparison orientation (frequency) for downward comparers</i>	96
Table 4.14	<i>Comparison across age cohorts for two social comparison directions (SCD)</i>	97
Table 4.15	<i>Comparison across age cohort for two social comparison directions (SCD)</i>	98
Table 4.16	<i>Logistic regression predicting likelihood of respondents making downward social comparisons</i>	101

LIST OF FIGURES

Figure 3.1	Map of Manawatu-Wanganui regional council area, North Island, New Zealand	82
Figure 4.1	Mean scores across older age for subjective physical health, mental health, objective health (number of conditions) functional ability and satisfaction with life	88
Figure 4.2	Percentage of social comparison directions on satisfaction with life	95
Figure 4.3	Percentage of social comparison direction between age groups	97
Figure 4.4	Percentage of downward comparers by age	99
Figure 4.5	Percentage of Means satisfaction with life scores for 3 social comparison directions across older age	99

LIST OF APPENDICES

Appendix A	Ethics Approval	175
Appendix B	Letter of Introduction	177
Appendix C	Questionnaire	181
Appendix D	Diagnosed chronic health conditions	195

CHAPTER ONE: INTRODUCTION

“Achieving and maintaining satisfaction with life,
along with other factors, is essential for
successful ageing”
(Vaillant, 2002).

1.1 Introduction and background to the study

For as long as I can remember, I have had a fascination with older people. So it was inevitable that as a nurse I gravitated towards gerontology in which speciality I have enjoyed a number of decades working with this group in community, hospital and residential settings. Over those years I have increasingly become aware of some interesting factors. As I got older, I thought that older people might seem to get younger as our age-differences narrowed; but life expectancy has increased and this group is now living longer; the oldest people are still a lot older than me! I have also observed that as people grow older, variability among similarly-aged individuals increases. Some of that variability was clearly health- and function- related, but I also saw wide variation in personal, social and psychological factors. Despite this, I had an over-riding perception that most of these people were successful in their adjustment to ageing and had a sense of being satisfied or content with where they were at in their lives.

This perception of satisfaction came from a typical conversation I have with older people, that goes something like: "How are you going today?". "Oh, I'm pretty good really; there's always someone worse off than me; I can't complain". Now that might sound like a reasonable response until you consider that often I'm talking with people who have poor health with multiple chronic health conditions, who struggle to get through the basic activities of daily living; people who have little in the way of financial resources and who may well have outlived their spouse and circle of close friends. To many observers, this isn't a picture of what they might call 'successful ageing'; but then a lot depends on how you define 'success' or 'satisfaction'.

'Satisfaction' can be thought of as a psychological concept that indicates a sense of contentment or acceptance linked to a measure of success or fulfilment. It has a positive connotation that one has achieved something that has personal meaning or value and can be experienced across a continuum. Satisfaction with life is an individual's perception of the meaning attached to the life they have lived to that point; it is a self-evaluation of their successes or achievements. As a global evaluation, satisfaction with life is multi-faceted and includes subjective assessments of areas such

as health, work, relationships, living standards and other life-dimensions. Like all evaluations, life satisfaction is based on a perceived discrepancy with a standard comparator; the narrower the discrepancy, the greater the sense of satisfaction or success. However, unlike objective assessments (e.g. an examination marked /100) with life satisfaction, individuals get to choose the comparator.

Satisfaction with life has increasingly been used by researchers as an indicator of subjective wellbeing (Herero & Extremera, 2010) and quality of life (Bowling, 1997; LaGrow, 2007; Stelmack, Stelmack & Massof, 2002) particularly in relation to older people. Often used inter-changeably, life satisfaction and subjective wellbeing are considered major components (if not a definition) of successful ageing (Pruchno, Wilson-Genderson & Cartwright, 2010; Strawbridge, Wallhagen & Cohen, 2002), a theoretical and practical goal of old age. Having a clear understanding of how people aged 65+ evaluate their perception of satisfaction with life is important to advance the general discussion of what it means to age successfully. It is equally important that there be increased congruence between researchers and the researched of how this perception is evaluated.

1.2 Ageing in New Zealand

The population in New Zealand, like that of many countries around the world, is experiencing a remarkable demographic development; the adult population is rapidly and markedly growing and getting older. In 2001, just 12% of the population (495,603) was aged 65+ years, but this is projected to rise to 26% (1,325,200) by 2051 (Ministry of Health (MOH), 2006). In the medium term (2014-2031) it is predicted that the greatest growth will take place in the 65-74 age group as the 'baby boomers' enter retirement. The most rapid population growth in New Zealand over the decades 2011-2051, however, will be in the oldest-old group (85+), with an increase of 356%. In comparison, the total 65+ population is estimated to increase by 131%, and the New Zealand population as a whole by only 20% (Statistics New Zealand, 2007). Such large changes to the face of the New Zealand population suggests a need for health care professionals, researchers and policy makers to consider some of the less-explored implications of ageing for this growing cohort.

1.3 Conceptualisations of ageing

People aged 65 years and over commonly experience declining health and associated functional disabilities as they age (Gwozdz & Sousa-Poza, 2010). Biological theories of ageing (e.g., Error-theory; Free-radical theory; Cross-linkage theory; Wear and tear theory; Programmed theory; Immunity theory) postulate that the body will deteriorate with age and exhibit functional decline; as a result, terms such as 'successful ageing', 'positive ageing' or 'satisfaction with life' in gerontological terms have been linked generally to a lack of physical deterioration and functional decline.

1.3.1 Old age and inevitable decline

Until relatively recently, old age was considered to be characterised by decline in health and function. Older people were regarded as either having pathological diseases or experiencing intrinsic age-related alterations (normal) such as increased blood pressure and deteriorating cognitive functioning (Rowe, 1985; Shock et al., 1984). Considerable research has, and continues to be, devoted to diseases that are common with increasing age (Dollemore, 2005) and empirical research supporting older persons' policy was and remains largely based on mortality, morbidity and disability (Strawbridge, Cohen, Shema & Kaplan, 1996). Blazer (2006) suggests that the attention paid to the treatment of diseases of old age does nothing to offset the belief that this life stage is beset with inevitable decline.

The concept of a potentially more positive ageing was explored by Pressey (1951) and Baker (1958) as they investigated changes that occurred with ageing. The study found that the expected decline in physiological and cognitive functioning did not occur at nearly the rate assumed (Palmore, 1970) from cross-sectional (snapshot) studies. This challenge to the accepted assumptions gave rise to the possibility that 'normal' ageing might not fully represent the possible range of ageing experience. The introduction of the World Health Organisation (WHO) definition of health as being a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity (WHO, 1952) supported this paradigm shift. Despite this more holistic re-definition of what constitutes 'health' however, little research attention was

paid to the consideration of ageing as potentially positive or successful until it was developed into a gerontological concept by Rowe and Kahn (Rowe & Kahn, 1987).

1.3.2. Re-defining normal: Usual and successful ageing

Rowe and Kahn (1987) argued for a new conceptualisation of ageing, suggesting that what had been considered inevitable effects of ageing (normal) were really the effects of disease and that people who showed little or no age-related decline in physiological function were ageing successfully. These authors defined successful ageing as most fully represented by the combination of three components: absence or low probability of disease and disease-related disability; maintenance of high functional and cognitive capacity and; sustained active engagement with life (Rowe & Kahn, 1987). Although the number of people ageing successfully by this definition would be low, Masoro (2001) believed the attraction of their argument was the implication that it was possible for older people to be free of age-associated diseases or physiological deterioration. This study opened the door for researchers to consider that characteristics hitherto thought to be age-dependent (i.e. caused by ageing itself) might be due to lifestyle and other age-related (i.e. they increase with age) factors. This had wide-ranging research and clinical implications, as it suggested that characteristics of ageing are modifiable and that intervention studies might identify effective strategies to increase the number of people ageing successfully.

1.3.3 Criticism of the Rowe and Kahn model

The model proposed by Rowe and Kahn (1997) activated among researchers serious discussion and investigation into what it means to age successfully, what should be included in a model of successful ageing, and how successful ageing should be measured. While the new successful ageing definition was a major advance, it was not without its detractors, both researcher and lay. A common critique of the model was that individuals who experience functional limitations (i.e. people with lifelong or acquired disabilities and those experiencing the increased functional impairments associated with the ageing process) automatically excluded most older people from the 'successful' ageing category.

Strawbridge, Wallhagen and Cohen (2002), compared Rowe and Kahn's definition of successful ageing with the self-ratings of 867 participants aged 65-77 years and made associations with satisfaction with life. It was found that overall, 50% rated themselves as ageing successfully compared with only 19% so classified by the Rowe and Kahn criteria. Many participants with chronic health conditions rated themselves as ageing successfully; none of these were classified as such under the Rowe and Kahn criteria. Additionally, of the 163 participants rated as ageing successfully by the Rowe and Kahn criteria, 37% did not rate themselves as successful agers. These results indicate that many more older people regard themselves as ageing successfully than would be indicated by the objective measures determined by researchers, health professionals or policy makers; also that the absence of chronic illness and functional disability are not essential to self-ratings of successful ageing. Clearly, older people perceive successful ageing differently to that defined in the literature. Strawbridge et al. confirm that successful ageing is a complex concept that remains difficult to define.

1.3.4 An alternative model of successful ageing

A life-span successful ageing alternative to Rowe and Kahn's (1987) model was provided by the Selective Optimisation with Compensation (SOC) model, developed by Baltes and Baltes (1990). These authors proposed that ageing was best characterised as a heterogeneous process with many different pathways and (successful) outcomes. The SOC model considered the process of successful ageing rather than exclusively defining its outcomes, and was a pioneer in this avenue of research.

According to the SOC model (Baltes & Baltes, 1990), people select life domains that are important to themselves, optimise the resources and aids that facilitate success in those domains, and compensate for declines or losses. These steps assist adaptation to biological, psychological, and socio-economic changes throughout their lives and allow the creation of an environment for lifelong successful development and satisfaction. Since stressors such as declining health and functional ability may increase as resources decrease in old age, selection, optimisation and compensation processes become increasingly important in order to maintain a positive balance between gains

and losses (Baltes, 1997; Baltes & Cartensen, 1996; Freund & Baltes, 2000; Freund et al., 1999; Marsiske et al., 1995). This enables an acceptable level of satisfaction with life and arguably a perception of successful ageing to be held by the older person.

While SOC is considered a universal mechanism, its expression depends on the individual and his/her environment since personal goals vary from person to person, and also according to culture and period (Baltes & Cartensen, 1996; Baltes, 2004). The SOC model of successful ageing allowed for non-normative, individual trajectories of successful development into and in older age that could be seen as a dynamic process enabling older people to grow and learn by using past experiences to cope with present circumstances while maintaining a realistic sense of self (Bowling 2005; Scheier & Carver, 1985). One mechanism that has been found to assist older people to feel more satisfied about their circumstances is Social Comparison. By making downward comparison with others doing worse, older people are able to create a lower reference point of evaluation allowing them to redefine their situation in a more positive light (Buunk, Oldersma & De Dreu, 2001). Understanding the adaptive processes by which older adults with health and functional declines preserve well-being and satisfaction with life would inform rehabilitative, preventative and health promotion interventions and may lead to a more inclusive phenotype of successful ageing (i.e., people who may experience disability/chronic illness, but maintain life satisfaction and social engagement).

1.3.5 Successful ageing: a multi-dimensional construct

Over the last three decades a wide range of large-scale, longitudinal and cross-sectional studies of older people have been conducted in different countries, looking at various components and definitions of successful ageing (for systematic reviews see Bowling, 2007; Depp & Jeste, 2006). Predictor variables studied have included demographic characteristics (Fernandez-Ballesteros, Zamarron & Ruiz, 2001), health (physical and mental), functional ability and social functioning, satisfaction with life or subjective well-being and psychological resources, with some studies identifying some or all of these as precursors to successful ageing.

Biomedical approaches to successful ageing continue to draw on the Rowe and Kahn (1987) model despite the unrealistic expectation of a disease/disability-free old age. Some include psychosocial elements (measured objectively and/or subjectively) but few are inter-disciplinary in nature. The psychosocial approaches prioritise factors related to wellbeing; life satisfaction, social participation and functioning and psychological resources (e.g. effective coping and adaptive strategies in the face of changing circumstances) as keys to ageing successfully while often including health-related factors assessed with a mixture of objective and subjective measures.

Less frequently researched, lay views of successful ageing emphasise wellbeing but include constructs of both biomedical and psychosocial approaches. They generally highlight; life satisfaction, life expectancy, mental and psychological health, cognitive function, personal growth, physical health and independent functioning, psychological characteristics and resources, social activities and participation, social networks and support (Bowling, 2005). While most frequently measured subjectively, some lay studies include objective measures of health and functioning. The multidimensional nature of the lay views suggests that while biomedical factors that can be measured objectively contribute to successful ageing, they are not the whole picture. Lay emphasis appears to be more focussed on factors linked to satisfaction with life. Strawbridge et al. (2002) point to self-assessment as being meaningful in the determination of successful ageing; they state that, “any successful aging definition must be reflected in well-being to be valid, unless one wants to restrict success merely to longevity or absence of disability” (p.732). To best understand the concept, construction and criteria of successful ageing, it seems pertinent to consider the multi-dimensional criteria that older people themselves use. Bowling (2005) suggests that “Lay views of successful ageing are important for testing the validity of existing models and measures, if they are to have any relevance to the population they are applied to. There is little point in developing policy goals if elderly people do not regard them as relevant” (p. 1550).

1.3.6. Conceptualising old age in the 21st century

Psychological and sociological theories of ageing (e.g., Disengagement theory; Activity theory; Continuity theory; Age stratification theory; Person-environment fit theory, Selective optimisation; Social comparison theory) suggest that the impact of physical decline may be influenced by coping, protective or adaptive strategies (as suggested in the SOC model) that may assist a person to age successfully or more positively with a stronger perception of life satisfaction. With these theories, satisfaction with life is more central to ageing successfully than is physical function (Tabloski, 2010).

Population ageing has become a growing area of research and policy interest as countries are faced with swelling older populations, including New Zealand. While population ageing has focused attention on older people as major beneficiaries of public expenditure for pensions and health care, the growing discourse on ageing successfully or positively has challenged the assumptions about inevitable decline in old age and focused research more on modifiable effects of lifestyle, attitudes and skills. Research is in part driven by the prospect of the burgeoning health care costs associated with an increasingly ageing population but more importantly, by the need to develop greater understanding of factors that will facilitate the health and wellbeing of this group.

Definitions of ageing successfully vary and appear to reflect the academic discipline of the researcher, with alternative references to 'healthy ageing' (Kendig et al., 2001), 'active ageing' (WHO, 2002), 'positive ageing' (Bowling, 1993; Kendig & Browning, 1997) and 'productive ageing' (Kershner & Pegues, 1998) offered. Additional meanings that arise from the literature include emphasis on physical and mental health (Meeks & Murrell, 2001; Wong & Watt, 1991), cognitive growth potential (Baltes, 1993; Stern & Cartensen, 2000), positive functioning or psychological well-being (Morgan, et al., 1991; Ryff, 1989a; Sullivan & Fisher, 1994), high quality of or satisfaction with life (Butt & Beiser, 1987; Caspi & Elder, 1986; Meeks & Murrell, 2001), and adaptation to life changes (Abraham & Hansson, 1995; Reichstadt et al., 2007). Researchers not only adopt different terms to define ageing that is successful or

positive, but also express a range of opinions as to what it means to achieve this. While terminology varies, wide ranging and discipline-specific definitions invariably include high levels of physical and mental health, functional ability and satisfaction with life or well-being (Bowling, 2007). It appears that these factors are acknowledged as being components of a successful and desirable life both for and by older people; what is less clear is if one can achieve this level of ageing evidenced by high levels of life satisfaction, despite health-related challenges.

In 2001, the New Zealand government launched its Positive Ageing Strategy (PAS) that provided a framework for government departments to contribute towards goals and policies aimed at developing a society where older people can age positively; where they are highly valued, have continuing opportunities for participation, are able to age in a place of their choosing and where there are positive attitudes to ageing (Ministry of Social Development, 2001). Nowhere in this document or in the ongoing PAS Annual Reports, is positive ageing defined outside of stating that the concept comprises factors including health, financial security, independence, self-fulfilment, community attitudes, personal safety and security and the physical environment (Dalziel, 2001). While fostering a positive societal view of ageing, the individual challenge remains that with increasing age, declines in physical health, functional ability and mental health are to some extent inevitable. What is less certain is the impact that these declines have on the older person's evaluation and resultant perception of their satisfaction with life (if any); also how these are perceived by the ageing person at different stages of old age. This uncertainty prompts the examination in this thesis of the relationships between these variables; if they are stable across age cohorts and if not; what is happening that might impact those relationships.

1.4 Satisfaction with life

In much of the literature and throughout this study, satisfaction with life is defined as, "a cognitive, judgmental, global evaluation of one's life" (Diener et al., 1985, p.71) that includes subjective assessment of health, work, relationships with family members, friends and community and living standards (Bowling, 2005). Early researchers (Havighurst, 1963; Neugarten et al., 1968; Palmore, 1979) considered

satisfaction with life to be based on a perceived discrepancy between personal achievement and a standard comparison determined subjectively by the individual as desirable; the lower the perceived discrepancy the higher the level of satisfaction with life. Being satisfied suggests a level of contentment one feels when a desire, need, or expectation has been and continues to be, fulfilled. Based on this conceptualisation of satisfaction with life, older people living with disabilities or life-long health conditions that incur functional activity limitation might be expected to be less satisfied with life and its outcomes than younger people or older people without chronic conditions or disabilities. This would be especially so if the functionally limited group were comparing themselves with the more functionally able.

Used increasingly by researchers as an indicator of subjective wellbeing (Herero & Extremera, 2010) and quality of life (Bowling, 1997; LaGrow, 2007; Stelmack, Stelmack & Massof, 2002) satisfaction with life is often used inter-changeably with these terms. Life satisfaction is considered a major component (if not a definition) of successful ageing (Pruchno, Wilson-Genderson & Cartwright, 2010; Strawbridge, Wallhagen & Cohen, 2002). Vaillant (2002), identified that the achievement and maintenance of satisfaction with life, together with physical health status, were essential for successful ageing. In New Zealand, the Positive Ageing Indicators Report (2007) identified satisfaction with life as an indicator of older peoples' attitudes towards ageing and regards it as a key factor in the measurement of their wellbeing, associated with positive attitudes to ageing and the overall quality of their lives.

Many studies (i.e., Abu-Bader, Rogers & Barusch, 2002; Asakawa, Koyanao, Ando & Shibata, 2000; Bailis, Chipperfield, Perry, Newall & Haynes, 2008; Baird, Lucas & Donnellan, 2002; Blace, 2012; Bryant et al., 2012; Chen, 2001; Enkvist, Ekstrom & Elmstahl, 2012; Fagerstrom et al., 2007; Frieswijk, Buunk, Steverink & Staets, 2004; Good, LaGrow & Alpass, 2011; Guteirrez, Tomas, Galiana, Sanchos & Cebria, 2013; Gwozdz & Sousa-Poza, 2010; Peck & Merighi, 2007; Smith, Borchelt, Maier & Jopp, 2002; Stewart, Chipperfield, Ruthig & Heckhausen, 2013) have investigated satisfaction with life in older people. The literature frequently has shown increasing old age to be negatively related to satisfaction with life (including several studies reviewed in the following chapter, i.e., Baird et al., 2010; Chen, 2001; Enkvist et al., 2012; Fagerstrom

et al., 2007; Gwozdz & Sousa-Poza, 2010; Smith et al., 2002) and the trajectory of satisfaction with life across age demonstrated as a general trend of decline with the lowest levels of satisfaction reported at the oldest age. While satisfaction with life is a multi-dimensional concept, with the question of which factors affect it still being debated (Bowling, 2005), there seems to be some consensus that health status, functional ability, mental health and demographic factors are among the significant predictors (Bowling).

1.4.1 Factors affecting satisfaction with life

It is generally assumed and expected that satisfaction with life declines as; age increases, increasingly poor health is experienced, there is a concomitant increase in co-morbid chronic health conditions, and functional ability is challenged (Abu-Bader et al.; 2002; Asakawa et al., 2000; Bailis et al., 2008; Blace, 2012; Bryant et al., 2002; Chen, 2001; Enkvist et al., 2012; Fagerstrom et al., 2007; Gutierrez et al, 2013; Gwozdz & Sousa-Poza, 2010; Smith et al., 2002). The widely-held stereotypical assumption is that life satisfaction declines with age since physical health, functional ability and mental health decline with increasing age. Rather than being associated with age per se, declining life satisfaction appears to be a consequence of the relationship between age and health.

Studies from different countries however, present mixed findings in relation to the association between satisfaction with life and age. While some have found that low levels of satisfaction with life are associated with old age not all researchers have reached the same conclusions. A small body of international literature suggests that there is no age-related decline in satisfaction with life (e.g. Bowling, Farquhar & Grundy, 1996; Blanchflower & Oswald, 2008; Diener & Suh, 1997; Horley & Lavery, 1995; Smith et al., 1999). More recent studies have found that older people appear to experience at least minimum levels of positive satisfaction with life (Abu-Bader et al.; 2002; Asakawa et al., 2000; Bailis et al., 2008; Baird et al., 2010; Blace, 2012; Bryant et al., 2002; Chen, 2001; Enkvist et al., 2012; Fagerstrom et al., 2007; Frieswijk et al., 2004; Good et al., 2011; Gutierrez et al., 2013; Gwozdz & Sousa-Poza, 2010; Peck & Merighi, 2007; Smith et al., 2002; Stewart et al., 2013), with some findings even

suggesting that satisfaction with life increases in later life in some populations (Fagerstrom et al., 2007; Frieswijk et al., 2004). Some of this research also explores the effect on satisfaction with life of declining physical health, functional ability and mental health (e.g., Abu-Bader et al.; Bryant et al.; Chen; Enkvist et al.; Gutierrez et al.; Gwozdz & Sousa-Poza; Smith et al.) as age increases.

1.4.1.1. Health and satisfaction with life

Research has shown old age to be associated with low levels of health and increased number of longstanding impairments (Bowling, 1995; Ferring, et al, 2004) which are difficult to reverse (Eliopoulos, 2013; Heckhausen & Baltes, 1991) and it has been suggested that old age is characterised by multi-morbidity (i.e., the accumulation of diseases and chronic conditions) (Pinquart, 2001). These characteristics have been shown to be associated with an increase in frailty (Frieswijk, et al., 2004) and a decline in satisfaction with life (e.g., Abu-Bader et al., 2002; Bryant et al., 2012; Chen, 2001; Enkvist et al., 2012; Gutierrez et al., 2013; Gwozdz & Sousa-Poza, 2013; Smith et al., 2002). Paradoxically, when older people with chronic co-morbidities are asked about their health, whether it be in general conversation, at formal health assessment sessions or when asked to rate themselves in a single statement health survey question, many will answer that they consider themselves to be in 'good health' (Choi, 2002; Enkvist et al., 2012; Fagerstrom et al., 2007; Gwozdz & Sousa-Poza, 2010; Smith et al., 2002).

The New Zealand Health Survey (MOH, 2006/2007) found that more than half of 65-74 year old people rated their health as very good or excellent with about 45% of those aged over 75 making the same self-assessment. There appears to be a considerable gap between objective and subjective ratings of health; between the physical reality and what is perceived by the older person (Hong, Zarit & Malmberg, 2004). It is unclear which of these ratings has the greatest effect on self-evaluation of satisfaction with life among older people.

1.4.1.2 Functional ability and satisfaction with life

The low levels of functional ability experienced by many older adults, have been associated with co-existing mental and physical health conditions (Oakley, Browne, Wells & Scott, 2006), so that low levels of health (physical and mental) initially might manifest as loss of functional ability in old age. Ferring et al. (2004) observed a pronounced effect of increased age on functional ability, and identified that low levels of health related to a reduced capacity to perform activities and that both were associated with advanced age. This finding is supported by other studies using objective measures of functional ability (Guralnik & Kaplan, 1989; Wahl, Schmitt, Danner & Coppin, 2010). Functional ability has been defined by Meiner and Lueckenotte (2006, p.9) as “the capacity to carry out the basic self-care activities that ensure overall health and well-being”. Basic self-care activities, (BADLs and IADLs), can only be carried out if the physical body is able to function at a level that allows the performance of such activity and when psychologically the motivation to do so is present. Lacking the ability to perform ADLs has been considered criteria of unsuccessful ageing (Rowe & Kahn, 1998). In New Zealand in 2006, three in four (3:4) people aged 65-74 lived at home without assistance; of those aged 75-84, this reduced to one in two (1:2) and only one and one half in ten (1.5:10) of those aged 85+ lived at home without assistance; the majority of people aged 85+ lived at home only with assistance (MOH, 2006/7). Functional ability/capacity has been found to be positively associated with satisfaction with life (Fagerstrom et al., 2007; Gutierrez et al.) when measured by self-report of activities of daily living (both basic [BADL] and instrumental [IADL]) or by dependency. Thus it is assumed that older people experiencing functional decline will consequently experience poorer satisfaction with life compared with those who do not.

1.4.1.3. Mental health and satisfaction with life

Having a high level of good mental health is considered by researchers to be one of the major components of satisfaction with life and successful ageing (Bowling & Dieppe 2005). Over 7% of older adults living in the community in New Zealand experience diagnosed mental illness each year with 9.9% reported as having visited a

mental health care provider (Oakley, Browne, Wells & Scott, 2006) often with a diagnosis or symptoms of depression. Depression appears to embody the interplay of biological, psychological and social factors in older people (Oakley et al., 2006). Psychological well-being (self-concept and mental health) can be adversely affected by the experience of pain that is frequently associated with mechanical restrictions to functional ability caused by age-related and other chronic health problems and can increase the incidence of depression in old age (Dew, 1998; Lenze et al., 2001).

The quality of older people's lives can also be diminished by psychological challenges, such as life regrets (Towers, 2009; Wrosch, Bauer & Scheier, 2005) or experience of loneliness (La Grow, Neville, Alpass & Rodgers, 2012) which compromise their well-being and diminish their ability to be satisfied with life. However, an emerging body of literature suggests that mental health may not decline as age increases (Alonso et al., 2004; Hudson, 2012; Kessler & Merikangas, 2004; Levinson, Paltiel, Nir & Makovki, 2007; Oakley, Wells & Scott, 2006), A range of adaptive and protective supports and mechanisms. have been suggested to enhance psychological functioning with positive implications for wellbeing. Older people have been found to consider a high level of mental health and cognition together with a high level of physical health to be major components of satisfaction with life and successful ageing (Bowling & Dieppe, 2005).

It has become apparent with the increasing use of subjective measures, that there is a widening gap with age between older people's perception of their health and functional ability and their measured objective levels (Bowling, 2007; Rapkin & Schwartz, 2004; Westerman et al., 2008). Such incongruence was found by Ruthig and Chipperfield (2007) to have a large, significant effect on functional well-being among older people who showed high levels of optimism (Van Doorn, 1999) despite low levels of functional ability. Subjective/objective incongruence help to explain the perspective of the older people as they age towards being satisfied with their lives despite the physical and functional losses they experience. The implications of Ruthig and Chipperfield's findings are particularly relevant to older people with low levels of functional ability as enhanced perception of functional ability was shown to affect perception of satisfaction with life in older people. A similar positive finding was

reported by Frieswijk et al. (2004) who investigated the effect of an adaptive mechanism (social comparison) on satisfaction with life among frail older people.

1.4.2. Summary: Satisfaction with life

Satisfaction with life is affected by a complex interplay of an individual's perspectives and evaluations of their past and present achievements, and so relates to a spectrum of lived experiences. In ageing research, satisfaction with life has been strongly associated with high levels of health (physical and mental) and functional ability, both of which are essential for maintaining independence, social contacts and participation (Jylha, 2001). While older people's self-rated health has been found to be more strongly associated with satisfaction with life than has objectively measured health (Berg, Hoffman, Hassing, McClearn & Johansson, 2009; Hong, Oddone, Dudley & Bosworth, 2005; Hilleras et al., 2001; Strawbridge & Wallhagen, 1999), Mroczek and Spiro (2005) found that the links between health and satisfaction with life are inconclusive among older people.

The question of which variables affect older people's perception of satisfaction with life is still being debated (Bowling, 2005), which both warrants and justifies further investigation in this study. The apparent gap between results of objective and subjective measures of health and functional ability may provide some insight into reported anomalies in levels of satisfaction with life among older people. Strategies for subjectively measuring health, functional ability or satisfaction with life often utilise ratings tied to a referent person, group or value (Bowling, 2005). Satisfaction with life is a subjective, cognitive evaluation that is, in part, determined by comparisons made with standards (Diener, et al., 1985). One such standard is how older people perceive themselves as compared with their peers.

1.5 Social comparison as an adaptive cognitive mechanism

It has been suggested that evaluation by social comparison is one mechanism used by older people to maintain their perception of satisfaction with life in the face of declining health and functional ability (Bowling, 2005; Frieswijk et al., 2004). Subjective measures of health, functional ability and satisfaction with life are thought to be

influenced by the social comparisons (Festinger, 1954) that people make when they consider their own situation and capability in relation to one or more others (Peck & Merighi, 2007).

Social comparison is a theory about a quest to know oneself – about the search for self-relevant information and how we gain self-knowledge. In the absence of objective information, this quest for self-knowledge is fulfilled by comparing self with others. It appears that evaluation of life satisfaction could be based on a perceived discrepancy between where older people see themselves, in relation to others. Comparison with an ‘other’ doing better, might lower self-esteem and result in a more negative self-valuation. Equally, comparing with an ‘other’ doing worse, might result in a favourable self-evaluation.

Social comparison is more often described than defined but always involves directionality that is determined by the purpose of, or motivation for, making the comparison. The literature on social comparison has been directed mostly at its protective and adaptive potential in circumstances of threat through illness or disability, loss of relationships, cancer diagnosis and in situations of failure or poor-performance (Taylor & Lobel, 1989; Wills, 1981). Frieswijk et al. (2004) suggest that this operates through the individual adjusting their criteria of success and failure, based on a comparison with a similar ‘other’ and can be related to the SOC model referred to previously.

Social comparison has been shown to have a motivational effect (Gibbons & Gerrard, 1991) such that when people feel threatened or at risk of loss, social comparison is able to serve as a means of positive cognitive adaptation, particularly if a comparison is made with a target ‘other’ doing worse than the self (downward comparison). Such a favourable comparison appears to enhance self-image and to aid self-evaluation by helping to regulate negative emotions (Wills, 1981). When older people perceive that their health or ability to function independently is under threat, it is reasonable to assume that downward comparisons (Wheeler & Miyaki, 1966; Wills, 1966) will be made in order for them to feel more positive about their own situation (*“They’re doing much worse than me, so I must be alright after all”*). If, as the

literature suggests, the oldest-old are more likely to be in poor health and experience functional disability, it seems that they are most likely to compare downwardly. This downward comparison should have a positive effect on their perception of life satisfaction and therefore their reported satisfaction with life should not be as low as might be expected, if it were based on health and functional ability alone.

The life-areas that most occupy me as an older-persons' nurse are maintaining health and functional ability. So it concerns me that many research findings suggest that satisfaction with life is expected to decline with age assuming it does so as health and functional ability decline. This seems to assume that the baseline for judging life satisfaction is related to the level of health and function one has; as these decline, so does satisfaction with life. Yet my experience with older people suggested this might not be the case, particularly among that fastest-growing segment of our population - the over-85s. I kept hearing that response, "There's always someone worse off than me you know". Older people appeared to be making social comparisons with peers to evaluate their own achievement.

Utilising downward social comparison may have a beneficial effect on improving the perception of satisfaction with life among older people who face health declines or functional limitations. Cheng, Fung and Chan (2008) suggest that while social comparison is a mechanism by which a person may be able to stabilise their perception of satisfaction with life when considering a physical decline, it has rarely been a focus of research in ageing. This theoretical gap in ageing research calls for further investigation into the effect of social comparison on satisfaction with life across older age, and between age cohorts 65-74, 75-84 and 85+.

1.6 Significance of the current study

It has been argued that Rowe and Kahn's model of successful ageing excludes numerous old people who see themselves as ageing successfully (Aldwin, Spiro & Park, 2006; Heckhausen & Schulz, 1996; Minkler & Fadam, 2002; Steverink, Lindenberg & Ormel, 1998) and researchers have consistently demonstrated a significant lack of agreement between researcher-defined objective and subjective ratings of successful ageing (Depp & Jeste, 2006; Knight & Ricciardelli, 2003; Montross et al., 2006;

Reichstadt, Depp, Palinka, Folsom & Jeste, 2006; Strawbridge et al., 2002). This debate has culminated in an increased interest in how older people themselves view successful ageing. Subjective ratings of successful ageing are significantly associated with higher scores on health-related quality of life and satisfaction with life measures (Montross et al., 2006) and older people indicate the themes of life satisfaction/well-being and adaptation/attitude as being most important to their perception of ageing successfully (Reichstadt et al., 2006). Although researchers have found varying relationships between health, functional ability and life satisfaction, investigations into these associations and their relevance, have been mixed. Specifically, researchers have yet to examine if these subjective measures change with increasing age and what effect they have on global judgment of satisfaction with life, as a major predictor (if not definition) of successful ageing. These unanswered questions demonstrate a current gap in the literature and form the background to the current study.

