

**Attitudes to Ageing:
Relationships with Health
and Health Behaviours at Midlife**

Anna M. Thorpe

**A thesis submitted for the degree of
Doctor of Philosophy
University of Otago, Christchurch**

2014

Acknowledgements

To the CHALICE participants, for your effort and openness during uncertain and shaky times.

To my supervisors, for your dedication, high standards and teamwork: Professor Peter Joyce, for your vision and leadership of CHALICE and for your experienced counsel; Professor Philip Schluter, for your constructive precision and continuity; and Dr John Pearson, for your principles and statistical back up.

To the CHALICE team: Janet Spittlehouse for your role at the centre of the wheel providing information and processes; Dr Esther Vierck for your thoughtful feedback; Julia Martin, Bridget Kimber and Robyn Abbott for participant assessments; Monica Johnstone for data management; and the CHALICE investigators for setting the CHALICE scene.

To the University of Otago, and the University of Otago, Christchurch, for financial support, training and flexibility following the disruptive Canterbury earthquakes, to the Department of Psychological Medicine for financial support, to staff for time and information freely given, to Carole Acheson for your literary direction, and to Dr Gini McIntosh for your encouragement.

To Professor Alan Walker for suggesting that attitudes to ageing in midlife needed researching, to Mansoor Khawaja for conveying the magnitude and implications of population ageing in New Zealand, to Dr Patrick LaShell for statistical mentoring, to my sister-in-law Katrina Rainey for proofreading, and to the New Zealand Federation of Graduate Women, Canterbury branch, for financial support.

To my family for keeping the home fires burning; to my partner, John McCallum, for his love, inspired cooking and understanding of the scientific method; to my sons, Fergus and Alec, for their presence and keeping me in the present; to my late parents, Marianne Weststrate and Anthony Thorpe, and late mother-in-law, Ann McCallum, for walking before me; and my sisters, Karina Thorpe and Gabrielle Thorpe, for walking beside me.

Thank you all.

Contents

Abstract.....	viii
Publications and Presentations	x
List of Figures and Tables.....	xiii
List of Abbreviations	xiii
CHAPTER 1: Introduction.....	1
1.1 Overview	1
1.2 Ageing Demographics	2
1.2.1 Ageing Globally.....	2
1.2.2 Ageing in New Zealand	3
1.2.3 Ageing in Canterbury.....	6
1.3 Attitudes to Ageing.....	7
1.3.1 Conceptual Framework for Research on Attitudes to Ageing.....	8
1.3.2 Attitudes to Ageing and Health	9
1.3.3 Attitudes to Ageing and Health Behaviours	11
1.4 Focus on Midlife	13
1.5 Summary	15
1.6 Outline of Thesis.....	15
CHAPTER 2: Reviewing the Literature	17
2.1 Overview	17
2.2 Ageing Constructs and their Measurement	18
2.3 Attitudes towards Ageing.....	19
2.3.1 Measurement of Attitudes to Ageing in the Literature	21
2.3.2 Attitudes to Ageing Questionnaire (AAQ)	23
2.3.3 Relationships of Attitudes to Ageing and Health.....	30
2.3.4 Summary of Attitudes to Ageing in the Literature.....	32
2.4 Attitudes towards Age Stereotypes.....	32
2.4.1 Measurement of Attitudes to Age Stereotypes in the Literature	34
2.4.2 Attitudes to Age Stereotypes and Health	37
2.4.3 Summary of Attitudes to Age Stereotypes in the Literature.....	37
2.5 Subjective Age.....	38
2.5.1 Measurement of Subjective Age in the Literature.....	39

2.5.2	Felt Age	39
2.5.3	Subjective Age and Health.....	42
2.5.4	Summary of Subjective Age Measurement.....	44
2.6	Age Identity.....	45
2.6.1	Measurement of Age Identity in the Literature	45
2.6.2	Ideal Age	46
2.6.3	Age Identity and Health.....	48
2.6.4	Summary of Age Identity Measurement.....	48
2.7	Self-Perceptions of Ageing	48
2.7.1	Measurement of Self-Perceptions of Ageing in the Literature.....	49
2.7.2	The Experience of Ageing.....	51
2.7.3	Subjective Life Expectancy.....	52
2.7.4	Self-Perceptions of Ageing and Health	55
2.7.5	Summary of Self-Perceptions of Ageing	56
2.8	Relevant Conceptual Frameworks in the Literature.....	57
2.8.1	Awareness of Age-Related Change	58
2.8.2	Life Span Perspective	62
2.8.3	Successful and Healthy Ageing	63
2.8.4	Summary of Relevant Conceptual Frameworks.....	65
2.9	Ageing Policy Frameworks	65
2.9.1	Global Ageing Plans	66
2.9.2	The New Zealand Positive Ageing Strategy.....	66
2.10	Ageing Research in New Zealand.....	67
2.10.1	Attitudes to Ageing Research in New Zealand	68
2.11	Summary.....	69
CHAPTER 3: Research Rationale, Questions and Hypotheses		71
3.1	Overview	71
3.2	Attitudes of Midlife New Zealanders to their own Ageing	72
3.3	Relationships between Attitudinal Measures	72
3.4	Attitudes to Ageing and Self-Rated Health	73
3.5	Attitudes to Ageing and Health at Midlife	74
3.6	Attitudes to Ageing and Health Behaviours at Midlife.....	74
3.7	Summary.....	75

CHAPTER 4: Methods	76
4.1 Overview	76
4.2 Study Design	76
4.2.1 Location.....	77
4.3 CHALICE Participants	78
4.3.1 Participant Recruitment	79
4.3.2 Participant Eligibility	79
4.4 Consent.....	80
4.5 Interview Structure.....	80
4.6 Instruments: Attitudinal Measures.....	81
4.6.1 Attitudes to Ageing Questionnaire (AAQ)	81
4.6.2 Felt Age	83
4.6.3 Ideal Age	84
4.6.4 Experience of Ageing.....	84
4.6.5 Subjective Life Expectancy.....	84
4.7 Instruments: Socio-Demographic Factors.....	85
4.7.1 Ethnicity	85
4.7.2 Education.....	86
4.7.3 Relationship Status.....	86
4.7.4 Household Income	86
4.7.5 Economic Living Standards Index (ELSI).....	86
4.8 Instruments: Health Measures.....	87
4.8.1 Short Form 36 (SF-36).....	87
4.8.2 Chronic Conditions	87
4.8.3 Depression	87
4.9 Instruments: Healthy Lifestyle and Help-Seeking Behaviours	88
4.9.1 Body Mass Index (BMI).....	89
4.9.2 Use of Cigarettes	89
4.9.3 Use of Alcohol	89
4.9.4 Annual General Practitioner (GP) visit	90
4.9.5 Immunisation for Influenza	90
4.9.6 Screening for Cancer	90
4.10 Ethics	91

4.11	Data Management	91
4.12	Data Analysis	92
4.13	Summary	93
CHAPTER 5: Describing the Sample		94
5.1	Overview	94
5.2	CHALICE Response Rates	94
5.2.1	Impact of Canterbury Earthquakes	96
5.3	Socio-Demographic Description of Sample	97
5.4	Summary	100
CHAPTER 6: Attitudes to Ageing.....		102
6.1	Overview	102
6.2	Attitudes to Ageing Questionnaire (AAQ).....	102
6.3	Felt Age.....	104
6.4	Ideal Age.....	106
6.5	Experience of Ageing	107
6.6	Subjective Life Expectancy	108
6.7	Attitudinal Findings Compared to the Literature	109
6.8	Relationships between Attitudinal Measures.....	110
6.9	Attitudes to Ageing Questionnaire (AAQ) Rationale	112
6.10	Attitudes to Ageing and Socio-Demographic Factors	112
6.11	Discussion of Findings	114
6.11.1	Attitudes to Ageing	114
6.11.2	Subjective Age and Age Identity.....	116
6.11.3	Self-Perceptions of Ageing	116
6.11.4	Relationships between Attitudinal Measures	117
6.12	Summary	118
CHAPTER 7: Attitudes to Ageing and Health Status		119
7.1	Overview	119
7.2	Short Form-36 (SF-36) Responses	119
7.2.1	SF-36 Responses and Socio-Demographic Factors.....	120
7.3	Attitudes to Ageing and Self-Rated Health	123
7.4	Chronic Conditions.....	124

7.4.1	Health and Socio-Demographic Factors	125
7.5	Attitudes to Ageing and Chronic Conditions.....	128
7.6	Depression	130
7.7	Attitudes to Ageing and Depression	131
7.8	Discussion of Findings	133
7.8.1	Attitudes to Ageing and Self-Rated Health.....	133
7.8.2	Attitudes to Ageing and Health	134
7.8.3	Attitudes to Ageing and Depression.....	135
7.9	Summary.....	137
CHAPTER 8: Attitudes to Ageing and Health Behaviours		138
8.1	Overview	138
8.2	Healthy Lifestyle and Help-Seeking Behaviours.....	138
8.2.1	Body Mass Index (BMI).....	140
8.2.2	Tobacco Use.....	140
8.2.3	Alcohol Use	140
8.2.4	General Practitioner (GP) Visits.....	141
8.2.5	Influenza Vaccination.....	141
8.2.6	Screening for Cancer	141
8.3	Health Behaviours and Socio-Demographic Factors.....	142
8.3.1	Comparison of Health Behaviours between CHALICE and New Zealand.....	146
8.4	Attitudes to Ageing and Health Behaviours.....	148
8.4.1	Adjusted Health Behaviours.....	150
8.5	Discussion of Findings	154
8.5.1	Attitudes to Ageing and Frequent GP Visits	154
8.5.2	Attitudes to Ageing and Obesity and Cigarette Smoking	155
8.5.3	Attitudes to Ageing and Unrelated Behaviours.....	156
8.5.4	CHALICE Sample Representativeness	157
8.6	Summary.....	158
CHAPTER 9: Discussion and Conclusions.....		159
9.1	Overview	159
9.2	Findings regarding Attitudes to Ageing.....	159
9.2.1	Attitudes to Ageing of Midlife New Zealanders	160
9.2.2	Relationships between Attitudinal Measures	160

9.2.3	Attitudes to Ageing and Self-Rated Health at Midlife.....	161
9.2.4	Attitudes to Ageing and Health at Midlife	162
9.2.5	Attitudes to Ageing and Health Behaviours at Midlife	163
9.3	Pattern of Results	163
9.4	Findings Contextualised	165
9.5	Study Contribution.....	168
9.6	Methodological Considerations.....	170
9.7	Study Limitations.....	171
9.8	Recommendations.....	173
9.9	Conclusions	175
BIBLIOGRAPHY.....		177
APPENDICES		213
Appendix A. CHALICE Ethics Approval (Upper South A. Regional Ethics Committee) .		214
Appendix B. CHALICE Invitation Letters		217
Appendix C. CHALICE Information and Consent Form		220
Appendix D. CHALICE Module 1: SF-36 Questions.....		229
Appendix E. CHALICE Module 2: Personal Health History		234
Appendix F. CHALICE Module 3: Attitudes and Beliefs		272
Appendix G. CHALICE Module 5: Mental Health Interview		289
Appendix H. Regression Models for Health Behaviours		323

Abstract

There is growing pressure to understand and protect the health of the world's ageing population. Despite projected rapid population ageing in New Zealand, limited attention has been given to attitudes towards ageing. Attitudes towards ageing are a complex, personalised perspective on the experience of ageing over the life span, which may be positively related to health and life expectancy. This doctoral study explores the relationships between attitudes to ageing and health and health behaviours at midlife, using a broad Awareness of Age-Related Change framework (Diehl & Wahl, 2010). Key constructs in the subjective ageing literature are identified as attitudes towards ageing, attitudes towards age stereotypes, subjective age, age identity, and self-perceptions of ageing. Attitudes towards ageing measures are critically discussed under these constructs. The study aims to compare attitudes to ageing with reported findings and to identify which health conditions and health behaviours are most associated with attitudes to ageing in midlife.

Data was collected through the Canterbury Health, Ageing and Lifecourse (CHALICE) study, a longitudinal study of health and wellbeing at midlife in New Zealand. Two hundred CHALICE participants were recruited in their fiftieth year for detailed health assessments. A range of attitude to ageing measures were examined in relation to socio-demographic factors, mental and physical health, prevalent chronic conditions in New Zealand, depression, and a selection of health behaviours.

Attitudes to ageing from this midlife sample were similar, or positive, compared to the literature. Participants reported feeling an average of ten years younger than their chronological age, with an ideal age of 17 years younger. Seventy percent of participants felt positive about the experience of ageing. In line with actuarial data, subjective life expectancy showed differences by gender: male participants expected to live to a mean 79.5 years, compared to 81.7 years for females.

Positive attitudes to ageing were found using the Attitude to Ageing Questionnaire (AAQ) to psychosocial loss, physical change and psychological growth domains (Laidlaw, Power, Schmidt et al., 2007), compared to similar-aged samples. The physical change domain of the AAQ showed the greatest relationships to health and health behaviours. Negative physical change attitudes to ageing were significantly related to hypertension, heart disease, arthritis, asthma, depression, obesity, smoking and frequent visits to the general practitioner (GP). Negative psychosocial loss

attitudes were related to high cholesterol and depression. Negative psychological growth attitudes to ageing were associated only with frequent GP visits, but this relationship ceased once socio-demographic and health factors were controlled. An apparent paradox was detected, in which relatively positive attitudes to ageing were assessed in all measures, but co-existed alongside significantly poorer mental health, higher depression and higher hazardous drinking rates, during the stressful Canterbury earthquakes.

This is the first study in New Zealand to report on selected attitudes to ageing measures. While the AAQ is increasingly used as a tool assessing attitudes towards ageing, participants are generally aged over 60 years. The AAQ was found to be a reliable instrument assessing attitudes to ageing in midlife. The AAQ has not previously been examined with a wide range of health conditions or health behaviours. This study makes an original contribution to the study of attitudes to ageing, in a world where there is significant population ageing and subsequent interest in understanding and protecting physical and mental health. Understanding people's attitudes gives an important insight into the personalised experience of ageing over the life span and how people anticipate their social, physical and psychological futures.

Publications and Presentations

- Thorpe, A. (2014). International Longitudinal Studies into Ageing. *Supplementary material for PhD 'Attitudes to Ageing: Relationships to Health and Health Behaviours in Midlife'* University of Otago Christchurch. <http://www.otago.ac.nz/christchurch/OTAGO082729>.
- Thorpe, A. M. (Oct. 2011). The Influence of Felt Age on Midlife Ageing. *Ninth Asia/Oceania Regional Congress of Gerontology and Geriatrics*: p. 50. Melbourne, Australia.
- Thorpe, A, M., Joyce, P. R. & Pearson, J. (June 2012). Attitudes to Ageing in Midlife. *International Federation of Ageing 11th Global Conference on Ageing*: p. 102. Prague, Czech Republic.
- Thorpe, A. M., Pearson, J., Schluter, P. J., Spittlehouse, J. K., & Joyce, P. R. (2014). Attitudes to Aging in Midlife are Related to Health Conditions and Mood. *International Psychogeriatrics, International Psychogeriatrics*, 26(12), 2061–2071. doi:10.1017/S1041610214001550.

List of Figures and Tables

Chapter 1

Figure 1.1. New Zealand Population in 2012 by Age Group and Gender	4
Figure 1.2. Life Expectancy at Birth, by Ethnic Group and Gender, 1950-1952 to 2005-2007.....	5

Chapter 2

Figure 2.1. Conceptual Framework for Awareness of Age-Related Change (AARC).....	59
--	----

Chapter 4

Figure 4.1. CHALICE Sample Region in Canterbury	78
Figure 4.2. Attitudes to Ageing Questionnaire (AAQ)	81

Chapter 5

Figure 5.1. CHALICE Participant Flow Chart.....	95
Figure 5.2. CHALICE Participant Interview Numbers per Month.....	97
Table 5.1. Socio-Demographic Profile of 200 CHALICE Participants	98

Chapter 6

Figure 6.1. Histograms of AAQ Subscale Results for 200 CHALICE Participants.....	103
Table 6.1. Comparison of AAQ Results between CHALICE (n=200) and the Australian Psychological Society Study (n=594)	104
Figure 6.2. Histogram of Felt Age Results for 198 CHALICE Participants	105
Figure 6.3. Histogram of Ideal Age Results for 200 CHALICE Participants	106
Figure 6.4. Histogram of Experience of Ageing Results for 200 CHALICE Participants	107
Figure 6.5. Histogram of Subjective Life Expectancy Results for 194 CHALICE Participants	108
Table 6.2. Spearman Correlations between Attitudinal Measures	110
Table 6.3. AAQ Subscale Results by Socio-Demographic Factors.....	113

Chapter 7

Table 7.1. Comparison of SF-36 Mean Domains from CHALICE (n=200) and New Zealand Adults Aged 45-54 Years (n=2,079).....	120
Table 7.2. Relationships of Four SF-36 Domains to Socio-Demographic Factors.....	121
Table 7.3. Spearman's Correlation Estimates of AAQ and SF-36 Domains.....	123

Table 7.4. Prevalence of Lifetime Diagnosed Chronic Conditions for 200 CHALICE Participants.....	124
Table 7.5. Relationships of Common Chronic Conditions to Socio-Demographic Factors for CHALICE Participants	126
Table 7.6. AAQ Subscale Means with Diagnosed Chronic Conditions for 200 CHALICE Participants.....	129
Table 7.7. Prevalence of Current and Lifetime Depression for 200 CHALICE Participants.....	130
Table 7.8. Relationship of AAQ Subscale Values to Depression.....	132

Chapter 8

Table 8.1. Health Behaviour Distribution for 200 CHALICE Participants.....	139
Table 8.2. Relationship of Health Behaviours and Socio-Demographic Factors for 200 CHALICE Participants	143
Table 8.3. Relationship of AAQ Subscales to Health Behaviours for 200 CHALICE Participants	149
Table 8.4. Relationship of AAQ Subscales to Obesity for 200 CHALICE Participants	151
Table 8.5. Relationship of AAQ Subscales to Current Smoking for 200 CHALICE Participants	152
Table 8.6. Relationship of AAQ Subscales to High GP Use for 200 CHALICE Participants....	153

List of Abbreviations

AAQ	Attitudes to Ageing Questionnaire
ACC	Accident Compensation Commission
AHEAD	Study of Asset and Health Dynamics
ALSA	Australian Longitudinal Study of Ageing
ANOVA	Analysis of Variance
ASOC	Aging, Status and Sense of Control study
AUDIT	Alcohol Use Disorders Identification Test
BMI	Body Mass Index
CDHB	Canterbury District Health Board
CES-D	Center for Epidemiological Studies - Depression scale
CFI	Confirmatory Factor Index
CHALICE	Canterbury Health, Ageing and Lifecourse study
CI	Confidence Intervals
COPD	Chronic Obstructive Pulmonary Disease
CVC	Consonant-Vowel-Consonant cognitive test
CVD	Cardiovascular Disease
df	Degrees of Freedom
ECG	Electrocardiogram
ECHO	Echocardiogram
ELSA	English Longitudinal Study of Ageing
ELSI	Economic Living Standards Index
ERA	Expectations Regarding Aging scale
EWAS	Enhancing Wellbeing in an Ageing Society study
GDS	Geriatric Depression Scale
GP	General Practitioner
HRS	Health and Retirement Study
HWR	Health, Work and Retirement study
IPIP	International Personality Item Pool
Kāumatua	Respected older Māori
LiLACS	Life and Living in Advanced Age, the Cohort Study - Te Puawaitanga o Nga Tapuwae Kia Ora Tonu
MIDUS	Midlife in the United States study

MINI	Mini International Neuropsychiatric Interview
MOCA	Montreal Cognitive Assessment
NEO-FFI	Neuroticism, Extraversion and Openness - Five Factor Inventory
NHI	National Health Index
NZLSA	New Zealand Longitudinal Study of Ageing
OR	Odds Ratio
OLSAR	Ohio Longitudinal Study of Aging and Retirement
<i>p</i> value	Probability value
Pap test	Papanicolaou test for cervical cancer
PSA test	Prostate-Specific Antigen blood test
RHBC	Reported Health Behaviours Checklist
ROPE	Relating to Older People Evaluation scale
RMSEA	Root Mean Square of Error Approximation
SD	Standard deviation
SHARE	Survey of Health, Ageing and Retirement in Europe
SF-12	Short Form-12 health survey
SF-36	Short Form-36 health survey
SPSS	Statistical Product and Service Solutions software package
STROBE	Strengthening the Reporting of Observational Studies in Epidemiology
<i>t</i> test	Statistical test to assess if means of two groups are significantly different
TILDA	The Irish Longitudinal Study of Ageing
χ^2	Chi-squared statistic to assess distribution of observed data
WHO	World Health Organization
WHOQOL	World Health Organization Quality of Life
WHOQOL-BREF	Brief World Health Organization Quality of Life Instrument
WHOQOL-OLD	World Health Organization Quality of Life Assessment for Older Adults

CHAPTER 1:

Introduction

“I’m very pleased with each advancing year. It stems back to when I was forty. I was a bit upset about reaching that milestone, but an older friend consoled me, ‘Don’t complain about growing old - many, many people do not have that privilege’.”