When constructing the Satisfaction With Life Scale (SWLS) Diener et al. (1985, p.71) defined the construct as “a cognitive, judgmental, global evaluation of one’s life” (Diener et al., 1985, p.71) that Bowling (2005 suggests includes assessment of health, work, relationships with family, friends, community and living standards. Satisfaction with life is reflective of the personal criteria individuals use to make these evaluations (Shin & Johnson, 1978). Among older people, this appears to include the extent to which they have adjusted to the fact that they have aged (Blace, 2012; Jang, 2004), the degree to which they feel that their needs are satisfied and the way in which they cope with their changing circumstances (Sok, 2010). While these circumstances may be associated with inevitable physical and functional decline (Abu-Bader, Rogers & Barusch, 2003; Bond & Corner, 2004; Silver & Worthman, 1980) especially in advanced old age (Gwozdz & Sousa-Poza, 2010), this varies greatly from person to person. The degree to which this decline may affect one’s perception of life satisfaction may also vary (Belsky, 1984), as life satisfaction is internally determined in relation to an individually-set standard (Diener et al.) that might be influenced by social comparisons (Bowling, 2005, Festinger, 1954; Peck & Merighi, 2007) (i.e., how one views their circumstances relative to that of elected others).

Social comparison of self with a peer may allow older people to be able to stabilise their perception of satisfaction with life when evaluating their physical and functional situation. By exploring the impact of declining health and functional ability and utilisation of social comparison on satisfaction with life across older age, this study seeks to contribute to the understanding of how satisfaction with life is perceived across a sample of older people. When considering older people's subjective assessment of satisfaction with life this study will ask participants to indicate how they compare themselves with other people.

As the 65+ segment of the population in New Zealand is predicted to rapidly increase it becomes salient to consider factors that contribute to their perception of life satisfaction. It is generally assumed that as people get older their physical health and functional ability will decline and as a result their satisfaction with life will decline also; these declines are expected to be the lowest at the oldest ages. It is not clear however, if the expectation of low life satisfaction actually reflects the perception and experience of older people themselves. This study proposes that the impact of these health-related variables on satisfaction with life may be affected by social comparison, resulting in the possibility that satisfaction with life might not decline across older age as expected.

1.6 Study objectives

An emerging body of literature raises the suggestion that satisfaction with life may be experienced differently by different age cohorts of older people and that social comparison may affect how life satisfaction is perceived. As the available literature is not definitive on this issue, the objectives of this study are to:

1) clarify the associations between increasing age and satisfaction with life. Factors such as physical health, functional ability, mental health and demographic variables will be examined to determine the nature of these relationships in this age group; and

2) investigate if social comparison (direction and frequency) provides an explanation for any changes found in satisfaction with life across older-age cohorts.

The study will contribute to the understanding of how physical health, functional ability, mental health and use of social comparison affect older people's perception of satisfaction with life across old age. The significance of this study lies in identifying if these relationships exist and in clarifying how these processes might differ across older age. This knowledge will add to information available from the New Zealand Positive Ageing Indicators 2007 Report (MOSD, 2007, p.10) which states that there is "... little information ...[that]... links older peoples' experiences across a range of indicators". The literature and recent ageing research interest is increasingly focused on factors that influence successful ageing in order to obtain a healthy and satisfying life during old age, in an ageing society (Lee, 2008; Paskulin, Vianna & Molzahn, 2009). Understanding the potential role of social comparison in how older adults evaluate their ageing is important to the discussion of satisfaction with life, the development of successful ageing literature, and to the focusing of age-appropriate health-promotion and rehabilitative initiatives.

1.7 Chapter conclusion

Chapter one has introduced 'successful ageing' as the background to the current study of older peoples' perception of satisfaction with life. It has been suggested that the impact of health-related and social comparison variables on the lay evaluation of satisfaction with life may differ across older age. The chapter has introduced the concepts of interest to the study and presented the main claims that guide it. Before turning to the literature relevant to this topic, the framework for the study is presented.

Chapter two reviews literature related to satisfaction with life and social comparison that provides a foundation for investigating the assumptions of this study. The third chapter discusses the method and design utilised and provides an overview of the statistical analyses carried out to investigate the research questions. The results of the investigation are presented in chapter four and chapter five discusses the outcomes of the data analysis and the relevance of the study. References and related appendices conclude the thesis.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

In this chapter, the results of selected studies on satisfaction with life in older age are reviewed. The particular focus of these studies is their relationship to health-related predictor variables (e.g. health status, health perception, functional ability, mental health) and to an association with social comparison. This review of the literature informed the research questions and provided a framework for positioning the current study and a benchmark with which to compare its findings.

2.2 Search strategy

The literature reviewed here was selected from recent (2000 – 2013) peer-reviewed journal articles published in English between 2000 and 2013 and was accessed from a number of databases that reflect a range of disciplinary perspectives (Cinahl, Scopus, Ebsco host, PsychINFO, Web of Science). The review targeted medium to large quantitative studies (i.e., 90+ participants) of community-dwelling adults aged 60+. The following keywords and phrases were searched for; satisfaction with life or life satisfaction, ag(e)ing, old* or elder*, health*, function* and social comparison. Other inclusion criteria were longitudinal and cross-sectional studies involving participants living in the community (not institutionalised) and not specific in relation to gender, disease or culture. Of 253 results, 16 included a minimum of three of the key terms and were therefore selected for review. The literature reviewed informed the research questions, design and methods used for this study.

All 16 studies were conducted with community-dwelling older persons and included participants with ages starting at 60+ (i.e., Abu-Bader, Rogers & Barusch, 2002; Baird et al.; Blace, 2012; Bryant et al., 2012; Chen, 2006; Fagerstrom et al., 2005; Gutierrez, Tomas, Galiana, Sanchos & Cebria, 2013); 65+ (i.e., Asakawa et al., 2000; Frieswijk, Buunk, Steverink & Slaets, 2004; Good, LaGrow & Alpass, 2011; Gwozdz & Sousa-Poza, 2010; Peck et al., 2007); 70+ (e.g. Smith et al., 2002), 78+ (e.g. Enkvist et al., 2012); and 79+ (e.g. Bailis et al., 2008; Stewart et al., 2013). The sample size of the studies reviewed ranged from 97 (e.g. Stewart et al., 2002) to 20,696 (e.g. Baird et al., 2010) and were conducted in 15 different countries (i.e., Angola, Australia, Austria, Britain, Canada, Germany, Italy, Japan, Luxemburg, The Netherlands, New Zealand,

Philippines, Sweden, Taiwan, USA). Ten of the 16 studies reviewed utilised data from large national studies (i.e., Asakawa, Koyano, Ando & Shibata, 2000; Bailis, Chipperfield, Perry, Newall & Haynes, 2008; Baird, Lucas & Donnellan, 2010; Chen, 2001; Enkvist, Ekstrom & Elmstahl, 2012; Fagerstrom et al., 2005; Gwozdz & Sousa-Poza, 2010; Smith, Borchelt, Maier & Jopp, 2002; Stewart, Chipperfield, Ruthig & Heckhausen, 2013; Peck & Merighi, 2007) including national samples from Canada, Europe (i.e., Austria, Germany, Italy, Luxemburg, Sweden, The Netherlands), Japan, the UK and the USA. All 16 studies were focussed on determining factors which impacted on the life satisfaction of older people.

Twelve studies investigating the relationships between age, health, functional ability, mental health and satisfaction with life are reviewed first, followed by four studies that have investigated the effect of social comparison on satisfaction with life among older adults. Table 2.1 summarises the first 12 articles reviewed (i.e., Abu-Bader, Rogers & Barusch, 2002; Asakawa, Koyano, Ando & Shibata, 2000; Baird, Lucas & Donnellan, 2010; Blace, 2012; Bryant et al., 2012; Chen, 2001; Enkvist, Ekstrom & Elmstahl, 2012; Fagerstrom et al., 2007; Good, LaGrow & Alpass, 2011; Gutierrez, Tomas, Galiana, Sanchos & Cebria, 2013; Gwozdz & Sousa-Poza, 2010; Smith, Borchelt, Mair & Jopp, 2002), while Table 2.2 summarises the final four articles reviewed (i.e., Bailis, Chipperfield, Perry, Newall, & Haynes, 2008; Frieswijk, Buunk, Steverink & Slaets, 2004; Peck & Merighi, 2007; Stewart, Chipperfield, Ruthig & Heckhausen, 2013).

2.3 Satisfaction with life: measures used

While generally left undefined, satisfaction with life was measured by subjective self-report in all studies reviewed. Eight studies used some variant of the Life Satisfaction Index ((LSI-A); Abu-Bader et al., 2002; Asakawa et al., 2000; Bailis et al., 2008; Blace, 2012; Chen, 2001; Enkvist et al., 2012; Fagerstrom et al., 2007; Stewart, 2013); four used the Satisfaction with Life Scale (SWLS); Bryant et al., 2012; Frieswijk et al., 2004; Good et al., 2011; Gutierrez et al., 2013), two used single-item measures of life satisfaction (Baird et al., 2010; Gwozdz & Sousa-Poza, 2010) and two used proxy measures for satisfaction with life. For the latter, Peck and Merighi (2007) used the

Perceived Quality of Life scale (PQOL) and Smith et al. (2002) used the Philadelphia Geriatric Center Morale Scale (PGCMS).

Table 2.1 Old age and satisfaction with life

Author, year	Location, Data	Independent Variables	Measure of Life satisfaction	Age	N	Findings
Abu-Bader, Rogers & Barusch, 2002	Utah, USA.	Physical health, Function, Mental health, Social support, Locus of control. Emotional balance	Life satisfaction Index-Z (LSI-Z)	60+	182 frail elders	Perceived physical health was the most significant predictor of life satisfaction (LS) accounting for 14% of the variance. Social support, emotional balance and locus of control each accounted for an additional 6%, explaining 32% of the prediction of LS. Nearly half of respondents reported high scores on LS.
Asakawa, Koyano, Ando & Shibata, 2000	Japan Tokyo Metropolitan Institute of Gerontology Longitudinal Interdisciplinary Study on Aging	Function, Mental health, depression Social networks,	Life satisfaction Index-K (LSI-K)	65+	692	The subjects who experienced functional decline showed a larger decline in LS and larger increase in depression than those without functional decline.
Baird, Lucas & Donnellan, 2010	Germany, Great Britain. German Socio Economic Panel Study and British Household Panel Survey	Age, Cohort	Single-item	16-91	20,696	Average levels of LS are quite consistent until early 70s and then decline steeply until the end of life. Results were similar for Germany and Great Britain

Table 2.1 Old age and satisfaction with life

Author, year	Location, Data	Independent Variables	Measure of Life satisfaction	Age	N	Findings
Blace, 2012	The Philippines	Function, Activity participation	Life satisfaction Index – Third Age LSI-TA	60+ (M = 68.5)	780	Functional ability was found to be a significant predictor of LS and together with other activity-related variables accounted for 24% of the variance in LS. The sample rated itself as ‘somewhat satisfied with life’ with a factor average of 4.09. Low levels of activity contributed to the low levels of LS.
Bryant, Bei, Gilson, Komiti, Jackson & Judd, 2012	Australia. Study of Health & Wellbeing in rural and regional Australia	Physical health, Mental health, Anxiety, depression Attitudes to aging,	Satisfaction With Life Scale (SWLS)	60+	421	Associations were found between more positive attitudes to aging and higher levels of LS, perceived physical and mental health (SF12) and lower levels of depression and anxiety.
Chen, 2001	Taiwan. Survey of Health and Living Status of the Elderly in Taiwan	Age, Age cohort, Health decline, Function, Activity participation, Spousal loss	Life satisfaction Index – A (LSI-A) Demographics	60+	3,155	Life satisfaction among the elderly decreased as age increased after age 60. Demographic factors, income decrease and level of activity participation have a profound impact on LS of Taiwan’s elderly people. When correlates were controlled for, coefficients for age cohorts >70years turned positive. Suggested as a case of cohort effect on LS.

Table 2.1 Old age and satisfaction with life

Author, year	Location, Data	Independent Variables	Measure of Life satisfaction	Age	N	Findings
Enkvist, Ekstrom & Elmstahl, 2012	Sweden. Good Aging in Skane (part of the Swedish National Study on Aging and Care)	Age, Function, Locus of control, Health, Depressive mood Demographics	Life satisfaction Index – A (LSI-A)	78-98	681	Number of symptoms, marital status, locus of control, depressive mood and age significantly predicted LS after three years. Functional capacity was related to unchanged LS, stratified by age and gender, however as functional capacity diminished, so too did LS.
Fagerstrom, Borg, Balducci, Burholt, Wenger, Ferring, Weber, Holst & Hallberg, 2007	Austria, Italy, Luxembourg, Netherlands, Sweden, UK. European Study of Adult Wellbeing	Age, Health, Function, Mental health, Self-esteem, Social contacts, Financial resources	Life satisfaction Index – Z (LSI-Z)	60-89	7,699	Low LS was found to be predicted by unsatisfactory social contacts, poor financial resources, being hindered by health problems and low self-esteem. The results were similar for all six European countries included in the study,
Good, LaGrow, Alpass, 2011	New Zealand. Cross-sectional survey	Age cohorts, Function & activity, Independence	Satisfaction With Life Scale (SWLS)	60+	421	Age cohorts differed with the oldest (85+) reporting lower levels of activity and independence. However there was no significant difference between the groups in overall LS.

Table 2.1 Old age and satisfaction with life

Author, year	Location, Data	Independent Variables	Measure of Life satisfaction	Age	N	Findings
Gutierrez, Tomas, Galiana, Sanchos & Cebria.(2013)	Angola. Cross-sectional survey.	Physical health, Function, Productivity, Generativity, Active engagement	Satisfaction With Life Scale (SWLS)	60-90	1,003	Main predictors of LS were those related to active engagement with others, although perceived health had a significant positive effect. Several processes accounted for a large variance, suggesting a multi-factor prediction for LS.
Gwozdz & Sousa-Poza, 2010	Germany & Europe. German Socio-Economic Panel & Survey on Health, Ageing & Retirement in Europe (Longitudinal)	Age, Physical health, Function	Single item	65+	3,315	Life satisfaction rapidly declines after 65 with lowest levels recorded for oldest-old, primarily attributable to low levels of perceived health, but not objective health status.
Smith, Borchelt, Maier & Jopp, 2002	Germany. Berlin Aging Study	Age, Health, Function, Mortality.	Philadelphia Geriatric Center Morale Scale (PGCMS)	70-105	516	Findings suggested that while objective health status was an indicator of LS, functional and perceived health were stronger indicators with perceived health being the strongest predictor.

All 16 studies reviewed investigated satisfaction with life among older people. Of these; seven (i.e., Baird et al., 2010; Blace, 2012; Bryant et al., 2012; Enkvist et al., 2012; Good et al., 2011; Gwozdz & Sousa-Poza, 2010; Peck & Merighi, 2007) found mean life satisfaction scores to be above the mid-point of the measure used indicating their sample to be somewhat satisfied with life, satisfied or very satisfied; four studies (Abu-Bader et al., 2002; Asakawa et al., 2000; Chen, 2001; Fagerstrom et al., 2007) found mean life satisfaction scores to fall below their measure's neutral scores, but not greatly, for at least some of their participant groups in USA, Tokyo, Taiwan and Europe (Italy) respectively; five studies (Bailis et al., 2008; Frieswijk et al., 2004; Gutierrez et al., 2013; Smith et al., 2002; Stewart et al., 2013) did not report mean life satisfaction scores. It is salient to note that across the studies reviewed, older persons generally report being satisfied with life at least minimally. The following section reviews studies that investigated factors affecting satisfaction with life among older people.

2.4 Factors affecting satisfaction with life among older people

As can be seen in Table 2.1, a number of independent variables were investigated to determine the extent to which they impacted on satisfaction with life, including; age (i.e., Baird et al., 2010; Chen, 2001; Enkvist et al., 2012; Fagerstrom et al., 2007; Good et al., 2011; Gwozdz & Sousa-Poza, 2010; Smith et al., 2002); physical health (i.e., Abu-Bader et al., 2002; Bryant et al., 2012; Chen, 2001; Enkvist et al., 2012; Fagerstrom et al., 2007; Gutierrez et al., 2013; Gwozdz & Sousa-Poza, 2010; Smith et al., 2002); functional ability (i.e., Abu-Bader et al., Asakawa et al., 2000; Blace, 2012; Chen; Enkvist et al.; Fagerstrom et al.; Good et al.; Gutierrez et al.; Gwozdz & Sousa-Poza; Smith et al.); mental health (i.e., Abu-Bader et al.; Asakawa et al.; Bailis et al.; Bryant et al.; Enkvist et al.; Fagerstrom et al.); and a range of other demographic and psycho-social factors thought to be associated with life satisfaction (i.e., Abu-Bader et al.; Asakawa et al.; Bryant et al.; Chen; Fagerstrom et al.; Gutierrez et al.; Stewart et al.). The sections that follow discuss; a) the findings of these 12 studies reviewed in relation to the effects of the health-related and other demographic or psycho-social factors on satisfaction with life and; b) the findings of the four studies reviewed that investigated the effect of social comparison on satisfaction with life.

2.4.1 Age and satisfaction with life

Seven of the 12 studies reviewed (i.e., Baird et al., 2010; Chen, 2001; Enkvist et al., 2012; Fagerstrom et al., 2007; Good et al., 2011; Gwozdz & Sousa-Poza, 2010; Smith et al., 2002) investigated the association between age and satisfaction with life; four (Chen et al.; Enkvist et al.; Good et al.; Smith et al.) of those made comparisons across age cohorts.

Baird et al. (2010) assessed changes in satisfaction with life over the lifespan using two large, nationally representative studies. In the first part of their study, data from the German Socio-Economic Panel Study [GSOEP], that used panel design with refreshment samples to isolate the effects of age from a possible cohort effect in life satisfaction, was analysed. From the annually collected GSOEP data, Baird et al. restricted their analysis to members of the original West German sample and the refreshment samples who were living in West Germany in 1989 (one year prior to reunification) and aged 60+. Of the original sample, 12,707 older people and 7,698 from the refreshment samples met the selection criteria (N = 20,696). Life satisfaction was measured using a single-item. Veenhoven (1996) suggests that single-item measures are generally as reliable and valid as multi-item measures. In the GSOEP the single-item was: 'How satisfied are you with your life in general?' The response to this question was scored on an 11-point scale (0 = completely dissatisfied, to 10 = completely satisfied) with the neutral midpoint of 5. The mean life satisfaction score for this cohort was found to decline from 7.45 in 1984 (i.e., nearly 3 points above the neutral middle point) to 6.82 in 2004. The trend observed in life satisfaction scores across the sample was relatively flat from ages 60 to 70 but declined sharply from 70+.

In the second part of the study, Baird et al. (2010) analysed the data from the British Household Panel Study (BHPS), an annual panel study, which began in 1991 and like the GSOEP, progressively added additional sub-samples. Analysis was restricted to members of the 1990 to 2001 waves (N = 21,448) who were aged 60+ in 1990. This study also used a single-item measure to assess life satisfaction, but in this case, the question read 'How dissatisfied or satisfied are you with your life overall?'. Responses ranged from 1 (not satisfied) to 7 (completely satisfied) with a neutral mid-point of 4.

Baird et al. reported mean life satisfaction scores of 5.33 in 1998 (i.e., nearly 1.5 points above the neutral midpoint of 4) to 5.19 in 2000, again indicating a decline in life satisfaction over time. As with the GSOEP data, the trend in life satisfaction scores were found to be relatively flat from ages 60 to 70 and declined thereafter. This decline, however, was much less sharp than that observed in the GSOEP data.

It should be noted that, in both studies, those in their 80s, who had the lowest life satisfaction scores in the sample, had mean life satisfaction scores above the neutral midpoint on the measures used and therefore could be said to still have positive life satisfaction, though lower than that of their younger cohorts. Baird et al. found that differences in life satisfaction became most evident when the oldest participants were contrasted with the youngest.

Gwozdz and Sousa-Poza (2010) analysed and compared data from two large surveys; the GSOEP (previously reported) and the Survey on Health, Ageing and Retirement in Europe (SHARE) to investigate life satisfaction among the oldest-old from a life-course perspective. In the first part of their comparison study, Gwozdz and Sousa-Poza's analysis of GSOEP longitudinal data concentrated on 3,315 participants aged 70+ (divided into age groups at 5 year intervals) who were involved in the study waves from 1994 to 2006. The GSOEP used a single-item to measure life satisfaction (reported above by Baird et al., 2010). In the second part of their study Gwozdz and Sousa-Poza analysed the German SHARE data. The 2004 SHARE provided the authors with cross-sectional data on self-reported physical and mental health, as well as some demographic features, of 3,008 people aged 60+, of whom 487 were aged 75+. The SHARE measured life satisfaction with a single-item 'How satisfied are you with your life in general?'. The response was scored on a 4-point scale (1 = very dissatisfied, to 4 = very satisfied) with a measure neutral point of 2.5. For both studies a higher score indicated a higher level of satisfaction with life.

After controlling for demographic factors in the GSOEP data, Gwozdz and Sousa-Proza (2010) found that life satisfaction increased to the 70-74 age group; after this life satisfaction declined and reached its lowest level with the oldest group aged 90-94 years. An unexpected finding was that respondents aged 65-84 were more satisfied

with life than the referent 16-19 year group. Similarly to Baird et al. (2010), the authors reported a mean life satisfaction score of 6.77, above the neutral point on the measures used, and therefore could be said to still have positive life satisfaction, though lower than those of younger cohorts, as was reported for the Baird et al. (2010) studies. In the second part of their study, using the SHARE data, Gwozdz and Sousa-Poza compared life satisfaction between the young-old (60-74) ($M = 3.198$) and the oldest old (75+) ($M = 3.154$) and found life satisfaction to be remarkably stable in their sample.

Enkvist et al. (2012) analysed data from the three year longitudinal 'Good Aging in Skane' project that followed 681 Swedish people aged 78-98 to examine the association between life satisfaction in the oldest-old and health status, functional capacity, locus of control (as a mental health factor) and other factors reported to affect life satisfaction in this group. Respondents were divided into four groups; male respondents aged 78-84 and 87-92 at baseline and female respondents aged 78-84 and 87-92 at baseline. Life satisfaction was measured with the Life Satisfaction Index-A (LSI-A) in this study.

The LSI-A was developed by Neugarten, Havighurst and Tobin (1961) to measure life satisfaction based on respondents' feelings. The scale aims to identify 'successful' ageing by measuring general feelings of well-being (Bowling, 2005). Designed to be a relatively short self-report measure, the LSI-A has 20-items, reflecting five dimensions; zest, apathy, resolution and fortitude, congruency and self-concept. Of the 20-items, 12 are positive statements and 8 negative. An example of a positive item is, "I would not change my past even if I could" and of a negative statement, "This is the dreariest time of my life". Response options for both positive and negative statements are scored from 0 to 2, with possible answers: agree, doubtful, or disagree. Negative statement scores are reverse coded and total scores summed to provide an overall score of 0 - 40 with a neutral mid-point of 20.

Enkvist et al. (2012) found mixed age-related results for life satisfaction with stable, decreasing and even an increasing result. The 78-84 female group reported a mean score of 25.7 (of 40 for the LSI-A) at baseline that declined only marginally to

25.5 at follow-up, while the 87-93 female group reported 24.1 at baseline and 23.8 at follow-up; both reasonably could be interpreted as stable scores. Among the male group aged 78-84, Enkvist et al. found a mean life satisfaction score of 26.9 at baseline and 27.1 at follow-up indicating a slight shift upward in life satisfaction. The male group aged 87-93 however, was found to have a mean score of 26.9 that declined to 25.0 (nearly two full points) at follow-up; this was the largest change reported by the study. It should be noted that this was still well above the 21.0 neutral-point and therefore respondents still could be said to have positive life satisfaction. Overall, the authors reported significant negative correlations between life satisfaction and older age, ($p < 0.001$) and after a logistic regression to test which factors would predict life satisfaction at the three year re-examination, older age was found to be a predictor of lower life satisfaction.

Using data from the Berlin Aging Study [BAS] of 516 older people aged 70 – 103 years, Smith et al. (2002) investigated associations between life satisfaction and perceptions of health and functional status. Of the participants, 30% were married, 65% had only primary level education, 41% were considered upper middle to higher class economically while 30% reported multi-morbidity of 5+ illnesses. The authors used the adapted PGCMS to measure the life satisfaction component of subjective wellbeing. The PGCMS (Lawton, 1975) consists of 17 items measuring three dimensions (agitation, attitudes towards own ageing, and lonely dissatisfaction) with dichotomous responses. Smith et al. (2002) adapted the PGCMS, shortening it to 15 items and expanding its response to a 5-point Likert scale. An example of a PGCMS item is 'I sometimes think that life isn't worth living'. Where required, items are reverse-coded so that higher numbers indicate greater morale. Smith et al. (2002) provided percentage results only from their analysis and found that overall 63% of participants were satisfied or very satisfied with life. They stated that there were significant differences between age groups 70-84 and 85-103 with the younger group reporting higher life satisfaction than the older group, indicating a decline in life satisfaction with increasing age.

Chen's (2001) study was a longitudinal comparison of 1989 and 1993 results of the Survey of Health and Living Status of the Elderly in Taiwan [SHLSET]. The SHLSET

investigated the effect of major life events (retirement, deterioration of health, loss of spouse) and activity participation on life satisfaction in a sample of 3,155 adults aged 60+. The respondents were divided into age groups at 5 year intervals. Chen shortened the LSI-A (previously described for Enkvist et al., 2012) to measure life satisfaction in this study. The author used only four LSI-A items, with three of the four items related to a global assessment of past life (index 0 - 3) and one additionally to feelings toward current life condition. Dimensions assessed were; a life better than others; best days in a life; more good events in the future and; feel satisfied with one's life. Responses were scored 0 = disagree, 1 = agree, with a total score ranging 0 – 4 with higher scores indicating higher satisfaction with life.

With a measure neutral point of 2.0, Chen found the mean of the 60-64 age group to be 2.28; the 65-69 group to be 2.12; the 70-74 group 2.09; the 75-79 group at 2.00 and; that of the 80+ group to be 1.59, suggesting a decline in life satisfaction as age increased. The authors also found that only the oldest group reported scores falling below the neutral point at which they could be said to have positive life satisfaction. The mean score for the 80+ age group indicated a cohort effect that the author attributed to cohort-specific life experiences.

The European Study of Adult Wellbeing [ESAW] collected data from 7,699 people aged 60-89 from across six European countries (i.e., Austria, Italy, Luxemburg, Sweden, The Netherlands, UK). Fagerstrom et al. (2007) compared the respondents on the effects of health problems, activity of daily living (ADL) capacity, self-esteem, social and financial resources on life satisfaction. Life satisfaction was measured with an adapted version of the Life Satisfaction Index-Z (LSI-Z). The LSI-Z, (Wood, Wylie & Sheafor, 1969), is a shortened 14-item form of the 20-item LSI-A, with possible responses agree, disagree or uncertain and total scores ranging from 1 to 14 with higher scores indicating greater life satisfaction. The already shortened 14-item LSI-Z was further reduced to 13-items of the original 20 LSI-A items, by Fagerstrom et al. (2007) who used the positively and negatively loaded indexed questions with an overall score of 0 – 26 with a neutral mid-point of 13. Higher scores indicated greater satisfaction with life.

Fagerstrom et al. (2007) found respondents in five countries to have life satisfaction mean scores ranging from 18.0 in Austria, Luxemburg and Sweden to 19.0 in The Netherlands and U.K, all above the LSI-Z neutral point of 13.0. It was noteworthy that 22% of the Swedish participants were aged 80+ (7.8% higher than any other country) and that the Swedish mean score was 18.0, comfortably above the LSI-Z neutral point of 13.0. However, none of the results from the six European countries included in the study found age to be significantly associated with life satisfaction.

Much the same results were found among a similar age range of participants in a cross-sectional study in New Zealand. Good et al. (2011) explored the effects of level of daily functioning, independence and social support on the overall life satisfaction of 425 New Zealanders aged 65+. These authors compared the participants across three age groups (65-74, 75-84, 85+). The majority of the respondents were; women, European, married, resident in urban communities and had minimum secondary school pass qualification.

Good et al. (2011) used the Satisfaction With Life Scale (SWLS) to measure satisfaction with life in this study. The SWLS (Diener, Emmons, Larsen & Griffin, 1985) was developed to assess an individual's conscious evaluative judgement of life domains using their own criteria and weighting (Diener et al., 1985). These same authors considered subjective well-being in terms of the cognitive and emotional evaluations of life. Pavot, Diener, Colvin, and Sandvik (1991) suggest that the scale is a judgemental component of subjective well-being without including related concepts such as vigour, thus improving on the LSI-A. The SWLS was designed to be appropriate for adults of all ages. The SWLS is a 5-item measure with responses scored on a 7 point scale from 1 = strongly disagree, to 7 = strongly agree producing total summed scores ranging from 5 to 35. The final scoring guide suggests that scores of 5-9 indicate that the respondent is extremely dissatisfied; 10-14 dissatisfied, 15-19 slightly dissatisfied, 20 neutral, 21-25 slightly satisfied; 26-30 satisfied, 31-35 extremely satisfied, so that higher scores suggest higher levels of satisfaction with life. The 5-item statements were broadly written to provide maximum respondent evaluation; an example of an item is, "In most ways, my life is close to my ideal".

Using the SWLS, Good et al. (2011) found mean life satisfaction scores to range from 24.95 for the 65-74 group to 23.28 for the 85+ group, all to be well above the SWLS neutral point of 20, but indicating a declining trajectory across age. However there were no significant differences in life satisfaction scores found across the three age groups (65-74, 75-84, 85+).

Of the twelve studies reviewed here, seven investigated the association between age and satisfaction with life (i.e., Baird et al., 2010; Chen, 2001; Enkvist et al., 2012; Fagerstrom et al., 2007; Good et al., 2011; Gwozdz & Sousa-Poza, 2010; Smith et al., 2002) and found a trajectory decline in life satisfaction across old age. However they all also found mean life satisfaction scores to be above the neutral mid-point of the life satisfaction measure they used. Five of these studies (i.e., Baird et al., 2010; Chen, 2001; Enkvist et al., 2012; Gwozdz & Sousa-Poza, 2010; Smith et al., 2002) found age either to be a significant predictor of, or to be significantly associated with life satisfaction. Two studies (i.e., Chen; Enkvist et al.) found significant difference between age-groups in satisfaction with life. However, two studies (i.e., Fagerstrom et al.; Good et al.) reported somewhat different results to the five above. None of the results from the six European countries (Fagerstrom et al.) found age to be significantly associated with life satisfaction. In their study, Good et al. found no significant differences in life satisfaction across the three age groups (65-74, 75-84, 85+). Some authors (e.g., Baird et al.; Gwozdz & Sousa-Poza) suggested that mixed results might be attributed to poorer physical health or declining functional ability in the oldest group.

2.4.2 Physical health and satisfaction with life

As can be seen in Table 2.1, the effect of physical health on satisfaction with life was investigated in eight (i.e., Abu-Bader et al., 2002; Bryant et al., 2012; Chen, 2001; Enkvist et al., 2012; Fagerstrom et al., 2007; Gutierrez et al., 2013; Gwozdz & Sousa-Poza, 2010; Smith et al., 2002) of the 12 studies reviewed. Four of these (i.e., Enkvist et al.; Fagerstrom et al.; Gwozdz & Sousa-Poza; Smith et al.) explored the effect of an objective health measure on satisfaction with life. All four studies measured objective health with the reported diagnosis of health conditions (comorbidity) or by number of

symptoms; lists of health conditions or symptoms were provided and participants responded yes or no as relevant.

2.4.2.1 Objective physical health and satisfaction with life

Enkvist et al. (2012) used the LSI-A to measure life satisfaction and found that objective health could predict life satisfaction after four years and was an influential predictor of life satisfaction in their model. Fagerstrom et al. (2007), using the LSI-Z as their life satisfaction measure, found no significant association between physical health and satisfaction with life. However, a noteworthy finding from this 6-nation study was that the majority of participants were 'rather healthy' (2007, p.46). Gwozdz and Sousa-Poza (2010) found a significant difference in health between the youngest and oldest participants. However, using a single-item life satisfaction measure they found that objectively measured health did not make a unique contribution to the prediction of life satisfaction, except for those respondents who had Parkinson's disease (a disease that results in severe loss of independence). Smith et al. (2002), using an adapted version of the PGCMS (previously reported) to measure the life satisfaction components of subjective wellbeing, found chronic illness to contribute to the variance in life satisfaction, but they stated that it added little to the overall prediction of life satisfaction in their model.

Of the four (i.e., Enkvist et al.; Fagerstrom et al.; Gwozdz & Sousa-Poza; Smith et al.) studies reviewed that investigated the effect of an objective measure of physical health on satisfaction with life all found physical health to decline across old age with the oldest participants experiencing the poorest health and the lowest levels of life satisfaction. However, only one study (i.e., Enkvist et al.) of the four found a significant association between objective physical health and satisfaction with life, contrary to what is commonly expected.

2.4.2.2 Subjective (perceived) physical health and satisfaction with life

The effect of subjective or perceived health on satisfaction with life was investigated in seven (i.e., Abu-Bader et al.; Bryant et al.; Chen et al.; Enkvist et al., 2012; Gutierrez et al.; Gwozdz & Sousa-Poza; Smith et al.) of the eight studies reviewed

that explored the effect of health on satisfaction with life, with mixed results. Abu-Bader et al. (2002) investigated the effect of perceived health status, along with emotional health, social support and locus of control on satisfaction with life in an American sample; the authors interviewed 182 people aged 60 to 101 years, 88% of whom were female. Their study was limited to community-dwelling, frail elderly people, with frailty defined as needing assistance with an average of two basic activities of daily living (BADLs) and five instrumental activities of daily living (IADLs). Life satisfaction was measured with the LSI-Z and perceived health with a single-item ("In general, would you say that your health is excellent, very good, poor, fair or poor?"). Perceived health was scored on a 5-point Likert scale with a higher score indicating better perceived health. Using regression analyses Abu-Bader et al. found perceived health to be the strongest predictor of life satisfaction in their study, accounting for 14% of the variance in life satisfaction.