Earl Warren, Chief Justice (1891 - 1974)

1.1 Overview

In an ageing society, understanding attitudes to ageing is of growing importance. Unlike the focus on the multiple processes and diverse outcomes of chronological ageing, comparatively little research has examined factors behind the development of attitudes towards one’s own ageing (Bryant, Bei, Gilson et al., 2014). Attitudes to ageing comprise individuals’ views of their own ageing, and also the ageing of others around them. Individuals of all ages have personal attitudes towards ageing, influenced by personality, experiences, stage in the life course and the approach of societies toward ageing citizens. Individuals’ attitudes to ageing have been shown to make a difference to physical and mental health, and even to longevity. The current study aimed to contribute to understanding the relationship between attitudes to ageing, physical and mental health, and behaviours undertaken to protect health.

The focus of the thesis was prompted by Ohio Longitudinal Study of Health and Retirement (OLSAR) findings that individuals with more positive self-perceptions of ageing lived on average 7.5 years longer than those with less positive perceptions, over a 23 year period (Levy, Slade, Kunkel et al., 2002)¹. Positive self-perceptions of ageing were associated with better functional health, after controlling for baseline measures such as age, functional health, gender, ethnicity, self-rated health, socio-economic status and loneliness. Further studies have

¹ Details of many longitudinal studies examining the health, wellbeing and social issues in ageing populations cited here can be viewed in the Appendices.

found that attitudes toward ageing may positively influence long-term health-related outcomes (Demakakos, Gjonca & Nazroo, 2007; Harrison, Blozis & Stuifbergen, 2008; Molzahn & Gallagher, 2009), and longevity (Levy et al., 2002; Uotinen, Rantanen & Suutama, 2005). If positive self-perceptions of ageing influence longevity as much as well-established factors, such as obesity, smoking or physical exercise (Fraser & Shavlik, 2001), the study of attitudes towards ageing and health warrants further attention, particularly as the proportion of those aged 65 years and older is doubling in much of the world in the years to 2050.

1.2 Ageing Demographics

This study is set within an unprecedented period of demographic ageing, which is both inevitable and predictable (World Health Organization, 2012a). Increases in life expectancy during the twentieth century are viewed as one of society's greatest achievements, leading to dramatic projected increases of the older global population (World Health Organization, 2011). Significant social, political and health changes accompanying ageing will create both challenges and opportunities.

2.2.1 Ageing Globally

Life expectancy is a key measure of the health of nations and equality within them. Global life expectancy has increased dramatically since 1900, when it stood at just under 50 years. In 1950, it had advanced to 66 years (United Nations, 2002a). By 2010, average life expectancy reached 68 years in less developed countries and 82 years in more developed countries, with women outliving men 4.5 years on average (Aboderin, Archibald, Beard et al., 2012). Life expectancy is assumed to continue rising, although slowing in pace, to reach between 87 and 106 years by 2030 (United Nations, 2004). Increased longevity is occurring in both the developed and developing worlds, but the developed world has grown wealthy before it grows old, whereas the developing world is growing old before it has grown wealthy (World Health Organization, 2002). Women are progressively over-represented in older age groups in almost every country, leading to what has been termed "the feminisation of ageing" (World Health Organization, 2002).

Not only is life expectancy projected to increase dramatically, but the size of age groups is also projected to change. The world population was estimated to stand at 7.18 billion as of July

2014 (United States Census Bureau, 2014). At the start of this century, the global population aged 60 years and over was estimated to be 605 million people. While the global population is projected to increase 3.5 times by 2050, the population aged 60 years and over will increase ten fold, to 2 billion people, and the population aged 80 years and over will increase 26 times, particularly in developing nations (Aboderin et al., 2012; World Health Organization, 2013a). By 2016, for the first time in recorded history, the number of adults aged 65 years or over will overtake the number of children aged less than five years (World Health Organization, 2011a). The large population group born between 1946 and 1964, known as baby boomers, will largely contribute to this increase.

What is termed “population ageing” (Kinsella & He, 2009) involves a transition from relatively high fertility rates and high mortality rates to relatively low mortality rates and persistently low fertility rates (Boston & Davey, 2006). This demographic transition involves the increasing age of parenthood, changing family structures and the decreasing size of households. Social changes such as rapid urbanisation, migration, global economic growth, individualisation and technological development are associated with this period of population ageing. Chronic non-communicable diseases (including dementia) are now the leading cause of disease and death in countries throughout the world, regardless of income level (World Health Organization, 2011). Alongside increases in global ageing, real challenges exist in the compression of morbidity and functional impairment (Crimmins & Beltrán-Sánchez, 2011), so that as individuals live longer, they can do so in relatively good health. The rates of disability and chronic disease are projected to increase in midlife populations (Weiss & Malone, 2013; World Health Organization, 2012a), influenced in part by a worldwide obesity epidemic (James, Leach, Kalamara et al. 2001; Reynolds, Saito & Crimmins, 2005). The WHO dictum states that “years have been added to life and now the challenge is to add life to years” (Walker & Mollenkopf, 2007, p. 3).

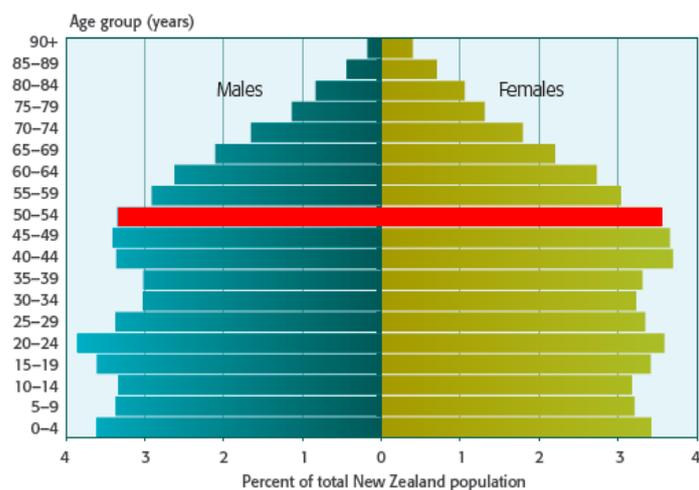
1.2.2 Ageing in New Zealand

New Zealand has been called one of the world’s leading countries in terms of longevity (Walker, 2008), but life expectancy is less favourable there compared to other OECD countries. In 2005-07, New Zealand was ranked 21st out of 30 OECD countries for females and 10th equal for males (Ministry of Social Development, 2010). Using 2010-2012 New Zealand population data, life expectancy at birth was 79.3 years for males and 83.0 years for

females. This figure is rapidly extending for males in particular, with an estimated three months increase for every year in the ten years since 2002: equivalent to an increase of one year for every four years lived (Statistics New Zealand, 2013c). The years spent in good health in New Zealand have also increased. From the age of 65 years, about 14 additional healthy years can be expected and about 9.5 years of these years can be expected to be free from functional limitation (Tobias, Yeh, Salzano et al., 2009).

In 2006, the New Zealand population stood at 4,027,947 (Statistics New Zealand, 2013e)². Population growth in New Zealand is expected to slow as births decline. The population age structure will continue to gradually but significantly change, resulting in more people in older age groups and further population ageing. In 2009, one in eight New Zealanders was aged 65 years or older. By 2031, this rate is predicted to increase to one in five, and by 2051 one quarter of the New Zealand population is estimated to be aged 65 years or older (Statistics New Zealand, 2009). This growth reflects the combined impact of sub-replacement fertility, increasing longevity and the movement of large numbers of people born between the 1950s and the 1970s into older ages. The breakdown of age groups in the New Zealand population as of June 2012 is shown in Figure 1.1, highlighting adults aged 50 to 54 years.

Figure 1.1. New Zealand Population in 2012 by Age Group and Gender³



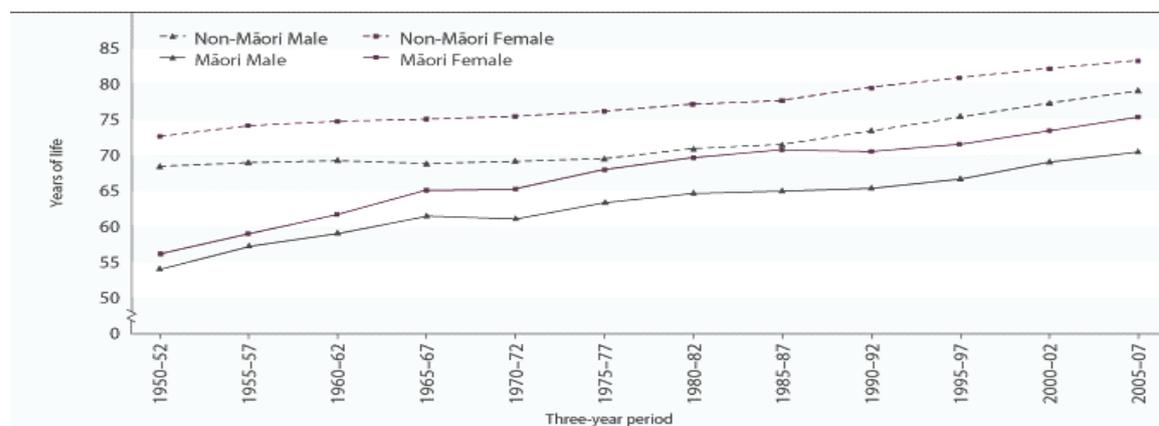
² The 2006 Census was the most recent reported Census to capture population statistics in New Zealand. The planned 2011 Census was delayed after the February 22 earthquake in Christchurch. Data from the 2013 Census is not fully available.

³ Reproduced with permission (Statistics New Zealand, 2013b).

New Zealanders born after 1950 are ageing in greater numbers than previous age groups and are a dominant feature of New Zealand’s age structure (Boston & Davey, 2006). With each passing year, the leading edge of those born in the baby boom generation is moving closer to their older adult years (Hartman-Stein & Potkanowicz, 2003). Gender differences in life expectancy exist and can be seen above in the higher proportion of females in older age groups. Over the past two decades, this gender gap has steadily decreased. New Zealand women aged 50 years are expected to live 3.0 years longer than men (Statistics New Zealand, 2013c). In living longer, women also spend more years with chronic conditions, functional limitations or disabilities (Crimmins, Kim & Solé-Auró, 2011).

Māori population ageing is tracking differently from that of non-Māori. Using data from the 2006 New Zealand Census, 15% of the total New Zealand population (565,329) identified as belonging to the Māori ethnic group (Robson & Harris, 2007). Māori are a significantly younger population, with a higher birth rate than non-Māori. Māori also have significantly lower life expectancy compared with non-Māori. Gender and ethnicity differences for New Zealanders’ life expectancy at birth are shown in Figure 1.2.

Figure 1.2. Life Expectancy at Birth, by Ethnic Group and Gender, 1950–1952 to 2005–2007 ⁴



Life expectancy for both Māori and non-Māori is tracking upwards. Despite a slight narrowing in life expectancy in recent years, a significant gap remains between the two ethnic groups at nearly all ages (Robson & Harris, 2007). Conditional life expectancy estimates, or expected future lifetime in years at birth, assuming survival, for New Zealand Māori in 2010-12 were

⁴ Reproduced with permission (Ministry of Social Development, 2010). Ministry of Health data for 1980–1982 to 1995–1997 was used, including an adjustment for the undercount of Māori deaths relative to the Māori population by linking mortality to census records (Blakely et al., 2005).

72.8 years for males and 76.5 years for females, compared to 80.2 years for non-Māori males and 83.8 years for non-Māori females. This equates to an average estimated reduced life expectancy at birth of 7.4 years for Māori males and 7.3 years less for Māori females (Statistics New Zealand, 2013a). At 50 years, Māori males can expect to live to 76.6 years, while Māori females can expect to live to 78.9 years, compared to 82.2 years for non-Māori males and 85.2 years for non-Māori females (Statistics New Zealand, 2013c). About 60% of the difference between Māori and non-Māori life expectancy comes from higher all-cause mortality between the ages of 50 and 79 years (Statistics New Zealand, 2013a), due to higher rates of cardiovascular disease (Pitama, Wells, Faatoese et al., 2011), cancer, accidents and diabetes (Robson & Harris, 2007), and underlying causes in ethnic mortality disparity attributed to harsher socio-economic impacts, increased lifestyle risk factors, less access to health care services and discrimination (Blakely, Tobias, Robson et al., 2005). The disparity of years spent in good health was 6.5 years in 2006 (Tobias et al., 2009). Consequently, Māori can expect to live shorter lives and fewer years in good health than non-Māori.

1.2.3 Ageing in Canterbury

The 2006 Census reported that the population of the Canterbury region was 521,832, or 13% of the New Zealand population (Statistics New Zealand, 2012b). The Canterbury population was older than the rest of New Zealand as a whole. Fewer Canterbury residents were aged 15 years or under compared to the rest of New Zealand (19.6% and 21.5% respectively). More of the Canterbury population was aged 65 years or over compared to New Zealand (13.9% and 12.3% respectively). Recent official projections indicate that the proportion of Canterbury residents aged 65 years and over will double by 2031, to make up about 23% of all Canterbury residents (Statistics New Zealand, 2012b). This is 20 years ahead of New Zealand as a whole. By 2031, half the regional population is expected to be over the age of 42 years. Thus ageing in Canterbury appears to be accelerated compared to New Zealand.

There were 36,669 people identifying as Māori living in Canterbury in 2006, which was 7.2% of the regional population (Statistics New Zealand, 2012a). The age of Māori in Canterbury is significantly younger than non-Māori. The median age of Māori in Canterbury is 22.0 years, compared to 37.6 years for the Canterbury population in general. Māori aged 15 years and under make up 35.5% of Māori in Canterbury, compared to 19.6% of Canterbury as a whole. Māori residents aged 65 years and older make up only 3.3% of the Canterbury population,

compared to 13.9% of Canterbury as a whole (Statistics New Zealand, 2012b). Due to the younger age and higher fertility rate of Māori in Canterbury, the Māori population is growing faster than the non-Māori population. In 2010, it was predicted that by 2012, Māori would make up 9.2% of the Canterbury population. By that time, the proportion of Māori aged 65 years and over is projected to double to 6.6% (Reid, 2010).

1.3 Attitudes to Ageing

Ageing is a process that starts at birth and continues throughout life (Cummings, Kropf & De Weaver, 2000). Age is more than simply a measure of chronological years. Age is also a social construct and is uniquely personal (Lucas-Carrasco, Laidlaw, Gómez-Benito et al., 2012). Interest in the ageing process, or senescence, has been commented on for thousands of years. Hippocrates was perhaps the first to articulate ideas of progression through the life course, when he compared the stages of life to passage through the seasons, from spring to winter. Gerontological ideas about the importance of happy and meaningful lives over individuals' life spans increasingly developed after World War I (Hall, 1922). The study of attitudes within gerontology has been a specific focus of study since the end of World War II (Dinkel, 1944), resulting in greater examination and explanation.

An attitude is a personalised evaluation, which gives meaning to aspects of the individual's world (Ajzen & Fishbein, 1977; Bohner & Dickel, 2011). Attitudes are understood to consist of emotional, cognitive and behavioural components that interact (Eagly & Chaiken, 1993; McGuire, 1969), and respond to experience and perceived consequences (Ajzen & Fishbein, 1980). Attitudes to ageing involve the subjective perception of ageing, rather than being based on individuals' chronological age and life experiences. As such, they represent a complex subjective evaluation of one's social, physical and psychological experiences and anticipated future. Attitudes exist on a dynamic continuum between positive and negative. Positive attitudes and happiness are overlapping, though distinct constructs, both being influenced by mood and personality. Positive attitudes to ageing reflect a perspective that personal growth and development can be experienced in later life (Laidlaw, Power, Schmidt et al., 2007), while negative attitudes reflect a perspective that older age is a time of physical and mental decline (Levy, 2003). Thus, attitudes towards ageing act as a multidimensional lens through which the gains and losses experienced with ageing are viewed (Laidlaw et al., 2007).

While attitudes towards ageing are an individualised appraisal, they exist within a social and cultural context. Individuals and the societies around them create views, values and expectations of how people should age (Montepare & Lachman, 1989). Negativity and stigma toward old age exist in many societies (Hummert, Garstka, Shaner et al., 1995; Levy, 2009; Settersten Jr & Mayer, 1997; Ward, 1977), particularly in those societies that value youth (Barrett, 2005; Kite & Johnson, 1988; Schafer & Shippee, 2010b) and promote the notion of agelessness over ageing (Andrews, 1999; Bultena & Powers, 1978).

Attitudes towards ageing can be understood and conceptualised by a number of conceptual frameworks, several of which are developed in the following chapter. An Awareness of Age-Related Change framework was selected as the most relevant for understanding attitudes to ageing.

1.3.1 Conceptual Framework for Research on Attitudes to Ageing

The awareness of growing older is a major subjective experience during adulthood and forms the basis of a recently developed conceptual framework (Diehl & Wahl, 2010), which is of broad relevance to the current study. The model emphasises that individuals become aware that their behaviour, performance, or experience of life may have changed as a result of growing older. Awareness of Age-Related Change comprises of perceptions, interpretations, understanding, knowledge and behaviours, which influence individuals' personal meaning of life and the self-regulation of behaviours. It is a multidimensional framework, recognising both positive and negative aspects attributed to ageing, such as physical declines, social losses and continued growth. Ageing outcomes are organised around physical wellbeing, psychological wellbeing and engagement with life.

The multidimensionality of the model recognises the complexity of internal and external triggers. Internal processes, such as perceiving oneself to look older than a peer or experiencing symptoms from ill health could prompt an individual to “feel older” as they become more aware of changes from ageing. External experiences, such as being called “older” or being diagnosed with a chronic (long-term) and potentially life-shortening condition, could also trigger an increased awareness of becoming older. Life may be perceived as changed, more fragile and possibly shorter. Consequently, health behaviours, such as having regular check-ups or taking medication may be pursued, or not. But not all individuals may

perceive an age-related change from these health triggers. These individuals may have unchanged meaning or behaviour in the domains of physical and psychological wellbeing and engagement with life.

This new framework is of relevance to the current study, as it encompasses multiple dimensions of the subjective ageing experience and broadly incorporates relationships of physical and psychological health with attitudes to ageing. Individuals are seen to make complex self-assessments of their socio-economic status, health conditions and psychological wellbeing (Demakakos, Gjonca & Nazroo, 2007); factors which help shape their Awareness of Age-Related Change.

1.3.2 Attitudes to Ageing and Health

There is increasing empirical evidence that individuals who are positive about ageing are also healthier, and live to an older age (Chida & Steptoe, 2008; Ong, 2010; Pressman & Cohen, 2005; Steptoe, Dockray & Wardle, 2009; Uotinen, 2005; Veenhoven, 2008; Wiest, Schüz, Webster et al., 2011). Positive attitudes in early life and midlife have been associated with increased life satisfaction, health and longevity up to 60 years later (Carstensen, Scheibe, Ersner-Hershfield et al., 2011; Dainese, Allemand, Ribeiro et al., 2011; Danner, Snowdon & Friesen, 2001). A recent review convincingly linked positive subjective wellbeing with an increase of life expectancy of between four and ten years (Diener & Chan, 2011).

Positive attitudes have been found to have more impact on life expectancy than hypertension and high cholesterol (Levy et al., 2002), body mass index (BMI), smoking or exercise (Fraser & Shavlik, 2001). Adults who feel younger and have a positive attitude have been found to have better mental and physical health (Barrett, 2003) and a reduced risk of disability (Demakakos et al., 2007). Long-term associations have been found between attitudes to ageing and specific health conditions, such as heart disease (Barefoot, Brummett, Williams et al., 2011; Kuper & Marmot, 2003; Levy, Hausdorff, Hencke et al., 2000; Levy, Zonderman, Slade et al., 2009; Steptoe & Wardle, 2012; Terry, Pencina, Vasan et al., 2005), hypertension (Demakakos et al., 2007) and respiratory mortality (Levy & Myers, 2005).

More negative attitudes towards ageing have been associated with poor health. For example, early studies found that individuals with ill health are more likely to report feeling older than

their actual age (Baum & Boxley, 1983), and also describe themselves as “old” (Markides & Boldt, 1983). Studies have evaluated the effect of age perceptions on life satisfaction, finding that those identifying as “old” report lower levels of happiness and life satisfaction (Logan, Ward & Spitze, 1992). Changes in health have been noted as the most common reason for beginning to notice one’s age and feel older (Sherman, 1994). Having a greater number of chronic conditions, worsening health, and depression were related to poorer perceptions of health and quality of life (Bryant, Beck & Fairclough, 2000; Piazza, Charles & Almeida, 2007; Siahpush, Spittal & Singh, 2008; Zaninotto, Falaschett & Sacker, 2009). There is strong evidence that poor health may lead to early retirement (Stephens, Alpass, Towers et al., 2011). Thus, the relationship between better individual health and more positive perceptions has been reasonably well established.

Health experiences influence subjective age awareness (Barrett, 2003). Despite evidence that attitudes to ageing are associated with functional health, few studies have focused on relationships between attitudinal measures and chronic health conditions (Demakakos et al., 2007). While specific chronic conditions have been examined with perceptions of ageing, gaps exist in the literature around the complexity of ageing perceptions and health relationships. For example, does the experience of symptoms or pain from chronic conditions have a bearing on individuals’ attitudes towards their own ageing? If a chronic condition potentially limits life expectancy, do individuals have more negative attitudes about ageing?

It is also apparent that the relationship between health and attitudes is much more complex than those with positive attitudes enjoying good health and those with negative attitudes suffering ill health. Individuals with poor health can still feel positive about ageing and those in good health can feel anxious about ageing (Pruchno, Wilson-Genderson, Rose et al., 2010). The coexistence of chronic disease and successful ageing within an individual has been receiving more attention (Bowling & Dieppe, 2005; Young, Frick & Phelan, 2009). The Alameda County Study found mixed results: one third of individuals over 65 years perceived themselves to age successfully despite having chronic conditions, while a further third without chronic conditions did not perceive that they were ageing successfully (Strawbridge & Wallhagen, 2003). Perceptions of successful ageing were associated with not smoking, being physically active, avoiding obesity, having positive relationships and being active in the community. Each of these behavioural factors was equivalent to the presence of one chronic

condition. Perceptions of successful ageing were therefore associated with particular behavioural factors, which could balance the potentially negative effect of ill health.

1.3.3 Attitudes to Ageing and Health Behaviours

Health is influenced by behavioural choices (Potempa, Butterworth, Flaherty-Robb et al., 2010). There are a diverse and complex range of healthy lifestyle and help-seeking behaviours⁵ which individuals engage in order to protect personal health and reduce the risk and impact of chronic conditions. Health behaviours, such as choices around smoking, alcohol consumption, immunisation, level of physical activity and cancer screening, can help prevent and reduce chronic disease, maintain optimal mental and physical health (Hoskins, 2002), and extend healthy years (Kalache, Aboderin & Hoskins, 2002).

During midlife years, select health behaviours have consistently been found to positively influence later health and life expectancy (Hartman-Stein & Potkanowicz, 2003; Lachman & Agrigoroaei, 2010; Terry et al., 2005; Willcox, He, Chen et al., 2006). A systematic review identified the six most influential modifiable health behaviours, which contribute to health improvements in older age as BMI; smoking status; alcohol use; physical activity level; diet and health practices (Peel, McLure & Bartlett, 2005). Studies tracking large samples from midlife have found that maintaining a healthy body weight, not smoking, undertaking regular exercise, and non-hazardous alcohol consumption are persistently associated with the slower development of disability and mortality postponement of between four and 14 years (Chakravarty, Hubert, Krishnan et al., 2012; Khaw, Wareham, Bingham et al., 2008).

The well-known Harvard Study of Adult Development found that functional health at 80 years could be predicted by a number of protective factors at 50, including higher educational achievement; not smoking; not drinking hazardously; maintaining a healthy weight; and engaging in exercise (Vaillant, 2002; Vaillant & Mukamal, 2001). In that study, male participants with three or fewer protective factors by the age of 50 years were three times as likely to be dead by the age of 80 years as those with four or more protective factors. Even the disadvantages of low education and income in early life have been found mitigated by not smoking, diet, exercise and moderate alcohol intake at midlife (Britton, Shipley, Singh-Manoux et al., 2008), thus reducing the impact of socioeconomic disparities.

⁵ To be referred to hereafter as health behaviours.

Attitudes are involved in the motivation to engage in health behaviours, particularly a belief in personal control and the modifiability of health. Midlife adults who “feel” young are more likely to expect better health and put more effort into their health by not smoking, and also be within the recommended BMI range (MIDUS, 2007). Compared to younger ages, those in midlife feel they have more control over their health and believe that eating a balanced diet and not smoking lead, not only to older age, but also to a healthier life in old age (Kneale, Mason & Bamford, 2012). Midlife New Zealanders have been also been observed to monitor their health, body and behaviour to reduce fear and anxiety of losing control of one’s health, particularly with regards to self- perceptions of ageing (Pond, Stephens & Alpass, 2010a). The same study found that actively engaging in health behaviours improves one’s self-perception as healthy (Pond, Stephens & Alpass, 2010b). However, some health behaviours may not be indicative of positive outcomes. For example, frequently visiting the doctor has been found to reflect health anxiety and depression (Ladin, 2012; Taylor, Marshall, Mann et al., 2012). Motivation to exert personal control over ageing processes likely underlies part of the individual’s choice to engage in health behaviours.

Despite firm evidence linking participation in key health behaviours with health and longevity, limited literature exists exploring the relationship between attitudes to ageing and health behaviours. Positive attitudes to ageing have been found predictive of individual motivation to engage in select health behaviours (Kalfoss, Low & Molzahn, 2010; Levy & Myers, 2004). Individuals may also feel more positive about physically ageing if they actively engage in health behaviours (Bryant, Bei, Gilson et al., 2012). Attitudes to ageing may help shape behavioural choices and plans for the future. This may be because positive self-perceptions and expectations about ageing catalyse an increase in protective resources (Ostir, 2004) caring for health. However, the range of healthy lifestyle and help-seeking behaviours is very diverse, and likely to reflect personal knowledge, environmental factors and a balancing of expectations about health benefits and assessment of individual effort required. Certain health behaviours may have a stronger relationship with subjective ageing perceptions. Specifically, which health behaviours are associated with positive attitudes to ageing is of interest to maintaining health as individuals and populations age. It is quite possible that individuals engage in particular health behaviours without having associated positive subjective ageing perceptions. It is likely that the choice to engage in certain health behaviours is linked with an expected benefit to an individual’s later health (Demakakos et al., 2007) and life expectancy (Levy et al., 2002, Levy,

2003). Attitudes towards ageing, notably during midlife, may have important implications for certain health behaviours and consequently for health and longevity.

1.4 Focus on Midlife

Relatively less attention has been paid to the attitudes to ageing of those in midlife. Precisely when midlife occurs continues to be the subject of debate. For example, the baby boomer generation commonly refers to those born between the years 1946 to 1965. As of 2014, baby boomers are aged between 49 and 67 years. The English Longitudinal Study of Ageing (ELSA) found that being male and being younger was associated with perceiving midlife to start up to 20 years younger, between 41 and 59 years (Kuper & Marmot, 2003; Swiery & Willitts, 2012). The Midlife in the United States (MIDUS) study also found that the age of entering midlife depended on respondent age and gender: older adults and women thought it started up to eight years later than younger adults and men. Midlife was perceived to last about 15 years (Brim, 2000).

The fifties are seen as the decade in which messages about the pace of ageing increases and awareness of mortality grows (Walker, 2002). Concrete and symbolic ageing reminders, such as the deaths of parents and friends, decade birthdays and health concerns, become important milestones for individuals, creating identity changes (Jetten & Pachana, 2012; Karp, 1988; Sherman, 1994). Even relatively subtle cues, such as being asked one's age and memory lapses, can activate changes to age-related attitudes (Hess, 2006). Life trajectories from midlife into older age range widely (Miche, Wahl, Diehl et al., 2013), including career changes, adult education, relationship stability or change, child-rearing and post child-rearing, caring for older parents and coping with their loss, preparing for retirement, health changes and, for women, going through menopause (Keller-Olaman, Williams, Knight et al., 2004). Consequently, midlife can be a time for greater reflection and attitude development about personal ageing and health than previous decades.

Those people currently in their midlife years are unlike their parents and grandparents in several ways (Biggs, Phillipson, Leach et al., 2007; Malcolm, 2012; Maples & Abney, 2006; Quine & Carter, 2006). This generation is living longer, are more highly educated, are less likely to be married, have lower rates of fertility, have later transitions into parenthood and retirement, hold altered world views because they have not experienced the deprivations and

struggle of a global war or the great depression, and are active consumers and users of technology. There is some evidence that individuals in their fifties are increasingly sharing attributes and behaviours with much younger individuals, in their thirties or forties, rather than those who are older (Scales & Scase, 2000). It is possible that future cohorts of individuals in their sixties and older will be even more reluctant to perceive themselves as “old” (Bowling & Iliffe, 2006).

Despite the significance of the middle stage of life, midlife has been called neglected (Karp, 1988; Wray, 2007) and the least charted territory in human development (Brim, 2000; Dainese et al., 2011; Willis & Martin, 2005). The emphasis on young adulthood and older age in the literature, at the cost of those in midlife, has been criticised (Barak, 2009; Logan et al., 1992; Toothman & Barrett, 2011). Perhaps the reason for midlife being overlooked more than younger and older age groups is that, as a life stage, it has been seen as largely undramatic (Dainese et al., 2011). Compared to younger and older age groups, individuals in midlife may be viewed as having more choices, being relatively healthy, socially active, having a higher income, and often leading full lives with employment and families. These factors may be viewed as justification for not highlighting this dynamic population group.

However, there are a number of key reasons for understanding this midlife cohort (Buckley, 2008). Understanding how individuals in midlife view their ageing and look after their health has been identified as a key component in societies ageing well in the future (Vaillant, 2002). Those in midlife are the older population of the future. For the first time in history, a shift is occurring from a youth-dominated age structure to one that is midlife-dominated and set to enter older age in the medium term. The size of this midlife cohort is the largest in history. As it moves up through the population structure, wave effects will be created, influencing health services, employment, transport, economics, housing, recreation, social dynamics, politics, environmental concerns, and resource constraints. Those in midlife have grown up in a period of significant and rapid social change, which will influence perceptions, expectations, behaviours and issues. Midlife has been called a critical and influential period on the pathway of successful ageing (Dainese et al., 2011), bringing a complex range of experiences, responsibilities and perceptions. Many normative and biographical transitions are observed during this time, which influence future life outcomes (Whitbourne, 2005; Martin & Willis, 2005). Optimising health and health behaviours of those in midlife has been found to contribute to better individual outcomes in later life, as well as broader social outcomes

(Barrett, 2003; Britton et al., 2008; Levy et al., 2002; Maier & Smith, 1999). Consequently, midlife years are important for a multitude of reasons, notably that they precede the young-old age group; they are currently the largest midlife age group in history; they hold a particular combination of power, relationships and responsibilities; and that midlife health influences health in later life.

1.5 Summary

The demographic shift to an older age structure has increased the pace of enquiry and discussion into caring for the health and wellbeing of ageing populations. The subjective experience of ageing is a critical aspect of individual trajectories through the life span. Attitudes to ageing are involved with how individuals view their own ageing, within the context of ageing societies. Existing literature has drawn convincing connections between presence of positive perceptions toward ageing and physical health, psychological wellbeing and longevity. But gaps in the literature exist, specifically the examination of attitudes towards ageing and chronic health conditions. Despite evidence linking key health behaviours with personal control, expectations of health, better health and longevity, gaps exist in the literature regarding the relationship between health behaviours and how individuals view their own ageing. Negative attitudes to ageing are likely to reflect Awareness of Age-Related Change and be triggered by internal and external conditions, such as experiencing health symptoms or being diagnosed with a chronic condition. The understanding of how individuals in midlife perceive their ageing has been comparatively less developed than that of younger and older population groups.

The study aimed to investigate attitudes to ageing in a midlife New Zealand population and examine relationships with a range of socio-demographic factors, self-perceptions of health, chronic health conditions, depression and health behaviours, within a broad Awareness of Age-Related Change framework.

1.6 Outline of Thesis

Chapter 2 reviews the literature, focusing on influential constructs involved in attitudes to ageing, and illustrated with measures used to assess attitudes over the past 50 years. Selected conceptual frameworks are presented and critiqued, with a particular focus on the Awareness

of Age-Related Change model. Chapter 3 presents a rationale for the research questions and hypotheses examined in the study.

Chapter 4 covers the methodology used in the study design. Participants were drawn from the Canterbury Health, Ageing and Lifecourse (CHALICE) study. The first 200 CHALICE participants were recruited randomly through the general and Māori electoral rolls, in the year of their 50th birthday (Schluter, Spittlehouse, Cameron et al., 2013). The attitudinal measures used in this study are the Attitudes to Ageing Questionnaire (AAQ), felt and ideal age, Experience of Ageing and subjective life expectancy. Key socio-demographic variables are defined, along with the health and health behaviour variables used in the study.

There are four results chapters (chapters 5 to 8). Response rates in recruiting the first 200 CHALICE participants were affected by the Canterbury earthquakes. Results from the five attitude-to-ageing measures assessed in the CHALICE study are presented and the AAQ is selected as the primary attitudinal measure to be analysed with socio-demographic factors, common chronic health conditions, depression, and selected health behaviours. Where possible, comparisons are made with Canterbury and New Zealand data from the New Zealand Census and New Zealand publications.

Finally, chapter 9 presents the discussion and conclusions of the thesis. The original research questions and hypotheses are reviewed in light of the results. The significance and implications of key results are discussed. Limitations in the study design are critiqued and recommendations made for future focus.

CHAPTER 2:

Reviewing the Literature

“In the end, it’s not the years in your life that count... it’s the life in your years.”

Abraham Lincoln

2.1 Overview

The awareness of growing older is an important experience for individuals over a lifetime (Diehl & Wahl, 2010). The literature has responded to the current “revolution in longevity” (United Nations, 2002a), as outlined in the introduction, by an upturn in ageing research, aiming to understand and explain the antecedents, pathways and outcomes of optimal ageing. Ageing research is showing increasing interest in how individuals acquire, develop, internalise and express knowledge of their ageing and, consequently, how this changing individual awareness is involved in experiences and outcomes across a wide range of domains. Part of this research has focused on clarifying the constructs and conceptual frameworks involved in the subjective, or individualised, experience of ageing, as at times concepts have been used interchangeably, creating some confusion. A theoretical shift has been observed in the field of subjective ageing research over the past ten years, in which conceptual frameworks have been broadened and merged, becoming more multidimensional and multidisciplinary. At the same time, the literature has reported an increase in multidimensional instruments to measure complex subjective ageing experiences, which incorporate positive as well as negative aspects of ageing (Kornadt & Rothermund, 2011; Laidlaw et al., 2007).

In the literature, attitudes towards ageing are an important component of examination and discussion around the antecedents and outcomes of subjective ageing experiences. Attitudes are beliefs, values and opinions in response to experiences in all spheres of life over time (Ajzen & Fishbein, 1980; Hess, 2006). Individuals have a unique awareness and knowledge of their own ageing (Laidlaw et al, 2007) and are observed to reflect on and construe meanings about their own ageing. These perceptions are not simply dependent on chronological age, although they are responsive to personal experiences and external feedback over the life span.

With increasing age, health becomes an increasingly important influence on life. However, the literature has yet to fully understand and conceptualise the relationship between attitudes towards ageing and health.

A number of key constructs and conceptual frameworks have informed the development of understanding and measurement of attitudes to ageing research. Relevant constructs identified in the literature include attitudes towards ageing, attitudes towards age stereotypes, subjective age, age identity and self-perceptions of ageing. A range of instruments is used to measure the characteristics of each construct. Several conceptual frameworks have guided the development of attitude to ageing research. An Awareness of Age-Related Change framework (Diehl & Wahl, 2010) is of particular value for understanding attitudes to ageing research. This recently developed framework has built on established traditions of a life span perspective, and healthy and successful ageing. Each conceptual framework is discussed in turn. The chapter then turns to political strategies globally, through the World Health Organization (WHO), and in New Zealand, which recognise and provide a context for attitudes to ageing. Literature coming out of New Zealand on ageing and attitudes towards ageing concludes the chapter.

2.2 Ageing Constructs and their Measurement

A range of key constructs and measures has informed attitudes to ageing literature. Chronological age is regarded as fundamental in terms of understanding and classifying individuals throughout the life span. Like other human characteristics, such as gender or ethnicity, chronological age is generally outwardly visible and used as a basis for social judgements and attributions (Cuddy & Fiske, 2002). Chronological age is typically used as a variable in empirical studies with either a specific age recorded in years or individuals categorised in age groups, for example, over 65 years. Such age categorisation is used in Census data. However, categorisation of chronological age is seen to obscure true physiological, psychological and social diversity of individuals as they age (Bowling & Iliffe, 2006). It has been argued that chronological age is a limited predictor of developmental changes over the life span (Miche et al., 2013; Mock & Eibach, 2011). Chronological age also does not recognise differences in how individuals feel about their own and others' ageing. Consequently, ageing research has seen increased attention focused on how individuals experience their own ageing, within ageing societies. Increasing interest has been shown in the

measurement of subjective ageing concepts, to complement that of chronological age (Kuper & Marmot, 2003; Uotinen, 2005).