Bryant et al. (2012) investigated the contribution of attitudes, subjective physical health and mental health towards satisfaction with life in a cross-sectional study of 421 rural community-dwelling Australians aged 60+ ($M = 71.67$ years). These authors used the SWLS and found a mean life satisfaction score of 26.63, nearly 7 points above the SWLS neutral mid-point of 20; it therefore could be said that respondents had positive life satisfaction. Using the SF12_{physical} to measure perceived physical health, the study found that subjective physical health was positively associated with satisfaction with life, despite the mean health score (42.17) being lower than the Australian adult mean (50). Also, participants reported relatively high satisfaction with life scores despite the fact that older age was found to be significantly associated with lower SF12_{physical} scores.

Chen (2001) examined how deterioration in health affected life satisfaction. The author used the LSI-A to measure satisfaction with life and subjective health was measured with a single-item asking respondents if their health had deteriorated across a four-year period. The latter was scored with 0 = no and 1 = yes. In a regression analysis, no significant relationship was found between satisfaction with life and health in their sample whose life satisfaction decreased as age increased.

The LSI-A was used by Enkvist et al. (2012) to measure life satisfaction when they examined the effect of perceived health status. Subjective health was measured with a single-item (“How are you feeling today”) estimated with 7-grades (1 = much better than usual, to 7 = much worse than usual), with a lower score indicating better health. Like Chen, Enkvist et al. found no relationship to exist between subjective physical health and satisfaction with life.

Gutierrez et al. (2013) used the SWLS in their cross-sectional study that investigated life satisfaction among 1,003 people aged 60-90 years ($M = 77.9$). The study took place in Angola and evaluated the predictive power of perceived health, active engagement, socio-demographic factors and generativity. Generativity is a concept arising from the human development literature and defined by Gutierrez et al. as being “linked to actively passing knowledge and/or experience to others ... in line with the dimension of participation in productive activities pointed to by the successful aging paradigm” (2013, p.94). Perceived health was measured with the Perceived Health Scale (Fernandez-Ballesteros, Zamarron & Ruiz, 2001) scored from 1 (bad) to 3 (good) with higher scores indicating better perceived health. An example of an item was, “In the last twelve months, your health has been ...”. The authors found perceived health to have a statistically significant but small impact on satisfaction with life ($r = 0.11, p < 0.01$).

Gwozdz and Sousa-Poza (2010) found a significant, positive medium association ($r = .384$) between perceived health and satisfaction with life. They used a single-item to measure each of life satisfaction and health. Health was measured using the single-item, ‘How would you describe your current health?’ scored on a 5-point scale from 1 = bad, to 5 = very good. With higher scores indicating better perceived health. The authors found that self-rated health was lower for the oldest respondents (2.2) than for the youngest respondents (2.9).

Smith et al. (2002) used an adapted version of the PGCMS to measure the life satisfaction component of subjective wellbeing, and a single-item “How would you rate your health at present?” to measure perceived health. The latter was scored on a 5-point response scale. Smith et al. found perceived health to be the strongest predictor

of life satisfaction explaining 20% of the variance in life satisfaction in their model. Noteworthy findings from this study were that subjective health was not correlated with age, and subjective health was a stronger predictor of life satisfaction than was objective health.

Overall, the findings relating to the effect of health on satisfaction with life indicate that the relationship between objective health and life satisfaction and subjective or perceived health and life satisfaction are mixed. A gap between objective and perceived health as predictors of satisfaction with life was reported by Smith et al. (2002) who included both variables in their study. Four studies (i.e., Enkvist et al., 2012; Gutierrez et al., 2013; Gwozdz et al., 2010; Smith et al., 2002) found subjective measures of health to be strong predictors of life satisfaction and to be (or to be among) the strongest predictors of the variables in their predictive models. Overall, older people appear to report high levels of subjective health (higher than their objectively measured health might suggest) and these perceptions are related to higher levels of satisfaction with life. At least two studies (Fagerstrom et al., 2007; Gwozdz & Sousa-Poza) suggested a link between health and functional capacity that might impact on satisfaction with life. The effect of functional ability on satisfaction with life will be reviewed in the next section.

2.4.3 Functional ability and satisfaction with life

The effect of functional ability/capacity on satisfaction with life was assessed in eight of the 12 studies reviewed (i.e., Abu-Bader et al., 2002; Asakawa et al., 2000; Blace, 2012; Enkvist et al.; Fagerstrom et al., 2007; Good et al., 2011; Gutierrez et al., 2013; Smith et al., 2002) and was measured by self-report of activities of daily living (both basic (BADL) and instrumental activities of daily living (IADL)) or by dependency. Basic activities of daily living (ADL) include basic physical skills of mobility and self-care activities (e.g. walking, bathing, toileting, eating, drinking), while Instrumental activities of daily living (IADL) refer to skills that enable an individual to maintain independence and to function independently in the community (e.g. doing laundry, shopping, housework, preparing meals) (Bowling, 2005; Eliopoulos, 2013).

No significant relationship between functional ability and satisfaction with life was found in two studies (i.e., Abu-Bader et al., 2002; Enkvist et al., 2012). Abu-Bader et al. measured satisfaction with life using the LSI-Z (reported previously by Fagerstrom et al., 2007) and mobility using the 56-item Iowa Self-Assessment Inventory (Morris & Buckwatter, 1988) subscale, mobility, scored from 1 (usually or always true) to 4 (usually or always false). Item scores are summed to provide a score range from 8 to 32. The authors reported that functional ability was not found to be a predictor of life satisfaction. Similar results to Abu-Bader et al. were reported by Enkvist et al. who found no relationship between functional ability and life satisfaction for both the age groups (78-84, 87-93) in their study. Satisfaction with life had been measured with the LSI-A and functional ability with ADL and IADL scales.

In contrast to the two studies reported above, three other studies reviewed (i.e., Asakawa et al., 2000; Fagerstrom et al., 2007; Gutierrez et al., 2013), found functional ability to be significantly positively related to life satisfaction. Asakawa et al. investigated the effects of functional decline and depression on satisfaction with life among 692 Japanese people aged 65+ over the two-year follow-up period of the Tokyo Metropolitan Institute of Gerontology Longitudinal Interdisciplinary Study on Aging [TMIG-LISA] (Shibata, Suzuki, Shimonaka & Koyana, 1993). The mean age of participants was 70.7 years and 57% were women. Participants were divided into two groups; those who maintained functional ability across two years and those who experienced functional decline. Asakawa et al. used the Life Satisfaction Index-K (LSI-K) to measure satisfaction with life in this study. The LSI-K is a Japanese 9-item measure adapted from the LSI-A by Koyana and Shibata (1994). The 9-item LSI-K had a response range of 0 - 9 with totals summed and averaged to provide total scores ranging 0-9 with a neutral mid-point of 4.5. Higher scores indicated higher life satisfaction. Asakawa et al. found a significant relationship between functional ability and satisfaction with life. When they compared the two groups on the LSI-K measure neutral point of 4.5, the group that maintained their functional health status had a mean life satisfaction score of 5.15 at baseline that increased to 5.32 at follow-up while the group whose functional health status declined had a baseline mean of 4.69 that reduced to 4.12 at follow-up; as functional ability declined, so too did satisfaction

with life. While these results were significant, they indicate that only the group who experienced a decline in functional health status was not satisfied with life. The authors suggested that this decline might affect the mental health of the participants.

Similarly, Fagerstrom et al. (2007) found that in a sample of participants with a high level of functional ability, mild to moderate reduction in ADL capacity were significantly associated with low life satisfaction, measured with LSI-Z. Gutierrez et al. (2013) utilised a measure of dependency to investigate functional ability and found a significant negative association with life satisfaction that when reverse coded for a positive functional ability provides a significant positive association. Satisfaction with life was measured with the SWLS. All three studies (i.e., Asakawa et al., 2000; Fagerstrom et al.; Gutierrez et al.) indicated that a higher level of life satisfaction is experienced by older people with higher levels of functional ability.

Two studies (i.e., Blace, 2012; Smith et al., 2002) included functional ability as a variable in a regression analysis to predict life satisfaction. Blace assessed the ability of physical activity status and functional capacity to predict life satisfaction among 780 community dwelling people aged 60+ years (M = 68.5) in the Philippines. The majority of the participants were female (58%), married (62%), with 6.8 mean years of education. Blace used the Life Satisfaction Index – Third Age (LSI-TA) to measure satisfaction with life (Barrett & Murk, 2006) which was based on the LSI-A. The author suggested this to be an updated scale based on the Neugarten et al. (1961) framework. The five-factor LSI-TA consists of 35-items; 20-items were re-stated from the LSI-A with an additional 15-items developed for consistency with the theoretical foundations of the original scale. Responses were scored from 1 = strongly disagree to 6 = strongly agree, with mean ratings for each factor interpreted as 1 – 1.83 (highly dissatisfied) to 5.16 - 6 (highly satisfied) providing a total measure neutral point of 3.5. Blace also used the Lawton Instrumental Activities of Daily Living (Lawton & Brody, 1969) with cultural adaptations to measure functional ability.

From his cross-sectional study Blace reported an overall life satisfaction mean score of 4.09, above the LSI-TA scale neutral point of 3.5. The author entered functional ability and physical activity as step one of a regression model and found

these variables predicted 25.5% of the variance in life satisfaction. Smith et al. (2002) included functional ability with chronic illnesses and perceived health in the first step of their model and reported these variables together to predict 20.0% of the variance in life satisfaction. While no other figures were provided, they stated that chronic illnesses provided relatively little variance in their model.

The remaining study of the eight that included functional ability as a variable was Good, LaGrow and Alpass (2011). These authors compared three age groups (65-74, 75-84, 85+) on levels of daily functioning in ADL domains and life satisfaction. They used the SWLS to measure satisfaction with life and an Independence Inventory to measure respondents' independence in 12 domains of daily living. Three ADL domains were investigated; domestic activity, work/leisure and outdoor/mobility. No significant difference was found between the age groups on life satisfaction or the domestic activities domain. Significant differences were found for work/leisure and outdoor/mobility with the oldest group recording the lowest scores. A regression analysis for the oldest group only, found activity and independence to predict around 30% of the variance in life satisfaction with each indicator making a unique contribution to life satisfaction.

Overall, six of the eight studies that investigated the impact of functional ability on satisfaction with life found a positive association between life satisfaction and functional ability in older persons with Fagerstrom et al. (2007) positing that declining ADL capacity might impact life satisfaction more strongly than age. Throughout these studies, functional ability was found to be associated not only with life satisfaction, but also with health (objective and perceived), age and mental health. The effect of mental health on life satisfaction is considered in the section that follows.

2.4.4 Mental health and satisfaction with life

As can be seen in Table 2.1, the effect of mental health on satisfaction with life was investigated in five of the 12 studies reviewed (i.e., Abu-Bader et al., 2002; Asakawa et al., 2000; Bryant et al., 2012; Enkvist et al., 2012; Fagerstrom et al., 2007). In these five studies, aspects of mental health were considered using different measures; depression (i.e., Asakawa et al.; Bryant et al.; Enkvist et al.), mental health

(i.e., Bryant et al.), cognitive function (i.e., Enkvist et al.), emotional balance (i.e., Abu-Bader et al.), self-esteem (i.e., Fagerstrom et al.), and anxiety (i.e., Bryant et al.).

Mental health was measured by depression in three (i.e., Asakawa et al., 2000; Bryant et al., 2012; Enkvist et al., 2012) of the articles that explored the impact of mental health on satisfaction with life; one study (i.e., Asakawa et al.) investigated only depression while the other two (Bryant et al.; Enkvist et al.) included additional measures of mental health. Asakawa et al. (2000) used the LSI-K to measure satisfaction with life. They measured depression as an indicator of the quality of everyday life, using a short version of the Geriatric Depression Scale [GDS] (Yasavage, 1988). The GDS contains 15-items scored dichotomously Yes/No with responses indicating depression scored as 1 and no depression as 0. The scores are summed to provide a total score 0-15 with a high score indicating greater depression. An item example is "Do you feel happy most of the time?". When the effects of age, gender and socio-economic factors were controlled for, changes in levels of depression and functional health status over a two-year follow-up period, were significantly related to satisfaction with life.

Participants who experienced functional decline over two years, reported a greater level of depression and lower life satisfaction, than those without functional decline. Results suggested that the interaction effects of change by functional ability were statistically significant both for life satisfaction and depression. Mean life satisfaction scores increased significantly for the respondents who maintained functional capacity over the two-years, but declined significantly for those who experienced functional decline over this time; this pattern was also found for mean depression scores. Similar results previously had been reported by Bowling and Grundy (1997).

Measures for depression, anxiety and subjective mental health were included in the study by Bryant et al. (2012). Satisfaction with life was measured with the SWLS while depression was measured with the Centre for Epidemiological Studies Depression Scale (CES-D) (Hertzog, Van Alstine, Usala, Hitsch & Dixon, 1990; Radloff, 1977), a 20-item measure with items scored 0 (rarely or never) to 3 (most or all of the

time) and the scoring of positive items reversed. The possible total score range of the CES-D is 0 – 60 with higher scores indicating greater symptomatology and scores above 16 being indicative of clinically significant depressive symptoms. A typical item is “I felt that everything I did was an effort”. Anxiety was measured with the 20-item Geriatric Anxiety Inventory [GAI] (Pacnaha, Byrne, Siddle, Koloski, Harley & Arnold, 2007) scored Yes/No with a cut-off score of 10/11 detecting generalised anxiety. The Short-Form 12 Health Survey [SF-12] (Ware, Kosinski & Keller, 1996), a self-rated 12-item inventory, assessed disability due to physical and mental health issues with two weighted subscales: Physical Component ($M = 49.1$) and Mental Component ($M = 52.0$); lower scores suggest greater mental disability. An example of a SF12_{mental} item is, “During the past 4 weeks, were you limited in the kind of work you do or other regular activities as a result of any emotional problems (such as feeling depressed or anxious)?”. Scores on the SF-12_{mental}, GAI ($M = 3.14$) and CES-D ($M = 9.27$) were found not to differ by gender, nor were they correlated significantly with age. After controlling for confounding variables, Bryant et al. found higher levels of life satisfaction were significantly associated ($p < 0.01$) with better self-reported mental health and lower levels of anxiety and depression. In a regression analysis, the three mental health factors were grouped into one variable (mood) and found to contribute 23% to the variance in life satisfaction.

In their study Enkvist et al. (2012) measured satisfaction with life with the LSI-A and depressive mood with the 10-item Comprehensive Psychiatric Rating Scale [CPRS] (Montgomery & Asberg, 1979) each item scored 0 – 6 and summed with total scores of 0 to 6 indicating mental wellbeing and 35-60 indicating severe depression. The authors also measured cognitive function using the Mini Mental State Examination [MMSE] (Folstein, Folstein & McHugh, 1975) with 17-items dichotomously scored Correct/Incorrect. The weighting of some questions was disproportionate and total scores ranged from 0 to 30. There was a significant positive correlation between life satisfaction and better cognitive status, while there were significant negative correlations between life satisfaction and higher age and depressive mood. A logistic regression tested which factors would predict life satisfaction at a three year follow-up. Cognitive status ($r = 0.127$, $p < 0.002$) was not included in the model (Tabachnick &

Fidell, 2007). Depressive mood and older age were found to be associated with lower life satisfaction. The model overall was found to predict 29% of variance in life satisfaction, with depressive mood making a unique contribution ($\beta = 8.6\%$, $p > 0.01$).

Two studies (i.e., Abu-Bader et al., 2002; Fagerstrom et al., 2007) used mental health measures other than depression in their studies. Abu-Bader et al. measured satisfaction with life using the LSI-Z and mental health with a measure of emotional balance. The 56-item Iowa Self-Assessment Inventory (Morris & Buckwatter, 1988) has a subscale for emotional balance with items rated 1 (usually or always true) to 4 (usually or always false); item scores were summed to provide a total score range of 8-32. Regression analysis was employed by the authors to estimate a model predicting life satisfaction and among a group of health variables, emotional balance made a unique contribution of 6% to a model that predicted 32% of the total variance in life satisfaction. The authors reported that the more objective measures of health were found not to be predictors of life satisfaction, while perceived physical health was the strongest (14%) predictor. While not tested specifically in this study the perception of mental health might also contribute to health appraisal and life satisfaction.

In their six-European country study Fagerstrom et al. (2007) measured satisfaction with life with the LSI-Z and mental health with Rosenberg's self-esteem scale [SES] (Rosenberg, 1979). The authors used the SES 10-items, five positive and five negative, on a five-point rating scale (from strongly disagree to strongly agree) with a middle neutral value. Negative items were reverse coded and the 10-items summed so that the total scores ranged from 10 to 50 with a higher score indicating a higher level of self-esteem. After adjustment for country-specific differences low self-esteem was found to be associated with low life satisfaction (reported as an odds ratio) low self-esteem (OR 2.1). Overall, the study found that most of the 60-89 year old Europeans were satisfied with life, similarly to previously reviewed findings. Those who were not satisfied, also reported having low self-esteem; this finding was consistent for the analysis of each country specifically. While there were important common, as well as country-specific, factors for life satisfaction in older age in the six European countries involved in the study, health, associated functional ability and low self-esteem were found to be the most common, rather than increasing age.

Overall, of the five studies that investigated the effect of mental health factors on satisfaction with life, four (Abu-Bader et al.; Bryant et al.; Enkvist et al.; Fagerstrom et al., 2007) found a significant positive association between life satisfaction and mental health, self-esteem or cognitive status; two of these four (Abu-Bader et al., 2002; Bryant et al., 2012) found mental health factors to make a significant and unique contribution to the variance in life satisfaction. Four studies reviewed (Abu-Bader et al., 2002; Asakawa et al., 2000; Bryant et al., 2012; Enkvist et al., 2012) found a significant negative association between life satisfaction and depression or anxiety.

2.4.5 Demographic factors and satisfaction with life

Of the 12 studies reviewed above, all acknowledged gender, marital/partnered status and socio-economic status (measured as income, education, work or residence) as well-known predictors of life satisfaction. As these were not the focus of any of the 12 studies reviewed, they were used only as control variables and where reported, none was found to have a significant effect on satisfaction with life. Demographic or socio-economic factors were not included as search terms for this review of literature related to satisfaction with life in older people. The section that follows reviews studies that investigated the effect of social comparison on satisfaction with life among older people.

2.5 Social comparison and satisfaction with life

Social comparison was investigated as a factor affecting satisfaction with life in four articles reviewed (i.e., Bailis, Chipperfield, Perry, Newall & Haynes, 2008; Frieswijk, Buunk, Steverink, & Slaets, 2004; Peck & Merighi, 2007; Stewart, Chipperfield, Ruthig & Heckhausen, 2013). While all four studies investigated the impact of social comparison direction on the evaluation of life satisfaction, two (i.e., Bailis et al.; Stewart et al.) also explored the effect of comparison orientation (frequency) on satisfaction with life. Table 2.2 summarises the four articles (i.e., Bailis, et al.; Frieswijk, et al.; Buunk, et al.; Peck & Merighi; Stewart, et al.) related to social comparison reviewed here.

2.5.1 Impact of social comparison direction on life satisfaction

Social comparison involves directionality that is determined by the purpose of, or motivation for, making the comparison. Upward comparisons are made with similar 'others' who are doing better than the self; downward comparisons are those made with similar 'others' who are doing worse than the self. When older people perceive that their health or ability to function independently are under threat, it is reasonable to assume that downward comparisons will be made in order for them to feel more positive about their own situation ('He's doing much worse than me, so I must be alright after all'). Four studies (i.e., Bailis, Chipperfield, Perry, Newall & Haynes, 2008; Frieswijk, Buunk, Steverink & Slaets, 2004; Peck & Merighi, 2007; Stewart, Chipperfield, Ruthig & Heckhausen, 2013) investigated the effect of social comparison direction on life satisfaction. The two studies (i.e. Frieswijk et al.; Peck & Merighi) that concentrated on downward social comparison are reviewed first, followed by the two studies (Bailis et al.; Stewart et al.) that also considered comparison orientation (frequency).

Frieswijk et al. (2004) explored the effect of social comparison direction on satisfaction with life across different levels of frailty among 455 community-dwelling Dutch older people aged 65+ years. Frailty was conceptualised as 'the degree to which older persons suffer from age-related loss ... at the physical, cognitive and psychological domain' (p.184). Satisfaction with life was measured with the Dutch-language version of the SWLS and adopted a 5-point scale from 1 (strongly disagree) to 5 (strongly agree). Response scores to the 5-item SWLS were summed from 5 to 25 then averaged to provide a total score of 1 to 5, with higher scores indicating higher levels of life satisfaction and with a measure neutral point of 3. Also, Frieswijk et al. used the 15-item Groningen Frailty Indicator [GFI] (Steverink, Slaets, Shuurmans & Van Lis, 2001) to screen for physical, cognitive and psychosocial problems to determine respondent's level of frailty.

Social comparison was assessed after administration of a bogus interview with a fictive person who was high on frailty (downward condition) or low on frailty (upward condition). An example of a downward interview fragment is 'I take my car to go

Table 2.2 Social Comparison and satisfaction with life

Author, year	Location, Data	Independent Variables	Measure of Life satisfaction	Age	N	Findings
Bailis, Chipperfield, Perry, Newall & Haynes, 2008	Canada. Aging in Manitoba: Successful Aging Study.	Function, LS SC orientation, Downward SC (dSC), Mental health Optimism	Life satisfaction Index -A (LSI-A) 4 -items	77+	164	Self-enhancing judgments or downward social comparison (dSC) of physical activity were associated with greater life satisfaction (LS). Self-rated frequency of using dSC had a significant positive effect on self-enhancement bias that was statistically independent from the effects of optimism.
Frieswijk, Buunk, Steverink & Slaets, 2004	The Netherlands. Cross-sectional survey.	Function, Social comparison direction. LS	Satisfaction With Life Scale (SWLS)	65+	455	The study examined the effects of SC on the LS of community-dwelling frail older people. Frailty was negatively related to LS and dSC had a more positive effect on LS than upward social comparison(uSC). The effect was much stronger with higher levels of frailty.
Peck & Merighi, 2007	USA. A Healthy Future.	Age group, Health, Mental health, Social comparison	Perceived Quality of Life (PQOL)	65+	2,558	SC has a significant influence on subjective wellbeing. After 2 year follow-up the model predicted 20% variance in physical and mental health outcomes. Findings suggest that SC is a key factor in enhancing wellbeing (LS) in older adults.

Table 2.2 Social Comparison and satisfaction with life

Author, year	Location, Data	Independent Variables	Measure of Life satisfaction	Age	N	Findings
Stewart, Chipperfield, Ruthig & Heckhausen, 2013.	Canada. Aging in Manitoba: Successful Ageing Study.	dSC, Mental health Perceived control, Demographics, Health	Life satisfaction Index – A (LSI-A)	79-97	97	There was a direct relationship between dSC and well-being (LS) but this was not distributed equally across levels of perceived control. The use of dSC was more strongly related to well-being (LS) at low levels of perceived control.

shopping or visit friends' and an upward interview fragment, 'I need help with just about everything and often my joints ache'. A 7-item measure scored 1 (much worse) to 5 (much better) was summed and averaged to provide a simple index in which higher scores indicated the participant perceived the target as doing better than the participant. The degree to which participants identified with the bogus interviewee target was measured using 4-items on a 5-point scale (1 =not at all, to 5 = much better). Responses were summed and averaged with higher scores suggesting upward comparison and lower scores suggesting downward comparison.

Hierarchical regression was used to verify that a downward comparison target was doing worse than the respondent with different levels of frailty; main effects of frailty and comparison direction explained 70% of the variance in the manipulation check, with both being significant. Regardless of level of frailty, the downward comparison target was perceived by older persons as doing worse than themselves. Results of the study further showed that 32% of the variance in life satisfaction was explained by the significant main effects of social comparison, frailty and identification, with downward comparison having a more positive effect on life satisfaction than upward comparison.

The entry of two-way interaction terms significantly increased the variance explained in life satisfaction by 4% with no significant two-way interaction between frailty and social comparison direction. This showed that the effects of social comparison on life satisfaction were stronger with higher levels of frailty than among less frail older persons and amongst the oldest-old. The authors suggest that these results support the evidence that social comparison provides an adaptive function for these groups and that the use of downward social comparison may highlight the role of this cognitive strategy to adaptively build resilience of the self in frail older people.

Peck and Merighi (2007) also examined the role of social comparison in relation to satisfaction with life and health status in older adults. They did this from a secondary analysis of data from "A Healthy Future" project (Patrick, Gransbowski et al., 1999) conducted in the USA. Of the 2,558 respondents aged 65+ years, the majority were older than 74 (66%), female (61%), married (65%), had less than 12 years

education (55%) and an income of less than \$30,000 (68%). The measures used to construct their model included satisfaction with life and physical health status, mental health status and socio-demographic characteristics.

Satisfaction with life was assessed with 19 items from the PQOL. The PQOL (Patrick et al., 2001) measured satisfaction with various life domains. An example of a PQOL item is 'How dissatisfied or satisfied are you with the meaning and purpose of your life?'. Responses to the PQOL are made on an 11-point scale ranging from 0 (extremely dissatisfied) to 10 (extremely satisfied). Peck and Merighi proposed that the PQOL measured life satisfaction in a similar manner to the SWLS. The measure is suitable for self-report only, because subjective evaluation of life circumstances can only be known to the individual concerned; "The concept of "critical need satisfaction" was identified as a core concept reflecting subjective evaluation of quality of life, a view consistent with definitions of satisfaction with life" (Patrick, Kinne, Engleberg & Pearlman, 2000, p.780). Physical health was measured with a symptom-based assessment tool [QWBS] (Patrick & Erickson, 1993) calculated from 31 physical symptoms and three ordinal scales of functional daily activity. The mental health component was assessed using 18 of 20 items of the CES-D (Radloff, 1977) tool, to determine lack of depressive symptoms. Social comparison was measured with a single-item health-related comparison question on a 3-point scale (1 = worse, 2 = about the same, 3 = better) that required participants to rate their health compared to others of a similar age. Socio-demographic characteristics included age, gender, marital status, ethnicity, years of education and household income.

The data were analysed by means of structural equation modelling with each variable requiring parcelling (Kline, 1998) to reduce the number of parameters. The exploratory factor analysis for each variable indicated that measurement items loaded on one factor, justifying the parcelling. Results confirmed that downward social comparison had a moderate, significant effect on satisfaction with life and that physical and mental health had a significant influence on life satisfaction. In summary, Peck and Merighi (2007) found downward comparison to have a direct, moderate, statistically significant effect on life satisfaction. While both Frieswijk et al. (2004) and Peck and Merighi reported a positive effect of downward social comparison on life

satisfaction, Frieswijk et al. found the association to be stronger with higher levels of frailty.

2.5.2 Impact of social comparison orientation (frequency) on satisfaction with life

Of the four studies reviewed that investigated the effect of social comparison direction on satisfaction with life, two (i.e., Bailis et al., 2008; Stewart et al., 2013) also explored the frequency with which social comparisons were made (also known as social comparison orientation). Bailis et al. used data from the 2003 wave of the Successful Aging Study [SAS] in Manitoba, Canada, to measure satisfaction with life, functional ability and adaptive strategies (optimism, control beliefs and downward social comparison) among 164 community-dwelling older adults aged 79+ years, of whom 66% were female and 38% were currently married. The LSI-A was adapted to provide an 8-item, 3-factor inventory used to measure life satisfaction. Scoring for each item was limited to 'agree', 'disagree' or 'not sure'.

Comparative judgments of physical activity were investigated with 4-items about levels of activity 'compared to others your age'; response scales were 5- or 7-point ranging from 'much worse off' to 'much better off'. Responses to the 4-items were scored consistently so that higher scores indicated doing better than others. These scores were standardised then averaged to provide a composite comparative judgment measure. Three adaptive resources or strategies (optimism, perceived control and downward social comparison) were measured also. Optimism was measured with an 8-item Life Orientation Test [LOT] (Scheier & Carver, 1985) using 4 pro-trait and 4 con-trait statements (e.g. "In uncertain times I usually expect the best" or "If something can go wrong for me it will") and scored 1 (strongly disagree) to 6 (strongly agree); negative statements were reverse coded and all responses summed and averaged for optimism ($M = 4.3$). Perceived control used a single-item 'How do you generally feel regarding your level of control in life?' scored from 1 (almost totally out of control) to 10 (totally in control) with 6-items for control motivation added from the Desirability of Control Scale (Burger & Cooper, 1979). Responses to a typical item ("I enjoy making my own decisions") were scored from 1 (strongly disagree) to 6

(strongly agree) then averaged ($M = 4.4$). The final adaptive resource/strategy measured was downward social comparison. Five items asked respondents to state 'How often do you tell yourself that despite [this problem], you are better off than many others?' with responses ranging from 0 = never, to 4 = almost always. The responses were averaged to provide a rating of how frequently downward social comparison was used ($M = 2.7$).

An objective measure of activity was provided by each participant wearing an Accelerometer on their non-dominant wrist for 24 consecutive hours while they went about their usual activities. This device sampled acceleration in milliGs 10 times per second that was summed every 1 minute and averaged across the day. Multiple regression analyses were conducted and found that more frequent use of downward social comparison was significantly and independently related to self-enhancement and that when age and objective function were controlled for, self-enhancing judgments (downward social comparisons) of physical activity were associated with greater life satisfaction; no mean scores were provided by the authors. The study further showed that in the context of activity restriction, downward social comparison made a unique positive contribution to life satisfaction which they proposed was a reflection of the self-enhancement function of social comparison.

Utilising data from the Manitoba SAS (as had Bailis et al., 2008) Stewart, Chipperfield, Ruthig and Heckhausen (2013) investigated the effect of downward social comparison on satisfaction with life when perceived control over daily tasks was threatened (a condition of high threat or risk of loss for older persons). The 2003 wave of the SAS provided data from 164 community-dwelling older adults aged 79+ years, of whom 66% were female and 38% were currently married. Stewart et al. measured satisfaction with life with the LSI-A and the influence of perceived control was measured with a single-item scored from 1 (almost no influence) to 10 (total influence) resulting in a range of 4 -10 ($M = 8.0$). To measure the frequency of downward social comparison the authors utilised 4-items from the Task-Specific Control Strategies inventory (Chipperfield & Perry, 2006). A typical item was 'When you have difficulty with ... how often do you tell yourself that despite this problem, you are better off than many other people your age?' and was scored 0 = never to 4 = always. Scores were

summed and a mean calculated ($M = 2.83$). Participants' age, gender and severity of chronic conditions were also reported.

Chronic conditions were assessed with 22 weighted items from the revised Seriousness of Illness Rating Scale – Revised [SIRS-R] (Wyler, Masuda & Holmes, 1968) with participants indicating if they suffered from each condition. The rank values were summed to provide a severity score with higher scores indicating greater severity of chronic conditions ($M = 3.63$). Participants perceived stress and depressive symptoms were also measured; the former with a single-item scored 1 (not at all stressful) to 5 (extremely stressful) ($M = 2.27$); and the latter with 10-items adapted from the Centre for Epidemiological Studies Depression Scale [CES-D] (Radloff, 1977) scored 0 (rarely) to 3 (most of the time) with items summed and a mean ($M = 0.68$) calculated.

Stewart et al.'s (2013) results revealed a direct relationship between frequency of downward social comparison and life satisfaction; the relationship was significant at low levels of perceived control, and non-significant at high levels of control. The frequent use of downward comparison predicted higher life satisfaction for low-control participants than for high-control older adults who were also physically healthier. The authors suggest that use of downward social comparison may have an important protective role for satisfaction with life in older people, particularly for those in situations of physical or functional decline.

In the two studies reviewed that explored frequency of downward social comparisons (i.e., Bailis et al., 2008; Stewart et al., 2013), both found more frequent use of downward social comparison had a significant positive effect on life satisfaction. One study (Bailis et al.) found that the effect was independent from the effects of optimism; the other study (Stewart et al.) found this effect to be greater among participants who reported low levels of control.

2.6 Summary of findings from the literature reviewed

Studies reviewed across a number of countries found mixed results for the association with satisfaction with life for people aged 65+. While all of the studies found a declining life satisfaction trajectory as age increased, the relationship was not

consistently found to be significant in all studies. The effect of age cohort on satisfaction with life was also not found to be consistent across studies. These mixed findings suggest a gap in understanding this relationship, particularly as there was some indication that life satisfaction might be experienced differently by different age cohorts.

Similarly, while all studies reviewed found physical health to decline as age increased, only one study reported a significant effect on satisfaction with life. Mixed results were found between physical health measured objectively and subjectively, with subjective (perceived) health found to be a stronger predictor of satisfaction with life than objectively measured health. Authors of studies reviewed that investigated both physical health and functional ability suggested a link between these variables that might impact on satisfaction with life. This suggests that the discrepancy between these scores might have an effect on how older people perceive satisfaction with life, contributing in a major way to the construction of their evaluation of successful ageing. All studies reviewed that investigated functional ability, found a trajectory of decline as age increased; however, while the majority of the studies found functional ability to be positively related to life satisfaction, these findings were not supported in other studies. Mixed results were also found among the studies that investigated the effect of mental health on satisfaction with life. The majority found a significant relationship, but one did not. Inconclusive findings suggest that further study is warranted to investigate the relationship between satisfaction with life and these health-related variables. Across the studies reviewed, some found demographic factors to be useful indicator variables that contribute to the varying perceptions of satisfaction with life.

Findings from the studies reviewed that investigated the effect of social comparison on satisfaction with life among older people, were more consistent than those that investigated the health-related variables. Downward social comparison was found across all studies reviewed to have a significant direct effect on satisfaction with life that was reported in some studies to be stronger with higher levels of frailty and amongst the oldest-old. Significant results were also reported in relation to the association between satisfaction with life and the frequency of downward social

comparisons. Again, these were stronger in the context of activity restriction and lower levels of perceived control. Age or age cohort were not considered as variables in these studies and so their association with these findings indicates a gap in the current knowledge.