The development of instruments to assess attitudes has been a necessary task in ageing research, in order to help explain attitude-behaviour relationships (Kafer, Rakowski, Lachman et al., 1980). Attitudes are not usually observed directly, but are contingent primarily on individual self-report (Bohner & Dickel, 2011). However, self-report measures are susceptible to socially desirable responses by responders (Hendrick, Fischer, Tobi et al., 2013), and rely on responders being able to make explicit attitudes that may be usually implicit (Schwarz, 2007). Consequently, attitude measurement is highly dependent on context, question wording, format and order (Schwarz & Bohner, 2001). There is no standard method of measuring attitudes toward ageing (Kalfoss et al., 2010), and to date, no known comprehensive review of attitudinal measures has been published.

Attitudinal scales are required to be consistent, accurate and reliable, in order to measure what they are supposed to measure (Palmore, 1982). To reduce potential difficulties with self-report attitudinal measures, reporting needs to specify reliability, validity, item inclusion and the sample used, to facilitate comparative analysis (Hendrick et al., 2013). Few instruments have been developed or validated in a cross-cultural setting or developing countries, and few have had large numbers of the community involved in testing model validity (Bowling & Dieppe, 2005). Attitudinal instruments are described and critiqued below under the most appropriate construct.

2.3 Attitudes towards Ageing

Attitudes have long been considered a distinctive and indispensable concept in contemporary social psychology (Allport, 1935). An attitude has been defined as “an evaluative integration of cognitions and affects experienced in relation to an object. Attitudes are evaluative judgements that integrate and summarize these cognitive/affective reactions. These evaluative abstractions vary in strength, which in turn has implications for persistence, resistance, and attitude-behavior consistency” (Crano & Prislín, 2006, p. 347). Individual knowledge, observations and experiences help form attitudes (Hess, 2006; Schwarz, 2007). Attitudes often exist on a continuum ranging from positive to neutral to negative, which can coexist simultaneously. Attitudes are generally viewed as stable integrative judgements, which summarise individuals’

thoughts, feelings and memories towards objects or situations (Prislin & Crano, 2008). However, attitudes are also recognised to incorporate complexity, uncertainty or conflict (Wood, 2000), and can change depending on experience, perceived consequences (Ajzen & Fishbein, 1980) and attitudinal strength. The strength of attitudes to resist change, or to adjust, partly depends on the social, cultural and historical contexts within which they exist.

Attitudes have been the focus of fruitful attention in the literature, including the study of attitudes towards ageing. An early review of the literature recognised that attitudes towards ageing were critical for older adults' adjustment and survival, as they influence whether behaviours are adaptive or maladaptive and strengthen the perception and approach of younger individuals to their own ageing (Bennett & Eckman, 1973). This view is still considered largely true today. Attitudes to ageing have been defined as affective, cognitive and evaluative components of behaviour toward the process of ageing as a personal experience and toward older adults as a group (Hess, 2006). Thus, attitudes to ageing include feelings, knowledge and assessments of one's own ageing and that of others. Attitudes towards ageing give individuals meaning regarding the experience of ageing, reflecting both individual knowledge and experiences, and influencing behavioural choices (Ajzen & Fishbein, 1977; Bohner & Dickel, 2011). When disagreement exists between belief and behaviour components of an attitude, an individual may adjust one to match the other, for example adjusting a belief to match behaviour, according to Dissonance-Reduction theory (Festinger, 1957). Consequently, attitudes may guide information processing and help an individual decide what behaviour is appropriate (Bohner & Dickel, 2011; Hendrick et al., 2013).

Attitudes to ageing are generally seen to function implicitly, guiding emotional response, thought patterns and behaviours, often without individuals' being overtly aware of their influence (Diehl & Wahl, 2010). Research into the strength and influence of individuals' attitudes to their own ageing over a range of domains has received less attention in the literature. Attitudes towards ageing are complex and multidimensional, incorporating both positive and negative views about ageing (Laidlaw et al., 2007), often simultaneously and sometimes in contradictory ways. Even though the ratio between gains and losses is seen to shift towards losses over the latter part of the life span, important gains are still perceived as achievable in older age (Heckhausen, Dixon & Baltes, 1989). To illustrate, older adults have reported personal growth, accomplishments, wisdom and greater experience as positive aspects of the ageing process (Wurm, Tomasik & Tesch-Römer, 2010).

Attitudes of younger individuals to older individuals have been a specific focus of study since the end of World War II (Bekker & Taylor, 1966; Blau, 1956; Dinkel, 1944; Drake, 1957; Elder, 1975; Havighurst, Neugarten & Bengtson, 1966; Kilty & Feld, 1976; Kogan, 1961; Linn & Hunter, 1979; Neugarten, 1968; Palmore, 1977; Peters, 1971; Thorson, Whatley & Hancock, 1974; Tobin & Neugarten, 1961; Tuckman & Lorge, 1953; Zola, 1962). These early empirical studies examined attitudes towards older adults, and found conflicting evidence of negative, neutral and positive attitudes towards older individuals (Kite & Johnson, 1988). A more recent meta-analytic review of 232 studies confirmed that attitudes were more negative towards older adults than younger adults (Kite, Stockdale, Whitley et al., 2005). Of note, individuals at advanced ages do not necessarily see themselves as old (Bultena & Powers, 1978; Logan et al., 1992; Montepare & Lachman, 1989), and it is common for them to avoid thinking about the decreasing number of years left to live (Weiss & Lang, 2012). In contrast, those in midlife have reported more negative attitudes towards older adults than older or younger respondents. It is likely that those in midlife are aware of their proximity to older age, but are reluctant to accept that ageing (Montepare & Lachman, 1989).

One of the earliest publications to focus on attitudes to ageing in midlife found that the majority of 625 American participants, aged between 40 to 70 years, had neutral attitudes toward the present and the future (Neugarten & Garron, 1959). But 30 years on, Americans in midlife were noted to be more pessimistic than the “oldest-old” about potential problems facing older adults (Secombe & Ishiikuntz, 1991). More recently, large studies, such as MIDUS and ELSA, have examined attitudes to ageing during midlife and their findings are referred to extensively in future chapters. However, the literature on midlife attitudes to ageing is far outweighed by that focused on the attitudes of younger and older individuals to their own and others’ ageing (Barak, 2009; Logan et al., 1992).

2.3.1 Measurement of Attitudes to Ageing in the Literature

It appears that just two scales have been developed to specifically measure individual attitudes toward their own ageing. Possibly the most widely known and used measure of attitudes to ageing in older adults is the Attitude Toward Own Aging subscale of the Philadelphia Geriatric Morale Scale (Lawton, 1975). This subscale includes five yes-no items, such as “Things keep getting worse as I get older” and “I am as happy now as I was when I was

younger”. Higher scores indicate more negative perceptions of ageing. The subscale was further developed into a negative ageing self-perception measure (Liang & Bollen, 1989). The Attitude Toward Own Ageing Subscale has been broadly used with a number of covariates. Results have been fairly consistent regarding mortality, depression, functional health and changes to health. Attitudes to ageing have been identified as a predictor of mortality in several studies. Each item in the Attitude Toward Own Aging Subscale showed significant relationships to mortality in a Spanish neurological study, relationships which were not found in the Agitation and Lonely Dissatisfaction subscales of the Philadelphia Geriatric Morale Scale (Benito-Leon, Louis, Rivera-Navarro et al., 2010). Similarly, the Berlin Aging Study found that attitudes towards ageing predicted mortality, after controlling for age; socio-economic status; self-rated health; number of illnesses; life satisfaction; and cognition (Maier & Smith, 1999). The Australian Longitudinal Study of Ageing (ALSA) supported these results, finding the subscale captured age-related changes and was significantly associated with health decline, physical functioning and mortality over a 16 year period (Sargent-Cox, Anstey & Luszcz, 2012, 2013).

Depression and neuroticism have been linked to more negative attitudes using the Philadelphia Geriatric Morale Scale. Older adults believing depression to be a normal part of growing older have been found to hold more negative attitudes about their own ageing (Law, Laidlaw & Peck, 2010). The Women’s Health Initiative Study found significant links between depression and more negative attitudes to ageing, and also found that positive attitudes were associated with better physical and emotional functioning, and greater resilience (Kavirajan, Vahia, Thompson et al., 2011; Vahia, Thompson, Depp et al., 2011). Older adults with high neuroticism have reported more negative attitudes to ageing in Korea (Jang, Poon, Kim et al., 2004), explained by greater attention being given to negative aspects of life and a perception of stressful or threatening situations. Functional limitations in women with multiple sclerosis were negatively associated with attitudes to ageing (Harrison et al., 2008). Being female, comparatively younger and of higher socio-economic status have been linked with more positive attitudes towards ageing in older adults aged over 70 years from the Berlin Aging Study (Kleinspehn-Ammerlahn, Kotter-Grühn & Smith, 2008). Attitudes to ageing of both younger and older individuals, in the OLSAR study, were found to influence how ageing stereotypes were internalised and consolidated, with increasing age (Levy, 2003, 2008; Levy et al., 2002). Negative ageing stereotypes led to more negative ageing perceptions over time.

While the Philadelphia Geriatric Morale Scale subscale is seen as well constructed, it has also been criticised. The subscale fails to capture the positive experiences of ageing, which many older adults acknowledge. In addition, it is regarded as an inadequate measure of attitudes to ageing across country, ethnicity and situation (Laidlaw et al., 2007).

2.3.2 Attitudes to Ageing Questionnaire (AAQ)

Frustration with the negative stereotypical view of older adults by younger adults, and a perceived lack of instruments capturing a full range of experiences and attitudes of older individuals to their own ageing process, led to the development of the AAQ. Older adults were recognised as having first-hand knowledge of their adaption to the ageing process: they are experts on their own ageing (Laidlaw et al., 2007). Ageing research had already found that ageing was often experienced in a positive light by older adults, reporting ongoing personal growth and positive wellbeing (Carstensen & Mikels, 2005; Charles, Reynolds & Gatz, 2001; Vaillant, 2002). A life span development framework was applied to the AAQ, which took account of the multidimensional and multidirectional losses and gains experienced over the life course (Baltes, 1991).

The AAQ scale was developed by Laidlaw, Power and Schmidt, in association with the WHO Quality of Life Assessment for Older Adults (WHOQOL-OLD) Group (Laidlaw et al., 2007). The European Commission Fifth Framework, under the auspices of the WHO Quality of Life (WHOQOL) Group, funded development of the scale. Questionnaire development followed that of the WHOQOL methodology (Harper & Power, 1998; Power, Quinn, & Schmidt, 1998). A literature review of gerontological knowledge and psychometric methodology was followed by an intense qualitative phase of cross-cultural testing with focus groups in 15 centres globally (Laidlaw et al., 2007). Output from these focus groups was used to identify common themes, either absent or inadequately covered in existing measures. These were then fed into a Delphi exercise, which generated a set of items for pilot testing. Pilot testing involving 1,356 participants aged 60 to 99 years was conducted in 15 centres worldwide, initially using 44 questions. Following detailed analysis of each item, the AAQ was refined to 38 questions within a three-factor model, and an extensive international field trial was conducted with 5,566 respondents aged 60 years and over from 20 of the WHOQOL-OLD centres. Testing occurred in Australia, Brazil, Canada, Denmark, Germany, Israel, Japan,

Lithuania, Norway, Spain, Sweden, Switzerland, Turkey, the United Kingdom, the United States of America and Uruguay.

The AAQ provides a profile of ageing, consisting of three subscale scores each with eight items, encompassing psychosocial loss, physical change and psychological growth⁶. Each item is scored on a five-point Likert scale, with variation in responses from 1=strongly agree to 5=strongly disagree. Each subscale range is 8 to 40. The psychosocial loss subscale presents old age as essentially a negative experience involving psychological and social loss. The physical change subscale focuses on physical change relating primarily to physical functioning, health, exercise and the experience of ageing itself. The third subscale focuses on psychological growth, reflecting explicitly positive gains of ageing in relation to self and others, for example wisdom or growth, and includes previously unforeseen positives about ageing (Laidlaw et al., 2007). Therefore, the positive and negatively worded items and orientation of the scales are designed to capture the multidimensionality of ageing.

The 24 items ultimately selected for the AAQ demonstrated good psychometric performance, both on classical (e.g. exploratory factor analyses) and on modern (e.g. confirmatory factor analyses, item response theory) grounds. Published Cronbach alpha coefficients were 0.68, 0.75 and 0.84 respectively, with an overall model scale fit of 93.8% for the three factor model (Laidlaw, et al., 2007). The AAQ has yet to be validated with a younger population. The AAQ domain structure has been supported by a number of studies in a number of countries (Chachamovich, Fleck, Trentini et al., 2008; Kalfoss et al., 2010; Laidlaw et al., 2007; Low, Ross, Stickland et al., 2013a). To date, while analysis of the AAQ has compared results from different countries, there has been no report of participant ethnicity in the literature.

The AAQ has been evaluated as providing a unique means of conceptualising and measuring attitudes towards ageing across different cultures, under different economic, political and social circumstances across the life span (Laidlaw et al., 2007). Global use of multiple-item attitudinal scales has been supported to increase equivalence, reliability, and both internal and external validity across cultures (Barak, 2009). The AAQ is one of the few attitudinal instruments designed to be applied in cross-cultural settings. As a self-report measure, it is seen to provide a useful tool for researchers, health professionals and policy makers to assess the impact of service provision and of different health and social care structures on the quality

⁶ See Section 4.6.1 for AAQ items.

of life of older adults. Interventions in a range of physical and mental health conditions related to increasing age can also be measured by the AAQ.

Following the original development paper (Laidlaw et al., 2007), a steadily growing number of publications have reported on the AAQ analysing the scale with a range of socio-demographic, physical and mental health factors, almost entirely with older adults. To date, only two out of 23 publications have reported on age groups other than those over 60 years. This may be because the AAQ has not yet been validated for use with adults aged younger than 60 years, but also possibly because of the greater emphasis placed on researching older adults over those in midlife. Published data is variable. Some publications have not been able to be located, such as those in China, and some do not report subscale means. This review focuses on those publications which report on health variables or which include midlife participants⁷.

One early publication from the original pilot study examined the impact of depression on quality of life and attitudes towards ageing in Brazil, with 421 adults aged 60 years and over (Chachamovich et al., 2008). A number of other instruments were also used alongside the AAQ. The Geriatric Depression Scale (GDS) is a 30 item self-reported questionnaire that measures depressive symptoms in older adults (Yesavage, Brink, Rose et al., 1983). A brief version of the generic WHOQOL instrument (WHOQOL-BREF) comprises 26 items over four domains, covering physical, psychological, social relationships and environment, plus two global questions about overall quality of life and satisfaction with health (Power et al., 1998). The WHOQOL-OLD is a module specifically for older adults consisting of 24 items covering six facets: sensory abilities; autonomy; past, present and future activities; social participation; death and dying; and intimacy (Power, Quinn & Schmidt, 2005). Similarities between the AAQ and WHOQOL instruments were noted. For example, they are both based on subjective perception, are multidimensional, and include physical and psychological aspects. It was suggested that the AAQ might capture a more stable perception of attitudes, compared to the more circumstantial WHOQOL-OLD (Chachamovich et al., 2008). The psychological growth domain of the AAQ showed relatively fewer relationships compared to other domains.

⁷ There are a number of other publications focusing on alternate covariates with the AAQ, which are of less interest to the current study. For example, publications on quality of life in Turkey (Top, Eriş & Kabalcıoğlu, 2012a; Top, Eriş & Kabalcıoğlu, 2012b) and Malaysia (Rashid & Ab Manan, 2013), filial piety in China and Scotland (Laidlaw, Wang, Coelho et al., 2010; Wang, Laidlaw, Power et al., 2009) and social support (Zhang, Wang, Power et al., 2011) and creativity (Zhang & Niu, 2013) in China are not included in this review.

Chachamovich and colleagues (2008) proposed that an alternative cluster of variables might be responsible for psychological growth if fewer opportunities for generativity exist. For example, having less to do with children or grandchildren may restrict opportunities to pass on the benefits of growing older or being good examples to younger individuals.

A Canadian study using the AAQ found that many aspects of the ageing process were viewed positively, such as not feeling old, having more energy and being healthier than expected, in 202 adults aged 60 to 95 years (Molzahn & Gallagher, 2009). However, about half of the participants felt that old age was a time of loss, that they were losing their physical independence, and that they felt excluded because of their age. The same Canadian sample was compared with 490 Norwegians aged over 60 years in a subsequent paper (Kalfoss et al., 2010). The reliability and validity of the AAQ was tested with the GDS, the WHOQOL-BREF, the WHOQOL-OLD, self-reported health (“Do you consider yourself to be healthy or sick?”) and the number of chronic conditions experienced. The physical change domain was significantly associated with health satisfaction in both countries.

A more recent Canadian study, using the AAQ and the WHOQOL-OLD, focused on how chronic obstructive pulmonary disease (COPD) affected the perspective of ageing and quality of life with a small sample of 87 participants aged 44 to 82 years (Low et al., 2013a). COPD was selected for its progressively debilitating physical, social and psychological consequences, and was measured by the St George’s Respiratory Questionnaire (Jones, Quirk, Baveystock et al., 1992). Identity Process Theory was applied, in which health limitations act as ageing cues in the physical, psychological and social functioning domains of personal identity (Whitbourne & Collins, 1998). Physical change attitudes to ageing were reported more negatively than other domains. However interestingly, older participants reported more positive physical change attitudes to ageing than younger participants. Functional impairment was found to have negative consequences for physical change attitudes and appeared to be of central importance to an individual’s physical identity. Less onerous physical symptoms and psychosocial losses with ageing were downplayed by individuals, and associated with more positive perceptions of the ageing process.

The Australian Psychological Society surveyed 1,507 Australians to explore their attitudes towards ageing and whether these differed across three age groups (Matthews, Lindner & Collins, 2007). More positive attitudes across domains were noted with increasing age

(younger: 18 to 40 years, middle: 41 to 60 years and older: 61 years and over). Interestingly, the greatest difference between age groups was observed in physical change attitudes, which were significantly more positive in the older group. The perceived age of becoming “old” was influenced by respondent age: the older respondents were, the older they defined when being aged occurred. Attitude to life, or outlook, was the most commonly identified factor determining whether an individual was aged or not, followed by level of fitness and health status. Three quarters of respondents reported feeling positive about the ageing population.

The relationship of the AAQ to self-rated physical and mental health was investigated with 421 adults aged 60 years and over, in rural and regional Australia (Bryant et al., 2012). The SF-12 health survey was used (Ware, Kosinski & Keller, 1996); along with the five-item Satisfaction to Life Scale, designed to measure global cognitive judgments of satisfaction with life (Diener, Emmons, Larsen et al., 1985); the 20-item Geriatric Anxiety Inventory, to detect the presence of anxiety symptoms in older adults specifically (Pachana, Byrne, Siddle et al., 2007); the Center for Epidemiological Studies Depression Scale (CES-D), which is a 20-item self-report scale measuring depressive symptomatology in the general population (Radloff, 1977); and an assessment of pain over the past six months. More positive attitudes to ageing were significantly associated with higher levels of satisfaction with life, better self-rated mental and physical health, and lower levels of anxiety and depression. Individuals who were employed, had a higher socio-economic status, or were in a relationship reported fewer psychosocial losses associated with ageing. Being in a relationship was also related to more positive psychological growth attitudes, and higher socio-economic status to more positive physical change attitudes.