2.7 Implications for current study

The 16 studies reviewed have suggested important factors that are associated with the determination of perception of satisfaction with life among older persons. The relevant factors include; physical health, functional ability, mental health, age cohort and social comparison. Generally, those who reported the lowest levels of satisfaction with life were significantly older, frailer, less functionally able and in poorer mental health than those who were not. However there were mixed results for all of these findings. Of particular note was the finding that perceived health was more strongly predictive of life satisfaction than objective health. A number of the authors alluded to the possibility that a protective, self-enhancing or adaptive mechanism might be at play with two (i.e., Enkvist et al. 2012; Good et al., 2011) suggesting that social comparisons might contribute to an explanation of unexpected findings. Four of the studies reviewed (Bailis et al., 2010; Frieswijk et al., 2004; Peck & Merighi, 2007; Stewart et al., 2013) found significant associations between social comparison and satisfaction with life. Both downward direction and frequency of social comparison were found to be strongly positively associated with the determination of perception of life satisfaction among older persons. This association was found to be greater for those older persons who were the oldest and most frail or reported the greatest health-related losses. All four sets of authors suggested that further research into the effect of social comparison on life satisfaction among older persons was warranted.

Overall, the studies reviewed seem to suggest that there is an assumption that older people will have poorer satisfaction with life because of the association between advancing age and decreasing physical health, function and mental health. As life satisfaction is suggested to be related to physical health, function and mental health, therefore older age and life satisfaction are expected to be related. However, the literature reviewed also suggests that physical health, function and mental health do

not decline as rapidly or consistently as expected, while those most likely to evidence these declines are the oldest-old. If these health-related variables predict life satisfaction, then it would be assumed that satisfaction with life would also not decline as rapidly or consistently as expected. From the studies reviewed however, it seems that the health-related variables are not as strongly related to life satisfaction as expected, while there appears to be some agreement that satisfaction with life is more directly related to perceived health than to objectively measured states of health. This perception may be affected by social comparisons made with peers, with downward comparisons effecting a protective mechanism to experienced health and functional declines. Currently it is not known how older people make comparisons or what effect those comparisons have on perception of life satisfaction.

No previous specific research on social comparison has been conducted in New Zealand; especially not in relation to an association with levels of satisfaction with life or health-related variables among different age-cohorts of older people. The social comparison literature reviewed suggests that the oldest participants (i.e. those who experience the greatest losses in health and functional capacity) would be expected to make predominantly downward comparisons and use social comparison more frequently. The wider literature reviewed also generally suggests that levels of satisfaction with life would be lowest at the oldest ages. However, the effect of social comparison on the perception of satisfaction with life in older age remains under-researched, and provides the basis for the current study.

2.8 Research Assumptions and Hypotheses

This study will investigate the following assumptions and hypotheses that have been derived from my personal observations working as a nurse with older people and the mixed results found in the literature reviewed:

Assumption 1: It is assumed that as age increases, the number of diagnosed health conditions will increase and perception of physical health, mental health and functional ability will decline among people aged 65+ who live in the community in the Manawatu-Wanganui region.

- Hypothesis 1:** *Age will be positively related to the number of diagnosed health conditions and negatively related to perceptions of physical health, functional ability and mental health;*
- Assumption 2:** It is assumed that as the number of diagnosed health conditions increase and perceptions of physical health, mental health and functional ability decline, satisfaction with life will decline among people aged 65+ who live in the community in the Manawatu-Wanganui region
- Hypothesis 2:** *Satisfaction with life will be negatively related to the number of diagnosed health conditions and positively related to perceptions of physical health, functional ability and mental health;*
- Assumption 3:** As age increases, it is assumed that perception of satisfaction with life will decline among people aged 65+ who live in the community in the Manawatu-Wanganui region
- Hypothesis 3:** *Age will be negatively related to satisfaction with life;*
- Assumption 4:** It is assumed that people who make downward social comparisons will be more likely to be satisfied with life than those who do not, among people aged 65+ who live in the community in the Manawatu-Wanganui region
- Hypothesis 4:** *Those who compare downwardly will be more likely to be satisfied with life than those who do not;*
- Assumption 5:** It is assumed that people who are older are more likely to make downward social comparisons than those who are younger, among people aged 65+ who live in the community in the Manawatu-Wanganui region
- Hypothesis 5:** *Those who are older will be more likely to compare downwardly than those who are younger.*

To test these hypotheses, a cross-sectional survey study (such as carried out by Abu-Bader et al., 2002; Baird et al., 2010; Blace, 2012; Bryant et al., 2012; Frieswijk et al., 2004; Good et al., 2011; Gutierrez et al., 2013; Peck & Merighi, 2007) was conducted in the Manawatu region of New Zealand among community-dwelling older persons aged 65+ (using a similar age to the studies reviewed and also similarly excluding institutionalised older people). The first part of the study investigated the associations between age, health-related variables and satisfaction with life. Objective health was investigated using diagnosed health conditions (as did Enkvist et al., 2012; Gwozdz & Sousa-Poza, 2010; Smith et al., 2002) and perceived physical health (also variously measured by Abu-Bader et al.; Bryant et al.; Chen, 2001; Enkvist et al.; Gutierrez et al.; Gwozdz & Sousa-Poza; Peck & Merighi; Stewart et al.) was assessed with the SF12_{physical} (as did Bryant et al., 2012). Both ADL and IADL functional activity were measured (as did Abu-Bader et al., Asakawa et al., 2000; Bailis et al; Blace; Chen; Enkvist et al.; Fagerstrom et al., 2007; Frieswijk et al., 2004; Good et al; Gutierrez et al.; Gwozdz & Sousa-Poza; Smith et al., 2002). The Groningen Activity Restriction Scale (GARS, Kempen, Miedema, Ormal & Molenaar, 1996) was adopted for this purpose as it was easily self-administered and provided a single tool for both ADL and IADL measures. Subjective mental health (also measured by Abu-Bader et al.; Asakawa et al.; Bryant et al.; Enkvist et al.; Fagerstrom et al.; Peck & Merighi) was assessed with the SF12_{mental} providing continuity with the subjective physical health component of the SF12. Satisfaction with life was measured with the Satisfaction with Life Scale utilised by Bryant et al. (2012); Good et al. (2011); Gutierrez et al. (2013) and Frieswijk et al. (2004). A small range of other demographic variables (gender, partnered status, ethnicity, residential area, educational status) were investigated as possible indicators of life satisfaction. Comparisons were made between three old-age cohorts (65-74, 75-84, 85+) to determine if these groups differed on variables of interest (as had Baird et al.; Chen; Good et al.; Smith et al.).

The second part of the study was designed to explore the effect of social comparison on satisfaction with life. Of particular interest was the suggestion that the older-old (those expected to be in the poorest health) would utilise downward social comparison more frequently than the younger-old (those expected to be in better

health) reflecting and extending the work of Bailis et al., 2008; Frieswijk et al., 2004; Peck & Merighi, 2007; and Stewart et al., 2013. The association of social comparison processes to satisfaction with life was explored.

2.9 Chapter conclusion

This chapter has provided a review of selected literature on satisfaction with life in older age, particularly in relation to health-related predictor variables (e.g. health status, health perception, functional ability, mental health) and to an association with social comparison. The literature suggests that satisfaction with life is expected to decline with age because age is associated with declining physical health, functional ability and mental health, which in turn are associated with life satisfaction. It has been suggested however, that the association between the age and life satisfaction may be impacted by social comparison, with downward social comparison being most likely to result in a more positive perception of life satisfaction. Downward social comparison is expected to be more prevalent among the oldest old as this cohort experiences the poorest health and might tend to apply downward social comparison as a protective / adaptive mechanism. The chapter that follows outlines the study methods and design including study population, sample size, selection of participants; procedures and data collection instruments, data collection process, ethical considerations and data management and analysis of the study.

CHAPTER THREE: METHODS AND STUDY DESIGN

3.1 Introduction

This chapter outlines the methods and study design used for testing the assumptions in the current study. The study design includes details of the study population, sample size, selection of participants; procedures and data collection instruments, data collection process, ethical considerations and data management and analysis of the current study. Within the paradigm of successful ageing, this thesis employs statistical methods to explore older peoples' perception of satisfaction with life. The relationship between age and health, health and satisfaction with life and age and satisfaction with life are explored before considering the relevance of social comparison in the evaluation of satisfaction with life among older people. It is imperative in the face of an increasing older population that health professionals and policy makers understand the precursors to successful ageing to devise effective health promotion and rehabilitative interventions to support this outcome.

3.2 Participant characteristics

For the purposes of this study, older people are defined as those aged 65 years+, being the demarcation for old age used by Statistics New Zealand (2004) and the age at which all New Zealand citizens are entitled to the superannuation benefit. The experiences of older people in the Manawatu region of New Zealand provide the context for the current study. The cohort is limited to those living in the community to provide a consistent comparator. At times the sample may be differentiated into three cohorts: the youngest-old (65-74 years), the middle-old (75-84 years), and the oldest-old (85+ years) (Orr, 1998; Statistics New Zealand, 2004). This allows for comparison of the variables of interest between these cohorts as it has been suggested that these groups may have unique attributes (Koopman-Boyden, 1993; Rubin & Zimmer, 2015). Considering older people in age cohorts enables comparison and exploration of possible differences that may challenge the notion of homogeneity often held by health professionals and policy makers as well as the general public. Differentiation into age cohorts also allows for the comparison of how satisfaction with life might be experienced and perceived between those groups.

3.3 Method and study design

The aim of the study was to test assumptions concerning the perception of satisfaction with life among older people, determined from a review of the relevant literature; this was accomplished by investigating the relationships among variables. Data in the form of quantifiable opinions (perceptions) were gathered from a sample from which the researcher could generalise about the Manawatu/Wanganui 65+ population from which it was drawn (Cressell, 2009). This region has no large-population urban centre such as Auckland, so care would need to be taken to generalise across all of New Zealand. The gathered data were analysed using statistical procedures. Such a quantitative approach is informed by traditional scientific principles of positivism that is the original historical observational method of the natural sciences (Maltby, 2010). As there was no desire to control conditions or to manipulate variables, the use of a survey strategy was deemed to be the most appropriate method of data collection (Neuman, 2000).

In order to investigate attitudes and trends in the population of interest, this study employed a cross-sectional population-based survey (Babbie, 1990; Coolican, 2004; Creswell, 2009), to study a sample of individuals selected from a population of people aged 65+ (Levy & Lemeshow, 2008). A single-stage, self-administered, postal survey was selected as the least invasive for the older participants, ensured a rapid turnaround of data and provided economy of design (Cresswell). The survey was conducted in the Manawatu-Wanganui regional council district of New Zealand (see



Figure 3.1 Map of Manawatu-Wanganui regional council area, North Island, New Zealand
(Source: Department of Internal Affairs, local councils <http://www.dia.govt.nz>)

Figure 3.1), during 2010. This district comprises the territorial local (and postal) authority districts of Horowhenua, Palmerston North city, Manawatu, Wanganui, Rangitikei and Ruapehu (Statistics New Zealand, 2007). The region includes rural, semi-rural, small city and suburban areas and provides a microcosm of New Zealand residential geography.

3.4.1 Sample size

The population of the Manawatu-Wanganui region is reported as 222,482 with people over 65 making up 14.3% (31,755) of the population (Statistics New Zealand, 2007). Yamane's (1973) formula was used to determine the minimum sample size required for the study to be representative of the 65+ population. The formula as used in the study is shown below:

Formula:

$$n = \frac{N}{1 + N (e^2)}$$

$$n = \frac{31,755}{1 + 31,755 (0.05^2)}$$

$$n = \frac{31,755}{80}$$

$$n = 397$$

Description:

n = Sample size

N = Population of Manawatu-Wanganui regional voters aged 65+

e = Level of precision (margin of error at 5%, e = 0.05).

A minimum sample size of 397 was found to be sufficient to be representative of the population (i.e. a precision of 0.05 and confidence level of 95%). While it was anticipated that a 40% response rate would be achieved (Edelman, Yang, Guymon & Olson, 2010), oversampling was applied to reduce the potential of bias from non-response, to ensure that the minimum sample size was achieved (Cochran, 1977) and to reduce the need for follow-up communication. As a result, a total of 1,000 people (rounded up from 992) were selected randomly and invited to participate in the study.

3.4.2. Sample Selection

Manawatu-Wanganui residents aged 65+ were accessed through the general electoral roll. As voter registration is mandatory in New Zealand it is estimated that approximately 95% of all eligible voters over the age of 65 appear on the electoral roll (Statistics NZ, 2007). In New Zealand, voters of Maori descent may choose to register on either the Maori roll or the general roll, with the boundaries of each of these being different. For the purpose of this study, age and district, rather than cultural group were main considerations. This did not exclude Maori participation, as Maori may opt to register on the general roll.

3.4.3 Criteria for Inclusion

Older people (65+) who live in the community in the Manawatu-Wanganui region and registered on the General Electoral Roll (includes Maori who do not opt to register on the Maori roll) were eligible for participation in the study. The minimum age of 65 years was selected as it is used by Statistics New Zealand in census and demographic information as the demarcation for older adults; it is also the age of eligibility for retirement benefits (superannuation) in New Zealand (www.winz.superannuation.govt.nz). Those who clearly had addresses at residential care facilities or lodges were excluded from selection. There were no other exclusion criteria for selection. A computer-generated random sample of 1,000 potential participants was selected from this pool.

3.4.4 Procedure

The study was conducted using a postal, self-administered questionnaire. This was a cost- and time-effective method (Fink, 2002; Fowler, 2002), that allowed the data to be collected at one point in time. A major advantage of this method, was convenience for the target population of older people, who were able to complete the questionnaire at their own pace and without feeling time-pressured by the presence of a research interviewer. Also, Coolican (2004) suggests that the privacy involved in postal surveys (allowing completion at home) might produce more honest answers. However, Coolican warns that, "... the questionnaire must be exceptionally clear, and unambiguous instructions for its completion must be carefully written" (p.163). To limit this potential difficulty, the questionnaire was pilot tested.

3.4.4.1 *Piloting the Questionnaire*

The questionnaire was tested to time the survey process and to trial the language accessibility of the questionnaire for older people. A convenience sample of 10 people aged 65+ years (five males and five females) was obtained by accessing members of a 'seniors lunch club' and a snowball method recruited a further 10 participants, providing a pilot sample of 20 people aged 65+ who lived in the community. This sample was representative of the rural/urban geographical mix of the

target population. Completion of the questionnaire was found to take 20 to 25 minutes. The findings confirmed the accessibility of the questionnaire to older people in terms of appropriate wording, print font and size, and that no adverse effects such as anxiety were caused by considering the content and context of the questions. The data collection process was also discussed with the pilot participants and as a result, the study proceeded without modification to the questionnaire or to the process.

3.4.5. Data collection instruments - The Questionnaire

The questionnaire used in this study consisted of 56 items. Six items focussed on demographic details including age, gender, marital status, ethnicity, residential area and educational status. One item asked about diagnosed health conditions as an objective measure of physical health and three items asked the participants to compare themselves to other people their own age in relation to health, task-completion and satisfaction with life.

In addition, four validated, commonly used self-report measures were included in the questionnaire (making up the remaining 46 items). Functional ability was assessed with the Groningen Activity Restriction Scale (GARS; 18 items), physical health and mental health information was collected with the Short Form 12 health survey (SF12; 12 items), satisfaction with life was assessed with the Satisfaction With Life Scale (SWLS; 5 items) and social comparison orientation (frequency) with the Iowa-Netherlands Comparison Orientation Measure (INCOM; 11 items). These tools were selected for their relevance to older people and use in studies with older adults reported in the literature (Abu-Bader et al., 2002; Asakawa et al., 2000; Bailis et al., 2008; Baird et al., 2010; Beaumont & Kenealy, 2004; Bentur & King, 2010; Blace, 2012; Bryant et al., 2012; Chen, 2001; Enkvist et al., 2012; Fagerstrom et al., 2007; Frieswijk et al., 2004; Good et al., 2011; Gutierrez et al., 2013; Gwozdz & Sousa-Poza, 2010; Michalos, Hatch & Hemingway, 2007; Peck & Merighi, 2007; Smith et al., 2002; Stewart et al., 2013; Suurmeijer, Douglas & Moum, 1994). As stated in the previous chapter, a range of measures were used in the studies reviewed to assess particular variables. An important consideration for the researcher was that validated measures be the

shortest yet still suitable tools, to ensure older participants were not over-burdened with long, repetitive or complex inventories or measures.

3.4.5.1 The Satisfaction With Life Scale (SWLS)

Satisfaction with life is suggested to be a judgmental process that refers to an individual's assessment of the quality of their life, based on their own set of criteria (Shin & Johnson, 1978). The Satisfaction With Life Scale (Diener, Emmons, Larsen & Griffen, 1985) was developed to assess satisfaction with life as a whole, rather than within specific life domains. Bowling states that the SWLS conceptualized "... subjective well-being as consisting of the emotional or affective component and the judgmental or cognitive evaluation of life" (2005, p.137). The scale's items are global in nature, so respondents are able to weight domains of their lives in terms of their own values as they arrive at a global judgment of satisfaction with life (Pavot & Diener, 1993). This measure was used in four of the studies reviewed (i.e., Bryant et al., 2012; Frieswijk et al., 2004; Good et al., 2011; Gutierrez et al., 2013).

The Satisfaction with Life Scale (SWLS) is a five- item scale measuring subjective well-being (see Appendix A, questions 20a – 20e). An example of a SWLS item asks participants to indicate their level of agreement with the statement, "The conditions of my life are excellent". The SWLS was rated on a 7-point scale ranging from 1 = "Strongly agree" through to 7 = "Strongly disagree". Scores were reverse coded before summing so that higher scores indicate a greater level of satisfaction with life. The possible summed score range was 5 to 35 interpreted such that 5 - 9 = extremely dissatisfied, 10 - 14 = dissatisfied, 15 - 19 = slightly dissatisfied, 20 = neutral, 21 - 25 slightly satisfied, 26 - 30 = satisfied, and 31 - 35 = extremely satisfied. In the current study SWL was used in two ways; as a continuous dependent variable or as a dichotomous variable (scores collapsed into two groups so that Group 1 = not satisfied with life (scores 5 to 19) and Group 2 = satisfied with life (scores 20 – 35). According to Pavot, Diener, Colvin and Sandvik (1991), the SWLS has good internal consistency, with Cronbach's alpha coefficient reported as .85. (in the current study the Cronbach alpha coefficient was .96). Scale validity was tested by Diener et al. (1985) and Pavot et al.

(1991) with both showing scores moderately to highly correlated with several other measures.

3.4.5.2 The Short Form 12 Health Survey (SF12)

The SF-12 is a commonly used, generic, standardised subjective health measure; it is a 12- item version of the original Short Form - 36 Health Survey (SF-36) (Stewart & Ware, 1992). The SF-12 was developed as a short, generic measure of subjective health status that was psychometrically sound and could be applied across a wide range of settings (Radosevich & Pruit, 1995). The SF-12 is popular among social gerontologists investigating the quality of life of older people and was used in four of the studies reviewed in the previous chapter (i.e. Bryant et al., 2012; Frieswijk et al., 2004; Good et al., 2011; Guitierrez et al., 2013). Population norms used in SF12 scoring methodology have been published in many countries (Bryant et al.; Bullinger, 1995; Gandek & Ware, 1998; Jenkinson et al., 1999). The measure produces eight scale-profiles (physical functioning, social functioning, role limitations due to physical problems, role limitation due to emotional problems, mental health, energy/vitality, pain and general health perception) that Bowling (2005) suggests represent the most frequently measured concepts in health surveys, and those most affected by disease and treatment. Item responses are weighted to allow them to be interpreted in the same direction (i.e., higher scores indicate better health).

The SF-12 subscales are combined to provide two summary scores (for physical health and mental health). These summary scores are normed and standardised so that the population mean is 50. The physical health scale includes four components; general health (one item), physical functioning (two items), role-physical (two items), and bodily pain (one item). The mental health scale is comprised of four components; role-emotional (two items), vitality (one item), social functioning (one item), and mental health (two items). As an example of the components, a role-physical item asks if the participant has accomplished less than they would like, as a result of their physical health. Similarly, a role-emotional item asks if the participant did work or activities less carefully than usual, as a result of any emotional problems.

The eight SF12 health subscales are rated on various scales (see Appendix A, questions 8 to 14). General Health is rated on a 5-point scale ranging from 1 = “Excellent”, to 5 = “Poor”, then reverse coded before scoring. Physical Functioning is rated on a 3-point scale ranging from 1 = “Yes, limited a lot”, to 3 = “No, not limited at all”. Bodily Pain is rated on a 5-point scale ranging from 1 = “Not at all”, to 5 = “Extremely” and is reverse coded before scoring. Role Physical, Vitality, Social Functioning, Role Emotional and Mental Health are all rated on 5-point scales ranging from 1 = “All of the time”, to 5 = “None of the time”. Of these last five subscales, Vitality and Mental Health are reverse coded before scoring. The SF12 is scored following recommended guidelines (Ware et al., 1996) with an algorithm involving weighted item responses to provide a Physical Component Summary and a Mental Component Summary (Ware et al., 1996). Scale values below 50 are interpreted as below average and higher scores indicate better health. The two SF-12 summary scores are reported as Physical Health and Mental Health in this study.

An important feature of this instrument is its ability to discriminate between age groups and gender (Lim & Fisher, 1999), making it useful in the current study. The SF-12 scale is reported as having a reliability coefficient of 0.89 for the physical health scale and 0.86 for the mental health scale (Stewart & Ware, 1992), exceeding the minimum standard for group level scores (Ware, Kosinski, Turner-Bowker & Gandek, 2009). The Cronbach alpha in this study for Physical Health was .94 and for Mental health was .97. Considering the overwhelming advantages of this scale and its utilisation by four of the reviewed studies (i.e. Bryant et al., 2012; Frieswijk et al., 2004; Good et al., 2011; Guitierrez et al., 2013), the Short Form-12 (SF12) Health Survey (Ware, Kosinski & Keller, 1996) was adopted to measure subjective physical and mental health in this study. It was also considered time-appropriate for the older people self-administering the survey questionnaire.

3.4.5.3 The Groningen Activity Restriction Scale (GARS)

The Groningen Activity Restriction Scale (GARS) (Kempen, Miedema, Ormel & Molenaar, 1996) assesses disability in the area of Basic Activities of Daily Living (BADL) including mobility as well as Instrumental Activities of Daily Living (IADL). Eleven BADL

items and eight IADL items can be treated as sub-scales or added together to provide a total activity restriction score. The cumulative, hierarchical structure provides an overall continuous GARS score range of 18-72, corresponding with no limitations to maximum limitations (Kempen et al.). The scale has concurrent validity with the SF20_{physical} ($r = 0.79$) (in the current study the Cronbach's alpha was .95) and was tested with positive findings in studies in the Netherlands, France, Norway, Sweden and Canada.

The GARS comprises 18 questions requiring participants to rate their functional capacity in terms of their ability to complete a range of activities of daily living (see Questions 7a - 7r, Appendix B), for example, dress themselves or do the shopping. The GARS was rated on a 4-point scale ranging from "I can do it independently without any difficulty" (a score of 1) through to "I cannot do it independently, I can only do it with someone's help" (a score of 4). Internal consistency for this measure is very strong with Cronbach's alpha reported as ranging from 0.79 to 0.95 (Kempen et al., 1996).

While not utilised in any of the studies reviewed in the previous chapter, the GARS was selected for use in this study on the grounds that; content was similar to other scales; ability to access sub-scales for ADL and IADL was felt to have utility; the scale was closely associated with the SF20 and; wording was accessible and culturally appropriate for older New Zealand participants. Although the sub-scales were assessed, this study reports the total activity restriction score, with scores reverse coded so that higher scores indicate a higher functional ability for participants.

3.4.5.4 Iowa-Netherlands Orientation Measure (INCOM)

Social comparison orientation measures the frequency with which a person makes social comparisons. In the studies reviewed; Bailis et al. (2008) used five-items asking respondents 'How often do you ...' in relation to comparison scenarios; Stewart et al. (2013) used four items from the Task Specific Control Strategies inventory (Chipperfield & Perry, 2006) and phrased questions, 'When you have difficulty with ... how often do you tell yourself that despite this problem, you are better off than may other people your age?'. These measures were strongly activity-directed and assumed only downward comparison could be made; the possibility of making lateral or upward

comparisons was not considered. On this basis, these measures were not deemed adequate for this study.

In this study social comparison orientation (frequency) was measured with the Iowa-Netherlands Comparison Orientation Measure (INCOM) (Gibbons & Buunk, 1999). The INCOM is comprised of 11 item statements; nine of these are positively worded and two negatively (see Appendix A, question 17). An example of a positively worded statement is: 'I always pay a lot of attention to how I do things compared with how others do things'. A sample of a negatively worded statement is; 'I never consider my situation in life relative to that of other people'. The range of questions allows respondents to consider the possibility of lateral or upward comparison direction preferences where appropriate.

Each of the 11 items is rated on a 5-point scale (1 = I strongly agree, 2 = I agree, 3 = I neither agree nor disagree, 4 = I disagree, 5 = I strongly disagree); nine items were reverse coded. Aggregated scores (11 – 55) were averaged to provide a total score ranging from 1 to 5, with higher scores indicating a higher self-reported comparison orientation (more frequent use of social comparison). Gibbons and Buunk (1999) reported that the INCOM has good internal consistency, with a Cronbach's alpha coefficient of .83. In the current study the Cronbach alpha coefficient was .82. The researcher was not able to locate any alternative validated social comparison measure.

To overcome a possible reluctance to report comparison interest, the authors of the scale (Gibbons & Buunk, 1999, p. 142) included the following instruction; 'Most people compare themselves from time to time with others. For example, they may compare the way they feel, their opinions, their abilities and/or their situation with those of other people. There is nothing 'good' or 'bad' about this type of comparison. Some people do it more than others'. This statement was included in the questionnaire for this study.

To determine social comparison direction, three items asked respondents to indicate who they compared themselves with in relation to their a) health, b) functional ability, and c) life satisfaction. Each item was scored to indicate the direction of the comparison target (1 = "others who do better than me", 2 = "others who are the

same as me”, 3 = “others who do worse than me”). After reverse coding, the scores were interpreted as categorical variables, such that Group 1 = downward comparers (others do worse than me), Group 2 = lateral comparers (others are the same as me) and Group 3 = upward comparers (others do better than me). In the current study, the Cronbach alpha coefficient was 0.82.

3.4.5.5 Qualitative data: Participant comment

At the end of the questionnaire, participants were provided the opportunity to add any comments they might have about the topic or any general comments. Participants were thanked for completing the questionnaire, given directions for returning the completed form and offered the opportunity to request a summary of the findings.

3.4.6 Data collection process

Access to the general electoral role was obtained and 1,000 potential participants were randomly selected. An introductory information letter (Appendix A) and the questionnaire (Appendix B) were posted to the potential participants. The introductory letter explained the nature of the study and its procedures and invited participation. This letter offered potential participants the option of phoning the researcher to have the questionnaire read to them with time allowed for consideration and provision of responses. A home visit by the researcher to assist with completing the questionnaire was also offered. Neither of these options was requested.

The introductory letter informed potential participants of their right to refuse to participate in the study and to decline to answer any question. Participants were asked to check that they had not missed any pages and that they had entered all the information that they intended. Return of the questionnaire in a pre-paid, return-addressed envelope was taken as consent to participate in the study. Confidentiality and anonymity were maintained throughout the study; no data was identifiable to any participant. On receipt, questionnaires were checked by an assistant to ensure that an attempt had been made at all sections in order to provide useable data and be

included in the study. Forms were numerically coded to ensure confidentiality and anonymity and passed to the researcher for data entry.

3.5 Data management and analysis

Data obtained from the questionnaires were coded and entered into a database using the Statistical Package for the Social Sciences v18 (SPSS). As data were entered into the data base and prior to analysis, they were screened for missing values and data entry errors. This process was validated by double entry; any discrepancies were corrected with reference to the original questionnaire.

All analyses for the study were performed using SPSS v18. Prior to conducting each analysis, the data were assessed to check that the assumptions for the tests used were not violated. If violations were found, appropriate actions were taken as recommended (Field, 2007; Pallant, 2007; Tabachnick & Fidell, 2007). The sample was described with simple descriptive statistics (i.e. range, frequency, percentage and means and standard deviations where relevant, were provided). Cronbach's alpha was used to assess the reliability of all multi-item scales (i.e. GARS, SF12, SWLS and INCOM) used in the study.

Associations between age and scores on number of diagnosed health conditions, physical health (SF-12), mental health (SF-12), functional ability (GARS), and satisfaction with life (SWLS) were explored with Pearson's product-moment correlation coefficient (r) before these variables were plotted using two yearly mean scores to observe trends across age. Based on trends observed, the participants were assigned to two groups based on age (Group 1 = 65 to 84, Group 2 = 85+) and compared on mean satisfaction with life scores using an independent samples t-test. Comparisons were made between the age cohorts for differences in demographic factors (gender, marital status, residential area and educational status) using chi² tests for independence. Those factors found to be significantly associated with age cohorts, were tested to assess their influence on the relationship between age cohort and satisfaction with life, using two-way between groups analysis of variance (ANOVA).

While the four social comparison studies reviewed in the previous chapter (i.e. Bailis et al., 2008; Frieswijk et al., 2004; Peck & Merighi, 2007; Stewart et al., 2013) assessed the relationship between satisfaction with life and social comparison only in terms of downward comparison and comparison frequency, the lack of social comparison information from New Zealand and the exploratory nature of this study provided an opportunity to assess both the orientation (frequency) and the options for older people to make lateral or upward as well as downward comparisons; this allowed the relationship between satisfaction with life and social comparison direction to be assessed as well.

A one-way analysis of variance (ANOVA) was used to determine if there was a statistically significant difference in satisfaction with life scores between participants who made different directional comparisons (Group 1 = downward, group 2 = lateral, Group 3 – upward). After post-hoc testing, two directional groups were identified and the three directional groups were collapsed to two for further analysis (Group 1 = downward, Group 2 = not downward). The proportion of satisfied participants who made downward or not downward comparisons was compared by running a chi² test for independence, before a comparison of the frequency with which social comparisons were made (social comparison orientation) by downward comparers and not downward comparers was assessed with an independent samples t-test.

To determine if there was an association between age cohort and making downward (Group 1) or not downward (Group 2) social comparisons a chi² test for independence was run. The two age cohorts were then compared on social comparison orientation (frequency) using an independent samples t-test. While the relationships between downward social comparison, age and satisfaction with life had been assessed, a binary logistic regression was run to determine what other factors included in the study would predict the likelihood that participants would report the use of downward social comparison.

3.6 Ethical considerations

Prior to engaging in any research endeavour, ethical implications must be considered and approvals gained. As a nurse-researcher it is essential that

considerations are shaped by the professional requirements for nurses under the New Zealand Nurses' Organisation Code of Ethics for Nurses (NZNO, 2010) as well as the academic institution under which the research is conducted. The questionnaire pilot and main survey phases of the research were peer-reviewed by a panel of professional academic nurse-colleagues and approved by the Human Ethics Committee of Massey University (MUHEC: Southern B 09/42) and were undertaken within the ethical guidelines of the University, the New Zealand Nursing Council (NZNC) and the New Zealand Nurses' Organisation (NZNO).

Research with older adults as with any human participant, must comply with fundamental ethical standards. Every effort was made to ensure informed consent, confidentiality, truthfulness, social sensitivity and minimisation of harm (Massey University, 1988). Because older adults may be considered a vulnerable population, they were afforded added care with regards their dignity and welfare (Good, 2001). The questionnaire content was piloted by 20 older people who also discussed the data gathering process. The pilot participants determined the questionnaire content and data gathering process to be appropriate and 'safe' for potential participants, with the clear understanding that withdrawal from the process could happen at any point.

The information letter (Appendix B) provided to every potential participant, assured them that participation was voluntary and that there was no means of identifying individual participants. Return of the questionnaire was taken as consent to participate. Confidentiality and anonymity were maintained through a process of coded return envelopes recorded and opened by an assistant (who signed a confidentiality agreement) prior to passing sequentially numbered questionnaires only, to the researcher for data entry. The coded envelopes provided a database for respondents who requested a summary of the findings and was prepared and maintained by the assistant. To further maintain confidentiality, returned survey forms were held in a locked cabinet and data stored on a pass-protected system with the code known only to the researcher. To encourage a sense of partnership and reciprocity by the older adult community for the project, a summary of the findings was offered. Any publications or presentations arising from this quantitative study will report general findings only; no individual will be identifiable.

3.6 Chapter conclusion

The study was conducted in the Manawatu-Wanganui region of the North Island of New Zealand, during 2010. After excluding older people in residential care from the population of 31,755 people aged 65+, a computer-generated random sample selected 1,000 possible community-dwelling participants. An information sheet, the questionnaire, letter of invitation to participate in the study and pre-paid return envelope were posted to the 1,000 possible participants. Return of the questionnaire was taken as consent to participate.

Data was entered into the SPSS v.18 for Windows programme, the assumptions for each analysis tested and required adjustments for any violations made as recommended (Field, 2013; Pallant, 2007; Tabachnick & Fidell, 2007). Variables were assessed for bivariate correlation and trends across the age range were examined. Further analyses were conducted with participants assigned to two groups (65 to 84, 85+). Cohort mean satisfaction with life scores were compared to determine if there was a significant difference. Comparisons were made across the age cohorts for differences in demographic characteristics before tests were run to explore interaction effects of three demographic characteristics and age on satisfaction with life.

The association between satisfaction with life and downward social comparison was explored. Following this, the influence of frequency of downward social comparison on levels of satisfaction with life was investigated. Age cohort differences in use of downward social comparison and frequency were also examined before factors predicting use and frequency of downward social comparison were investigated. As previously stated, this research was approved by the Human Ethics Committee, Massey University, New Zealand (MUHEC: Southern B 09/42) and was undertaken within the ethical guidelines of the University, the New Zealand Nursing Council (NZNC) and the New Zealand Nurses' Organisation (NZNO).

This chapter has outlined the methodology used in this study before an overview of the variables of interest and the measurement tools used to explore their relationships was provided, together with sample size, sample selection, steps of data collection, data management and analysis. Procedures relating to the conduct of the

study and ethical concerns specific to researching with older people in this study were outlined. The following chapter describes in detail the results obtained from the analysis of the data and explores relationships among older age, satisfaction with life, health-related, demographic and social comparison variables for three cohorts of older people living in the Manawatu-Wanganui region of New Zealand.

CHAPTER 4 - RESULTS

4.1 INTRODUCTION

This chapter reports: a) the demographic characteristics of the sample; b) associations between age, diagnosed health conditions, physical health, functional ability, mental health and satisfaction with life; c) comparisons across age cohorts (65-84, 85+) of demographic characteristics and satisfaction with life; d) the association between downward social comparison (and its frequency), satisfaction with life and age; and e) factors that predict downward social comparison.

The results reported in this chapter will include reference to the stated Hypotheses. Hypotheses will appear in a text box prior to the relevant analysis; may not necessarily be in numerical order; will be in italic font to distinguish them from the surrounding text and be headed with the appropriate Hypothesis number. This reduces the need to constantly refer back to the previous chapter.

4.2 Participants

Of one thousand questionnaires posted to potential study participants in the Manawatu-Wanganui district of New Zealand, 564 were returned (return rate of

Table 4.1

Demographic details of participants

	N = 542	
	n	%
Gender		
Male	234	43.1
Female	308	56.8
Marital Status		
Total partnered	351	64.8
Total not partnered	191	35.2
Ethnicity		
Pakeha /European	502	92.6
Maori	9	1.7
Other	31	5.7
Size of Community		
Total Urban	455	83.9
Total Rural	87	16.1
Secondary Education		
No qualification	114	21.1
Secondary qualification	428	78.9

56.4%). Of those, 542 participants had completed all sections so were included in the study; all analyses reported here were conducted on the 542 complete cases. As can be seen in Table 4.1, the majority of the participants were female (56.8%) and married/partnered (64.8%). Most participants identified as Pakeha/European (92.6%), a figure slightly higher than that reported for the New Zealand 65+ population as a whole (89%) (Statistics New Zealand, 2007). The Maori participation rate was 1.7%, much lower than that found in the Manawatu (5%) or the nation as a whole (4.6%). Most participants lived in urban areas (83.9%) and 78.9% held a secondary school qualification or better.

Presented with a list of 24 commonly diagnosed health conditions, the majority of the participants reported having been diagnosed with three or more chronic health conditions (59%) and only 7.5% of participants had no diagnosed health condition (see Table 4.2). The most common reported condition was hypertension (high blood pressure) (52%) and slightly less than 45% reported having been diagnosed with arthritis (see Appendix D). The average number of diagnosed health conditions reported was 3.6 (SD = 7.24) and these ranged from 0-12 conditions.

Table 4.2

Diagnosed health conditions

	N	%	M	SD	Range
24 listed conditions			3.6	7.24	0-12
No health conditions	41	7.5			
1 or 2 health conditions	182	33.6			
3 or more health conditions	319	58.9			

Table 4.3 reports the means, standard deviation and range for the study variables (i.e., age, physical health, mental health, functional ability, satisfaction with life), considered as subjective or perceived measures. The participants ranged in age from 65 to 98 years with a mean age of 76.5 years (SD = 7.24). The SF-12 scores for physical and mental health were standardised so that the adult population norm for both is 50; values below 50 are interpreted as below average with each point being one-tenth of a standard deviation; this allows the two scales to be comparable with one another. The mean for physical health (44.47) indicates that the participants

generally reported their health at a level that was lower than average for the adult population norm. The mean for mental health however (54.58) indicates a response of better than average mental health, and is considerably higher than the physical health mean. Despite the below average mean score for physical health the mean score for functional ability (3.81) was at the upper level of the GARS scale indicating that participants perceived themselves to be able to function independently at a high level. The mean score of 2.61 for satisfaction with life was just below the neutral mid-point of 3.0, suggesting that the participants (aged 65 – 97) generally had a poor perception of being satisfied with life. Standard deviations for all scales were within acceptable ranges established by measure authors.

Table 4.3
Means, standard deviation and range for study variables

Measure	Variable	M	SD	Range
Age	Age	76.5	2.39	65 - 98
SF12 _{physical}	Physical health	44.47	10.74	11.03 - 73.04
SF12 _{mental}	Mental health	54.58	11.81	13.75 - 71.39
GARS	Functional ability	3.81	0.52	1 - 5
SWL	Satisfaction with life	2.61	1.00	1 - 5

4.3 Associations between diagnosed chronic health conditions, physical health, mental health, functional ability, satisfaction with life and age.

The total number of diagnosed chronic health conditions was assessed by self-report of conditions diagnosed by a health professional and is treated as an objective measure similarly to utilisation in literature reviewed. This data could not be verified, owing to the nature of self-report, but provides a comparator with SF12 data. Three standard measures (SF12, GARS and SWLS) were used to subjectively assess health (physical and mental), functional ability and satisfaction with life respectively. The reliability of each of these measures was checked and found to have good internal consistency with Cronbach’s alpha coefficients well above the acceptable value of 0.70 (Pallant, 2007): SF12 Physical = 0.96, SF12 Mental = 0.95, GARS = 0.96, SWLS = 0.94.

Hypothesis 1: *Age is positively related to number of diagnosed health conditions and negatively related to perceptions of physical health, mental health and functional ability*

The size and direction of the relationships between age and total number of diagnosed chronic health conditions, physical health, mental health and functional ability were explored using Pearson’s product-moment correlation coefficient. Preliminary analyses were conducted and the assumptions of normality, linearity and homoscedasticity were found not to be violated. As can be seen in Table 4.4, age was found to be positively associated with total number of diagnosed health conditions (.237) and inversely related to perceptions of physical health, mental health and functional ability as stated in Hypothesis 1. While the relationship between age and number of health conditions, physical health, mental health and functional ability are in the direction expected, the strength of the relationships is small (.10 to .29) in all cases (Cohen, 1988).

Table 4.4
Pearson’s product-moment bivariate correlations between age, health conditions, physical health, mental health and functional ability

Scale	1	2	3	4	5
1. Age	-				
2. Total number of diagnosed health conditions	.237*	-			
3. Physical health	-.180**	-.466**	-		
4. Mental health	-.119**	-.381**	.258**	-	
5. Functional ability	-.187**	-.286**	.438**	.428**	-

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

* Correlation is significant at the 0.05 level

- | | |
|----------------------|--|
| 1. Age | Range: 65- 98 years |
| 2. Health conditions | Total number of diagnosed chronic health conditions. Range: 0 - 24 |
| 3. Physical health | Population norm-based scores with each scale having an average of 50 and SD=10, values below 50 interpreted as below average and each point one-tenth of a SD. |
| 4. Mental health | Population norm-based scores with each scale having an average of 50 and SD=10, values below 50 interpreted as below average and each point one-tenth of a SD. |
| 5 Functional ability | 1= dependant, 2=independent with great difficulty, 3 =independent with difficulty, 4=independent |

Hypothesis 2: *Satisfaction with life is negatively related to number of diagnosed health conditions and positively related to perceptions of physical health, mental health and functional ability*

and functional ability were explored using Pearson’s product-moment correlation coefficient. Preliminary analyses were conducted and the assumptions of normality, linearity and homoscedasticity were found to be supported. Table 4.5 shows that the relationship between functional ability and satisfaction with life, is small and not in the direction expected. While the relationship between satisfaction with life, number of health conditions, physical health and mental health are moderate, they are also still not in the direction assumed. These findings were so unexpected that the data entry and reverse-coding of the satisfaction with life responses were checked and rechecked to ensure accuracy. These unexpected findings do not uphold Hypothesis 2.

Table 4.5

Pearson’s product-moment bivariate correlations between satisfaction with life, health conditions, physical health, mental health, functional ability and age

Scale	1	2	3	4	5	6
1. Satisfaction with life	-					
2. Total conditions	.361**	-				
3. Physical health	-.309**	-.466**	-			
4. Mental health	-.331**	-.381**	.258**	-		
5. Functional ability	-.230**	-.286**	.438**	.428**	-	
6. Age	.555**	.237**	-.180**	-.119**	-.187**	-

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

1. SWL	1. In most ways my life is close to my ideal 2. The conditions of my life are excellent 3. I am satisfied with my life 4. So far I have gotten the important things I want in life 5. If I could live my life over, I would change almost nothing 1=strongly disagree, 2=disagree, 3=slightly agree, 4=neutral, 5=slightly agree, 6=agree, 7=strongly agree.
2. Health conditions	Total number of diagnosed chronic health conditions. Range: 0 - 24
3. Physical health	Population norm-based scores with each scale having an average of 50 and SD=10, values below 50 interpreted as below average and each point one-tenth of a SD.
4. Mental health	Population norm-based scores with each scale having an average of 50 and SD=10, values below 50 interpreted as below average and each point one-tenth of a SD.
5 Functional ability	1= dependant, 2=independent with great difficulty, 3 =independent with difficulty, 4=independent
6 Age	Range = 65 – 98

Hypothesis 3: *Age is negatively related to satisfaction with life*

4.3.1 Satisfaction with life and age

The size and direction of the relationship between satisfaction with life and age was initially explored using Pearson's product-moment correlation coefficient. Preliminary analyses were conducted and the assumptions of normality, linearity and homoscedasticity were found to be supported. Table 4.5 shows that relationship between age and satisfaction with life is large (Cohen, 1988) and not in the direction expected. These findings are unexpected and do not uphold Hypothesis 3.

To further investigate this unexpected finding, a one-way between-groups analysis of variance (ANOVA) was conducted (Table 4.6) to explore the impact of age on levels of satisfaction with life. Participants were divided into three age groups commonly utilised in the literature (Group 1 = 65 to 74; Group 2 = 75 to 84; Group 3 = 85+). Preliminary tests found that the assumptions of normality and linearity were not violated. However, Levene's test was found to be significant, violating homogeneity of variance. Pallant (2007) suggests that ANOVA is reasonably robust to violations of this Hypothesis, so no adjustments were required. As can be seen in Table 4.6, a statistically significant difference was found on satisfaction with life scores across the three age groups ($F(2,539) = 268.1, p = .001$). The effect size, calculated with eta squared, was 0.5, considered large (i.e. $\eta^2 \geq .14$) by Cohen's (1988) criteria. Because group sizes differed, post hoc comparisons used the Games-Howell test and indicated that Group 1 ($M = 13.62, SD = 5.86$) and Group 2 ($M = 15.14, SD = 6.69$) were significantly different from Group 3 ($M = 29.68, SD = 2.71, p = .001$). However, no statistically significant difference was found on satisfaction with life between Groups 1 and 2 ($p = .07$). Based on this finding and noting also that the change seen in satisfaction with life across age (Figure 4.1) was not linear, the groups were collapsed to two for further analysis.

Table 4.6

Comparison across three age groups on satisfaction with life scores

Group	1 (n = 277)		2 (n = 177)		3 (n=88)		F	P
Variable	Mean	SD	Mean	SD	Mean	SD		
Satisfaction with life	13.6	5.86	15.14	6.69	29.68	2.71	268.13	.001

Follow up	Variable	Mean difference	P
Satisfaction with life	(1) 65 - 74 - (2) 75 - 84	-1.52	.07
	(1) 65 - 74 - (3) 85+	-16.06	.001*
	(2) 75 - 84 - (3) 85+	-14.54	.001*

* Significant ($p \leq 0.05$)

The mean scores for satisfaction with life, number of diagnosed health conditions and the three subjective health-related variables (physical health, mental health and functional ability) were plotted at two-yearly intervals (Figure 4.1) to graphically present the trends for each of these variables across age. The graph demonstrated a steady relationship between age and all the variables up to age 85 where a marked and sustained increase in satisfaction with life was observed.

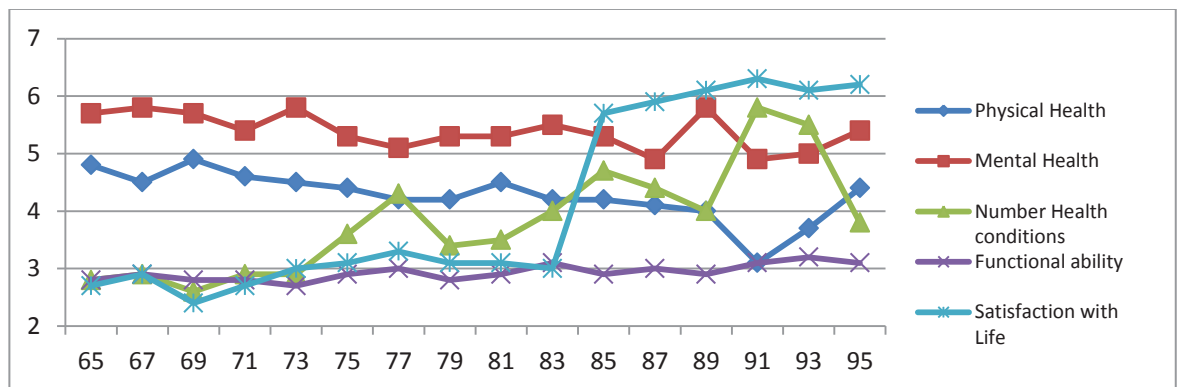


Figure 4.1 Mean scores across older age for subjective physical health, mental health, objective health (number of conditions) functional ability and satisfaction with life

Across the age range, satisfaction with life is not related in a linear fashion with any of the health-related variables. Nor are those relationships in the direction assumed. The marked change in satisfaction with life in an unexpected direction prompted multiple reviews of the data entry and reverse coding of the variable; these

were verified as being accurate. This non-linear relationship, together with the results of the ANOVA (Table 4.6), confirmed that age be considered in two cohorts for further analysis. The observed marked upward shift in satisfaction with life as people age does not appear to be explained by similar patterns in the health-related variables and increasing number of diagnosed health conditions and declining physical health, mental health and functional ability are not logically linked to an increased perception of satisfaction with life. As a consequence, these variables were not investigated further in this study.

An independent samples t-test was run to compare the mean satisfaction with life scores for age cohorts (65-84; 85+) to determine if there was a significant difference between the age groups. Preliminary tests found that the assumption of normality was not violated, however, Levene’s test was found to be significant, indicating that homogeneity of variance was violated. Pallant (2007) suggests that information provided by SPSS as ‘Equal variances not assumed’ be reported. As can be seen in Table 4.7, a significant difference in satisfaction with life scores was found between participants aged 65-84 ($M = 2.32$, $SD = .812$) and those aged 85+ ($M = 4.09$, $SD = .391$) [$t(540) = -31.433$, $p \geq .000$ (two-tailed)]. The magnitude of the differences in means (mean difference = -1.774, 95% CI -1.885 to -1.663, $\eta^2 = .65$) was large (Cohen, 1988), with 65% of the variance in satisfaction with life explained by age cohort. The analysis found that participants aged 85+ reported significantly higher satisfaction with life scores than participants aged 65-64. This finding did not uphold Hypothesis 3.

Table 4.7

Comparison between 2 age groups on satisfaction with life scores

Variable	65-84 (n=454)		85+ (n=88)		t	p	eta ²
	Mean	SD	Mean	SD			
Satisfaction with life	2.32	.812	4.09	.391	-31.43	.000*	.65

* Significant ($p < .001$)

In this study, Hypothesis 1 (Age is positively related to number of health conditions and negatively related to physical health, mental health and functional ability) was supported and confirmed the findings reported in the literature reviewed in Chapter 2. The second Hypothesis (Satisfaction with life is inversely related to number of health conditions and positively related to physical health, mental health and functional ability) was not upheld in this study. Results showed a negative relationship between satisfaction with life and physical health, mental health and functional ability and a positive association with number of health conditions and age; none of the findings were in the direction expected or reported in the literature reviewed in Chapter 2, with the exception of Frieswijk et al. (2004) who found the frailest participants (who were also the oldest) reported high satisfaction with life. The findings were counter-intuitive, so required further investigation. Some ageing literature suggests that improved satisfaction with life might be accounted for by a range of other demographic factors including gender, partnered status, residential area or educational status.

4.4 Comparisons across the age cohorts on demographic variables (gender, partnered status, residential area, educational status)

The two age cohorts were compared to determine if they differed significantly on a range of demographic variables (gender, partnered status, residential area, educational status). Prior to conducting chi squared tests, assumptions of independent observations and expected cell frequencies were assessed and found not to be violated. As can be seen in Table 4.8, the cohorts were found to differ significantly on gender [$\chi^2 (1, N = 542) = 7.30, p \geq .007$] and educational status [$\chi^2 (1, N = 542) = 101.99, p \geq .001$], but not on partnered status [$\chi^2 (1, N = 542) = 2.503, p \geq .114$] or residential area [$\chi^2 (1, N = 542) = .420, p \geq .517$]. The association between age and gender ($\phi = .121$) was found to be small ($\phi = .10$) using Cohen's (1988) criteria, while the association between age and educational status ($\phi = .44$) was found to be moderate ($\phi = .30$) (Cohen, 1988).

Table 4.8

Comparison across two age groups on gender, marital status, residential area and education

Group	65-84 (n=454)		85+ (n=88)		χ^2	P	phi
	N	%	N	%			
Gender					7.30	.007*	.12
Male	208	45.8	26	29.5			
Female	246	54.2	62	70.5			
Partnered Status					2.50	.114	.07
Partnered	301	66.3	50	56.8			
Not partnered	153	33.7	38	43.2			
Residential area					0.42	.517	-.035
Urban	393	86.6	79	89.8			
Rural	61	13.4	9	10.2			
Educational status					101.99	.001**	-.439
2 ^o Education	343	75.6	17	19.3			
None	111	24.4	71	80.7			

** Significant ($p \geq .05$)

Two-way between-groups ANOVAs were performed to assess if gender or education confounded the effect of age on satisfaction with life.

4.4.1 The impact of age on satisfaction with life, controlling for gender

Prior to conducting a two-way between groups analysis of variance (ANOVA), preliminary assumption testing found that Levene's test was significant, violating homoscedasticity, so a more conservative significance level of .01 was set for evaluating the ANOVA results (Tabachnick & Fidell, 2007). No other assumptions were found to be violated. As can be seen in Table 4.9, the interaction effect between age

Table 4.9

Comparison across groups on satisfaction with life, age and gender

(n = 65-84yrs) (n = 85 + yrs)

Variable	M	SD	M	SD	F(1,538)	p	partial eta ²
Age cohort*gender	14.21	6.23	29.680	2.710	0.368	.544	.001
Age cohort					433.93	.001*	.446
Gender					0.621	.431	.001

* Significant at the $p < .01$ level

cohort and gender was found not to be statistically significant, [$F(1, 538) = 0.368, p \geq .544$]. While a significant main effect was found for age [$F(1,538) = 433.93, p \geq .001$], none was found for gender, [$F(1, 538) = .621, p \geq .431$]. Gender was therefore found not to moderate the impact of age cohort on satisfaction with life.

4.4.2 The impact of age on satisfaction with life, controlling for education

Having found that gender did not have an indirect effect on the association between age and satisfaction with life, a two-way between groups analysis of variance (ANOVA) was run to assess if education confounded the effect of age on satisfaction with life. Preliminary assumption testing found that Levene’s test was significant, violating homoscedasticity, so a more conservative significance level of .01 was set for evaluating the ANOVA results (Tabachnick & Fidell, 2007). No other assumptions were found to be violated. As can be seen in Table 4.10, the interaction effect between age cohort and education was found not to be statistically significant, [$F(1, 538) = 2.27, p \geq .133$]. While a significant main effect was found for age [$F(1,538) = 328.76, p \geq .001$], none was found for education, [$F(1, 538) = .034, p \geq .853$]. Education therefore, was found not to moderate the impact of age cohort on satisfaction with life.

Table 4.10
Comparison across groups on satisfaction with life, age cohort and education
 (n = 65-84 yrs) (n = 85+ yrs)

Variable	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>F(1,538)</i>	<i>p</i>	<i>partial eta</i> ²
Age cohort ² *education	14.21	6.23	29.680	2.710	2.270	.133	.004
Age cohort					328.76	.001*	.379
Education					.034	.853	.001

* Significant at the $p < .01$ level

While gender and education were found not to impact on the association between satisfaction with life and age cohort, the pattern of that association (displayed in Figure 4.1) indicated that some other variable/s might have an impact on this relationship. Further analyses explored the possible effect of social comparison variables on satisfaction with life.

Hypothesis 4: *Those who compare downwardly will be more likely to be satisfied with life than those who do not.*

4.5 Satisfaction with life and downward social comparison

Because of the lack of social comparison information in New Zealand and the exploratory nature of this study, two dimensions of social comparison were assessed separately; the direction of the comparisons made (social comparison direction) and the frequency with which older people make social comparisons (social comparison orientation). Social comparison direction was measured categorically (1 = downward comparison; 2 = lateral comparison; 3 = upward comparison). The standard measure INCOM was used to assess social comparison orientation (frequency); reliability of this measure was checked and found to have good internal consistency with Cronbach's alpha coefficient = .83.

4.5.1 Satisfaction with life and downward social comparison (direction)

A one-way between-groups analysis of variance (ANOVA) was used to determine if there was a statistically significant difference in satisfaction with life scores between participants who made downward, lateral and upward comparisons. Preliminary tests for the assumptions of independence and normality were found not to be violated. However, as Levene's test was significant, violating the assumption of homogeneity of variance, Welch's F is reported (Field, 2013). The ANOVA (see Table 4.11) was statistically significant, indicating that perception of satisfaction with life was influenced by social comparison direction, [$F(2, 539) = 35.14, p \geq .001$]. As the group sizes differed, post hoc analyses were conducted using the Games-Howell test (Field, 2013). It was found that participants who made downward social comparisons ($M = 3.17, SD = 1.12$) reported significantly higher satisfaction with life scores [$F = 35.14, p = .001$] than those who made lateral comparisons ($M = 2.36, SD = .84$) or upward comparisons ($M = 2.36, SD = .83$). The effect size ($\eta^2 = .14$) was considered to be large ($\leq .14$) using Cohen's (1988) criteria. However, there was virtually no difference between the satisfaction with life scores of those who made lateral comparisons and those who made upward comparisons. Based on this finding, the three directional

groups were collapsed to two (Group 1 = downward comparers; Group 2 = not downward comparers) for further analysis.

Table 4.11

Comparison across three social comparison directions on satisfaction with life scores

Group	n = 166		n = 290		n = 86		F	P	eta ²
	1 Downward		2	Lateral	3	Upward			
Variable	Mean	SD	Mean	SD	Mean	SD			
Satisfaction	3.17	1.12	2.36	0.84	2.36	0.86	35.14	0.001	0.14
Follow up	Variable					Mean difference		P	
Satisfaction with life									
	(1) downward - (2) lateral					.814*		0.001	
	(1) downward - (3) upward					.808*		0.001	
	(2) lateral - (3) upward					-0.005		0.999	

* Significant ($p \leq 0.01$)

The participants were divided into satisfied and not-satisfied groups using a median SWL score split and a chi squared test for independence was run to determine the proportion of satisfied participants who made downward, compared to not downward social comparisons. Preliminary tests for assumptions of independence and minimum expected cell frequency were carried out and found not to be violated. The chi-square test indicated a statistically significant association between satisfaction with life and downward social comparison [$\chi^2(1, n = 542) = 89.34, p \geq .001$]. The effect size ($phi = .41$) was medium ($phi \geq .3$) using Cohen's (1988) criteria. As can be seen in Table 4.12, 54% of those who made downward comparisons were satisfied with life, as compared to 14% of those who made comparisons not in a downward direction.

Table 4.12

Comparison across satisfaction with life groups for social comparison direction (SCD)

Group N = 542	n = 143		n = 399		χ^2	p	Phi
	Satisfied		Not satisfied				
	n	%	n	%			
SCD					89.34	0.001	0.41
1. Downward	89	54	77	46			
2. Not downward	54	14	322	86			
Total	143	26	399	74			

Those participants who made downward comparisons were 3.9 times more likely to be satisfied with life than those who made comparisons not in a downward direction (see Figure 4.2), thus confirming Hypothesis 4.

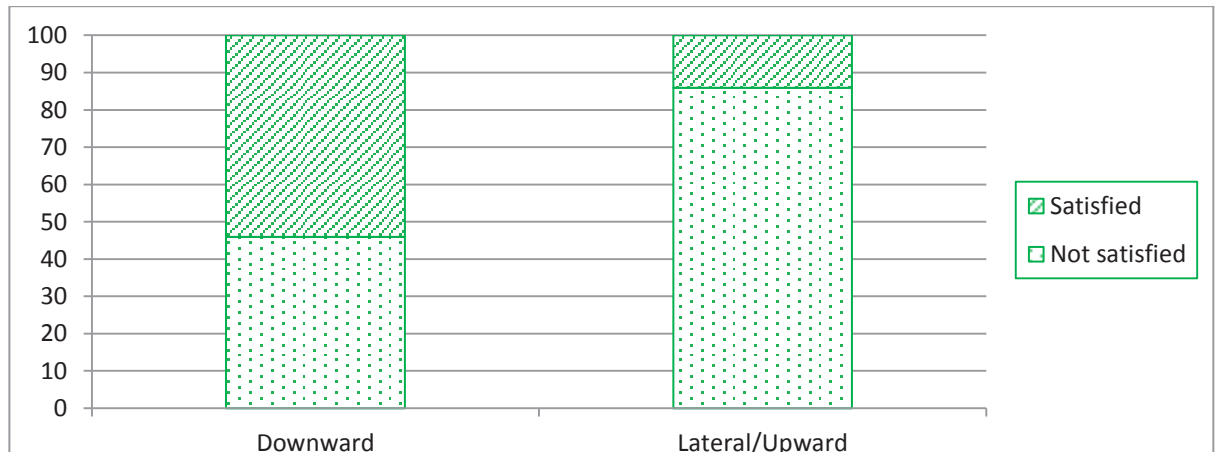


Figure 4.2 Percentage of social comparison directions on satisfaction with life

4.5.2 Satisfaction with life and social comparison orientation (frequency) of downward comparers

A bivariate Pearson’s product-moment correlation was calculated to assess the size and direction of the relationship between satisfaction with life and social comparison orientation (frequency). Social comparison orientation (frequency) was found to be significantly positively correlated with satisfaction with life ($r = .261, p > .01$) but the effect size was only weak (Cohen, 1988). The participants who made downward social comparisons were divided into two groups using a median SWL score split (Group 1 = satisfied with life, Group 2 = not satisfied with life) and an independent samples t-test was run to determine if there was a significant difference in social comparison orientation (frequency) scores between participants in the ‘satisfied’ and ‘not satisfied’ groups.

Preliminary assumptions for normality and equal variances were assessed and found not to be violated. As can be seen in Table 4.13, a significant difference in social

comparison orientation scores was found between the satisfied (M =3.67, SD = .72) and not satisfied (M =3.26, SD = .64) groups [$t(164) = -3.90, p > .001$ (two-tailed)]. The magnitude of the differences in the means (mean difference = -.41, 95% CI: -.624 to -.205, $\eta^2 = 0.08$) was moderate (Cohen, 1988), with 8% of the variance in satisfaction with life of downward comparers explained by social comparison orientation (frequency). This analysis found that among downward social comparers, the ‘satisfied’ group reported a moderately stronger orientation toward social comparison than the ‘not satisfied’ group that was statistically significant (i.e., the satisfied group made social comparisons more frequently than the not satisfied group). These findings were similar to those reported by Bailis et al. (2008), Frieswijk et al.(2004), Peck and Merighi (2007) and Stewart et al. (2013) reviewed in Chapter 2.

Table 4.13
Comparison across satisfaction with life groups on social comparison orientation (frequency) for downward comparers

Group	Satisfied (n=89)		Not satisfied (n=77)		<i>t</i>	<i>p</i>	η^2
	Mean	SD	Mean	SD			
Social comparison orientation (frequency)	3.67	.72	3.26	.64	-3.090	.000*	.08

Hypothesis 5: *Those who are older will be more likely to compare downwardly.*

4.6 Age and social comparison

As statistically significant associations were found between satisfaction with life and age cohort, and between downward social comparison, social comparison orientation (frequency) and satisfaction with life, further analysis investigated the relationships between age cohorts (i.e., 65-84, 85+) and the two dimensions of social comparison.

4.6.1 Age and downward social comparison

A chi-squared test for independence was carried out to determine if use of downward social comparison differed by age cohort. Preliminary tests for assumptions of independence and minimum expected cell frequency were carried out and found not to be violated. The chi-square test (see Table 4.14) indicated a statistically significant association between age cohort and downward social comparison [$\chi^2(1, n = 542) = 150.5, p \geq .001$] with an effect size ($\phi = -.53$) considered to be large ($\phi > .50$) using Cohen's (1988) criteria. Results showed that 20% of participants 65-84 made downward comparisons compared to 86% of those aged 85+.

Table 4.14

Comparison across age cohorts for two social comparison directions (SCD)

Group	n = 166		n = 376		χ^2	p	phi
	Downward		Not downward				
	n	%	N	%			
Age					150.5	.001	-.532
1. 65 - 84	90	20	364	80			
2. 85+	76	86	12	14			
Total	166	31	376	69			

As can be seen in Figure 4.3, the participants aged 85+, were 4.3 times more likely to make downwards comparisons compared with those 65-84, confirming Hypothesis 5.

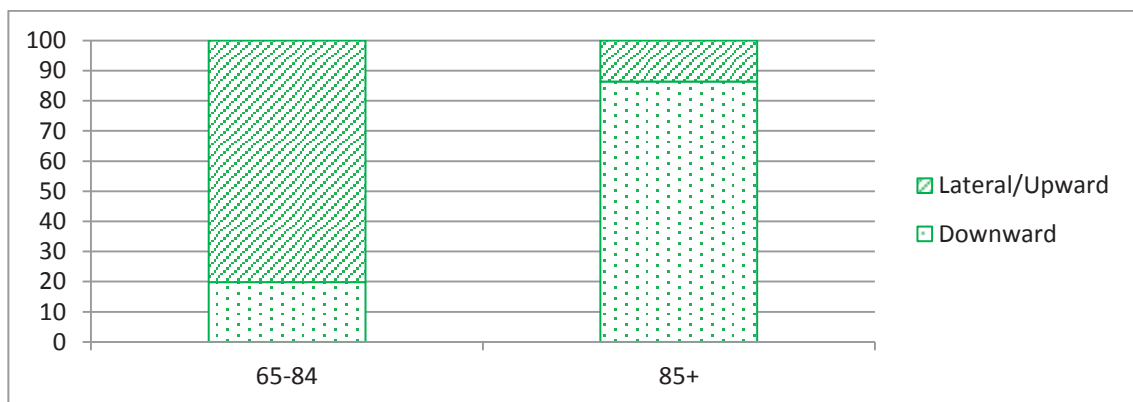


Figure 4.3 Percentage of social comparison direction between age groups

Having considered the effect of age on one dimension of social comparison (social comparison direction), the effect of age on the second dimension (social comparison frequency) on age was investigated.

4.6.2 Age and social comparison orientation (frequency)

An independent samples t-test was run to determine if there was a significant difference in social comparison orientation (frequency) between the age cohorts (65-84; 85+). Preliminary assumptions for normality and equal variances were assessed and found not to be violated. As can be seen in Table 4.15, a significant difference in social comparison orientation (frequency) scores was found between the younger (M =3.09, SD = .667) and older (M =3.78, SD = .648) age cohorts [$t(540) = -8.54, p \geq .001$ (two-tailed)]. The magnitude of the differences in the means (mean difference = -.66, 95% CI: -.812 to -.508, $\eta^2 = 0.12$) was moderate ($\eta^2 d \geq .06 < 0.14$), with 12% of the variance in social comparison orientation (frequency) explained by age cohort. This analysis found that the older cohort reported a stronger orientation towards social comparison than the younger cohort; the older cohort (85+) made social comparisons significantly more frequently than the younger cohort (65-84).

Table 4.15
Comparison across age cohorts on social comparison orientation

Group	65-84 (n=454)		85+ (n=88)		<i>t</i>	<i>p</i>	η^2
	Mean	SD	Mean	SD			
Social comparison orientation	3.09	.667	3.78	.648	-8.54	.000*	.12

* Significant ($p < .001$)

When the participants were considered at two-yearly age intervals (Figure 4.4), a marked increase in use of downward comparison was evident at around age 85 that was similar to the trend observed in Figure 4.1. These findings confirm Hypothesis 5 and supported those of Bailis et al. (2008), Frieswijk et al. (2004), Peck and Merighi (2007 and Stewart et al. (2013) reported in the literature reviewed

Comparing Figures 4.1 and 4.4 it appears that the highest levels of satisfaction with life were reported by participants aged 85+, (the group reporting the most health

conditions and the poorest health and functional ability) who made frequent use of downward social comparisons. The oldest participants (aged 91+) reported the highest levels of satisfaction with life and made only downward social comparisons. The pattern that emerged demonstrates a marked and sustained increase in downward comparison around age 85, resembling the trajectory for satisfaction with life (Figure 4.1), which supported Hypothesis 5.