More recently, the same Australian study of health and wellbeing used the AAQ to examine personality antecedents involved in the formation of attitudes to ageing (Bryant et al., 2014), using the five factor International Personality Item Pool, or IPIP (Goldberg, 1999). Neuroticism was significantly associated with negative psychological growth attitudes, while extraversion and agreeableness were associated with fewer psychosocial losses. Self-reported physical health declined significantly in the ten year period since baseline measurements were taken, but mental health and satisfaction with life improved significantly as participants aged during the same period. Better reported health and positive changes to health over time predicted more positive psychosocial losses and physical change attitudes, but psychological growth attitudes were not associated with these health measures.

The reliability and validity of the AAQ was tested in Spain with 242 participants aged 60 years and over, one third of whom were caregivers of those with mental illness or dementia (Lucas-Carrasco et al., 2012). The WHOQOL-BREF, WHOQOL-OLD, the SF-12 and the GDS were also used. Moderate correlations were found between physical change and psychosocial loss subscales of the AAQ and physical and psychological WHOQOL-BREF domains, the WHOQOL-OLD, the total GDS and the physical component of the SF-12. The psychological growth subscale demonstrated the lowest reliability of the three domains. Caregivers reported more negative attitudes to ageing. Female gender and higher education were related to more positive physical change and psychosocial loss attitudes to ageing.

The AAQ has been successfully used with individuals suffering from mild dementia. Dementia was examined alongside quality of life and attitudes to ageing in a small British sample of 56 participants with, and 86 participants without, dementia (Trigg, Watts, Jones et al., 2012). A number of other instruments were administered alongside the AAQ: the 14-item Bath Assessment of Subjective Quality of Life in Dementia, assessing life satisfaction and feelings of positive life quality (Trigg, Skevington & Jones, 2007); the 13-item Memory Functioning Scale of the Memory Awareness Rating Scale (Clare, Wilson, Carter et al., 2002); the 23-item Alzheimer's Disease Cooperative Study Activities of Daily Living Inventory (Galasko, Bennett, Sano et al., 1997); and the well-used Mini-Mental State Examination measuring cognitive function (Folstein, Folstein & McHugh, 1975). The AAQ was found to be valid for individuals with mild to moderate dementia. Increasing age was not related to attitudes to ageing. Memory was a significant predictor for all domains of the AAQ for individuals with dementia, suggesting that lower levels of insight, relative to memory dysfunction, resulted in more positive attitudes to ageing. However, greater awareness of memory dysfunction was associated with a greater perception of psychosocial loss.

The AAQ has also successfully been used with individuals who have a mental health diagnosis, albeit with a small sample. Attitudes to mental illness and ageing were examined in Scotland, comparing 24 older participants with a mental health diagnosis with 50 non-clinical participants (Quinn, Laidlaw, Murray et al., 2009). Instruments assessed with the AAQ included items for the National Scottish Survey of public attitudes to mental health (Braunholtz, Davidson & King, 2004); the 58-item Barriers to Mental Health Services Scale, measuring internal and external barriers to help-seeking in younger and older adults (Pepin,

Segal & Coolidge, 2009); the Understandability Questionnaire, with three attitudinal statements about the predictability of depression in later life (Law et al., 2010); the Rame Questionnaire, measuring internalised ageism in an older population (Parnell, Worthington, Nursing et al., 2001); the 12-item version of the General Health Questionnaire, measuring non-psychotic psychiatric symptoms (Goldberg & Williams, 1988); and the 21-item Reported Health Behaviours Checklist (RHBC), covering preventative health actions and cognitive/affective aspects (Prochaska, Leventhal, Leventhal et al., 1985). Negative attitudes to mental illness were found to be associated with negative attitudes to ageing. The non-clinical group held more negative internalised views of older individuals with mental illness, but were more sympathetic toward younger individuals with mental illness. Those with current or a history of mental illness expressed more positive attitudes towards mental illness, but more negative attitudes to ageing. As a cross-sectional study, it was not possible to gauge whether negative attitudes cause older adults to seek less health care for mental health issues.

Attitudes to ageing mediated the relationship between older individuals' subjective health and quality of life in a secondary analysis of 4593 participants from the original 20 country study developing the AAQ (Low, Molzahn & Schopflocher, 2013b). This extensive survey found that older adults' attitudes towards their ageing partly mediated the relationship between health satisfaction and quality of life, as measured by the WHOQOL-BREF, across all 20 countries, regardless of age and gender. These findings are important, as they show the universality and strength of attitudes in those aged over 60 years. Attitudes towards physical change were the greatest mediator of health satisfaction upon global and domain-specific quality of life, followed by psychosocial loss attitudes and to a lesser extent psychological growth. Those who were dissatisfied with their health reported more negative attitudes towards their ageing. Of interest, more positive psychological growth attitudes were associated with greater health dissatisfaction.

Personality and mood were found to be significant predictors of attitudes towards ageing in a recent study of 792 participants from the 1936 Lothian Birth Cohort, in the United Kingdom (Shenkin, Laidlaw, Allerhand et al., 2014a). Personality was assessed using the brief Neuroticism, Extraversion and Openness - Five Factor Inventory, or NEO-FFI (Costa & McCrae, 1992). In contrast, socio-demographic, cognition and physical ability explained a relatively small proportion of attitudinal variance, once personality was introduced. Extraversion, openness, agreeableness and less physical disability were associated with both

more positive psychosocial loss and physical change attitudes. Anxiety and depression were negatively associated with psychosocial losses, while being female and of higher socio-economic status were positively associated with physical change attitudes. Surprisingly, psychological growth attitudes were more positive amongst those who lived alone, had lower socio-economic status, lower vocabulary and walked more slowly. It was suggested that psychological growth may be a relatively independent from physical and mood changes.

Lothian birth cohort responses were further analysed using Mokken scaling (Mokken & Lewis, 1982), to determine dimensionality of the three AAQ domains (Shenkin, Watson, Laidlaw et al., 2014b). Results suggest that Mokken scaling added a hitherto unidentified dimension of vitality, composed of items from all three AAQ domains, but included a greater number of physical change items. The eight item vitality scale referred to physical and psychological aspects of individual ageing. Legacy and exclusion scales were also identified out of items from psychosocial loss and psychological growth domains of the AAQ. Legacy consisted of four items regarding the impact of an individual's ageing on others, or their "social value". Exclusion comprised six items related to individuals' "social role", particularly focusing on the perception and experience of social exclusion. All three scales were found to be reliable and statistically significant. Results supported the AAQ as conceptually strong and particularly able to measure psychosocial loss and psychological growth. Shenkin and colleagues proposed that, with further refinement, a shorter alternative version of the AAQ could be developed (2014b).

2.3.3. Attitudes to Ageing and Health

The majority of studies reporting on attitudes to ageing, using the Attitude Toward Own Aging Subscale of the Philadelphia Geriatric Morale Scale and the AAQ, have examined relationships with health factors. Because the Philadelphia Geriatric Morale Scale has been used for almost four decades, longitudinal data has been collected on long-term health and mortality. Mortality was significantly associated with the Philadelphia Geriatric Morale Scale in Spain (Benito-Leon et al., 2010), Germany (Maier & Smith, 1999) and Australia (Sargent-Cox et al., 2012, 2013). Depression has been reasonably consistently linked to more negative attitudes, using the same subscale (Kavirajan et al., 2011; Law et al., 2010; Vahia et al., 2011). The subscale has also been observed to be indicative of health decline (Sargent-Cox et al., 2012, 2013), as well as physical and emotional functioning (Harrison et al., 2008; Kavirajan et al., 2011; Vahia et al., 2011).

Studies using the AAQ have found positive attitudes to ageing are linked with feeling healthy (Molzahn & Gallagher, 2009), better self-reported physical and mental health (Bryant et al., 2012, 2014), and greater health satisfaction (Kalfoss et al., 2010; Low et al., 2013b). More negative attitudes to ageing were reported by those with a greater number of chronic conditions (Lucas-Carrasco et al., 2012). Negative physical change and psychosocial loss attitudes to ageing have been strongly associated with poor health and health declines (Bryant et al., 2012, 2014; Kalfoss et al., 2010; Lucas-Carrasco et al., 2012; Shenkin et al., 2014a). Impairment of function was negatively correlated with physical change attitudes in those with COPD (Low et al., 2013a). It is likely that severe symptoms, affecting functionality, may influence individuals' to identify as ill or "old", compared to more minor symptoms, which can be more easily downplayed and accommodated. Curiously, in two studies, greater psychological growth with ageing was associated with poorer health (Bryant et al., 2012) or health dissatisfaction (Low et al., 2013a). Poor health may necessitate the development of resilience, personal acceptance and better coping mechanisms, resulting in more positive psychological growth scores.

The AAQ has been significantly correlated with mental health, anxiety and depression in a number of studies (Bryant et al., 2012; Kalfoss et al., 2010; Lucas-Carrasco et al., 2012; Shenkin et al., 2014a). Even relatively minor levels of depression have been associated with a pattern of negative attitudes towards ageing (Chachamovich et al., 2008). Attitudes towards psychosocial losses were more closely associated with mental health than other domains (Bryant et al., 2012; Quinn et al., 2009, Shenkin et al., 2014a). Awareness of ageing has also been reported by those with dementia, including a heightened sense that ageing would result in a loss of physical independence, difficulties making new friends and reduced involvement in the community (Trigg et al., 2012).

Little attention has been paid to the relationship between attitudes to ageing and health behaviours to date. Only one study is known to have reported on health behaviours (Quinn et al., 2009). More negative attitudes to ageing in physical change and psychological growth domains were associated with fewer health behaviours and lower subjective wellbeing in this study. However, it was unclear whether having negative attitudes actually causes older adults to seek less health care for mental health difficulties.

2.3.4 Summary of Attitudes to Ageing in the Literature

Together, these studies indicate that interest in measuring attitudes to ageing has been active since the mid-1970s. The AAQ was developed in 2007, to provide a multidimensional, cross-culturally valid way of measuring older adults' attitudes to the experience of their own ageing, which includes positive aspects of ageing. Individual attitudes towards the physical changes and, to a lesser extent, the psychosocial losses associated with ageing have been consistently associated with perceptions of health. Literature exploring the relationship of attitudes to ageing and health has focused more on self-rated health and mental health, than on the experience of physical health and health behaviours. All but two of the 23 studies known to have reported on the AAQ have been with older samples. Primarily, this is likely to be because of the relative lack of attention paid to the attitudes toward ageing of midlife adults. It may also be in part to the AAQ not having been validated for research participants under the age of 60 years. However, the AAQ is viewed here as the questionnaire best capturing the complex, multidimensional characteristics of attitudes to ageing, having been extensively tested internationally with a very large sample.

2.4 Attitudes towards Age Stereotypes

Related to the study of attitudes to ageing is the research tradition of attitudes towards age stereotypes. Individuals' attitudes about their own ageing exist within social, historical and cultural contexts, and reflect societal messages, opportunities and stereotypes. Stereotypes about ageing have been called a subset of ageing-related attitudes and beliefs (Diehl, Wahl, Barrett et al., 2014). Age stereotypes in the literature are generally directed toward other individuals and groups, and are recognised as contributing to prejudice and discrimination (Levy, 2003). Ageism, as a term, was first coined by Butler (1969), to refer to discrimination against individuals on the basis of age, similar to racism and sexism. Since then, the term has been broadened to include prejudice or discrimination in favour or against an age group (Ory, Hoffman, Hawkins et al., 2003). Literature has focused on the processes in which age stereotypes become salient, prompting attitudes and influencing behaviours (Hummert, 2011).

Age stereotypes probably become internalised early in life, having repercussions over the life span. Children at about the age of six years have been found to develop and express stereotypical views about age, by one relatively small study with 144 participants aged between four and eight years (Isaacs & Bearison, 1986). Stereotypes have been found to play a central

role in the development of individual evaluations about ageing (Kornadt & Rothermund, 2011). Subliminally activated and internalised negative age stereotypes over the life span have been shown to affect health and functioning in older age (Levy et al., 2002; Levy, 2009). Generally, studies on age stereotypes have tested for, and found, a negative view of later adulthood: the strength of negative opinion corresponding inversely with the age of the participant (Stuart-Hamilton, 2000). Overall, the evidence suggests that attitudes are more negative toward older adults than younger adults (Kite et al., 2005), and that negative attitudes toward older adults outweigh positive attitudes (Hummert, 2011).

Negative stereotyping feeds into attitudes to ageing at both individual and societal levels. Stereotypical attitudes to ageing are affected by a number of factors. Individuals who are younger, male, with lower education, lower economic living standards, in paid employment, and who live in urban areas generally hold more negative views towards older adults (Abrams, Vaclair & Swift, 2011). Stereotyping is more common in cultures that value individualism (Linn & Hunter, 1979; Westerhof & Barrett, 2005). Negative age stereotypes are more pervasive, influential and persistent than positive age stereotypes (Cuddy, Norton & Fiske, 2005; Levy et al., 2000). They are seen to potentially “contaminate” the attitudes of older adults toward themselves (Rothermund & Brandtstädter, 2003). Consequently, those exposed to negative age stereotypes have been found to assimilate these ideas into their own personal attitudes to ageing (Kotter-Grühn & Hess, 2012) at three times the rate of positive age stereotypes (Meisner, 2012), raising questions about the effectiveness of activating positive age stereotypes.

Literature has emphasised the influence of negative age stereotyping in generating self-fulfilling personal expectations and self-stereotyping behaviours over the life course (Levy & Leifheit-Limson, 2009). The theory of stereotype embodiment was proposed by Levy (2009) to explain how age stereotypes influence the functioning of older adults over multiple pathways. Psychological pathways involve expectations of future cognitive and physical functioning (Levy & Leifheit-Limson, 2009), while behavioural pathways are exemplified by engagement in health practices (Levy & Meyers, 2004; Levy et al., 2000) and physiological pathways likely involve the body’s response to stress (Levy et al., 2000; Levy, Slade, May et al., 2006). Age stereotypes focus on potential losses that can accompany ageing, affecting health, physical function, family and friends, employment, independence, wealth and opportunities, and have been the focus of many studies.

2.4.1 Measurement of Attitudes to Age Stereotyping in the Literature

A wide array of self-report instruments measuring the effects of age stereotyping and internalised ageism has been developed, representing most early measures assessing attitudes towards ageing. Early scales focused mainly on the assessment of older adult stereotypes, many of them evaluating the perceptions of younger adults. Two of the earliest scales focused on the perceptions of older adults and older employees (Kirchner, Lindbom & Paterson, 1952; Tuckman & Lorge, 1953, 1958). The Old People Scale used items from ethnic minority research and substituted older adults as subjects (Kogan, 1961). Using this scale, nurses' attitudes to older patients were influenced by their knowledge of the ageing process (Holroyd, Dahlke, Fehr et al., 2009). The Aging Semantic Differential (Drake, 1957) was used to develop a factor analysis of attitudes towards the aged (Rosencranz & McNevin, 1969).

Attitudes to age stereotyping scales developed in the 1970s and 1980s were broader in scope. The Opinions About People Scale identified ageing constructs other than stereotypes, including denial, anxiety and responsibility (Ontario Welfare Council, 1971). Psychiatrists' attitudes to ageing and the aged were examined and younger participants were found to hold more negative attitudes about ageing (Cyrus-Lutz & Gaitz, 1972). Use of the Salter View of the Elderly Scale found that anxiety about death was associated with more positive attitudes and behaviour toward older adults (Salter & Salter, 1976). Other studies combined previous scales to understand beliefs about ageing (Kilty & Feld, 1976). The Facts on Aging Quiz is a shorter scale of 25 true-false items designed to differentiate facts from attitudes about ageing (Palmore, 1977, 1980, 1982). Supporting results using the Kogan Scale (Holroyd et al., 2009), the more facts about ageing that younger adults knew, the more positive their attitudes towards older adults (Helmes, 2012). The Aging Opinion Survey expanded items to include age anxiety and the positive value of older adults (Kafer et al., 1980). Thus, as age stereotype measures developed, they were more likely to incorporate multidimensional views of ageing.

While most age stereotyping measures assess attitudes towards others' ageing, the Rame Questionnaire measures internalised ageism, or internalised age stereotypes, in older adults, with 23 items on a four-point Likert scale (Parnell et al., 2001). Items include fear of the ageing process, deterioration in physical and cognitive ability, illness, inability to learn new tasks, reduction of sexual desire and beliefs that older individuals require constant help and contribute little to society. The questionnaire has been used with the AAQ in one study, with

individuals using a mental health service (Quinn et al., 2009). As predicted, internalised ageism was associated with more negative attitudes to ageing and fewer health behaviours. In a further study, higher levels of internalised ageism have also been associated with an expectation of depression in older age (Law et al., 2010). Thus, internalised ageism was shown to have serious negative consequences for health.

The multidimensional Fraboni Scale of Ageism was developed to measure affective components of stereotypical attitudes, to supplement the cognitive measurement of ageism offered by other scales (Fraboni, Saltstone & Hughes, 1990). It consists of 44 items on a four-point Likert scale and has been tested on students (Bodner & Lazar, 2008; Kalavar, 2001). Being younger and male was significantly associated with higher ageism scores in a study of university students in the United States (Rupp, Vodanovich & Credé, 2005). The scale has also successfully been used in Turkey, with a wider age sample (Kutlu, Kucuk & Yildiz Findik, 2012). The authors highlighted differences between Turkey and more individualistic countries, suggesting that attitudes to age stereotypes appeared to be less negative as a result of greater intergenerational contact.

The Relating to Older People Evaluation (ROPE) measures positive and negative ageism in a 20-item questionnaire (Cherry & Palmore, 2008). In contrast to much of the literature on attitudes to age stereotyping, one study found positive ageist behaviours were more readily reported by individuals of all ages, particularly women (Allen, Cherry & Palmore, 2009). More negative attitudes towards older adults were reported by younger adults who engaged in risk-taking behaviours, such as tobacco use, alcohol use, illicit drug use, and sexual behaviour (Popham, Kennison & Bradley, 2011), showing a connection between attitudes and behaviour. It would be of interest to follow that cohort as they age, to assess whether less engagement in health behaviours continued to be associated with negative attitudes to ageing.

The OLSAR study has been particularly influential in extending knowledge of age stereotypes, over recent years. The Stereotype Scale was developed by the OLSAR study to assess negative ageing stereotypes. Attitudes towards retirement are assessed in seven items, with true-false responses (described in Levy, 2008). The personality trait of rigidity was identified as an antecedent of internalised negative stereotypes (Levy, 2008). Cardiovascular events in later life, as well as slower recovery from ill health, have been identified as outcomes of internalised negative stereotypes (Levy, Slade, Murphy et al., 2012; Levy et al., 2009). Despite some of the

studies having smaller samples, internalisation of negative age stereotypes has been shown to have powerful negative effects on a range of life outcomes.

Recently, a new questionnaire was developed to assess domain-based age stereotypes, in a German study of 769 participants, aged 30 to 80 years (Kornadt & Rothermund, 2011). The scale comprises seven domains of 81 items altogether, to gauge a multidimensional picture of the ageing process (Kornadt & Rothermund, 2012). The self-view of future older age was found to influence individuals' age stereotypes and current self-views. Of note, individuals of all ages were prone to internalise age stereotypes into their personal ageing expectations and self-views. The questionnaire has yet to be tested longitudinally, but it offers promising insight about the internalisation of age stereotypes into individuals' possible future selves.