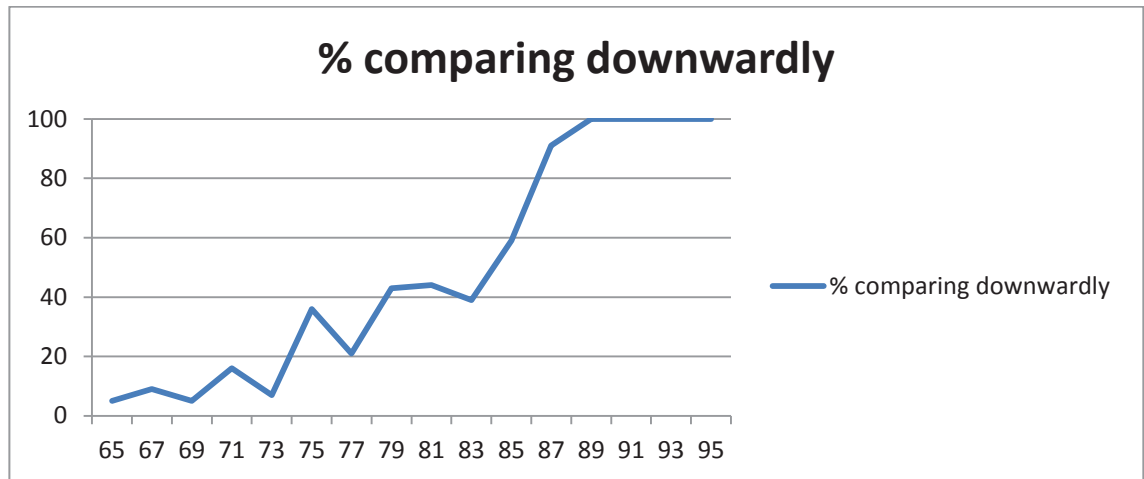


Figure 4.4 Percentage of downward comparisons by age

The mean satisfaction with life scores for all three social comparison directions were plotted at two-yearly intervals (Figure 4.5) to consider the trends for each comparison direction. The graph shows that the highest levels of satisfaction with life

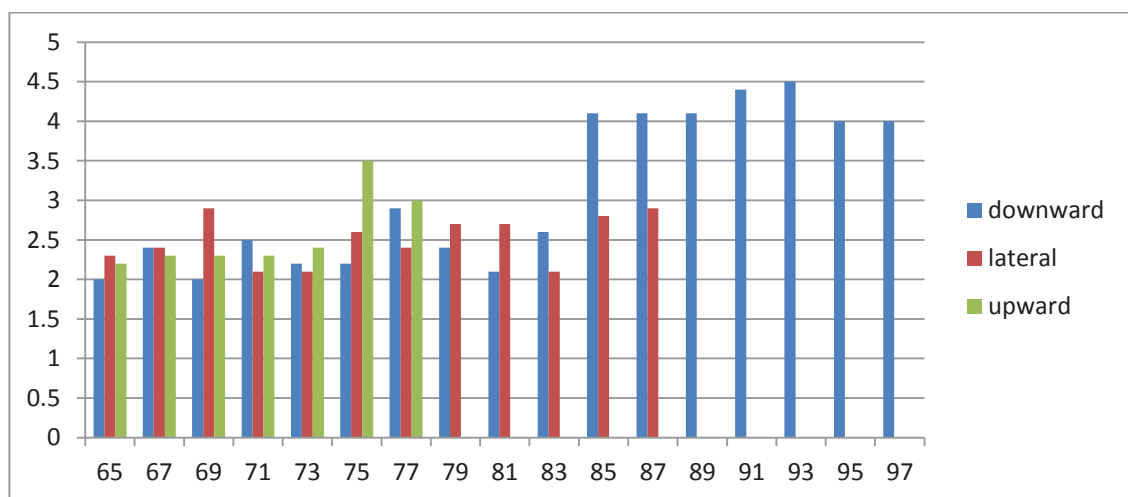


Figure 4.5 Percentages of mean satisfaction with life scores for three social comparison directions across older age

were reported by participants aged 85+ (who made predominantly downward social comparisons). The graph also clearly indicates that no upward comparisons were made after age 77 and no lateral comparisons were made from age 87. The oldest participants (aged 89+) reported the highest levels of satisfaction with life and made only downward social comparisons.

The pattern that emerged demonstrates a marked and sustained increase in downward comparisons around age 85, resembling the trajectory for satisfaction with life (Figure 4.1). However, as can be seen in Figure 4.5, younger participants (aged 65 – 84) who made downward comparisons did not report high levels of satisfaction with life. Satisfaction with life was found to be significantly associated with age, social comparison orientation and social comparison direction.

While the relationships between downward social comparison, social comparison orientation (frequency), age and satisfaction with life had been assessed, a binary logistic regression was run to determine what other factors included in the study would predict the likelihood that participants would report the use of downward social comparison. Preliminary tests for multicollinearity and outliers were carried out and not found to violate assumptions for logistic regression. The regression included ten independent variables considered in the study (i.e. physical health, mental health, number of health conditions, functional ability, satisfaction with life, gender, partnered status, education, residential area, age cohort).

The model containing all predictors was statistically significant, $\chi^2 (10, N = 542) = 114.39, p < .001$, suggesting that the model could distinguish between respondents who reported and did not report making downward social comparisons. The model as a whole explained between 27.1% (Cox and Snell R square) and 38% (Nagelkerke R Squared) of the variance in use of downward social comparison and correctly classified 81.5% of cases. As can be seen in Table 4.16, only two of the independent variables made a unique statistically significant contribution to the model (i.e. partnered status; age cohort). The strongest predictor of making downward social comparisons was age cohort, recording an odds ratio of 19.31. This indicated that respondents who were aged 85+ were over 19 times more likely to report making downward social

comparisons than those aged 65-84, controlling for all other factors in the model. The odds ratio of 1.53 for partnered status indicating that partnered respondents were over one and a half times more likely to use downward social comparisons than those who were not partnered, controlling for other factors in the model. Respondents who are among the oldest-old and partnered are more likely to make downward social comparisons.

Table 4.16

Logistic regression predicting likelihood of reporting making downward social comparisons

	B	S.E.	Wald	df	p	Odds Ratio	95% C.I. for Odds Ratio	
							Lower	Upper
physical health	-0.01	0.02	0.15	1	0.70	0.99	0.97	1.02
mental health	0.02	0.01	1.97	1	0.16	1.02	0.99	1.05
health problems	0.04	0.07	0.34	1	0.56	1.04	0.91	1.18
functional ability	-0.18	0.31	0.34	1	0.56	0.84	0.46	1.53
SWL	0.34	0.45	0.57	1	0.45	1.40	0.59	3.35
Gender	-0.33	0.30	1.20	1	0.27	0.72	0.40	1.30
partnered status	0.64	0.31	4.29	1	0.04	1.53	0.29	0.97
education	-0.15	0.31	0.23	1	0.63	0.86	0.47	1.58
residential	0.03	0.32	0.01	1	0.92	1.03	0.55	1.93
age cohort	2.96	0.55	29.08	1	0.00	19.31	16.58	22.62
Constant	-1.07	1.36	0.62	1	0.43	0.34		

Participants were offered the opportunity to add any comments they might have about the topic or any general comments. Of all questionnaires returned, only 12 added general comments about their participation; four suggested that they did not believe they compared themselves with others, but had considered the possibility to complete the survey. While qualitative comments were added to the survey, there was insufficient data provided for useful analysis.

4.7 Summary of Findings

The results reported in this chapter have described demographic characteristics of the 542 older people who participated in this study. The health of the participants was considered by self-reported objective and subjective variables (i.e.; number of diagnosed health conditions, physical health, mental health and functional ability) while satisfaction with life was considered by self-reported evaluative judgement of subjective wellbeing. Social comparison was investigated by self-reported direction and orientation (frequency).

Across ages 65-98, this study found a positive association between age and number of health conditions and negative associations between age and physical health, mental health and functional ability, as generally assumed. However the relationship between age and satisfaction with life not only was found to be positive, but also very strong. While this was not as generally expected, the marked and sustained increase in satisfaction with life observed at age 85 was a dramatic finding. This non-linear, upward shift suggested that satisfaction with life was perceived quite differently before and after the age of 85. This shift suggested a cohort difference and was the rationale for using 65-84 and 85+ as age cohort groups for the remainder of the study.

As the health-related variables did not appear to be explanatory of the non-linear trajectory of satisfaction with life, other variables were considered. Some ageing literature suggests that demographic and other characteristics may influence satisfaction with life. When gender, marital status, residential area and educational status were compared across the two age groups, significant differences were found between the groups on gender and education only. The association between age and gender was found to be small and the association between age and educational status medium. On further analysis neither of these variables was found to moderate the impact of age on satisfaction with life. It was therefore assumed that some other factor must be influencing the change in perception of satisfaction with life before and after age 85.

Social comparison has been investigated as “a strategy that protects older people from the negative effects of aging” (Cheng, Fung & Chan, 2007), so was explored as a possible explanation of the unexpected phenomenon. Two dimensions of social comparison (direction and orientation/frequency) were considered in this study. Social comparison direction was explored initially to determine if there was a significant difference in satisfaction with life scores between participants who made downward, lateral and upward comparisons. Downward comparers were found to report significantly higher satisfaction with life scores than lateral comparers and upward comparers, but there was virtually no difference in mean life satisfaction scores found between lateral and upward comparers. As a result, the groups were collapsed to two (Group 1 = downward comparers; Group 2 – not downward comparers) for further analysis.

A statistically significant association was found between satisfaction with life and two directions of social comparison direction. Fifty-four percent of those who made downward comparisons were satisfied with life, compared to 14% of not downward comparers; those participants who made downward comparisons were 3.9 times more likely to be satisfied with life than those who did not. The frequency (comparison orientation) with which downward comparers made social comparisons was compared with not downward comparers and the two groups were found to differ significantly; downward comparers made more frequent use of social comparison than did the non-downward comparers.

As statistically significant associations were found between downward social comparison, comparison orientation (frequency), satisfaction with life and age, further analysis investigated the relationships between age cohorts and the two dimensions of social comparison. A large statistically significant association was found between age cohort and downward social comparison with 20% of participants aged 65-84 making downward comparisons compared to 86% of those aged 85+. The participants who were 85+, were 4.4 times more likely to make downward comparisons compared with those 65-84. When the trends of social comparison direction (downward or not downward) on satisfaction with life scores were considered, it was found that comparisons not in a downward direction, ceased at age 85. The oldest participants

(aged 87+) were found to make only downward social comparisons and to report the highest levels of satisfaction with life.

A significant difference in social comparison orientation (frequency) scores was found between the younger and older age cohorts with 12% of the variance in social comparison orientation (frequency) explained by age. While the older group reported a stronger orientation (frequency) towards social comparison than the younger group the trajectory of social comparison orientation did not appear to follow the trajectory of satisfaction with life; there was no marked change at age 85 years as was demonstrated for satisfaction with life.

The variables included in the study were assessed to determine which would predict the use of downward social comparison. Only partnered status and age cohort were found to make a unique statistically significant contribution to the model, with age cohort being the strongest predictor. Respondents who were aged 85+ were over 19 times more likely to report making downward social comparisons than those aged 65-84, controlling for all other factors in the model. Partnered respondents were 1.5 times more likely to make downward social comparisons than non-partnered respondents.

4.8 Chapter conclusion

This chapter has reported: the demographic characteristics of the sample; associations between age, diagnosed health conditions, physical health, functional ability and mental health. The chapter has also reported: associations between satisfaction with life and age groups (65–84; 85+), diagnosed health conditions, physical health, functional ability and mental health. The association between two dimensions of social comparison, satisfaction with life and age; and predictors of downward social comparison were also reported in this chapter. The chapter that follows provides a discussion of these findings.

CHAPTER FIVE: DISCUSSION

"We assume happiness is intrinsically connected with the qualities of youth, and yet we find that older adults tend to be happier. This has been referred to as the paradox of aging."

—Anthony Ong

5.1 Introduction

Emerging literature dealing with the suggestions that satisfaction with life might be perceived differently across older age and that this perception might be affected by social comparison, is not definitive. As a result, the objectives of this study were to: 1) clarify the associations between increasing age and satisfaction with life (examining factors such as physical health, functional ability, mental health and some demographic variables, to determine the nature of these relationships across this age group); and 2) investigate if social comparison (direction and frequency) provides an explanation for any changes found in satisfaction with life across older-age cohorts.

This chapter provides an interpretation and discussion of the study findings in relation to the studies reviewed, the implications of the findings with suggestions for further research and the limitations of this study.

5.1 Participants

This study was conducted with people aged 65+, living in the community (non-institutionalised) in the Manawatu-Wanganui region of New Zealand's North Island, during 2010. The 542 participants were among 1,000 potential participants randomly selected from those registered on the general electoral role. They ranged in age from 65 to 98 years with a mean age of 76.5 (SD = 7.24) slightly higher than NZ's 65+ mean age of 74.2% (Statistics New Zealand (SNZ), 2007). Just over half of the participants were female (56.8%) reflecting the decreasing gap in life expectancy between males and females in New Zealand (79.1 years for males and 82.8 years for females, SNZ) with females now expected, on average, to live just 3.7 years longer than males.

The majority of the participants were married/partnered (64.8%) compared with 54.4% across New Zealand and 92.6% identified as Pakeha/European, a figure similar to the 92.7% reported for the 65+ population of the Manawatu-Wanganui region, higher than the 86.7% reported for New Zealand (SNZ, 2007). While Maori participation rate (1.7%) was lower than the 5.6% reported for the region, this may be the result of the option for Maori to be enrolled on either the general electoral roll or the Maori electoral roll. The majority of the participants; reported having three or

more health conditions (59%) slightly more than the 53.9% reported as disability prevalence for New Zealand (SNZ); had received some secondary education (78.9%), and lived in urban areas (83.9%).

5.3 Satisfaction with life

Throughout this study, satisfaction with life has been defined as, “a cognitive, judgmental, global evaluation of one’s life” (Diener et al., 1985, p.71) that includes assessment of health (Bowling, 2005). Older people living with disabilities or chronic health conditions that incur functional activity limitation might be expected to be less satisfied with life than older people without chronic conditions or disabilities. This study utilised self-reported measures of these variables rather than objectively determined data, to obtain information and insight into how older people perceive these aspects of their lives. From the literature reviewed in Chapter 2 it was assumed that as age increased, number of chronic conditions would increase and physical health, functional ability, mental health would decline; as a result, satisfaction with life would also decline.

5.4 Satisfaction with life and increasing age.

The first objective of this study was to clarify the relationship between increasing age and satisfaction with life. The literature frequently has shown old age to be directly related to satisfaction with life. The seven studies reviewed (i.e., Baird et al., 2010; Chen, 2001; Enkvist et al., 2012; Fagerstrom et al., 2007; Good et al., 2011; Gwozdz & Sousa-Poza, 2010; Smith et al., 2002) that investigated the association between satisfaction with life and age suggested that life satisfaction would decline with increasing age and that the oldest-old would experience the lowest levels of life satisfaction. The studies reviewed found age to be either significantly inversely associated with, or a significant predictor of, satisfaction with life. General trends in life satisfaction scores were observed to be relatively flat from ages 60 to 70 and to decline thereafter until the lowest scores were reported at the oldest age. It was noteworthy that, in all studies reviewed, those in their 80s, who had the lowest life satisfaction scores in their sample, had mean life satisfaction scores above the neutral midpoint on the measures used. It could therefore be inferred from these studies, that

older people were not dissatisfied with their lives although their level of satisfaction was lower than that of younger cohorts.

In contrast to the studies reviewed, the association between age and satisfaction with life in this study was found to be both positive and strong, so did not uphold Hypothesis 3 (satisfaction with life is negatively related to age). Not only did the relationship between increasing age and satisfaction with life not decline, it was also found not to be linear. The marked upward shift in satisfaction with life observed at age 85, suggests that life satisfaction was perceived differently before and after age 85. This dramatic finding was so unexpected, that data entry was reviewed and data coding was checked and re-checked to ensure the accuracy of the recoding of negatively worded questions. After multiple checks, the perception of satisfaction with life in this study indeed appears to be relatively low and stable to age 85, then to increase dramatically and to be sustained at high levels, after the age of 85. The perception of life satisfaction is different before and after age 85 in this sample. To make sense of this unexpected finding, other factors associated with increasing age and particularly changes that might be expected to differ before and after age 85, were considered.

5.5 Associations between increasing age and health-related variables (number of diagnosed health conditions, physical health, functional ability and mental health)

From the literature reviewed in Chapter 2 it was assumed that as age increased, the number of chronic conditions would increase and physical health, functional ability and mental health would all decline and as a result, so too would satisfaction with life. The fact that satisfaction with life did not decline as expected in this sample could be related to the associations between age and number of diagnosed health conditions and subjective perceptions of physical health, functional ability and mental health also not being as expected. The participants in this study might arguably have been in remarkable health and thus provide a possible explanation for the high levels of satisfaction with life reported. The possibility that the life satisfaction anomaly found

might be explained by high levels of health and functional ability in the sample was investigated.

5.5.1 Increasing age and physical health (objective and subjective)

Physical health was measured in this study using both an objective measure and a subjective measure. The objective (although self-reported) measure used was reported number of diagnosed health conditions, a measure used in four of the studies reviewed (i.e., Enkvist et al., 2012; Fagerstrom et al., 2007; Gwozdz and Sousa-Poza, 2010; Smith et al., 2002). Fifty-nine percent of the respondents in this study reported having three or more chronic health conditions; 34% had one or two conditions and 7% reported having no chronic health conditions. While, as expected the number of chronic conditions increased as age increased (upholding Hypothesis 1), the relationship was only small. These findings are similar to three of the four studies reviewed (i.e. Enkvist et al.; Fagerstrom et al.; Gwozdz and Sousa-Poza). Unexpectedly however, the relationship between satisfaction with life and the number of health conditions was found to be positive and of medium strength in this study. This did not support Hypothesis 2 (life satisfaction is inversely related to number of diagnosed health conditions) and was contrary to the findings of the four studies reviewed (i.e., Enkvist et al., 2012; Fagerstrom et al., 2007; Gwozdz and Sousa-Poza, 2010; Smith et al., 2002). It is an illogical suggestion that having more chronic health conditions would contribute to greater satisfaction with life; some other factor/s must have a greater impact on the perception of life satisfaction among older people.

Perceived health was measured in this study with self-reported responses to four components of the SF-12 tool; general health, physical functioning, role-physical and bodily pain. It was found that perceived health was negatively related with age as expected, but the association was only weak. These findings upheld Hypothesis 1 (age is negatively related to perceptions of physical health). However Hypothesis 2 (satisfaction with life is positively related to perceived physical health) was not upheld, as the association between life satisfaction and perceived health was found to be negative in this study. The gap between objective and subjective reports of health found in four of the studies reviewed (Enkvist et al., 2012; Fagerstrom et al., 2007;

Gwozdz & Sousa-Poza, 2010; Smith et al., 2002) was offered as an indication of an unrealistic positive perception of wellbeing (despite the objectively measured health decline) that may have contributed to greater satisfaction with life. This gap was not observed in this study, possibly indicating that these participants had a realistic (or possibly stoic) perception of their physical health status. There was no sense from these findings that an unrealistic, overly-positive perception of self-evaluated health might contribute to greater satisfaction with life.

5.5.2 Increasing age and functional ability

The standard measure GARS was used in this study to assess the perception of functional ability on a range of basic and instrumental activities of daily living (BADL and IADL). It was found that functional ability was negatively correlated with age, but only weakly, as had also been found for subjective physical health. Further, it was found that the decline in functional ability was steady across old age, with a slight increase after 89, but with no major changes at any point. These findings upheld Hypothesis 1 (functional ability declines with age), but this perception appears to improve slightly at the oldest ages. This more positive perception of functional ability at the oldest ages provides an illustration of the SOC model (Baltes & Baltes, 1990). Older people may prioritise (select) their ability to complete BADLs and IADLs and optimise their use of resources and aids to facilitate functioning in order to compensate for declines or losses. Since stressors such as declining functional ability may be greatest in very old age, selection, optimisation and compensation processes become increasingly important in order to maintain a positive physical and psychological balance between gains and losses (Baltes, 1997; Baltes and Cartensen, 1996; Freund and Baltes, 2000; Freund et al., 1999; Marsiske et al., 1995). This enables an acceptable level of satisfaction with functional level and arguably a perception of greater satisfaction with life and successful ageing to be held by the older person. It is also possible that other protective or adaptive processes, such as social comparison, are at play.

The trajectory of functional ability observed was similar to that of physical health. This is an expected finding as a person's ability to function is closely related to

their physical capacity, reflected in the significant moderate correlation between these variables found in this study. The trajectory of decline in physical health and functional ability in this sample were gradual and linear and as such did not account for the change in satisfaction with life at 85. Functional ability was found to be negatively associated with satisfaction with life but only weakly, and did not uphold Hypothesis 2 (satisfaction with life is positively related to perceived functional ability). These findings were similar to those reported by Abu-Bader et al. (2002) and Enkvist et al. (2012) but contrary to the findings of Asakawa et al. (2000), Blace (2012), Fagerstrom et al. (2007) Good et al. (2011), Gutierrez et al.(2013) and Smith et al. (2002) in the studies reviewed. The trajectory of functional ability found in this study did not explain the non-linear pattern of satisfaction with life.

5.5.3. Increasing age and mental health

Mental health was measured in this study with self-reported responses to four components of the SF-12 tool; role-emotional, vitality, social functioning, mental health. It was found that mental health was negatively correlated with age as expected, but only weakly and that mental health declined steadily across old age. These findings were similar to those in the reviewed literature (Abu-Bader et al., 2002; Asakawa et al., 2000; Bryant et al., 2012; Enkvist et al., 2012; Fagerstrom et al., 2007), and upheld Hypothesis 1. In addition to the pathology of declining mental health and the psychological challenges associated with physical and functional declines, older people may also be responding to changes in their own expectations of how they had imagined their old age or future to be; many may be living with regret. The trajectory of gradual decline in mental health was similar to that of physical health and functional ability in this sample, although respondents reported higher levels of perceived mental health than physical health. Accordingly, mental health was found to be negatively related to satisfaction with life and did not uphold Hypothesis 2. Once again, this linear relationship did not reflect any major change at age 85 as seen for satisfaction with life and so does not provide an explanation for the different perceptions held before and after age 85 or for the high levels reported after age 85.

5.5.4 Associations between increasing age and health-related factors that might explain the change in satisfaction with life at age

The first objective of this study was to clarify the associations between increasing age and satisfaction with life. It was expected that as age increased, the number of diagnosed health conditions would increase, physical health, functional ability and mental health would all decline and as a result, satisfaction with life would decline also. While increasing age and the health-related factors were found to be associated as expected, satisfaction with life not only did not decline, but was found to be strongly positively related to increasing age and not to be a linear relationship. The marked increase in the perception of satisfaction with life observed at age 85, indicated a different perception before and after 85. The association of the health-related factors with increasing age was unable to explain the different perceptions of satisfaction with life before and after 85.

5.6 Associations between satisfaction with life and demographic factors

Some ageing literature suggests that improved satisfaction with life might be accounted for by the impact of a range of demographic factors including gender, partnered status, residential area, educational status and age cohort. The personal meaning or value attached to these factors by older people might arguably contribute to a greater perception of fulfilment and life satisfaction than health-related factors. The literature investigating the effect of these indicators on satisfaction with life among older people has produced mixed findings.

5.6.1 Demographic factors and satisfaction with life

Among older people, gender, partnered status, residential area, educational status and age cohort may contribute to the perception of satisfaction with life and help to explain the anomalies found in this study. The two age cohorts (65 – 84; 85+) were compared on these variables. Among the younger group, 54.2% were female, 66.3% were partnered, 86.6% lived in urban areas, 75.6% had a secondary education, and 53.7% had three or more health conditions. The older group was more likely to be female (70.5%), live in urban areas (89.8%) and to have three or more health

conditions (85.2%) than the younger group. The older group was also less likely to be partnered (56.8%), or have completed secondary education (19.3%) than the younger group.

This study found only gender and education to be statistically significantly related to satisfaction with life among the demographic factors assessed. Even then, once the effect of age was also considered, gender and education were found not to influence the perception of satisfaction with life. So in this sample, the marked and sustained increase in the perception of satisfaction with life observed at age 85, not only was not explained by health-related factors, but demographic indicators also did not account for this phenomenon. There was something about the older cohort that set them apart from the younger cohort that explained or contributed to their greater perception of satisfaction with life. Membership of an age cohort has been suggested as an indicator of life satisfaction.

5.6.2 Cohort effect on satisfaction with life

In the four studies reviewed that considered the effect of age cohort on satisfaction with life, three (i.e. Baird et al., 2010; Chen, 2001; Enkvist et al., 2012; Smith et al., 2002) found the oldest cohort to report lower levels of satisfaction with life than the younger cohorts; only Good et al. (2011) found no significant difference between the age groups (65-74, 75-84, 85+) in levels of satisfaction with life. The possibility of a cohort effect was investigated in this study with respondents divided initially into three groups (i.e. 65-74, 75-84, 85+). The two younger groups (ages 65-74 and 75-84) were significantly different from the oldest group (aged 85+) while no statistically significant difference was found on satisfaction with life between the two younger groups. These two cohorts (65 – 84; 85+) were not only significantly different, but there appears to be a marked difference in perception of life satisfaction before and after age 85. This marked difference was indicated by higher and sustained levels of satisfaction with life among the participants aged 85+ than for the younger, who reported the highest levels of perceived health and functional ability.

The mean satisfaction with life found for participants aged 65-84 was just below the measure mid-point of 3 and was a surprising finding that is difficult to explain. It is

possible that the collapse of a number of large New Zealand financial institutions at around the time leading up to the survey may have diminished the invested life-savings of many older people surveyed. The effects of this on expected future lifestyle and security would have been felt across the age span, but arguably have been greater for the younger-old cohorts who would be reliant on these funds for a longer period than the oldest-old cohort. This can only be speculation however, as no financial information was sought in the survey. Similarly, the closeness of these cohorts to retirement and the life changes this involves may have impacted on their perception of satisfaction with life.

When considering the literature on the effect of age on satisfaction with life, a confounding factor is that age cohorts are not always easily comparative. For example, Gwozdz and Sousa-Poza (2010) utilised a population-based definition of the oldest-old as beginning at the transition between the third and fourth age or the chronological age at which 50% of the birth cohort are no longer alive. In developing countries, this third- to fourth-age transition is suggested to take place around 75 years of age (Baltes & Smith, 2003). In this study the transition appears to occur ten years later, at age 85. These varying measures that differ from country to country, make accurate comparisons by age group across countries a challenging undertaking. In many studies of the relationship between age and satisfaction with life, samples also often are not representative, making generalisation difficult and requiring ongoing investigation to add to the body of valid evidence. This makes it important for researchers in New Zealand to study the country's own older population, to use representative samples and to understand the perspectives of older New Zealanders, rather than implying that they will reflect those of other nations.

A cohort effect and possible survivor bias might explain the perception of greater life satisfaction from age 85 found in this study. The participants aged 85 – 98 were born between 1912 and 1925 and have lived through two World Wars and a major economic Depression. Many will have experienced extreme hardship and lived frugal lives with little expectation of living long or happy lives; their expectation of old-age would likely have been role-modelled on parents and grandparents exposed to poorer conditions than they themselves lived under. These same participants however, are

the survivors of their generation. Community-dwelling, these older people are physically and functionally able to live (with or without support) independently of residential care and to be cognitively competent enough to have responded to a letter of invitation, completed the survey form and returned it to the appropriate address in order to participate in this study. Simply by being alive, these participants have outlived many of their peers and siblings, suggesting that they are among the healthiest of their generation. These survivors arguably have adapted successfully to old age with the use of various coping mechanisms or techniques.

It is clear that in this sample, the perception and evaluation of satisfaction with life is not affected by health-related or the other demographic factors, but something related to age before and after 85 obviously had a marked effect, particularly on the older cohort. Some research (e.g., Bailis et al., 2008; Frieswijk, 2004; Peck & Merighi, 2007; Stewart et al., 2013) suggests that perception of circumstances shaped by social comparisons can be an important predictor of life satisfaction. The effect of this mechanism on satisfaction with life was investigated in this study and is discussed in the following section.

5.7 Social comparison and satisfaction with life

The second objective of this study was to investigate the effect of social comparison direction and orientation (frequency) on any satisfaction with life, and on any changes in the perception of satisfaction with life across age cohorts. It was assumed that as satisfaction with life is a cognitive perception based on a comparison with an acceptable state, those who compared downwardly were more likely to have higher life satisfaction than those who do not (Hypothesis 4).

As previously stated, social comparison involves evaluating one's own situation (e.g. health status) in relation to one (or more) actual or imagined comparison 'other' or target. Social comparison may act as a protective, adaptive mechanism or psychological resource that allows those facing loss, decline or uncertainty (Dibb & Yardley, 2006) to reframe their situation in order to enhance self-image and possibly regulate associated negative feelings (Wills, 1981), particularly among those unable to control their circumstances (Stewart, Chipperfield, Ruthig & Heckhausen, 2013). The

mechanism by which this strategy operates is selective use of information from the social environment, allowing one to relate their own situation to that of others (Van der Zee, Buunk, Sanderman, Botke & Bergh, 2000) and so draw a favourable comparison with the peer-target. The result may be an improvement in a sense of well-being or satisfaction with life, especially when comparisons are made with a target 'other' considered by the comparer to be doing worse (downward comparison).

The effect of social comparison on satisfaction with life was investigated by four (i.e., Bailis et al., 2008; Frieswijk et al., 2004; Peck & Merighi, 2007; Stewart et al., 2013) of the 16 studies reviewed. Two (i.e., Frieswijk et al.; Peck & Merighi) considered comparison direction only and two (i.e. Bailis et al.; Stewart et al.) explored comparison orientation (frequency) and direction. This study investigated the effect on satisfaction with life of downward social comparison and its frequency of use across old age, in order to determine if there was any relationship to the marked and sustained increase in the perception of satisfaction with life observed at age 85.

5.7.1 Downward social comparison and satisfaction with life

Two studies reviewed (i.e., Frieswijk et al., 2004; Peck & Merighi, 2007) looked specifically at the effect of downward social comparisons on satisfaction with life. Both found a significant positive association, however Frieswijk et al. reported this to be stronger with respondents who had higher levels of frailty. This group experienced greater functional loss than those who did not use downward comparison and who also reported lower levels of life satisfaction.

The current study considered the effect of social comparison direction on satisfaction with life by asking participants to respond to the statement 'When it comes to my satisfaction with life, I sometimes compare myself to others who ...'. Responses could indicate an upward, lateral or downward direction of comparison. A statistically significant difference was found between the three directional groups (i.e., downward, lateral, upward) and indicated that perception of satisfaction with life was strongly influenced by making downward social comparisons. This finding was similar to that reported by Frieswijk et al. (2004) and by Peck and Merighi (2007).

Peck and Merighi (2007) showed that the effect of downward social comparison on life satisfaction was stronger with higher levels of frailty than among less frail older persons and amongst the oldest-old. The authors suggest that their results support the evidence that downward social comparison provides an adaptive function for these groups. The adaptive utility of downward social comparison at the oldest ages was also found by Henchoz, Cavalli and Girardin (2008) when they looked at the relationship between health status and its perception in advanced old age. Both sets of authors suggest that the use of downward social comparison may highlight the role of this cognitive strategy to adaptively build resilience of the self in frail older people.

This study found that participants who used downward social comparison reported significantly higher satisfaction with life scores than those who made lateral or upward comparisons. There was virtually no difference however, between the satisfaction with life scores of those who made lateral or upward comparisons. Of those who made downward comparisons, 54% were satisfied with life, as compared to 14% of those who made other comparisons. Those participants who made downward comparisons (i.e. compared themselves with others doing worse than themselves) were 3.9 times more likely to be satisfied with life than those who made lateral/upward comparisons. This finding upheld Hypothesis 4 (those who compare downwardly are likely to have higher satisfaction with life than those who do not). While not suggesting a causal relationship, this finding provides new information about how older people in New Zealand develop their perception of satisfaction with life, in the face of physical and functional decline. Such information may be useful for health professionals who work with older people and wish to maximise the effectiveness of rehabilitative or health promoting initiatives. Of equal importance to understanding the impact of downward comparison on the perception of satisfaction with life, is to understand the effect of comparison orientation (frequency of use) of downward comparers.

5.7.2 Social comparison orientation (frequency) and satisfaction with life

Social comparison orientation measures the frequency with which a person makes social comparisons. Two of the reviewed studies (i.e. Bailis et al., 2008; Stewart

et al., 2013) explored social comparison orientation (frequency). Bailis et al. found that social comparison orientation made a significant and unique contribution to the variance in satisfaction with life. This finding was in the context of activity restriction, with those most restricted having the strongest comparison orientation (frequency). Stewart et al. also found a significant relationship between social comparison orientation (frequency) and satisfaction with life but that this became non-significant with high levels of control. In both these studies, the association between social comparison orientation (frequency) and satisfaction with life was found to be stronger when respondents experienced or were at risk for, physical or functional loss.

The current study found social comparison orientation (frequency) to be only weakly, positively correlated with satisfaction with life. However, a significant difference in social comparison orientation scores was found between participants who were satisfied with life and those who were not satisfied; the magnitude of the differences in the means was moderate. The results of this study suggest that the 'satisfied' group use social comparison more frequently than the 'not satisfied' group. Further, the studies reviewed and the current study, suggest that more frequent use of predominantly downward social comparison is associated with greater satisfaction with life.

5.7.3 Age and downward social comparison

The fifth Hypothesis in this study was that those who are older (and likely to have the poorest health and functional ability) are more likely to compare downwardly than others. The two age groups (i.e., 65-84. 85+) were compared on social comparison direction and a statistically significant association with a large effect was found. Only twenty percent of participants 65-84 made downward comparisons compared to 86% of those 85+. The younger study participants (aged 65 – 84) who made downward comparisons, did not report high levels of satisfaction with life. The difference found between the two age groups is an example of heterogeneity across old age. The participants aged 85+, were 4.3 times more likely to make downward comparisons compared with those aged 65-84. Longitudinal changes in patterns of social comparison direction and qualitative information related to the comparison 'target'

would add to understanding the effect of this mechanism on perception of life satisfaction beyond the scope of this cross-sectional study.

This finding is however, particularly pertinent to this study because the highest levels of satisfaction with life were reported by participants aged 85+ and because the perception of satisfaction with life differed before and after 85. The oldest participants (aged 89+) reported the highest levels of satisfaction with life and made only downward social comparisons. The pattern that emerged from this study demonstrates a marked and sustained use of downward comparisons around age 85, that closely resembles the trajectory for satisfaction with life.