Ageist language and images of ageing have been assessed more specifically as examples of age stereotyping. The Aging Semantic Differential was updated to consist of 24 polar adjectives to explore the impact of ageist language on attitudes to ageing (Polizzi & Millikin, 2002). Using this measure, older Americans were found to view themselves and other older adults more positively than did younger or middle aged participants (Laditka, Fischer, James et al., 2004). In Germany, positive affect and agreeableness were associated with positive attitudes towards age stereotyping (Gluth, Ebner & Schmiedek, 2010). Women's attitudes towards menopause have been examined in several studies using an adapted semantic differential tool (Bowles, 1986). Use of the Ageing Semantic Differential and Facts about Ageing Quiz in Australia and the United Kingdom found negative attitudes toward personal ageing were significantly associated with misconception and stereotyping of older adults (Gething, Fethney, McKee et al., 2002).

An Image of Aging Scale assesses positive and negative perceptions held of older adults (Levy, Kasl & Gill, 2004). A list of over 3,000 words to describe older adults was generated from an older reference group. Only 17% of these words and phrases were positive, compared to 60% of negative terms. Responses were reduced to nine conceptual categories: activity, appearance, cognition, dependence, personality, physical health, relationships and will to live. Self-perceptions of ageing were found to be highly sensitive to prior exposure to age stereotypes, based on the Image of Aging Scale (Kotter-Grühn & Hess, 2012). After exposure to negative stereotypes, adults in both good and poor health reported feeling older and wanting to be younger. Thus, images and language are potent and widespread examples of age stereotypes.

Negative stereotypes are socially acceptable (Bonnesen & Burgess, 2004). However, evidence has shown that these stereotypes may be malleable, and thus open to influence.

2.4.2 Attitudes to Age-Stereotypes and Health

Existing literature has shown less interest in the relationship between health and attitudes towards age stereotypes than other constructs of subjective ageing. Internalised ageism has been linked with an expectation of depression in older age in one study (Law et al., 2010) and more negative attitudes to ageing and fewer health behaviours in another (Quinn et al., 2009). Much of the research into age stereotyping and health has come out of the OLSAR study, finding evidence of a relationship between individually held stereotypes and cardiovascular disease (CVD) in several studies. Holding negative age stereotypes in earlier life predicted a cardiovascular event at some point over the following 38 years in participants from the Baltimore Longitudinal Study of Aging, aged less than 50 years with no history of CVD (Levy et al., 2009). Being primed with negative age stereotypes induced cardiovascular stress responses, whereas those primed with positive age stereotypes did not (Levy et al., 2000, 2008). Those with positive age stereotypes had significantly better recovery from acute myocardial infarction than those with negative age stereotypes, even after controlling for age, ethnicity, education and comorbidities (Levy et al., 2006, 2012).

Recently, social status perceptions of being older were found to moderate the relationship of age identification on the self-rated health of older Europeans (Marques, Swift, Vauclair et al., 2014). Consequently, if the social status of older individuals was perceived as low, a stronger association existed between subjective ill-health and identifying with one's age group. Despite a relative lack of attention in the literature, publications are consistent about the long-term health risks of internalising negative age stereotypes and the health benefits of activating positive age stereotypes.

2.4.3 Summary of Attitudes to Age Stereotypes in the Literature

Much of the early ageing research focused on attitudes towards age stereotypes, particularly of attitudes of younger individuals and professional groups towards older individuals. Over time, measures have become more sophisticated and multidimensional, with a small, but important, number of studies examining the internalisation of age stereotypes. Overall, the evidence about attitudes to age stereotypes is reasonably consistent. Age stereotypes are more negative

toward older adults than younger adults (Kite et al., 2005), and negative stereotypes about older adults outweigh positive stereotypes (Hummert, 2011). Younger individuals and men report more negative stereotypical views of ageing, while women and older adults express more positive views. Stereotypes about ageing have been proved open to influence, for example, through knowledge of ageing and intergenerational contact. The internalisation of negative age stereotypes has been found to exert a powerful self-fulfilling effect on individuals as they age, including their increased susceptibility to some disease and also slower recovery from ill health. There has been some criticism of attitudes towards age stereotyping measurement: the context in which age stereotypes develop has generally been overlooked (Kornadt & Rothermund, 2011), a shortcoming that could also be applied to a range of other instruments capturing subjective perceptions of ageing.

2.5 Subjective Age

Subjective age is a further key construct in the understanding of attitudes to ageing. As early as the 1950s, researchers began reporting differences between individuals' chronological age and the age that they feel (Blau, 1956; Zola, 1962). Subjective age is synonymous with the personal perception of age, that is, the age that individuals feel. Felt age entails comparing current personal circumstances with expectations about life yet to come as an older person (Ward, 2010). Individuals have been noted to make selective age comparisons with others, overestimating others' problems and viewing personal circumstances more positively (Heckhausen & Krueger, 1993), resulting in a younger felt age. Individuals can "feel old" at different ages, in response to personal experiences and social expectations (Sherman, 1994). Consequently, the literature suggests that subjective perceptions of age are personalised and often do not reflect chronological age (Hubley & Hulstsch, 1994).

The cultural adage "You're only as old as you feel" reflects an understanding that age is more than just age in years (Logan et al., 1992; Montepare & Lachman, 1989). To illustrate, an individual could be aged 50 years of age, but feel much younger. The tendency to feel a different age than chronological age has been described as a crucial construct, with implications for a range of physical and psychological outcomes (Öberg & Tornstam, 2001; Stephan, Demulier & Terracciano, 2012). This personal evaluation of age has been claimed to be more accurate than chronological age in determining the pace of ageing (Hubley & Hulstsch, 1994; Settersten Jr & Mayer, 1997), and has proved a reliable way of predicting

psychological and health related outcomes (Kotter-Grühn, Kleinspehn-Ammerlahn, Gerstorf et al., 2009; Stephan, Chalabaev, Kotter-Grühn et al., 2013; Uotinen et al., 2005; Westerhof & Barrett, 2005).

2.5.1 Measurement of Subjective Age in the Literature

Subjective age was an early construct to be measured in the literature. The first known measure of subjective age identified four age dimensions: emotional (feel/age); biological (look/age); societal (do/age); and intellectual (interest/age) associated with a decade age, for example, “I feel as though I am in my ...” (Kastenbaum, Derbin, Sabatini et al., 1972). Individuals have been asked to compare themselves to their chronological age, for example, “I feel older, the same, or younger than my real age” (Baum & Boxley, 1983). A further measure, which has been little used, is the Subjective Age and Gender Scale, which contains open-ended questions within three subscales: psychological, physical and social-subjective age (Montepare, 1996a). Physical age identity was found to be strongly predictive of positivity to ageing in women (Montepare, 1996b).

2.5.2 Felt Age

The most commonly used measure of subjective age is felt age, or the age individuals feel themselves to be, for example, “What age do you feel most of the time?” (Barrett, 2003). A felt age less than a respondent’s chronological age represents a younger felt age, while a felt age older than chronological age reflects an older felt age (Schafer & Shippee, 2010b). Individuals can have a felt age which is the same as their chronological age. Felt age is usually compared to chronological age, resulting in a negative or positive felt age difference: a greater difference between felt age and chronological age reflecting a greater strength of association. For the most part, felt age is used as a unidimensional measure. More recently, it was extended to incorporate perceived “mental age” and “physical age” (Uotinen, 2005). Felt age has often been used with ideal age⁸, or the age people would like to be, although felt age has been studied more than ideal age (Keyes & Westerhof, 2012).

In reviewing the literature on felt age, individuals gradually feel relatively younger as they get older. The transition from an older to a younger felt age occurs at about the age of 24

⁸ Ideal age could arguably be viewed as another measure of subjective age, but is defined in the current study as a measure of age identity, and is covered in Section 2.6.

(Montepare & Lachman, 1989) or 25 years (Galambos, Turner & Tilton-Weaver, 2005; Rubin & Bernsten, 2006). It has been found that under the age of about 25 years, individuals generally feel older than their chronological age, and after this age it is more common to feel younger. Studies have consistently found that most individuals identify with a “younger self” (Barnes-Farrell & Piotrowski, 1989; Barrett, 2003, 2005; Goldsmith & Heiens, 1992; Hubley & Hultsch, 1994; Kaufman & Elder, 2002; Logan et al., 1992; Markides & Boldt, 1983; Montepare & Lachman, 1989; Schafer & Shippee, 2010b; Uotinen et al., 2005; Uotinen, Rantanen, Suutama et al., 2006; Westerhof & Barrett, 2005; Westerhof, Barrett & Steverink, 2003). Younger felt age may help protect a positive self-image (Barnes-Farrell & Piotrowski, 1989) and mobilise an increase in psychosocial resources to benefit later health and help extend life (Demakakos et al., 2007). Feeling younger than one’s age group has been explained as a way to avoid negative age stereotyping (Weiss & Lang, 2012).

Studies consistently show that the discrepancy between felt and chronological age increases with age (Barak, 2009; Barnes-Farrell & Piotrowski, 1989; Hubley & Hultsch, 1994; Hubley & Russell, 2009; Kastenbaum et al., 1972; Kaufman & Elder, 2002; Montepare & Lachman, 1989; Ward, 1977; Westerhof & Barrett, 2005). As individuals get older, the difference between chronological age and felt age increases. For example, the MIDUS study of 2,691 participants aged 25 to 74 years found that those in their forties felt an average of seven years younger, which increased to ten years in their fifties, 12 years in their sixties and 13 years for those aged over 70 years (Ward, 2010). The Iowa Youth and Families Study found smaller increases with age: at 60 years, felt age was on average six years younger; at 70 years, felt age increased to eight years younger; and by 80 years, felt age was ten years younger (Kaufman & Elder, 2002). Another American study, with over 600 American participants aged 21 to 92 years, found increasing numbers felt younger with increasing age: 25% reported a younger felt age in their thirties; 54% in their forties; and 69% in their fifties (Goldsmith & Heiens, 1992). A Danish study of 1,470 adults aged 20 to 97 years proposed that the difference between felt and chronological age increased until the age of 40 years, after which age individuals feel 20% younger than their chronological age (Rubin & Bernsten, 2006). The Evergreen Project, with 1,155 adults aged 65 to 84 years in Finland, did not find an increase in felt age difference in the eight years between data collection waves, finding that felt age remained relatively steady, even at older ages (Uotinen et al., 2006). Thus, studies have consistently found that most individuals feel younger than their chronological age, and most of the evidence suggests that this difference increases with age.

However, interesting differences in felt age have been found between countries that value individualism and those that are more collective⁹. A review of 30 studies of felt age in 18 countries found that collectivistic countries, such as Asian and East European countries, had felt ages closer to chronological age than more individualistic countries, such as North America and European countries (Barak, 2009). Collectivistic countries' felt age ranged from zero difference to eight years younger than chronological age, whereas in individualistic countries, felt age ranged between five and ten years younger. It has been suggested that different levels of responsibility placed on individuals for their future wellbeing and economic self-sufficiency may account for these inter-country differences in felt age (Uotinen, 2005).

The majority of studies using felt age as an instrument are from the United States. The MIDUS study found that felt age was on average about seven years younger than actual age, ranging between 32 years younger and 16 years older than chronological age (Barrett, 2005). A later publication from MIDUS found the mean felt age was still on average seven years younger than chronological age, but ranged between 39 years younger and 13 years older than chronological age (Schafer & Shippee, 2010a). Other studies from the United States have found a similar difference of six to eight years' difference between felt age and chronological age (Barak, 2009; Barnes-Farrell & Piotrowski, 1989; Kaufman & Elder, 2002). A Canadian study found 80% of participants aged 55 to 85 years felt younger than their chronological age, with a mean felt age 11 to 15 years younger (Hubley & Hultsch, 1994).

Felt age results are similar in Europe. The Omnibus Survey of 999 British participants aged 65 years and over found over half of respondents felt younger than their chronological age, with the median felt age about 15 years younger (Bowling & Iliffe, 2006). Three quarters of the 8,780 ELSA participants felt younger than their chronological age (Demakakos et al., 2007). The Berlin Aging Study, with 1,285 adults aged 70 years and older, found a mean difference of 13 years between felt and chronological age (Kleinspehn-Ammerlahn et al., 2008). In contrast, a couple of European studies have reported smaller differences between felt age and chronological age. Dutch adults aged over 40 years had a mean felt age over three years less than Americans (Westerhof, Whitbourne & Freeman, 2012). The Evergreen Study in Finland

⁹ Individualist cultures, such as those of the United States and Western Europe, emphasise personal achievement, competition and a strong sense of self. Collectivist cultures, such as those of China, Korea, and Japan, emphasise family and work group goals above individual needs or desires.

reported that mean felt age was just two years younger than chronological age (Uotinen, 2005), showing greater similarities to more collectivistic countries.

Evidence shows that non-white ethnicity, female gender and higher socio-economic status are generally associated with a younger felt age (Demakakos et al., 2007; Demakakos, Nazroo, Breeze et al., 2008; Kuper & Marmot, 2003; Pinguart & Sorensen, 2000). Women, on average, report feeling younger than men. This is of interest, given that women have also been observed to have negative experiences with ageing (Barrett, 2005). For example, women with an older felt age in the MIDUS study report longer periods of ill-health; disadvantages in paid employment; older partners; a partner or a parent in poor health; and completing life course roles early, such as education, marriage, parenthood and retirement (Barrett, 2003). They were also twice as likely to feel pessimistic about cognitive ageing as men (Schafer & Shippee, 2010b). In contrast, the Omnibus Survey in Britain did not find gender differences (Bowling & Iliffe, 2006). Thus, results on gender differences in felt age are somewhat mixed.

Socio-economic status has been linked to felt age in the literature. Poverty has been broadly linked to older felt age (Bowling & Iliffe, 2006; Demakakos et al., 2007, 2008; George, Mutran & Pennybacker, 1980; Markides & Boldt, 1983). MIDUS participants with an older felt age were three times more likely, than those with a younger felt age, to report they did not have enough money to cover their needs. They were also more likely to be unemployed (Barrett, 2005) and have lower levels of education (MIDUS, 2007). This may be because individuals with lower socio-economic status have a compressed life course, more rapid and earlier onset social and biological ageing (Toothman & Barrett, 2011) and age of expected death.

2.5.3 Subjective Age and Health

Health experiences influence subjective age awareness (Barrett, 2003). Felt age has been examined with health in a great number of studies, and worse health has been associated with an older felt age. An older felt age was correlated with worse health and more chronic diseases in the Evergreen Study (Uotinen, 2005; Uotinen et al., 2006), the Berlin Aging Study (Kleinspehn-Ammerlahn et al., 2008); MIDUS (Barrett, 2005), and ELSA (Demakakos et al., 2007). Lower levels of perceived control over health were also associated with an older felt age (Barrett, 2005). Hypertension, heart disease, diabetes and disability have also been associated with an older felt age (Barrett, 2003; Demakakos et al., 2007). Good health and functioning

were the main independent predictors of a younger felt age in the British Omnibus Survey (Bowling & Iliffe, 2006).

Changes in health and an increase in functional limitations generally have been found to activate increases in felt age (Furstenberg, 2002; Sherman, 1994). A transition to an older felt age may also be an early indicator of worsening health (Uotinen et al., 2006). Changes in felt age were closely associated with changes in physical health in the MIDUS study (Murphy, 2009). For example, a change to a younger felt age was associated with more favourable perceptions of recent physiological changes (Barrett, 2003). Felt age perceptions have also been found to respond to stimulus. For example, positive verbal feedback to a grip strength exercise resulted in reports of a younger felt age, suggesting that felt age can be influenced and associated with positive changes to physical functioning (Stephan et al., 2013).

Better self-rated health has been associated with feeling younger in a number of studies (Bowling & Iliffe, 2006). The MIDUS study found that felt age at midlife was explained more by self-rated health than by socio-demographic factors (Barrett, 2003; Mock & Eibach, 2011). The MIDUS study found that being in comparatively “much better health” than one’s peers was associated with a felt age two years younger than individuals with only “somewhat better health” (Barrett, 2003). Higher levels of vitality, greater satisfaction with health, better self-rated health and, for men, better physical functioning were associated with a younger felt age (Hubley & Russell, 2009). Older-feeling participants reported having more difficulty with basic activities, such as climbing several flights of stairs and walking a moderate distance. MIDUS also found that the earlier onset of health limitations, a faster rate of decline in functional ability, and more negative predictions of future health helped explain the relationship between older felt age and lower socio-economic status.

Felt age has been convincingly linked to mental health and wellbeing. Feeling younger has been associated with greater happiness, life satisfaction and quality of life in both cross-sectional and longitudinal studies (Bowling & Iliffe, 2006; Hubley & Russell, 2009; Logan et al., 1992; Mock & Eibach, 2011; Westerhof & Barrett, 2005). This suggests that individuals who feel younger not only perceive they have more life to live, but also that life is happier, more satisfying and of higher quality. In contrast, an older felt age has been strongly linked to depression and anxiety (Bowling & Iliffe, 2006; Hubley & Russell, 2009; Uotinen et al., 2005). The longitudinal MIDUS study found that for every year participants felt younger than their

chronological age, the odds of a major depressive episode decreased by 1.3% (Keyes & Westerhof, 2012).

Longitudinal studies have been able to demonstrate that older felt age is associated with increased mortality. In their 13 year follow-up, the Evergreen Project in Finland found that having a felt age older than chronological age was associated with an increased risk of mortality, after controlling for such risk factors as age, gender, educational attainment, self-rated health and chronic health conditions (Uotinen et al., 2005). Participants in the Evergreen Project who had an older felt age did indeed have more chronic conditions, poorer self-rated health, higher rates of depression, and lower cognitive scores than those who felt younger. ELSA also found that felt age had significant predictive value for mortality and survival statistics among older age groups (Demakakos et al., 2007). The Berlin Aging Study, with a subsample of 516 adults aged 70 to 103 years, found that older felt age was associated with higher rates of mortality and lower satisfaction with ageing (Kotter-Grühn et al., 2009).

Felt age has also been associated with health behaviours in the literature. Adults who feel younger than their chronological age report increased positive health behaviours and decreased future disease risk (MIDUS, 2007). It has been suggested that a more youthful felt age may lead to health-enhancing behaviours (Barrett, 2005). Adults who felt older than chronological age were about twice as likely to be smokers, have a Body Mass Index (BMI) over 30 kg/m² and visit their doctor more often. More frequent doctor visits have been associated with identifying as “old” and holding negative stereotypes of ageing (Mutran & George, 1982). However, compared to other health factors, there has been relatively little examination of felt age with health behaviours to date.

2.5.4 Summary of Subjective Age Measurement in the Literature

The difference between felt age and chronological age is the most commonly used measure of subjective age in the literature. Individuals typically feel increasingly younger as they age, but greater differences between felt and chronological ages have been noted between Western countries than those that are more collectivistic. A younger felt age has consistently been linked with better outcomes in terms of psychological wellbeing, physical health and increased life expectancy. Criticisms have been directed toward the measurement of subjective age. As a unidimensional measure, subjective age is decontextualised, and it does not assess what

personal experiences give rise to a particular rating of subjective age (Montepare, 2009), nor how these ratings are related to expectations of normative ageing (Baltes, 1989; Heckhausen et al., 1989). Despite these shortcomings, the value of felt age lies in being a simple measure to utilise in different languages, showing reliable and valid results (Barak, 2009), which has proved popular in ageing studies. The term subjective age has, at times, been used interchangeably with that of age identity and been used in similar ways in the literature (Schafer & Shippee, 2010a). However, for the purposes of this study, these terms are distinguished from each other.

2.6 Age Identity

The concept of age identity has also helped shape current thinking about attitudes to ageing. Age identity refers to how individuals perceive their age in relation to age norms, stage in the life course, social roles and age group identification. It is a social construct of age, generated from collective and individual meaning (Logan et al., 2002). Age identity has been described as being more than a self-perception of age shaped by one's situation, experience and health, but also a relationship between oneself and the age grouping with which one identifies (Hubley & Hultsch, 1994; Kotter-Grühn & Hess, 2012). Consequently, individuals interpret their own process of ageing, making comparisons to others of similar ages and giving importance to appearance and vigour (Sherman, 1994). It is not surprising that in Western societies, where individualism, good health and being young are valued, most adults seek to maintain a youthful age identity (Barak, 2009; Barrett, 2003; Logan et al., 1992; Schafer & Shippee, 2010a; Westerhof et al., 2003; Westerhof & Barrett, 2005). Youthful identities are prized and not easily relinquished as individuals age (Barrett, 2005).

2.6.1 Measurement of Age Identity in the Literature

Early research on age identity focused on whether people identify with their own age group or a younger or older age group (Logan et al., 1992). Individuals have been asked to rank themselves with age groups, for example, "Do you feel young, middle aged or old?" (Markides & Boldt, 1983). Age identity questions have also included "When does middle age end and old age start?" (Demakakos et al., 2008). Female gender and non-white ethnicity have been generally associated with an older perception of leaving middle age (MIDUS, 2007), although

gender differences were only found after self-rated health and chronic conditions were controlled (Barrett, 2005).

2.6.2 Ideal Age

Arguably the most commonly used measurement of age identity is ideal age, or the age that individuals wish to be¹⁰. Ideal age is an aspirational measure of age identity. Sometimes called desired age, the first known question to assess ideal age was asked in the early 1960s, “What age would you most like to be?” (Zola, 1962). Twenty years later, the question was asked “What do you consider to be a person’s ideal age (___years)?” (Barak & Gould, 1985; Barak & Stern, 1986). Questions were also asked as to which decade group individuals most identified with (Barak & Schiffman, 1981), which was further modified into a desired age decade scale, using the question, “Which of these age decades would you IDEALLY LIKE to belong to?” (Barak, 2009; Barak, Stern & Gould, 1988). More recent studies, such as ELSA and MIDUS, simply ask “What age would you like to be?”

Ideal age is an aspirational construct, and involves comparing one’s current and younger life (Ward, 2010). Consequently, the measure is an idealised age identity, contextualised by negative ageing stereotypes and societal norms (Öberg & Tornstam, 2001). A younger ideal age reflects a motivation to be and look youthful and ageless, particularly among higher educated, higher socio-economic and westernised populations (Barak, Mathur, Lee et al., 2001; Demakakos et al., 2007). Younger ideal age is related to more negative assessments about life changes (Demakakos et al., 2008). If individuals wish they were younger, they are expressing and reinforcing dissatisfaction with their current age. But, there may also be advantages in holding a youthful age identity, as individuals might be less vulnerable to internalising negative age stereotyping (Jetten & Pachana, 2012; Montepare, 2009; Weiss & Lang, 2009, 2012). An ideal age that is similar to chronological age has been associated with personal growth, higher levels of education (Ward, 2010) and higher socio-economic status, suggesting acceptance and satisfaction with one’s current age (Demakakos et al., 2008).

A review of 25 studies of ideal age in 18 culturally different countries found ideal age was significantly younger than chronological age (Barak, 2009). Ideal age in collectivistic countries ranged between an average of three and 18 years younger, but was closer to chronological age

¹⁰ Felt age could be seen as a measure of age identity, but here is defined primarily as a measure of subjective age.

than in individualistic countries, where the range was between nine and 25 years younger. For example, participants in the MIDUS study wanted to be an average of 20 years younger than they actually were (MIDUS, 2007). The mean ideal age of the 660 Midwesterners in the Iowa Youth and Families Project was 22 years younger than their mean chronological age of 70 years (Kaufman & Elder, 2002). ELSA found the mean ideal age was 23 years younger than chronological age and that 91% of participants wished to be younger than they were (Demakakos et al., 2007). In comparison, the Evergreen Project in Finland found the mean ideal age was just eight years younger than chronological age.

The same review found that ideal age was almost always younger than felt age (Barak, 2009). Not only does the gap between chronological age and felt age increase with age, but the gap between felt and ideal age also increases with age (MIDUS, 2007). A Swedish study of 1,250 participants aged 20 to 85 years found that three quarters felt younger, wanted to be younger and thought that others saw them as younger than they actually were (Öberg & Tornstam, 2001). The literature consistently reports that as individuals age, the difference between chronological and ideal age steadily increases. For example, in their forties MIDUS participants wished to be an average of 14 years younger, extending to 19 years younger in their fifties, 25 years younger in their sixties and 32 years younger over the age of 70 years (Ward, 2010). The Iowa Youth and Families Study found smaller differences between chronological and ideal ages. At 60 years, women had a mean ideal age 16 years younger, at 70 years this grew to 20 years younger, and at 80 years ideal age was 25 years younger (Kaufman & Elder, 2002). ELSA found that the proportion of individuals wanting to be younger also increased with chronological age (Demakakos et al., 2006). While ideal age is observed to track upwards, its pace is consistently slower than both chronological age and felt age.

Gender differences have been detected in studies of ideal age. MIDUS found men's ideal age was a mean of three years younger than women's (MIDUS, 2007). The Iowa Youth and Families Project found that men aged 60 years wished to be five years younger on average than women aged 60 years did (Kaufman & Elder, 2002). ELSA and the Evergreen Project in Finland also found that men's ideal age was younger than women's (Demakakos et al., 2006; Uotinen et al., 2006). However, a relationship between gender and ideal age was not found among 577 adults aged 20-59 years from India, Korea and China (Barak et al., 2001). Thus, while men wish to be younger than women, these gender differences appear to be influenced by the country of origin, and whether they are more collectivistic or individualistic.

2.6.3 Age Identity and Health

Health was found to have a weak association with ideal age in the literature (Ward, 2010). Mixed results have been noted between ideal age and self-rated health. Younger ideal age has been associated with worse self-rated health in some studies (Demakakos et al., 2007; Kaufman & Elder, 2002), but little to no relationship has been detected in others (Hubley & Hultsch, 1994; Hubley & Russell, 2009). Unlike felt age, younger ideal age is associated with lower wellbeing (Ward, 2010), and less “flourishing mental health” (Keyes & Simoes, 2012). While not using the same instrument of age identity, the Whitehall Study found that those who thought that middle age ended at a younger age were more likely to suffer from heart disease, and poorer mental as well as physical health (Kuper & Marmot, 2003).

2.6.4 Summary of Age Identity in the Literature

Age identity and subjective age are often used interchangeably, but age identity refers more specifically to the personal identification with social roles and age groups along the life course. Ideal age, or desired age, is defined as an aspirational concept and is the most commonly used measurement of age identity. The literature reports that ideal age is consistently younger than chronological age and felt age. Men have been found to have younger ideal ages than women, though more so in westernised countries. Mixed results have been found in relation to health. More criticism has been levelled at ideal age than at felt age. While felt and ideal age measurements are often used together, the measurement of ideal age has been claimed to be less reliable than felt age (Ward, 2010). Similarly, ideal age as a unidimensional measure can be seen as neglecting the contextualisation of age identity and changing self-perceptions of ageing.

2.7 Self-Perceptions of Ageing

Self-perceptions include personal thoughts, feelings and evaluations about aspects of life. The construct of self-perceptions of ageing has stimulated considerable attention and increasingly has been broadly used to denote subjective ageing experiences (Kleinspehn-Ammerlahn et al., 2008; Kotter-Grühn & Hess, 2012; Kotter-Grühn et al., 2009). Self-perceptions of age reflect significant social meanings of age, including cultural images and stereotypes (Ward, 2010). Self-perceptions of ageing are anchored in personal experiences, and are usually processed and understood implicitly, though have the potential to be consciously and explicitly expressed

when the environment is conducive (Diehl et al., 2014). Clearly, any measurement of individuals' experiences and perceptions of their own ageing requires individuals to give explicit responses, which may have been implicit until that point.

Generally, there is agreement from qualitative and quantitative studies that self-perceptions of ageing are a multidimensional construct, incorporating a number of domains. Similar to attitudes towards ageing and age stereotypes, self-perceptions of ageing incorporate gains and losses, opportunities and declines (Diehl & Wahl, 2010; Steverink, Westerhof, Bode et al., 2001). One earlier study, based on in-depth interviews with adults aged over 50 years, found ageing was perceived as a natural and gradual process, a time of evaluation, reflection and wisdom, a period of increased freedom and new interests, a time of increased physical health difficulties; and a period of losses particularly employment and interpersonal losses (Keller, Leventhal & Larson, 1989). Despite the relatively recent development of self-perceptions of ageing, a number of unidimensional and multidimensional measures to assess self-perceptions of ageing exist.

2.7.1 Measurement of Self-Perceptions of Ageing in the Literature

The perceptions and experience of ageing have been assessed in several further scales, dating from the 1990s. The Anxiety about Aging Scale was developed as an early multidimensional scale, consisting of 20 negatively phrased items in four domains: "fear of old people"; psychological concerns; physical appearance; and fear of losses (Lasher & Faulkender, 1993). Men were significantly more anxious about ageing than were women, but women were more negative about the effect of ageing on their appearance. American participants were found to have less anxiety about ageing than those in Turkey or Germany (McConatha, Hayta, Rieser-Danner et al., 2004; McConatha, Schnell, Volkwein et al., 2003), contradicting other findings showing Americans to be more concerned about ageing compared to more collectivistic societies (Barak, 2009). In a further study, personal anxieties about ageing and death were found to predict negative attitudes toward other older adults (Depaola, Griffin, Young et al., 2003). Here, age anxiety acted as an antecedent to negative attitudes towards ageing, in contradiction to the Salter scale finding associations between anxiety about death and more positive attitudes and behaviour towards older adults (Salter & Salter, 1976).

The Reactions to Ageing Questionnaire measures personal attitudes to older adults, with 27 items on a six-point Likert scale within six domains: anxiety about the future; physical wellbeing; psychological wellbeing; denial of ageing; isolation; and activity (Gething, 1994; Gething et al., 2002). A study of New Zealand psychiatrists found that more negative views about ageing were associated with being younger, female, or experiencing deteriorating health (Draper, Gething, Fethney & Winfield, 1999). However, this study had a small sample and contradicted other literature finding women hold more positive perceptions about ageing (Lasher & Faulkender, 1993; Rupp et al., 2005; Shenkin et al., 2014a). The questionnaire has mainly been used in Australia with students, where greater knowledge about ageing was found to decrease age stereotypes (Gattuso & Saw, 1998; Tyack, 2009; Williams, Anderson & Day, 2007), similar to results from the Kogan Scale (Holroyd et al., 2009) and Facts About Aging Quiz (Helmes, 2012).

A multidimensional conceptualisation of self-perceptions of ageing was strongly supported by the Personal Experience of Aging Questionnaire, tested in the German Aging Survey with a representative sample of over 4,000 adults aged over 40 years (Steverink et al., 2001). The questionnaire consists of a set of 47 both positive and negative ageing experiences statements, in domains such as health, social contacts, activities, and personality. Three aspects of ageing were found to be significant in this particular study: physical decline (the loss of vitality and health), continuous growth (including personal development) and social loss (such as no longer being needed by others or decreased respect from others). It can be noted that the Personal Experience of Aging Questionnaire has three very similar domains to the AAQ: psychosocial loss, physical change and psychological growth (Laidlaw et al., 2007). Being younger and having better self-rated health, higher income, less loneliness, higher education, positive affect and greater hope were all associated with positive continuous growth, and reduced physical decline and social loss. In a further study, social losses and continued growth perceived with ageing were linked to self-esteem in the United States, but not in the Netherlands (Westerhof, Whitbourne & Freeman, 2012), suggesting that the context of ageing perceptions is influential.

Expectations of ageing in the future are also part of self-perceptions of ageing. The Expectations Regarding Aging scale, the ERA-38 (Sarkisian, Hays, Berry et al., 2002) and the shorter ERA-12 (Sarkisian, Steers, Hays et al., 2005), focus on expectations regarding physical, mental and cognitive health associated with ageing. The Ageing Perceptions Questionnaire

was subsequently adapted from this scale and from the revised Illness Perception Questionnaire (Moss-Morris, Weinman, Petrie et al., 2002). It offers a framework for assessing the self-perceptions of ageing across four dimensions: timeline of ageing, consequences of ageing, control over aspects of ageing, and emotional response to ageing (incorporating identity and health-related changes). Health expectations and satisfaction have been significantly associated with physical health appraisals using the ERA-12 (Weltzien, 2007). The Irish Longitudinal Study of Ageing (TILDA) study with over 2,000 older participants found that self-perceptions of ageing were positively associated with physical and psychological health (Barker, O'Hanlon, McGee et al., 2007; McGee, Morgan, Hickey et al., 2011). Holding more positive expectations about ageing was also associated with better physical and mental health in Korea (Kim, 2009).

The Perceptions of Ageing scale adapted characteristics from existing measures (Heckhausen et al., 1989). The measure assesses whether eight characteristics increased, stayed the same, or decreased with age: physical attractiveness; ability to do everyday tasks; ability to learn new information; general knowledge; wisdom; respect received from others; authority in family; and life satisfaction, as well as a perceptual rating of how society viewed ageing. A Brief Ageing Perceptions Questionnaire has recently been developed and tested in the TILDA sample of 6,718 Irish participants aged 50 years and over (Sexton, King-Kallimanis, Morgan et al., 2014). Findings confirmed the presence of distinct physical decline and ongoing development dimensions to ageing perceptions. In one of the few studies to offer a broad cross-country analysis, perceptions of age-related changes in physical, cognitive and socio-emotional spheres of functioning were assessed in over 3,000 college students from 26 countries, including New Zealand (Löckenhoff, de Fruyt, Terracciano et al., 2009). Compared with Eastern countries, participants from Western countries generally reported more negative societal views of ageing, but more favourable perceptions of age-related changes in wisdom.

2.7.2 The Experience of Ageing

The Experience of Ageing assesses self-perceptions of the ageing experience. The measure was constructed to assess whether growing older has been a positive or negative experience for the ELSA study (Demakakos et al., 2006). Development followed previous testing with two open-ended questions asking what the most positive and negative things were about growing older. A 12-item scale to assess ageing perceptions was derived from the most

common responses to these questions. Subsequently, a single question was developed, “On the whole, has growing older been a positive or negative experience?” with responses on a five-point Likert scale: very positive, positive, neither positive nor negative, negative and very negative. These categories can be collapsed into positive, neutral and negative perceptions of ageing.

To date, ELSA is the only known study to have reported results on the Experience of Ageing measure and findings are somewhat different compared to other measures of age perceptions. Ageing was perceived as a positive experience by 55% of the 7,433 participants, aged 52 years and over (Demakakos et al., 2006). Only 8% perceived ageing as a negative experience. This finding contradicts the pervasive negative stereotyping about ageing, with its consequent physical, social, cognitive and economic deterioration. However, those aged 55 to 59 years reported more negative perceptions of ageing (along with those over 80 years) compared to other age groups. Generally, there was a positive relationship between wealth and perception of ageing, with wealthier participants perceiving ageing as a more positive experience than poorer participants. Men also reported that ageing was a more positive experience than women, across all age groups. Among adults aged 52 to 59 years, 55% of men viewed ageing positively compared to 51% of women (Demakakos et al., 2006). Thus, being aged in the mid to late fifties, low income and female were correlates of more negative ageing experience perceptions. Women reported more negative perceptions towards ageing, consistent with findings from the Reactions to Ageing Questionnaire (Draper et al., 1999), but contradicting most age-stereotype results, that men hold more negative perceptions towards ageing.

2.7.3 Subjective Life Expectancy

Subjective life expectancy is a personalised estimate of either the length of life or the number of remaining years until death. It has been called self-rated life expectancy, subjective survival expectations and subjective lifespan (O’Connell, 2011) and offers an interesting view on the self-perception of life remaining as one ages. From the 1960s, psychological studies have viewed subjective longevity expectations as a critical measure of a highly complex attitude toward an emotionally charged issue (Tokor & Murphy, 1967), as it offered a way for individuals to judge their own health changes, genetic background, and behavioural risk factors in a way that no one else can (Idler & Benyamini, 1997; Perozek, 2008; van Doorn & Kasl, 1998). As such, subjective life expectancy has been closely associated with wellbeing

(Kaufman & Elder, 2002) and mortality (van Doorn & Kasl, 1998), although it may hold less relevance for midlife (Siegel, Bradley & Kasl, 2003). Subjective life expectancy has been used in a growing number of economic studies, to assess retirement decision-making and readiness (Bloom, Canning, Moore et al., 2007; Griffin, Hesketh & Loh, 2012; Hamermesh, 1985) and decision-making under uncertainty (Hurd & McGarry, 1995). It has also been studied alongside health behaviours and health-care utilisation, as individuals with low subjective life expectancy may take more health risks and place less importance on preventative health measures (Levy & Myers, 2004; Sarkisian et al., 2002).

At least three different subjective life expectancy questions have been used in empirical studies (Jylhä, 2011). Firstly, respondents have been asked to estimate their chances of living to a particular age (e.g. 75 or 85 years). Probably the largest and longest-running study collecting information on subjective life expectancy is the Health and Retirement Study (HRS), together with the Study of Asset and Health Dynamics (AHEAD) from the United States (n=14,237), which have been collecting data biennially since 1992 (Bulanda & Zhang, 2009; Elder, 2007; Falba & Busch, 2005; Hurd & McGarry, 1995, 2002; Perozek, 2008; Siegel et al., 2003). This question is used by a number of other studies: the British Household Panel Survey (Popham & Mitchell, 2007); ELSA (Demakakos et al., 2007; Wardle & Steptoe, 2003); and the Survey of Health, Ageing and Retirement in Europe (SHARE) with participants aged 50 years and older from ten European countries (Delavande & Rohwedder, 2011; Winter, 2008). Secondly, respondents from ALSA have been asked how likely it is, on a four-point scale, that they will live another ten years (van Doorn & Kasl, 1998). A final life expectancy question: “To what age do you expect to live?” is asked by the Aging, Status and Sense of Control (ASOC) study (Mirowsky, 1997, 1999; Mirowsky & Ross, 2000; Ross & Mirowsky, 2002), the Australian 45 and Up Study (Griffin et al., 2012; Griffin, Loh & Hesketh, 2013), and slightly differently by the Harlem Longitudinal Study of Black Urban Youth: “No-one knows for sure, but what age do you guess you will live to?” (Irby-Shasanmi, 2012).

Subjective life expectancy research has tended to overlook the proportion of respondents who did not or could not answer questions about how long they expected to live (O’Connell, 2011). For example, the ASOC study noted that 21% did not answer the subjective life expectancy question (Mirowsky & Ross, 2000) and a study of discharged orthopaedic patients found a missed response rate of 15% to the question (Ziegelmann, Lippke & Schwarzer, 2006). Missed responses could result in under- or over-statement of subjective life expectancy

regression estimates (Mirowsky & Ross, 2000). It may be that those who do not reply to the question are less likely to be healthy (Mirowsky, 1997). For many, subjective life estimations would be a pre-conscious and implicit knowledge.