5.7.4 Age and social comparison orientation (frequency)

The frequency with which older people use downward social comparison (comparison orientation) was also explored in this study as this might also impact on perception of satisfaction with life. A significant difference in social comparison orientation scores was found between the younger (65 – 84) and older (85+) age groups and the magnitude of the differences in the means was moderate. One study reviewed in Chapter 2 (Stewart et al., 2013) suggested that the effect of more frequent use of downward social comparison on life satisfaction was greater among people who reported low levels of control, arguably those in the oldest ages. The current study found that the older age group reported more frequent use of social comparison (i.e., had a stronger orientation towards social comparison) than the younger group.

The picture that emerges from this study is that the oldest participants, despite having the poorest health and functional ability of all participants across the age range, report the highest perception of life satisfaction; they make more social comparisons and these are mostly made with others they evaluate as doing worse than themselves. It would appear that frequent use of downward social comparison provides an adaptive or protective mechanism that allows this older cohort to maintain a strong perception of life that is satisfying by their own evaluation. This aligns social comparison as a mechanism with the SOC theoretical model discussed earlier.

5.7.5 Prediction of downward social comparison

While downward social comparison was found to be strongly associated with older age and with the perception of satisfaction with life, the current study considered if the other factors included in the study would predict the likelihood that participants would make downward social comparisons. The results of a logistic regression found the model including all of the study variables could distinguish between respondents who reported and did not report making downward social comparisons; the model correctly classified 81.5% of cases. Only partnered status and age cohort made unique statistically significant contributions to the predictive model. Age cohort was found to be the strongest predictor with an odds ratio of 19.31 indicating that respondents who were aged 85+ were over 19 times more likely to report making downward social comparisons than those aged 65-84, controlling for all other factors in the study model. Participants who were partnered recorded an odds ratio of 1.53 indicating that partnered people were 1.5 times more likely to make downward social comparisons than participants who were not partnered, controlling for other factors in the model. This indicates that those 85+ were highly likely to compare themselves with others doing worse than themselves, as were participants who were partnered, to a lesser extent. The strong association between age and prediction of downward social comparison adds to the understanding of the association between age cohort and satisfaction with life found in this study.

5.7.6 Summary: Downward social comparison and satisfaction with life

The fourth and fifth research Hypotheses explored in this study concerned the relationship between downward social comparison, satisfaction with life and older age. The four studies reviewed (i.e., Bailis et al., 2008; Frieswijk et al., 2004; Peck & Merighi, 2007; Stewart et al., 2013) found significant positive associations between downward social comparison and comparison orientation (frequency) and satisfaction with life. The findings of this study upheld the Hypothesis that those who compare downwardly are likely to have higher satisfaction with life than those who do not and that the oldest persons are more likely to compare downwardly than others. Overall the study found that more frequent use of predominantly downward social

comparisons is significantly associated with satisfaction with life and that this relationship is strongest for older people aged 85+.

5.8 Summary of study findings

Across the 65-98 age range in this study, a negative association was found between age and physical health, mental health and functional ability, with a decline across age as generally assumed. However the relationship between increasing age and satisfaction with life not only was found to be strongly positive, but also was not linear. While this positive relationship was not as generally expected, the marked and sustained increase in satisfaction with life observed from age 85 was a dramatic finding. This upward shift suggested that satisfaction with life was perceived quite differently before and after the age of 85. Compared with the younger age group, (i.e. 65-84) the oldest group in this study (85+) was found: to have the highest level of satisfaction with life despite having the most co-morbid diagnosed health conditions and the lowest level of physical health, functional ability and mental health and; to make predominantly downward social comparisons and compare themselves more often with others. Other demographic factors were not found to moderate the effect of age on satisfaction with life. The high levels of satisfaction with life reported from age 85 were not explained by health-related or other demographic factors, but significantly the participants in this cohort compared themselves with others more frequently than younger participants and made predominantly downward social comparisons.

5.9 Implications and Recommendations

The findings from this study have provided some unexpected, sometimes difficult to explain and potentially useful information for researchers, policy makers and health professionals who work with older people, an increasing segment of New Zealand's population. Berg, Haffman, Hassing, McClearn and Johansson (2009) suggest that because of age-related deterioration in physical and psychological health at the oldest ages, generalisations of findings of life satisfaction from un-stratified samples of young-old through to oldest-old may not be appropriate. It was therefore important for this study to consider differences across older age which highlighted the

heterogeneity of older people, an important consideration for research, clinical and policy-making endeavours.

The dramatic marked and sustained increase in satisfaction with life observed at age 85, clearly suggests that this cohort has a different perception of life satisfaction than the younger cohort. Chronological age and cohort more closely followed the trajectory of satisfaction with life, than did the physical, psychological or demographic factors assessed that are generally assumed to be important to the wellbeing of older people and act as indicators of successful ageing. Older people need to be considered not as a homogeneous group, but to have the differences between cohort groups factored in to the writing of national and local body policies related to 'Ageing' and 'Older People' and to the development of health-promoting initiatives that are nurse-led or multi-disciplinary in nature. Health professionals may assume that health and functional maintenance is a dominant aspect of life satisfaction and wellbeing in the lives of older people and act as indicators of successful ageing. This Hypothesis could lead to frustration if clinicians find it difficult to engage older clients in health promotion or rehabilitative initiatives, and the labelling of older clients as 'non-compliant' when faced with health promoting or rehabilitative activities. On reflection of the findings of this study, health professionals may find that the oldest group have different priorities for the use of their time and energy to achieve a sense of satisfaction with life. Individual assessment and understanding of older client's priorities will help to establish what is important to their perception of satisfaction with life and so worth putting their time and energy into.

The steady decline observed in physical health and functional ability, with no sharp decline at any stage, might suggest that the health of the increasing number of older adults in New Zealand is generally good. The expected serious health decline among the older population may not occur and create the economic burden anticipated on the health dollar, as self-rated health has been found to predict mortality independently of objective health conditions (Cheng, Fung & Chan, 2007; Idler, Russel & Davis, 2000; Spiers, Jagger, Clark & Arthur, 2003). It must be remembered however, that this study and the studies reviewed included only older people living in the community; the majority of the oldest people who experience the

poorest health and functional ability frequently are institutionalised. It is possible that results are an indication of selective survivorship (Idler, 1993). It is also possible that potential community-dwelling participants with very poor health did not choose to participate in the studies.

The finding that the younger groups were the least satisfied with life while reporting the highest levels of physical health, functional ability and mental health is difficult to explain. The younger participants did not tend to make downward social comparisons as did the oldest group and this may provide some explanation. The major financial crisis in New Zealand, previously mentioned, may also have affected their perception of life satisfaction at the time of the survey. However, as no financial information was gathered, this can only be an Hypothesis. Targeted qualitative research would be needed to investigate this unusual and unexpected phenomenon.

Recalling that the purpose of social comparison is self-esteem, self-enhancement and self-evaluation, the findings relating to social comparison orientation and direction were noteworthy and highlight the heterogeneity that exists across old age. The overall directional pattern of social comparisons suggests that respondents aged 65-77 used the range of three comparison directions indicating that they may view their target 'other' from a strengths-based position; it is possible that this may be related to their own character traits (e.g. of optimism or pessimism) (Dumtrache, Windle & Rubio, 2005). Those aged 78-87 no longer made upward comparisons but were still happy to compare equally with 'same' and 'worse' others. This group is more distant from working life, and closer to a developmental stage where less time is left to achieve large and hitherto unreached goals. Only at age 88 (with the poorest health and functional ability) was the target 'other' always 'doing worse' than the comparer. It is possible that this represents a survivorship bias (Heiss, 2011; Horner, 2014), as at this age, many peers may have died or been admitted to residential care.

The information related to social comparison provided in this study is potentially useful for health professionals aiming to motivate older clients towards positive health outcomes and functional improvements. Provision of information about a target other in the appropriate direction will allow older clients to compare themselves favourably

and to be positively motivated or challenged. It is suggested that health professionals utilise a tailored-intervention approach and create appropriate opportunities for older people to engage in social comparisons that match the content of physical intervention to specific client comparison orientation and ability. When a health professional takes the time to understand the client's directional preference, intervention outcomes may be enhanced. Similarly, being aware of comparison orientation/frequency may provide an indication of the likelihood of social comparison being an appropriate tool.

Comparison orientation (frequency) was found to be stronger in the oldest group and may be best encouraged with clients in this age group. Making effective social comparisons can help increase self-esteem (Helgeson & Michkelson, 2000) and facilitate effective coping with inevitable age-related losses. Interventions targeting internal communications may help clients clarify thoughts, and what they tell themselves about these thoughts, while not exaggerating differences or catastrophising about comparison gaps. Judicious use of social comparison as a potential cognitive intervention might help older people obtain a sense of optimism based on how comparisons are interpreted (Bailis et al., 2005). Many age-related health promotion and rehabilitative programmes are geared toward adverse outcomes of increasing frailty, such as reducing falls-risk. Including comparison information in such programmes may help to influence the way older people evaluate these outcomes, so that despite inevitable losses they may be able to maintain a level of satisfaction by adjusting their subjectively determined criteria of satisfaction and successful ageing.

5.10 Future research directions

Further research into the mechanism of social comparison and its adaptive value in older age is necessary to uncover its potential value to maintaining or improving life satisfaction and successful ageing among older people. For example, do older people of all ages identify themselves with their target 'other' or contrast themselves with this target? This choice will affect the outcome of the direction of the comparison made. Understanding the strategic use of the social comparisons older people make on their

own initiative would provide a baseline from which to determine effective adaptation interventions and evaluative norms.

The use of social comparison within older cohorts with specific age-related conditions (e.g. musculoskeletal conditions) may have an adaptive function that is self-enhancing or might build self-esteem and would be a valuable addition to health professionals' knowledge and clinical practice. Mixed-methods and experimental research would be appropriate methods to uncover this important information.

This study has indicated that different cohorts have different perceptions of life satisfaction. In ten years' time the then-oldest cohort will have lived very different lives to the current 85+ cohort. These pre- and 'baby-boomer' generations have been and continue to be strong consumers with high expectations of the unlimited possibilities of life. The mechanisms they use to formulate their perceptions of life satisfaction will inevitably be different to those relied on today. The inclusion of social comparison questions in a national older persons' longitudinal study with multiple waves would provide ongoing insight into the changing utilisation and value of social comparison direction and its impact on perception of life satisfaction. Longitudinal assessment would provide evidence of how the use of social comparison might change over time for individuals and if individual personality characteristics might also contribute to the use and effect of social comparison direction and orientation. This information would provide further guidance on the possible clinical application of social comparison initiatives to enhance overall life satisfaction for older people seeking to age successfully.

5.11 Limitations of this study

The variables explored in relation to satisfaction with life in this study were limited to those directly relating to health and social comparison. It is acknowledged that many other factors not included in the study have an impact on life satisfaction, but the focus here was to explore those factors that have most commonly been attributed in the literature to old age and successful ageing and have particular meaning for older people.

The cross-sectional nature of this study requires the findings to be interpreted cautiously, and suggestion of causation to be avoided. However, the study was intentionally designed to be cross-sectional to investigate the comparison across age cohorts of the existing associations between health-related, demographic, social comparison, age and satisfaction with life variables at a particular point in time. It is acknowledged that cross-sectional comparisons can confound age and cohort differences and that longitudinal data would be needed to validate these findings (Pinquart, 2001).

Cooligan (2004) suggests that unequal group sizes (such as found in this study) may confound differences observed and that cohort effects might be the result of different life experiences (Chen 2001). This has been acknowledged as a possible explanation for the differences found in this study. While the group sizes varied significantly, they were each large enough and representative of the present Manawatu-Wanganui 65+ population, to accommodate the differences. The projected increase of people 85+ will change the look of these group sizes in the future. While the overall sample size is sufficiently large to be representative of the population from which it was drawn, the findings and causal inferences can only be cautiously generalised to other populations. As the research was undertaken in one region of New Zealand only, it is possible that these results may not be representative of other regions in the country, particularly to those with predominantly main urban populations (e.g. Auckland) or with high Maori or migrant populations. Furthermore, it is important to remember that the study involved only community-dwelling persons, thus removing those in the oldest age group most likely to have poorer health and functional ability (i.e. those in residential care) who might arguably be the least satisfied with life.

5.12 Conclusion

‘Satisfaction’, can be thought of as a psychological concept indicating acceptance or achievement of something holding personal meaning or value that is linked to a measure of success or fulfilment. On the basis of being satisfied with life older people can perceive themselves as having aged successfully, especially when they compare

themselves to peers who are not thought to be doing as well. It is generally assumed that as people get older and their physical health, mental health and functional ability decline, their satisfaction with life will also decline. The current study has found that this expectation does not reflect the perception and experience of the older participants themselves. Despite their declines in health-related factors, high levels of satisfaction with life were reported by the oldest participants (aged 85+) who also made frequent downward social comparisons in contrast to the young-old (65 – 84) or middle-old (75-84). Making downward social comparisons appears to act as a protective or adaptive mechanism when older people are faced with health and functional decline as they get older. This chapter has provided a discussion and interpretation of the findings of the current study. It has outlined the implications of the findings with suggestions for further research and addressed the limitations of this study.

REFERENCES

- Abraham, J. D. & Hansson, R. O. (1995). Successful aging at work: An applied study of selection, optimization and compensation through impression management. *Journal of Gerontology Series B Psychological Sciences and Social Sciences*, 50, 94-103.
- Abu-Bader, S., Rogers, A., & Barusch, A. (2002). Predictors of life satisfaction in frail elderly. *Journal of Gerontological Social Work*. 38(3), 3 -17.
- Aldwin, C. M., Spiro, A. & Park, C. L. (2006). Health, behavior, and optimal aging: A lifespan developmental perspective. In J. Birren & K. W. Schaie (Eds.), *Handbook of the Psychology of Aging*, (6th ed.). pp.85 – 104). San Diego: Academic Press.
- Alonso, J., Angermeyer, M., Bernert, S., Bruffaerts, R., Brugha, T.S., Bryson, H.,... Vialagut, G., (2004). Prevalence of mental disorders in Europe: Results from the European Study of the Epidemiology of Mental Disorders (ESEMeD) project. *Acta Psychiatrica Scandinavica*, 109, 21-27.
- Asakawa, T., Koyana, W., Ando, T., & Shibata, H. (2000). Effects of functional decline on quality of life among the Japanese elderly. *International Journal of Aging and Human Development*. 50(4), 319-328.
- Babbie, E. (1990). *Survey research Methods*. (2nded.). Belmont, AC: Wadsworth.
- Bailis, D., Chipperfield, J., Perry, R., Newall, N., & Haynes, T. (2008). Exploring the commonalities between adaptive resources and self-enhancement in older adults' comparative judgments of physical activity. *Journal of Aging and Health*, 20(8), 899-919. doi:10.1177/0898264309324636
- Baird, B., Lucas, R., & Donnellan, M. (2010). Life satisfaction across the lifespan: Findings from two nationally representative panel studies. *Social Indicators Research*. 99, 183-203. doi:10.0117/s11205-010-9584-9
- Baker, J. L. (1958). The unsuccessful aged. *Journal of the American Geriatrics Society*, 7, 570–572.
- Baltes, P. B. (1993). The aging mind: Potential and limits. *The Gerontologist*, 33, 580-594.
- Baltes, P. B. (1997). On the incomplete architecture of human ontogeny: Selection, optimization, and compensation as foundations of developmental theory. *American Psychologist*, 52, 366-380.

- Baltes, P. B. (2004). A general model of successful (proactive) aging: Selective optimization with compensation. Paper presented at the 57th Annual Scientific Meeting of the Gerontological Society of America, Washington
- Baltes, P. & Baltes, M. (1990) *Successful aging: Perspectives from the behavioral sciences*. Cambridge, New York.
- Baltes M. M. & Cartensen, L. (1996). The process of successful aging. *Aging and Society*, 16, 397-422.
- Baltes, P. & Smith, J. (2003). New frontiers in the future of aging from successful aging of young old to dilemmas of the fourth age. *Gerontology*, 49(2), 123-135.
- Belsky, J. (1984). *The psychology of aging: Theory, research and practice*. Monterey, California: Brooks/Cole Publishing Company.
- Bentur, N., & King, Y. (2010). The challenge of validating SF-12 for its use with community-dwelling elderly in Israel. *Quality of Life Research*, 19(1), 91-95. doi: 10.1007/s11136-009-9562-3.
- Berg, A. I., Hoffman, L., Hassing, L. B., McClearn, G. E., & Johansson, B. (2009). What matters, and what matters most, for change in life satisfaction in the oldest-old? A study over 6 years among individuals 80+. *Aging & Mental Health*, 13(2), 191-201. doi: 10.1080/13607860802342227.
- Blace, N. (2012). Functional ability, participation in activities and life satisfaction of the older person. *Asian Social Science*, 8(3), 75-87. doi:10.5539/ass.v8n3p75
- Blanchflower., D. G. & Oswald, A. J. (2008). Is well-being U-shaped over the life cycle? *Social Science & Medicine*, 88(8), 1733-1749. Retrieved from <http://www.econstor.eu/dspace/bitstream/10419/34665/1/548721912.pdf>
- Blazer, D. G. (2006). Successful aging. *American Journal of Geriatric Psychiatry*, 14, 2-5. doi: 10.1097/01.JGP.0000195222.93655.d1
- Bond, J. & Corner, L. (2004). *Quality of life and older people*. Maidenhead, England: Open University Press.
- Bowling, A. (1993). The concepts of positive and successful aging. *Family Practice*, 10, 449-453.

- Bowling, A. (1995). The most important things in life: Comparisons between older and younger population age groups by gender. *International Journal of Health Sciences*, 6(4), 169-176.
- Bowling, A. (2005a). *Measuring Health*. (3rded.). NY: Open University Press.
- Bowling, A. (2005b). *Ageing Well: Quality of Life in Old Age*. England: Open University Press.
- Bowling, A. (2007a). Aspirations for older age in the 21st century: What is successful aging? *International Journal of Aging and Human Development*, 64(3), 263-297. doi: 10.2190/L0K1-87W4-9R01-7127
- Bowling, A. (2008). Enhancing later life: How older people perceive active ageing? *Aging and Mental Health*, 12(3), 293-301. doi:10.1080/13607860802120979
- Bowling, A., & Dieppe, P. (2005). What is successful ageing and who should define it? *British Medical Journal*, 331, 1548-1551. doi: 10.1136/bmj.331.7531.1548
- Bowling, A., Farquhar, M., & Grundy, E. (1996). Associations with changes in life satisfaction among three samples of elderly people living at home. *International Journal of Geriatric Psychiatry*, 11(12), 1077-1087. doi: 10.1002/(sici)1099-1166(199612)
- Bowling, A. & Grundy, E. (1997). Activities of daily living: Changes in functional ability in three samples of elderly and very elderly people. *Age and Ageing*, 26, 107-114.
- Bryant, C., Bei, B., Gilson, K., Koniti, A., Jackson, H. & Judd, F. (2012). The relationship between attitudes to aging and physical and mental health in older adults. *International Psychogeriatrics* 24(10), 1674-1683. doi:10.1017/S104161212000774.
- Burger, J., & Cooper, H. (1979). The desirability of control. *Motivation & Emotion*, 3, 381-393.
- Butt, D. S. & Beiser, M. (1987). Successful aging: A theme for international psychology. *Psychology and Aging*, 2, 87-94.
- Buunk, B., Oldersma, F. & De Dreu, C. (2001). Enhancing satisfaction through downward comparison: The role of relational discontent and individual differences in social comparison orientation. *Journal of Experimental Social Psychology*, 37, 452-467.

- Caspi, A. & Elder, G. H. (1986). Life satisfaction in old age: Linking social psychology and history. *Psychology and Aging, 1*, 18-26.
- Chen, C. (2001). Aging and life satisfaction. *Social Indicators Research, 54*, 57-79. doi: 10.1023/A:1007260728792
- Cheng, S. T., Fung, H. H., & Chan, A. C. M. (2008). Living status and psychological well-being: Social comparison as a moderator in later life. *Aging & Mental Health, 12*(5), 654-661. doi: 10.1080/13607860902343241
- Chipperfield, J. (1993). Incongruence between health perceptions and health problems. *Journal of Aging and Health, 5*(4), 475-496.
- Chipperfield, J. & Perry, R. (2006). Primary-and secondary-control strategies in later life: Predicting hospital outcomes in men and women. *Health Psychology, 25*(2), 226-236.
- Choi, N. G. (2002). Changes in self-assessment of health: Comparison of self-perception and self-ratings score measures among young-old persons. *Journal of Gerontological Social Work, 37*(1), 65-88. doi: 10.1300/J083v37n01_05
- Cochran, W. G. (1977). *Sampling techniques* (3rd ed.). New York: John Wiley & Sons.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Cooligan, H. (2004). *Research methods and statistics in psychology* (4th ed.). London: Hodder and Stroughton.
- Cresswell, J. W. (2009). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (3rd ed.). London: Sage.
- Dalziel, L. (2001).). *The New Zealand Positive Ageing Strategy*. Wellington: Ministry of Social Development.
- Depp, C. A. & Jeste, D. V. (2006). Definitions and predictors of successful aging: a comprehensive review of larger quantitative studies. *American Journal of Geriatric Psychiatry, 14*, 6-20. doi: 10.1097/01.JGP.0000192501.03069.bc
- Dew, M. A. (1998). Psychiatric disorder in the context of physical illness. In B. P. Dohrenwend et al. (Eds.), *Adversity, Stress and Psychopathology* (pp.177-218). New York: Oxford University Press.

- Dibb, B., & Yardley, L. (2006). Factors important for the measurement of social comparison in chronic illness: a mixed-methods study. *Chronic Illness, 2*, 219-230.
doi:10.1179/174592006X129473
- Diener, E. (1984). Subjective well-being. *Psychological Bulletin, 95*(3), 542-275
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment, 49*(1), 71-75.
- Diener, E., & Suh, E. M. (1997). Age and subjective well-being: An international analysis. *Annual Review of Gerontology and Geriatrics, 17*, 304-324.
- Dollemore, D. (2005). *Aging hearts and arteries: A scientific quest*. National Institute on Aging. Retrieved 4 May, 2011, from http://www.niapublications.org/pubs/hearts/Ageing_Hearts_And_Arteries.pdf
- Dumtrache, C., Windle, G & Rubio, R. (2005). Do social resources explain the relationship between optimism and life satisfaction in community dwelling older people? *Journal of Happiness Studies 16*(1), 633-3654.
- Edelman, L., Yang, R., Guymon, M. & Olson, L. (2010). Survey methods and response rates among rural community dwelling older adults. *Nursing Research, 62*(4), 286-291.
- Eliopoulos, C. (2013). *Gerontological Nursing*, (8th ed.). Philadelphia: Lippincott, Williams & Wilkins.
- Enkvist, A., Ekstrom, H., & Elmstahl, S. (2012). What factors affect life satisfaction (LS) among the oldest-old? *Archives of Gerontology and Geriatrics, 54*, 140-145.
doi:10.1016/j.archger.2011.03.013
- Fagerstrom, C., Borg, C., Balducci, C., Burholt, V., Wenger, C., Ferring, D., Weber, G., Holst, G. & Hallberg, I. (2007). Life satisfaction and associated factors among people aged 60 years and above in six European counties. *Applied Research in Quality of Life, 2*, 33-50. doi:10.1007/s11482-007-9028-0
- Fernandez-Ballesteros, R., Zamarron, M., & Ruiz, M. (2001). The contribution of socio-demographic and psychosocial factors to life satisfaction. *Aging and Society, 21*, 25-43.

- Ferring, D., Balducci, C., Burholt, V., Wenger, C., Thissen, F., Weber, G. & Hallberg, I. (2004). Life satisfaction of older people in six European countries: Findings from the European Study on Adult Well-being. *European Journal of Ageing* 1(1), 15-25. doi: 10.1007/s10433-004-0011-4
- Festinger, L. (1954). A theory of social comparison processes. *Relations*, 7, 117-140.
- Field, A. (2013). *Discovering statistics using SPSS* .(4thed.). Thousand Oaks, CA: Sage.
- Fink, A. (2002). *The Survey Kit*. (2nded.). Thousand Oaks, CA: Sage.
- Folstein, M., Folstein, S., & McHugh, P. (1975), "Mini-mental state". A practical method for grading the cognitive state of patients for the clinician. *Journal of Psychiatric Research*, 12, 189-198.
- Fowler, F. J. (2002). Challenges for standardizing interviewing. *Contemporary Psychology: APA Review of Books*, 47(4), 405-407.
- Freund, A. M., & Baltes, P. B. (2000). The orchestration of selection, optimization and compensation: An action-theoretical conceptualization of a theory of developmental regulation. In W. J. Perrig & A. Grob (Eds.), *Control of human behavior, mental processes, and consciousness: Essays in honor of the 60th birthday of August Flammer* (pp. 35–58). Mahwah, NJ: Lawrence Erlbaum.
- Freund, A. M., Li, K. Z. H., & Baltes, P. B. (1999). Successful development and aging: The role of selection, optimization, and compensation. In J. Brandtstädter & R. M. Lerner (Eds.), *Action and self-development: Theory and research through the life span* (pp. 401–434). Thousand Oaks, CA: Sage.
- Frieswijk, N., Buunk, B., Steverink, N., & Slaets, J. (2004a). The effect of social comparison information on the life satisfaction of frail older people. *Psychology and Aging*, 19, 183-190. doi: 10.1037/0882-7974.19.1.183
- Frieswijk, N., Buunk, B. P., Steverink, N. & , J. P. J. (2004b). The interpretation of social comparison and its relation to life satisfaction among elderly people: Does frailty make a difference? *Journal of Gerontology: Psychological Sciences*, 59B(5), 250-257. doi:10.1093/geront/59.5.P250

- Gandek, B. & Ware, J. (1998). Translating functional health and well-being: International quality of life assessment (IQOLA) project studies of the SF-36 Health Survey. *Journal of Clinical Epidemiology*, *51*, 891 – 1214.
- Gibbons, F. X. & Buunk, B. P. (1999). Individual differences in Social Comparison: Developing a scale of Social Comparison Orientation. *Journal of Personality and Social Psychology*, *76*(1), 129-142.
- Gibbons, E., & Gerrard, M. (1991). Downward comparison and coping with threat. In J. Suls & T. Wills (Eds.), *Social comparison contemporary theory and research* (pp.317-345). Hillsdale, NJ: Erlbaum.
- Good, G. A. (2001). Ethics in research with older, disabled individuals. *International Journal of Rehabilitation Research*. *24*, 165-170. doi: 10.1097/00004356-200109000-00001
- Good, G. A. (2005). *Ageing and vision impairment: Activity, independence and life satisfaction*. Unpublished doctoral dissertation. Massey University, Palmerston North, New Zealand.
- Good, G., La Grow, S., & Alpass, F. (2011). A study of older adults: Observation of ranges of life satisfaction and functioning. *New Zealand Journal of Psychology*, *40*(3), 96-102.
- Guralnik & Kaplan. (1989). Predictors of healthy aging: Prospective evidence from the Alameda County study. *American Journal of Public Health* *79*(6), 703-708.
- Gutierrez, M., Tomas, J., Galiana, L., Sancho, P. & Cebria, M. (2013). Predicting life satisfaction of the Angolan elderly: A structural model. *Aging and Mental Health*, *17*(1), 94-101. doi.org/10.1080/13607863.2012.702731.
- Gwozdz, W., & Sousa-Poza, A. (2010). Ageing, health and life satisfaction of the oldest old: An analysis for Germany. *Social Indicators Research*, *96*(7), 397-417. doi: 10.1007/s11205-009-9508-8
- Havighurst, R. J. (1961). Successful aging. *The Gerontologist*, *1*, 8-13. doi: 10.1093/geront/1.1.8
- Heckhausen, J., & Baltes, P. B. (1991). Perceived controllability of expected psychological change across adulthood and old age. *Journal of Gerontology & Psychological Sciences*, *46*, 165-173.

- Heiss, E. (2011). Dynamics of self-related health and selective mortality. *Empirical Economics*, 40(1), 119-140.
- Helgeson VS, Mickelson KD. (1995) Motives for social comparison. *Personality and Social Psychology Bulletin*, 21(11), 1200–1209
- Herero, V. G., & Extremera, N. (2010). Daily life activities as mediators of the relationship between personality variables and subjective well-being among older adults. *Personality and Individual Differences*, 49, 124-129. doi: 10.1016/j.paid.2010.03.019.
- Hertzog, C., Van Alstine, J., Usala, P., Hulsch, D., & Dixon, R. (1990). Measurement properties of the Centre for Epidemiological Studies Depression Scale (CES-D) in older populations. *Psychological Assessment: A Journal of Consulting and Clinical Psychology*, 2(1), 64-72.
- Hilleras, P. K., Jorm, A. F., Herlitz, A., & Winblad, B. (2001). Life satisfaction among the very old: A survey on a cognitively intact sample aged 90 years or above. *International Journal of Aging and Human Development*, 52(1), 71-90. doi: 10.2190/B8NC-D9MQ-KJE8-UUG9
- Hong, T. B., Zarit, S. H., & Malmberg, B. (2004). Role of health congruence in functional status and depression. *Journal of Gerontology: Psychological Sciences*, 59B, P151–P157. doi: 10.1093/geronb/59.4.P151
- Horley, J., & Lavery, J. J. (1995). Subjective well-being and age. *Social Indicators Research*, 34, 275-282.
- Horner, E. (2014). Subjective wellbeing and retirement. *Journal of Happiness Studies* 15(1), 125-144.
- Hudson, C.G., (2012). Declines in mental illness over the adult years: An enduring finding or methodological artifact? *Aging & Mental Health*, 16(6), 735-752.
- Idler, E. L. (1993). Age differences in self-assessments of health: Age changes, cohort differences, or survivorship. *Journal of Gerontology, Social Sciences*, 48, S289-S300.

- Jang, Y., Mortimer, J., Haley, W., & Borenstein-Graves, A. (2004). The role of social engagement in life satisfaction: its significance among older individuals with disease and disability. *Journal of Applied Gerontology, 23*, 266-278.
doi:10.1177/0733464804267579
- Jenkinson, C., Stewart-Brown, S., Petersen, S., & Paice, C. (1999). Assessment of the SF-36 Mark 2 in the United Kingdom. *Journal of Epidemiology and Community Health, 53*, 46-50.
- Jylha, M. (2001). Old age and loneliness - cross-sectional and longitudinal analyses in the Tampere longitudinal study on aging, paper presented at the International Congress of Gerontology, Vancouver.
- Kempen, G. I. J. M., Miedema, I., Ormel, J., & Molenaar, W. (1996). The assessment of disability with the Groningen activity restriction scale: conceptual framework and psychometric properties. *Social Science Medicine, 43*, 1, 1601 – 1610.
- Kendig, H., & Browning, C. (1997). Positive ageing: facts and opportunities. *Medical Journal of Australia, 167*, 409-410.
- Kerschner, H., & Pegues, J. A. (1998). Productive aging: a quality of life agenda. *Journal of the American Dietetic Association, 98*, 1445-1448.
- Kessler, R.C., & Merikangas, K.R. (2004). The National Comorbidity Survey (NCS-R): Background and aims. *International Journal of Methods in Psychiatric Research, 13*, 60-68.
- Knight, T. & Ricciardelli, L. (2003). Successful ageing: Perceptions of adults aged between 70 and 101 years. *International Journal of Aging and Human Development, 56*(3), 223-245
- Koopman-Boyden, P. G. (1993). *New Zealand's ageing society: The implications*. Wellington: Daphne Brasell Associates.
- La Grow, S.J. (2007). Predicting perceived quality of life from the National Eye Institute 25-item visual function questionnaire. *Optometry and Vision Science 84*(8):785-788.
- La Grow, S.J., Neville, S.J., Alpass, F., & Rodgers, V. (2012). Loneliness and self-reported health among older persons in New Zealand. *Australasian Journal on Ageing. 31*(2), 121–123.

- Lee, J. H. (2008). *The factors that affect life satisfaction of the elderly* (Unpublished Master's thesis) Kyung Hee University, Seoul, South Korea.
- Lenze, E. J., Rogers, J. C. Martire, L. M., Mulsant, B. H., Rollman, B. L., Dew, M. A., & Reynolds, C. F. (2001). The association of late-life depression and anxiety with physical disability: A review of the literature and prospectus for future research. *American Journal of Geriatric Psychiatry, 9*, 113-135.
- Levinson, D., Paltiel, A., Lir, M. & Makovki, T. (2007). The Israel National health Survey: Issues and methods. *Israel Journal of Psychiatry and Related Sciences, 44*, 85-93.
- Levy, P. & Lemeshow, S. (2008). *Sampling of populations: methods and applications*. NJ: Wiley
- Lim, L., & Fisher, J. (1999). Use of the 12-item short form (SF-12) health survey in an Australian heart and stroke population. *Quality of Life Research, 8*, 1-8.
- Maltby, (2010). *Research methods for nursing and healthcare*. Harlow, UK: Person Education.
- Marsiske, M., Lang. F. R., Baltes, P. B. & Baltes, M. M. (1995). Mental stimulation, neural plasticity and successful aging. *Psychology and Aging, 12*, 150-161.
- Masoro, E.J. (2001). Physiology of aging. *International Journal of Sport Nutrition & Exercise Metabolism, 11*(4), S218
- Massey University. (1988). *Code of ethical conduct for research and teaching involving human subjects*. Palmerston North, New Zealand: Author.
- Meeks, S, & Murrell, S. A. (2001). Contribution of education to the health and life satisfaction in older adults mediated by negative affect. *Journal of Aging and Health, 13*, 92-119. Meiner, S. E. & Lueckenotte, A. G. (2006). *Gerontological Nursing*, (3rded.). St. Louis: Elsevier.
- Meiner, S. E. & Lueckenotte, A. G. (2006). *Gerontological Nursing*, (3rded.). St. Louis: Elsevier.
- Michalos, A., Hatch, P, & Hemmingway, D. (2007). Health and quality of life of older people, a replication after six years. *Social Indicators Research, 84*(2), 127-158.

- Ministry of Health. (2002). *Health of Older People in New Zealand: A statistical Reference*. Wellington: Ministry of Health.
- Ministry of Health. (2006). *Health of Older People in New Zealand: A statistical Reference*. Wellington: Ministry of Health.
- Ministry of Health. (2008). *A portrait of health: Key results of the 2006-2007 New Zealand health survey*. Wellington: Ministry of Health.
- Ministry of Social Development. (2001). *The New Zealand Positive Ageing Strategy*. Wellington: Ministry of Social Development.
- Ministry of Social Development (2007). *New Zealand Positive Ageing Indicators 2007 Report*.
- Minkler, M. & Fadem, P. (2002). Successful aging: A disability perspective. *Journal of Disability Policy Studies*, 12(4), 229-235. doi: 10.1177/104420730201200402
- Montross, L. P., Depp, C., Daly, J. et al. (2006). Correlates of self-rated successful aging among community-dwelling older adults. *American Journal of Geriatric Psychiatry*, 14, 43-51. doi: 10.1097/01.JGP.0000192489.43179.31
- Morgan, K., Dallosso, H., Bassey, E. J., Ebrahim, S., Fentem, P. H. & Arie, T. H. D. (1991). Customary physical activity, psychological well-being and successful aging. *Ageing and Society*, 11, 399-415.
- Mroczek, D. K. & Spiro, A. (2005). Change in life satisfaction during adulthood: Findings from the veterans affairs normative aging study. *Journal of Personality and Social Psychology*, 88(1), 189-202. doi: 10.1037/0022-3514.88.1.189
- Neugarten, B., Havighurst, R., & Tobin, S. (1961). The measurement of life satisfaction. *Journal of Gerontology*, 16, 134-143.
- Neuman, W. (2000). *Social research methods: Qualitative and quantitative approaches*. Boston: Allyn & Bacon.
- New Zealand Nurses Organisation. (2010). *Code of Ethics*, Wellington, New Zealand: Author
- Oakley Browne, M. A., Wells, J. E., & Scott, K. M. (2006). Te rau hinengaro: The New Zealand mental health survey. Wellington: Ministry of Health.

- Orr, A. L. (1998). *Issues in aging and vision: A curriculum for university programs and in-service training*. New York: American Foundation for the Blind.
- Pallant, J. (2007). *SPSS Survival Manual*, (3rd ed.). Sydney: Allen & Unwin.
- Palmore, E.B. (1970). Normal aging: Reports from the Duke Longitudinal Study. *Contemporary Sociology* 5(3), 286-287
- Palmore, E. (1979) Predictors of successful aging. *The Gerontologist*, 19(5), 427-431.
- Paskulin, L., Vianna, I., & Molzahan, A. E. (2009). Factors associated with quality of life of Brazilian older adults. *International Nursing review*, 56, 109-115. doi: 10.1111/j.1466-7657.2008.00671.x
- Pavot, W., & Diener, E. (1993). Review of the Satisfaction With Life Scale. *Psychological Assessment*. 3(2), 164-172.
- Pavot, W., Diener, E., Colvin, C. R., & Sandvik, E. (1991). Further validation of the Satisfaction With Life scale: Evidence for the cross method convergence of wellbeing measures. *Journal of Personality Assessment*, 57, 149-161.
- Peck, M. D., & Merighi, J. R. (2007). The relation of social comparison to subjective well-being and health status in older adults. *Journal of Human Behaviour in the Social Environment*, 16(3), 121-142. doi: 10.1080/10911350802107827
- Pinquart, M. (2001). Correlates of subjective health in older adults: A meta-analysis. *Psychology and Aging*, 16(3), 414-426. doi: 10.1037//0882-7974.16.3.414
- Pressey, S.L. (1951). Review of the aged and society. *Journal of Applied Psychology*, 35(4), 297.
- Pruchno, R. A., Wilson-Genderson, M., & Cartwright, F. (2010). A two-factor model of success. *Journal of Gerontology: Psychological Sciences*, 65B(6), 671-679. doi: 10.1093/geronb/gbq051
- Radloff, L. (1977). The CES-D Scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, 1, 385-401.
- Rapkin, B. D., & Schwartz, C. E. (2004). Towards a theoretical model of quality-of-life appraisal: Implications of findings from studies of response shift. *Health and Quality of Life Outcomes*, 2, (14). doi: 10.1186/1477-7525-2-14

- Reichstadt, J., Depp, C. A., Palinkas, L. A., Folson, D. P. & Jeste, D. V. (2006). Building blocks for successful aging: A focus group of older adults' perceived contributors to successful aging. *American Journal of Geriatric Psychiatry*, 15 (2), 194-201.
- Rowe, J. W. (1985). Health care of the elderly. *New England Journal of Medicine*, 312(13), 827-835.
- Rowe, J. W. & Kahn, R. L. (1987). Human aging: Usual and successful. *Science*, 237, 143-149.
- Rowe, J. W. & Kahn, R. L. (1997). Successful Aging. *The Gerontologist*, 37(4), 433-440.
- Rowe, J. W. & Kahn, R. L. (1998). *Successful Aging*. New York: Dell Publishing, Random House.
- Rubin, S. & Zimmer, Z. (2015). Pain and self-assessed health: Does the association vary by age? *Social Science & Medicine*, 130, 259-267
- Ruthig, J. C., & Chipperfield, J. G. (2006). Health incongruence in later life: Implications for subsequent well-being and health care. *Health Psychology*, 26(6), 753-761. doi: 10.1037/0278-6133.26.6.753
- Ryff, C. D. (1989). In the eye of the beholder: Views of psychological well-being among middle and old-aged adults. *Psychology and Aging*, 4, 195-210.
- Schultz, K., Heckhausen, J., & Locher, J. (1991). Adult development, control and adaptive functioning. *Journal of Social Issues*, 47, 177-196.
- Scheier, M. & Carver, C. (1985). Optimism, coping, and health: Assessment and implications of generalized outcome expectancies. *Health Psychology*, 4, 219-247.
- Shin, D. C., & Johnson, D. M. (1978). Avowed happiness as an overall assessment of the quality of life. *Social Indicators Research*, 5, 475-492.
- Shock, N.W., R.C. Greulich, R. Andres, D. Arenberg, P.T. Costa, Jr., E.G. Lakatta, and J.D. Tobin. 1984. *Normal Human Aging: The Baltimore Longitudinal Study of Aging*. NIH Publication No. 84-2450. Washington, DC: U.S. Government Printing Office.
- Silver, R. L., & Wortman, C. B. (1980). Coping with undesirable life events. In J. Garber & M. E. P. Seligman (Eds.), *Human helplessness: Theory and applications* (pp. 279-340). New York: Academic Press.

- Smith, J. & Baltes, P.B. (1997). Profiles of psychological functioning in the old and oldest old. *Psychology & Aging* 12(3), 458-472.
- Smith, J., Borchelt, M., Maier, H. & Jopp, D. (2002). Health and well-being in the young old and oldest old. *Journal of Social Issues*, 58(4), 715-732.
- Smith, J., Fleeson, W., Geiselman, B., Settersten, R., & Kunzmann, U. (1999). Sources of well-being in very old age. In P. B. Baltes & K. U. Mayer (Eds.), *The Berlin aging study: Aging from 70 to 100* (pp. 450-471). New York: Cambridge University Press.
- Sok, S. (2010). Factors influencing life satisfaction of Korean older adults living with family. *Journal of Gerontological Nursing*, 36(3), 32-40.
- Spiers, N., Jagger, C., Clarke, M., & Arthur, A. (2003). Are gender differences in the relationship between self-rated health and mortality enduring? Results from three birth cohorts in Melton Mowbray, United Kingdom. *The Gerontologist*, 43, 406–411.
- SPSS Inc. Released 2009. *PASW Statistics for Windows, Version 18.0*. Chicago: SPSS Inc
- Statistics New Zealand. (1996). *New Zealand census of population and dwellings*. Wellington: Statistics New Zealand.
- Statistics New Zealand. (2004). *Older New Zealanders-65 and beyond*. Wellington: Statistics New Zealand.
- Statistics New Zealand. (2007). *New Zealand's 65+ population: A statistical volume*. Retrieved from http://www.stats.govt.nz/people_and_communities/older_people/new-zealand
- Statistics New Zealand. (2007). www.statisphere.govt.nz
- Stelmack, J., Stelmack, T., & Massof, R. (2002). Measuring low-vision rehabilitation outcomes with the NEI VFQ-25. *Investigative Ophthalmology and Visual Science*, 43(9), 2859-2868.
- Stern, P. C., & Cartensen, L. L. (2000). *The aging mind: Opportunities in cognitive research*. Washington, D.C.: National Academy Press.
- Steverink, N., Lindenberg, S., & Ormal, J. (1998). Towards understanding successful aging: Patterned change in resources and goals. *Aging and Society*, 18, 441-467.

- Stewart, A., & Ware, J. (1992). *Measuring Functioning and Well-being: The Medical Outcomes Study Approach*. Durham, NC: Duke University.
- Stewart, T., Chipperfield, J., Ruthig, J., & Heckhausen, J. (2013). Downward social comparison and subjective well-being in late life: The moderating role of received control. *Aging and Mental Health*, *17*(3), 375-385.
doi.org/10.1080/13607863.2012.743963
- Strawbridge, W. J., Cohen, R. D., Shema, S. J. & Kaplan, G. A. (1996). Successful aging predictors and associated activities. *American Journal of Epidemiology*, *144*, 135-141.
- Strawbridge, W. J., & Wallhagen, M. (1999). Self-rated health and mortality over three decades: Results from a time-dependent covariate analysis. *Research on Aging*, *21*, 401-416.
- Strawbridge, W. J., Wallhagen, M. I., & Cohen, R. D. (2002). Successful aging and well-being: Self-rated compared with Rowe and Kahn. *Gerontologist*, *42*, 727-733. doi: doi.org/10.1093/geront/42.6.727
- Sullivan, W. P., & Fisher, B. J. (1994). Intervening for success: Strengths-based case management and successful aging. *Journal of Gerontological Social Work*, *22*, 61-74.
- Suumeijer, T., Doeglas, D., Moum, T., & Briancon, S. (1994). The Groningen Activity Restriction Scale for measuring disability: Its utility in international comparisons. *American Journal of Public Health*, *84*(8), 1270.
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using Multivariate Statistics* (5th ed.). Boston, MA: Pearson.
- Tabloski, P. (2013). *Gerontological Nursing*. (3rd ed.). Canada: Pearson Education
- Taylor, S. & Lobel, M. (1989). Social comparison activity under threat: Downward evaluation and upward contrasts. *Psychological Review*, *96*, 569-575.
- Towers, A. (2009). *Consolidating mistakes of the heart and mind: towards a dual process theory of regret* (Unpublished doctoral dissertation). Massey University, New Zealand.

- Vaillant, G.E. (2002). *Aging Well: Surprising Guideposts to a Happier Life from the Landmark Harvard Study of Adult Development*. Boston, MA: Little Brown.
- Vaillant, G., & Mukamal, K. (2001). Successful aging. *American Journal of Psychiatry*, *158*(6), 839-847.
- Van der Zee, K., Buunk, B., Sanderman, R., Botke, G., & Van den Bergh, F. (2000). Social comparison and coping with cancer treatment. *Personality and Individual Differences*, *28*, 17-34. doi: 10.1016/S0191-8869(99)00045-8
- Van Doorn, C. (1999). A qualitative approach to studying health optimism, realism and pessimism. *Research on Aging*, *21*, 440-457.
- Wahl, H. W., Schmitt, M., Danner, D., & Coppin, A. (2010). Is the emergence of functional ability decline in early old age related to change in speed of cognitive processing and also to change in personality? *Journal of Aging and Health*, *22*(6), 691-712. doi:10.1177/0898264310372410
- Ware, J. E., Kosinski, M., & Keller, S. D. (1996). A 12 item short-form health survey. Construction of scales and preliminary tests of reliability and validity. *Medical Care*. *34*, 220 – 233.
- Ware, J. E., Kosinski, M., Turner-Bowker, D. M., & Gandek, B. (2009). *User's Manual of the SF-12v2® Health Survey*. Rhode Island: Quality Metric Incorporated.
- Westerman, M. J., Hak, T., Sprangers, M. A. G., Groen, H. J. M., van der Wal, G., & The, A. M. (2008). Listen to their answers! Response behaviour in the measurement of physical and role functioning. *Quality of Life Research*, *17*, 549-558. doi: 10.1007/s11136-008-9333-6
- Wheeler, L., & Miyake, K. (1992). Social comparisons in everyday life. *Journal of Personality and Social Psychology*, *62*, 760-773.
- Wills, T. A. (1981). Downward comparison principles in social psychology. *Psychological Bulletin*, *90*, 245-271.
- Wong, P., & Watt, L. (1991). What types of reminiscence are associated with successful aging? *Psychology & Aging*, *6*(2), 272 – 279.

- World Health Organization. (1952). Constitution of the World Health Organization. In: *World Health Organization Handbook of Basic Documents*, (5th ed.). Geneva: Palais de Nations.
- Wrosch, C., Bauer, I., & Scheier, M. (2005). Regret and quality of life across the adult lifespan. The influence of disengagement and available future goals. *Psychology and Aging*, 20(4), 657-670. doi: 10.1037/0882-7974.20.4.657
- Yamane, T. (1977). *Statistics: An introduction to analysis*. New York: Harper and Row.
- Yasavage, J. (1988). Geriatric Depression Scale. *Psychopharmacology Bulletin*, 24, 709-701.
- Abraham, J. D. & Hansson, R. O. (1995). Successful aging at work: An applied study of selection, optimization and compensation through impression management. *Journal of Gerontology Series B Psychological Sciences and Social Sciences*, 50, 94-103.

Appendices

Appendix A

Ethics Approval



Massey University

5 August 2009

Ms Vivien Rodgers
School of Health & Social Services
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Dear Vivien

**Re: HEC: Southern B Application – 09/42
Social comparison and life satisfaction in later life**

Thank you for your letter dated 5 August 2009.

On behalf of the Massey University Human Ethics Committee: Southern B I am pleased to advise you that the ethics of your application are now approved. Approval is for three years. If this project has not been completed within three years from the date of this letter, reapproval must be requested.

If the nature, content, location, procedures or personnel of your approved application change, please advise the Secretary of the Committee.

Yours sincerely

Dr Karl Pajo, Chair
Massey University Human Ethics Committee: Southern B

cc Prof Steve LaGrow
School of Health & Social Services
PN351

Dr Stephen Neville
School of Health & Social Services
ALBANY

Dr Gretchen Good
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Prof Warwick Slinn, HoS
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Massey University Human Ethics Committee
Accredited by the Health Research Council



Appendix B

Letter of Introduction and Information Sheet



Information Sheet

Social Comparison and Life Satisfaction in Later Life.

Who is doing this research?

My name is Vivien Rodgers. I am a PhD student in the School of Health & Social Services at Massey University in Palmerston North. As a registered nurse, I have worked for many years with older adults in New Zealand and overseas.

What is this research about?

This project is looking at how people over 65 years of age assess their life satisfaction. I hope to find out a little about general health and activity levels and how this age group compares itself to others. One of the main goals is to find out what factors affect life satisfaction for people aged 65+. As a person who is 65+ years of age living in New Zealand, I would like to invite *you* to be part of this project.

How did I get your address?

I have made contact with you through the New Zealand Electoral Roll which tells me that you are aged 65+ and live in the community. I need 400 participants to form a representative sample of the Manawatu population of 65+ year old people. Your name will not be connected with your responses and after you have returned the questionnaire you will not be contacted again in relation to the project, unless you request this to happen.

What would you do if you agree to participate?

If you accept the invitation to participate, you would complete the questionnaire within two weeks, taking as many breaks as you need, and return it to me in the pre-paid, addressed return envelope provided – that's it!

The questionnaire will take about 30 minutes for you to complete, and remember, you can take as many breaks as you want or need.

OR ...

If you would like to participate but *need assistance to complete the questionnaire*, you can telephone me and I will complete the questionnaire for you over the phone. Your confidentiality will be safeguarded when you call, by providing me with the number on your return envelope, rather than using your name. You would then destroy the questionnaire you have, to prevent a follow up letter being sent to you. I can be reached on 06 3569 099 exn 7718.

If any of the questions cause you distress, you can contact me or your local Age Concern office.

Is the study confidential?

Yes! Your name *will not appear* on the questionnaire. A code number is written on the return envelope just so that I can keep track of who has returned the questionnaire. If two weeks after posting, I do not have enough responses, I will send out a follow-up letter to those who have *not* already returned the questionnaire. Once I receive your envelope, I will separate it from the questionnaire to maintain your confidentiality. My supervisors and I will be the only people with access to the questionnaire which will be locked away securely. If any research assistants are employed to help input data, they will sign a confidentiality agreement. None of the information you provide will be passed on to any agency.

Your Rights as a Participant

You are under no obligation to accept this invitation. If you decide to participate, you have the right to:

- decline to answer any particular question;
- withdraw from the study at any point;
- ask any questions about the study at any time during participation;
- provide information on the understanding that your name will not be used;
- be given access to a summary of the project findings when it is concluded.

Completion and return of the questionnaire implies consent

So now, if you choose to participate you will need to ...

Complete the questionnaire and return it to **Vivien Rodgers** in the postage-paid, pre-addressed envelope that is provided.

OR

If you would like *assistance with completing the questionnaire*:

- telephone the researcher on 06 3569099 ext 7718
- give me your code number from the return envelope (not your name – to maintain your confidentiality)
- I will complete the questionnaire with you over the phone
- You will destroy the questionnaire you have at home.

If you would like a summary of the project findings ...

Just draw a **bold circle** around the number written on your return envelope and your name will be added to a list of those who would like to receive the summary at the end of the project (estimated to be 2012). This information will be kept separately from the questionnaire.

Approval

This project has been reviewed and approved by the Massey University Human Ethics Committee: Southern B, Application 09/42. If you have any concerns about the conduct of this research, please contact Dr Karl Pogo, Chair, Massey University Human Ethics Committee: Southern B, telephone 06 801 5799 x 6929. email humanethicsouthb@massey.ac.nz.

Thank you for taking the time to consider my invitation to be part of this important project.

Vivien Rodgers (Researcher)
3569099 ext. 7718

Supervisors:

Professor Steven LaGrow, School of Health & Social Services,
Palmerston North. 06 3569099 ext. 2248

Dr Stephen Neville, School of Health & Social Services,
Albany. 09 4140800 ext 9065

Dr Gretchen Good, School of Health & Social Services,
Palmerston North. 06 3569099 ext. 2245

Appendix C

Questionnaire



Social Comparison and Life Satisfaction in Later Life

Filling in this questionnaire implies consent

How to complete this questionnaire

Instructions:

- Use a blue/black pen or pencil to complete the questionnaire
- Try to mark your response clearly with a tick
- When asked to write a response, please print clearly
- If you make a mistake, please put a cross over the incorrect response and place a tick in the box that best reflects your answer

EXAMPLE ONLY

In general, would you say your health is:
(Please tick one box)

Excellent	Very good	Good	Fair	Poor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please read the following carefully:

- All the information you give me is in confidence and will be used only for the purposes of this research
- There are no right or wrong answers; I want the response that is best for you
- It is important that you give your own answers to the questions
- Do not linger too long over each question; usually your first response is best
- Completion and return of this questionnaire implies consent to take part in the study

Thank you for taking the time to complete this survey

If you need help to answer any questions please contact me either by toll-free phone or via email at:

Phone: 0800 627 739 ext 7718

Email: V.K.Rodgers@massey.ac.nz

Firstly, I would like to ask you for some general background information. Please place a tick next to the answer that you believe gives an accurate indication of your current situation.

Q 1	Which age group do you belong to? (Please tick one box)		
	I am 65 – 74 years of age	<input type="checkbox"/>	
	I am 75 – 84 years of age	<input type="checkbox"/>	
	I am 85 or more years of age	<input type="checkbox"/>	
Q 2	Are you ...? (Please tick <u>one</u> box)		
	Male	<input type="checkbox"/>	
	Female	<input type="checkbox"/>	
Q 3	Which one of these statements is true about your legal marital status? (If you have been married more than once, answer for your current or most recent marriage)		
	I am legally married	<input type="checkbox"/>	
	I am in a civil union/de facto/partnered relationship	<input type="checkbox"/>	
	I am permanently separated from my legal husband or wife	<input type="checkbox"/>	
	I am divorced or my marriage has been dissolved	<input type="checkbox"/>	
	I am a widow or widower	<input type="checkbox"/>	
	I have never been legally married	<input type="checkbox"/>	
Q 4	Which ethnic group do you belong to? (Please tick <u>all</u> the boxes that apply to you)		
	Pakeha / New Zealander of European descent	<input type="checkbox"/>	
	Māori	<input type="checkbox"/>	
	Samoan	<input type="checkbox"/>	
	Cook Island Māori	<input type="checkbox"/>	
	Tongan	<input type="checkbox"/>	
	Niuean	<input type="checkbox"/>	
	Chinese	<input type="checkbox"/>	
	Indian	<input type="checkbox"/>	
	Other (such as Dutch, Japanese, Tokelauan). Please tick this box then state below:	<input type="checkbox"/>	

Q 5	Which of the following best describes the area where you live? (Please tick <u>one</u> box)				
	Main Urban Area	⇒	A city with population of 30,000 or more	⇒	<input type="checkbox"/>
	Secondary Urban Area	⇒	A town / city with a population of between 10,000 & 29,999	⇒	<input type="checkbox"/>
	Minor Urban Area	⇒	A town with a population of between 1,000 & 10,000	⇒	<input type="checkbox"/>
	Rural Centre	⇒	A town with a population of between 300 & 1,000	⇒	<input type="checkbox"/>
	Rural Area	⇒	Outside a town / city boundaries	⇒	<input type="checkbox"/>

Q 6	What is your <u>highest</u> secondary school qualification? (Please tick <u>one</u> box)				
	No school qualifications				<input type="checkbox"/>
	NZ School Certificate in one or more subjects				<input type="checkbox"/>
	NZ Sixth Form Certificate in one or more subjects				<input type="checkbox"/>
	NZ Higher School Certificate, or Higher Leaving Certificate				<input type="checkbox"/>
	NZ University Entrance				<input type="checkbox"/>
	NZ A or B Bursary or University Scholarship				<input type="checkbox"/>
	Other NZ secondary school qualification (Please print the qualification below):				<input type="checkbox"/>
	Overseas secondary school qualification				<input type="checkbox"/>

Q 7	Apart from secondary school qualifications, do you have other qualifications? (Please <u>don't</u> count incomplete qualifications or qualifications that take less than 3 months of full-time study to get).				
	Yes (Please print your highest qualification below):				<input type="checkbox"/>

	No				<input type="checkbox"/>

Q8

The following question asks if you can perform various tasks. Please indicate whether you can perform these tasks fully, independently:

You may answer one of four ways:

1. Yes, I can do it independently without any difficulty
2. Yes, I can do it fully independently but with some difficulty
3. Yes, I can do it fully independently but with great difficulty
4. No, I cannot do it independently, I can only do it with someone's help
(Please tick one box on each line)

	1. ▼	2. ▼	3. ▼	4. ▼
(a) Dress yourself?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(b) Get in and out of bed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(c) Stand up from sitting in a chair?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(d) Wash your face and hands?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(e) Wash your whole body?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(f) Get on and off the toilet?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(g) Feed yourself?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(h) Get around in the house?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(i) Go up and down stairs?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(j) Walk outdoors?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(k) Take care of your feet and toenails?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(l) Prepare meals?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(m) Do light household activities (e.g. dusting & tidying)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(n) Do heavy household activities (e.g. mopping and cleaning)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(o) Wash and iron clothes?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(p) Make the beds?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(q) Do the shopping?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(r) Go on social outings?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(s) Mow the grass?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(t) Do the gardening?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(u) Wash the car?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q 9	Which one of these statements most accurately describes your ability to drive? (Please tick one box only?)		
	I drive whenever and wherever I want	<input type="checkbox"/>	
	I drive but do have some restriction on where (e.g. distance) or when (e.g. after dark)	<input type="checkbox"/>	
	I no longer drive	<input type="checkbox"/>	
	I have never driven	<input type="checkbox"/>	

Q 10 Thinking about your responses to Questions 8 and 9 above, how do you think your ability to perform tasks compares to other people your age? (Please tick one box)

Much Better	Better	the Same	Worse	Much Worse
▼	▼	▼	▼	▼
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q 11 In general, would you say your health is:
(Please tick one box)

Excellent	Very good	Good	Fair	Poor
▼	▼	▼	▼	▼
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q 12 Compared to one year ago, how would you rate your health in general now?
(Please tick one box)

Much better than one year ago	Somewhat better than one year ago	About the same as one year ago	Somewhat worse now than one year ago	Much worse than one year ago now
▼	▼	▼	▼	▼
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q 13 The following questions are about activities you might do during a typical day.
Does your health now limit you in these activities? If so, how much?
 (Please tick one box on each line)

<u>Activities</u>	Yes, limited a lot	Yes, limited a little	Not limited at all
(a) <i>Vigorous activities</i> , such as running, lifting heavy objects, participating in strenuous sports	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(b) <i>Moderate activities</i> , such as moving a table, pushing a vacuum cleaner, bowling, or playing golf	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(c) Lifting or carrying groceries	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(d) Climbing <i>several</i> flights of stairs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(e) Climbing <i>one</i> flight of stairs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(f) Bending, kneeling, or stooping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(g) Did you have a lot of energy?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(h) Walking <i>several blocks</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(i) Walking <i>one block</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(j) Bathing or dressing yourself	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q14

During the past 4 weeks, how much of the time have you had any of the following problems with your work OR other regular daily activities as a result of your physical health?

(Please tick one box on each line)

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
(a) Cut down on the <i>amount of time</i> you spent on work or other activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(b) Accomplished less than you would like	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(c) Were <i>limited</i> in the <i>kind</i> of work or other activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(d) Did you have a lot of energy?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q 15 During the past 4 weeks, to what extent has your physical health or emotional problems interfered with your normal social activities with family, friends, neighbours, or groups? (Please tick one box)

Not at all	Slightly	Moderately	Quite a bit	Extremely
▼ <input type="checkbox"/>	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>

Q 16 How much bodily pain have you had during the past 4 weeks?
(Please tick one box)

All of the time	Most of the time	A good bit of the time	Some of the time	A little of the time	None of the time
▼ <input type="checkbox"/>	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>

Q 17

During the past 4 weeks, how much of the time have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (e.g. feeling depressed or anxious)?
(Please tick one box on each line)

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
(a) Cut down on the <i>amount of time</i> you spent on work or other activities	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>
(b) Have you felt calm and peaceful?	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>
(c) Have you felt downhearted and depressed?	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>

Q 18 The following questions focus on **health problems** you may have. Please tick the box corresponding to the word 'Yes' or 'No' to indicate if a doctor, nurse or other health care worker has told you that you have any of the following health problems.

(Please do not skip any questions)

		Yes	No
(a)	Melanoma?	<input type="checkbox"/>	<input type="checkbox"/>
(b)	Non-melanoma skin cancer	<input type="checkbox"/>	<input type="checkbox"/>
(c)	Other forms of cancer?	<input type="checkbox"/>	<input type="checkbox"/>
(d)	Diabetes?	<input type="checkbox"/>	<input type="checkbox"/>
(e)	Epilepsy?	<input type="checkbox"/>	<input type="checkbox"/>
(f)	High blood pressure or hypertension?	<input type="checkbox"/>	<input type="checkbox"/>
(g)	Heart trouble (e.g., angina or myocardial infarction)?	<input type="checkbox"/>	<input type="checkbox"/>
(h)	Asthma?	<input type="checkbox"/>	<input type="checkbox"/>
(i)	Other respiratory conditions (e.g., bronchitis)?	<input type="checkbox"/>	<input type="checkbox"/>
(j)	Stomach ulcer or duodenal ulcer?	<input type="checkbox"/>	<input type="checkbox"/>
(k)	Chronic liver trouble (e.g., cirrhosis)?	<input type="checkbox"/>	<input type="checkbox"/>
(l)	Bowel disorders (e.g., colitis or polyps)?	<input type="checkbox"/>	<input type="checkbox"/>
(m)	Hernia or rupture?	<input type="checkbox"/>	<input type="checkbox"/>
(n)	Chronic kidney or urinary tract conditions?	<input type="checkbox"/>	<input type="checkbox"/>
(o)	Chronic skin conditions (e.g., dermatitis or psoriasis)?	<input type="checkbox"/>	<input type="checkbox"/>
(p)	Arthritis or rheumatism?	<input type="checkbox"/>	<input type="checkbox"/>
(q)	Hepatitis?	<input type="checkbox"/>	<input type="checkbox"/>
(r)	Sight impairment (that cannot be corrected by glasses)?	<input type="checkbox"/>	<input type="checkbox"/>
(s)	Hearing impairment?	<input type="checkbox"/>	<input type="checkbox"/>
(t)	Stroke?	<input type="checkbox"/>	<input type="checkbox"/>
(u)	Depression?	<input type="checkbox"/>	<input type="checkbox"/>
(v)	Leg ulcers?	<input type="checkbox"/>	<input type="checkbox"/>
(w)	Anaemia (low iron)?	<input type="checkbox"/>	<input type="checkbox"/>
(x)	Other disability (please tick box then specify below)	<input type="checkbox"/>	<input type="checkbox"/>

Q 19 Thinking about your responses to questions 11-18 above, how do you think your general health compares to other people your age?
 (Please tick one box)

Much Better	Better	the Same	Worse	Much Worse
▼ <input type="checkbox"/>	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>

Q 20 Below are five statements that you may agree or disagree with. Using the scale below, please indicate your agreement with each item. Please be open and honest about your responses.
 (Please tick one box on each line)

	Strongly agree	Agree	Slightly agree	Neither agree nor disagree	Slightly disagree	Disagree	Strongly Disagree
(a) In most ways my life is close to the ideal.	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>
(b) The conditions of my life are excellent.	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>
(c) I am satisfied with my life	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>
(d) So far I have gotten the important things I want in life.	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>
(e) If I could live my life over, I would change almost nothing.	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>

Q 21 Thinking about your responses to question 20 above, how do you think your satisfaction with life compares to other people your age?
 (Please tick one box)

Much Better	Better	the Same	Worse	Much worse
▼ <input type="checkbox"/>	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>	▼ <input type="checkbox"/>

Q 22 Most people compare themselves from time to time with others. For example, they may compare the way they feel, their opinions, their abilities and/or their situation with those of other people.

There is nothing “good” or “bad” about this type of comparison. Some people do it more than others. I would like to find out how often you compare yourself with other people. To do that I would like you to indicate how much you agree with each statement below.

(Please tick one box on each line)

		I agree strongly	I agree	I neither agree nor disagree	I disagree	I disagree strongly
(a)	I often compare how my loved ones are doing with how others are doing.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(b)	I always pay a lot of attention to how I do things compared with how others do things.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(c)	If I want to find out how well I have done something, I compare what I have done with how others have done.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(d)	I often compare how I am doing socially (e.g. social skills, popularity) with other people.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(e)	I am not the type of person who compares often with others.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(f)	I often compare myself with others with respect to what I have accomplished in life.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(g)	I often like to talk with others about mutual opinions and experiences.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(h)	I often try to find out what others think, who face similar problems as I face.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(i)	I always like to know what others in a similar situation would do.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(j)	If I want to learn more about something, I try to find out what others think about it.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(k)	I <i>never</i> consider my situation in life relative to that of other people	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q 23

Some people compare themselves upwardly from time to time with others. For example, they may compare the way they feel, their opinions, their abilities and/or their situation with those of other people doing better than themselves.

Other people compare themselves downwardly from time to time with others. For example, they may compare the way they feel, their opinions, their abilities and/or their situation with those of other people doing worse than themselves.

Some people compare themselves from time to time with others who are similar to themselves. For example, they may compare the way they feel, their opinions, their abilities and/or their situation with those of other people doing much the same as themselves.

There is nothing “good” or “bad” about this type of comparison. I would like to find out how you compare yourself with other people. To do that I would like you to indicate how much you agree with each statement below.

(Please tick one box on each line)

	do better than me	are the same as me	do worse than me
(a) When it comes to my health, I sometimes compare myself with others who ...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(b) When it comes to my ability to complete tasks, I sometimes compare myself with others who ...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(c) When it comes to my life satisfaction, I sometimes compare myself to others who ...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Is there anything you would like to add to this topic? Please write your comments on the lines below. If you need more room, please write on the back of the booklet.

THANK YOU FOR COMPLETING THIS QUESTIONNAIRE!

Now, before you place the completed questionnaire in the addressed, FREEPOST envelope, please:

- Check to see that you have NOT skipped any pages;
- Double check to make sure that you have entered ALL the information that you intended.

If you have completed the questionnaire over the telephone with the researcher, please destroy this copy of the questionnaire.

If you would like to receive a summary of the findings of this survey, please draw a **BOLD** circle around the number on the lower corner of the return envelope.

Other Comments

Appendix D

Diagnosed Chronic Health Conditions

Diagnosed chronic health conditions

Chronic Diagnosed Health Condition	N = 542	
	N	%
High blood pressure	284	52.4
Arthritis	241	44.5
Hearing impairment	190	35.1
Other disability	144	26.6
Heart trouble (e.g. Angina)	130	24
Sight impairment (not corrected by glasses)	90	16.6
Respiratory condition (not asthma)	66	12.2
Diabetes	65	12
Bowel disorder	63	11.6
Asthma	62	11.5
Depression	55	10.1
Hernia	52	9.6
Chronic kidney / urinary tract condition	49	9
Chronic skin condition (not cancer-related)	41	7.6
Anaemia	32	5.9
Stroke	28	5.2
Stomach or duodenal ulcer	19	3.5
Leg ulcers	13	2.4
Epilepsy	8	1.5
Cirrhosis	6	1.1