Some earlier studies found evidence of overestimation of longevity expectations (Hamermesh & Hamermesh, 1983). Many studies have found that subjective life expectancy roughly parallels actuarial life expectancy tables and the age of mortality, after adjusting for chronic conditions (Hurd & McGarry, 1995, 2002; Jylhä, 2011; Mirowsky, 1999; Perozek, 2008; Siegel et al., 2003; van Doorn & Kasl, 1998; Winter, 2008). A more recent review of subjective life expectancy found that the prevailing tendency is to underestimate lifespans (O'Connell, 2011), by about five years (O'Brien, Fenn & Diacon, 2005; Wardle & Steptoe, 2003). Underestimation is likely to be explained by individuals not understanding or not accounting for mortality improvements (Elder, 2007; O'Brien et al., 2005).

Evidence shows that the older individuals are, the longer they hope to live. Older respondents have been found to overestimate how long they would live (Bloom et al., 2007; Ludwig & Zimper, 2008). The Iowa Youth and Families Project found that women aged 60 years expected to live to a mean of 80 years, compared to 83 years for women aged 70 years, and 86 years for women aged 80 years (Kaufman & Elder, 2002).

Gender and ethnicity differences are also apparent in the subjective life expectancy literature. Men are found to give higher estimates in all studies reviewed (O'Brien et al., 2005). It is generally known that women live longer on average than men (O'Connell, 2011), but men still tend to be more optimistic than women, compared to longevity figures. Men report they can reduce their biogenetic risk and manipulate their life expectancy more than women (Griffin et al., 2013). A race anomaly has been recognised, in which African Americans predict living two to three years longer than white Americans, despite clear evidence to the contrary (Bulanda & Zhang, 2009; Hurd & McGarry, 1995; Mirowsky, 1999). This has been explained by the lack of knowledge about disparities in life expectancy by ethnicity, gender and place (Irby-Shasanmi, 2012).

Low educational achievement has been associated with low subjective life expectancy (O'Connell, 2011; Popham & Mitchell, 2007), as these individuals implicitly anticipate a more risky future (Mirowsky & Ross, 2000). ASOC found that each additional year of education

increased subjective life expectancy by about 0.7 years (Mirowsky & Ross, 2000), but this in part was mediated by better health. Subjective life expectancy was also strongly associated with a sense of control over personal outcomes, after controlling for socio-demographic and health factors (Mirowsky, 1997). Findings from ELSA suggested that an older subjective life expectancy may reflect an increased sense of control, which then might influence health choices and pathways (Demakakos et al., 2007).

Wealth accounted for large differences in subjective life expectancy estimates across the HRS and SHARE studies, particularly in the United States and England (Delavande & Rohwedder, 2011; Hurd & McGarry, 1995). Low subjective life expectancy was associated with low patterns of retirement savings in the HRS (Hurd & McGarry, 2002), while high longevity expectations have been related to the provision of good pension plans in the Netherlands (van Solinge & Henkens, 2010). Individuals in lower socio-economic positions, from the British Household Panel Survey, were more pessimistic about their life expectancy (Popham & Mitchell, 2007). Subjective life expectancy decreased by a mean of eight years with current hardship, in the ASOC study (Mirowsky & Ross, 2000).

Parents' ages, or ages at death, have been also linked to subjective life expectancy (Hurd & McGarry, 1995). Having surviving parents, particularly the same sex parent, was found to increase subjective life expectancy (Ross & Mirowsky, 2002). Respondents with long-lived parents significantly overestimated their longevity by 12 to 18 years more than those with short-lived parents (Hamermesh & Hamermesh, 1983). The effect of parent death is likely to operate through both psychological (knowledge and experience) and biological (risk of inheriting disease) mechanisms (Hurd & McGarry, 2002). Marriage and social support have also been associated with longevity expectations (Ross & Mirowsky, 2002). Men's subjective life expectancy increased with marriage in the ASOC study, but this association was not supported in a more recent review publication (O'Connell, 2011).

2.7.4 Self-Perceptions of Ageing and Health

The literature has shown interest in examining health covariates with self-perceptions of ageing. At least three studies have reported better self-rated physical and psychological health with more positive self-perceptions of ageing, in Ireland (Barker et al., 2007), Germany (Steverink et al., 2001) and Korea (Kim, 2009). Positive ageing experiences were also

associated with better-perceived health across all age groups in the ELSA study (Demakakos et al., 2006). More specifically, of the adults aged 52 to 59 years in the ELSA study who perceived their ageing experience as negative, 22% also rated their health as poor or fair, compared to 8% with good and 5% with very good or excellent self-rated health. In contrast, 62% of participants who rated their health as very good or excellent viewed ageing as a positive experience, compared to 49% in good and 38% in fair or poor self-rated health.

Subjective life expectancy also showed significant relationships with health in the literature. A decline in health resulted in a lowering of subjective life expectancy, according to the HRS (Benitez-Silva & Ni, 2008; Hurd & McGarry, 2002). In line with mortality risk, cancer reduced subjective life expectancy, while arthritis did not (Hurd & McGarry, 2002). Evidence fairly consistently links self-reported health status to longevity expectations (Bulanda & Zhang, 2009; Irby-Shasanmi, 2012; Mirowsky & Ross, 2000; O'Connell, 2011). Disability was found to decrease subjective life expectancy by over three years in the ASOC study (Mirowsky & Ross, 2000).

Health behaviours have also been found to influence subjective life expectancy in the literature, but are generally underestimated. Studies show that individuals, who smoke, drink alcohol hazardously, have a high BMI or have poor nutritional habits, expect shorter lives, while individuals who exercise have longer subjective life expectancies (Hurd & McGarry, 1995; Ross & Mirowsky, 2002). While smokers have lower estimates of their longevity than non-smokers (Hamermesh & Hamermesh, 1983; Popham & Mitchell, 2007), the evidence suggests that smokers still underestimate the mortality risk (O'Brien et al., 2005; Ross & Mirowsky, 2002). Obesity was also underestimated as a risk factor (Falba & Busch, 2005; Griffin et al., 2013). Alcohol use does not appear to be taken into account in longevity expectations (O'Connell, 2011). Doctor visits and private health insurance were not associated with increased subjective life expectancy estimates in the ASOC study (Ross & Mirowsky, 2002).

2.7.5 Summary of Self-Perceptions of Ageing in the Literature

The self-perceptions of ageing construct is relatively recent in the literature, but increasingly referred to as a range of subjective ageing experiences and perceptions. Measures are both unidimensional (as in the Experience of Ageing and subjective life expectancy) and

multidimensional (as in the Personal Experience of Aging Questionnaire and the ERA scales). Positive self-perceptions of ageing have been significantly associated with being younger, male, having higher education and socioeconomic status, better self-rated physical and mental health, and longer life expectancy. In addition, longer estimates of subjective life expectancy are related to being older and of non-white ethnicity. Comparisons of these findings with actuarial data are mixed. To a certain point, life expectancy is increased the older individuals are, as well as for those with higher educational qualifications and socio-economic status. However, subjective life expectancy findings diverge from actuarial data in terms of gender and ethnicity. Health has frequently been examined in relationship to self-perceptions of ageing in the literature.

2.8 Relevant Conceptual Frameworks in the Literature

Understanding of subjective ageing draws on a broad set of disciplines, theories, frameworks and relevant constructs. Subjective ageing is multidimensional in nature, and of interdisciplinary interest theoretically. In covering wide ranging and very complex phenomena, psychological ageing research has been called “a fabric of rather loosely linked theories and empirical investigations on age-related changes” (Marcoen, Coleman & O’Hanlon, 2012, p.78). Just prior to the turn of the 21st century, it was argued that the study of ageing, and in particular psychological approaches to ageing, was data rich, but theory poor (Birren, 1999). Since then, more attention has been paid to integrative and interdisciplinary (Gans, Putney, Bengston et al., 2009) theoretical explanations of ageing, to address the complexities of ageing well. Combining different perspectives on understanding ageing has been called fruitful (Jopp & Smith, 2006).

Conceptual frameworks of particular value to the study of attitudes to ageing in the literature are identified, in order, as Awareness of Age-Related Change (Diehl & Wahl, 2010), a life span perspective (Baltes, 1987), and successful and healthy ageing (Depp & Jeste, 2006). These frameworks build upon each other to help frame research questions and contextualise findings.

2.8.1 Awareness of Age-Related Change

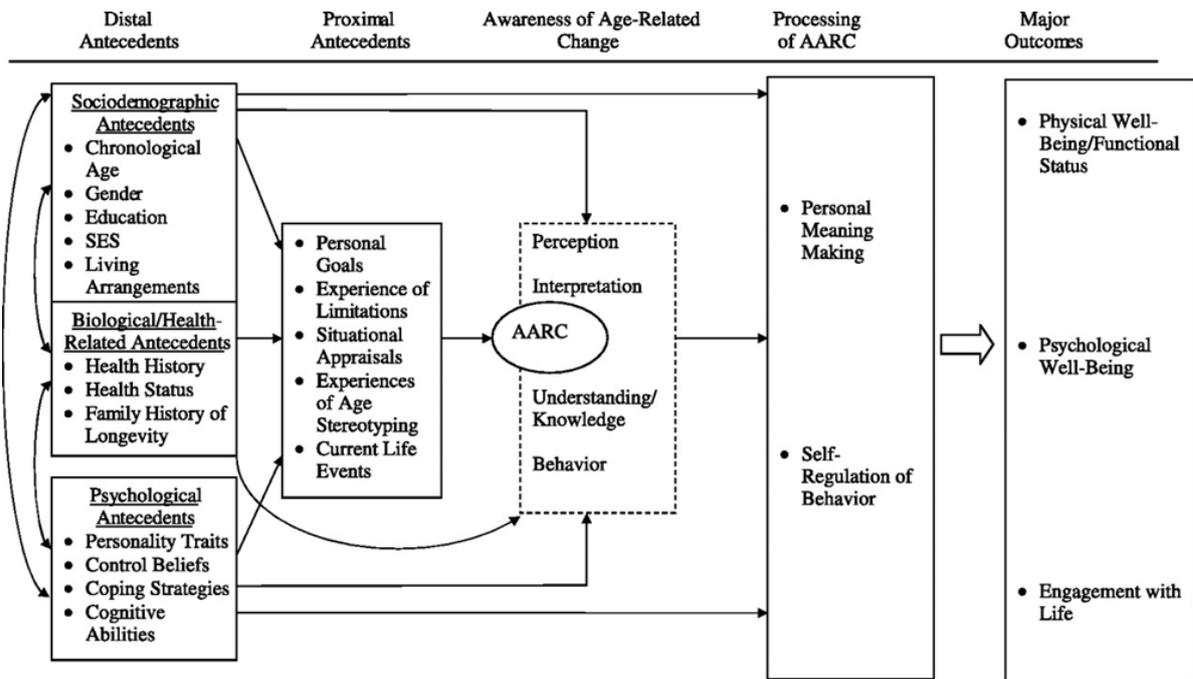
A useful contribution to the literature on subjective ageing is Awareness of Age-Related Change, recently published by Diehl and Wahl (2010). It extends influential theoretical perspectives explaining life span development, subjective age experiences, and age identity, with the intention of providing a conceptual framework that could inform and stimulate future conceptualisation and subjective ageing research. The central tenet of Awareness of Age-Related Change is that the personal awareness of growing older is a significant subjective experience during adult years, which influences how ageing is experienced. Awareness of Age-Related Change is defined as “all those experiences that make a person aware that his or her behaviour, level of performance, or ways of experiencing his or her life have changed as a consequence of having grown older” (Diehl & Wahl, 2010, p. 340). Individuals need to perceive a change in their behaviour, performance or experiences, and this change needs to be directly attributed to age, rather than some other factor, such as ill health. This broad framework was developed in order to clarify the antecedents, correlates and processes that affect individuals’ awareness of growing older, and the outcomes that result from this awareness.

Three underlying assumptions of Awareness of Age-Related Change are identified. Firstly, ageing is experienced as a multidimensional process throughout adulthood, with distinct gains perceived as well as losses (Steverink et al., 2001). This is despite many of the instruments measuring attitudes to ageing, age stereotypes, subjective age, age identity and self-perceptions of ageing being unidimensional. Secondly, great diversity exists between individuals as to how they experience and perceive ageing processes. Such diversity is based on social beliefs and expectations of particular age groups; as well as socio-demographic antecedents, such as age, education and socioeconomic status; health antecedents, such as health status; and psychological antecedents, such as personality and beliefs. Thirdly, individual plasticity is recognised, with the potential to modify behaviour and experience, and optimise personal functioning.

This multidimensional framework, based on the subjective ageing experience, was designed to be applied to five core behavioural domains: health and physical functioning; cognitive functioning; interpersonal relationships; social-cognitive; and lifestyle and engagement. Overall, the model demonstrates how individual perceptions, interpretations, understanding, knowledge and behaviours lead to the formation of personal meaning and the self-regulation

of behaviours, with major outcomes organised around physical wellbeing, psychological wellbeing and engagement with life. Described as more of an emerging construct than a fully developed theory, the model of Awareness of Age-Related Change is shown in Figure 2.1.

Figure 2.1. Conceptual Framework for Awareness of Age-Related Change (AARC)¹¹



(Diehl & Wahl, 2010, p. 346)

Distal and proximal antecedents are distinguished from each other. Sociodemographic, biological/health-related and psychological factors are regarded as distal antecedents to Awareness of Age-Related Change. As reviewed earlier in this chapter, attitudes to ageing and age stereotypes, self-perceptions of ageing, subjective age and age identity are associated with a range of socio-demographic, health and psychological factors. It is proposed here that these antecedents are likely to be similar to those helping form individuals' attitudes to ageing. Education and socioeconomic status were expected to be particularly influential sociodemographic antecedents to Awareness to Age-Related Change (Diehl & Wahl, 2010), as lower levels of education and income have been associated with lower engagement with health behaviours, earlier onset of health limitations and increased attributions of health decline to age (Barrett, 2003). Biological or health related antecedents to Awareness of Age-Related Change include health history and health status. Given the evidence linking health declines

¹¹ Reproduced with permission.

with ageing perceptions (Kleinspehn-Ammerlahn et al., 2008), these health factors were expected to be significantly linked to Awareness of Age-Related Change. Psychological antecedents include personality traits, such as optimism, control beliefs and coping strategies, influencing both perceptions of age-related change and health behaviours. If individuals perceive having control over their health, they are more likely to engage in health behaviours than those who attribute ill health to increasing age.

Proximal antecedents refer to personal goals, current experiences of limitations, age stereotyping and current life events, and appraisals of life situations. These factors can also be viewed as antecedents of attitudes to ageing. Proximal antecedents are regarded as mediating the effects of distal antecedents on perceptions of age-related change. The model recognises that certain goals change with age, for example, having a child. Limitations, such as functional limitations, could trigger an awareness of age-related change in individuals. Experiences in everyday life provide positive and negative reminders of chronological ageing, such as the birth of grandchildren or stereotypical comments from others. Antecedents are triggered internally, such as experiencing functional limitations or fatigue, and externally, such as receiving a medical diagnosis. Together, they help shape personal goals, experiences and appraisals.

How these antecedent experiences are evaluated by individuals and, consequently, how behaviour is influenced are dependent on the individual's own perceptions of ageing, their knowledge of ageing, how malleable ageing is perceived to be and their goals in relation to ageing (Diehl & Wahl, 2010). Individuals are seen to create their own meaning of ageing and respond to their ageing psychologically and behaviourally. Interpreting ageing cues may include comparisons between present and past personal performance and social comparisons with others. These evaluative processes could result in an adjustment of personal goals to select self-relevant abilities and aspects of life, in order to optimise adjustment and subjective wellbeing over adulthood. Outcomes focus on subjective and objective appraisals of physical wellbeing and functional status, a range of psychological wellbeing dimensions and active engagement with life domains. Outcomes are recognised as being characterised by a high degree of individual variability and influenced by factors over the life course that shape personal development.

There are a number of reasons why the Awareness of Age-Related Change is useful to the study of attitudes to ageing. Attitudes towards ageing, being affective, cognitive and evaluative aspects of the personal experience of ageing and toward older adults as a group (Hess, 2006), could be said to comprise aspects of Awareness of Age-Related Change. The model usefully incorporates subjective ageing concepts and contextualises the diversity of experience and perceptions of ageing. The framework explicitly recognises the multidimensional personal experience of ageing (Steverink et al., 2001), based on the Personal Experience of Aging Questionnaire, which has been constructed with very similar domains to the internationally validated AAQ, measuring attitudes to ageing (Laidlaw et al., 2007). Socio-demographic, health and psychological antecedents identified in the model are frequently key variables in the examination of attitudes to ageing. While the mechanisms in which health experiences intersect with attitudes towards ageing and age expectations are not comprehensively known, the Awareness of Age-Related Change framework offers a way of understanding components, influences and outcomes and relationships between each.

The Awareness of Age-Related Change framework was designed to prompt discussion and research into subjective ageing experiences, and shows potential for shaping interventions and for promoting attitudes and behaviours assisting with the optimising of successful and healthy ageing. To date, the model has been applied to a mixed methods study of subjective ageing experiences with German adults aged 70 years and over from the BEWOHNT study (Miche et al., 2013). In this study, women reported more positive ageing experiences than men and functional status was more influential than age. A call was made to test results with younger age groups. A number of challenges are raised by Diehl and Wahl (2010) for the model's application. What are the circumstances under which Awareness of Age-Related Change leads to positive and negative outcomes? What contextual and behavioural conditions need to be present for individuals' Awareness of Age-Related Change to result in resilience and optimal ageing, and also suboptimal and possibly negative outcomes? These questions are of interest in the study of attitudes towards ageing and health.

However, this recent model has some notable omissions. The concept of time passing, as individuals age through the life course, is excluded. Nor does the model recognise particular mechanisms of changing awareness of age. Attitudes to ageing are not specifically included, although perceptions, interpretations and age stereotyping experiences are. There is no feedback loop for the model to be open to ongoing development over time and to influences

from internal and external factors. These omissions are not surprising, given the framework is fairly new and called a superordinate construct or blueprint, rather than a fully developed theory. Despite these shortcomings, Awareness of Age-Related Change is seen to offer a valuable, though broad, conceptual contribution to the study of attitudes to ageing, which is reflected on further in the concluding chapter.

2.8.2 Life Span Perspective

A life span developmental approach underpins a considerable body of psychological ageing research, including Awareness of Age-Related Change (Diehl & Wahl, 2010) and the AAQ (Laidlaw et al., 2007). An underlying assumption of a life span perspective is that individual development continues across the entire life course, with “adaptive processes of acquisition, maintenance, transformation and attrition” taking place (Baltes, Staudinger & Lindenberger, 1977, p. 471). Generally, a life span perspective is based on chronological age (Dixon, 2011). The passage of time is regarded as fundamental, providing the context for ageing to take place (Baars, 2009). With the passing of time, individuals move through their lives, experience growing older and become consciously aware of age-related changes brought about by increasing age (Miche et al., 2013; Steverink et al., 2001), including becoming increasingly aware of time remaining (Carstensen, 2006). However, this awareness is highly subjective and diverse, experienced in differently ways, at different ages and at different paces over the life span.

A life span perspective has been called a “family of perspectives” (Baltes, 1987), incorporating commonly agreed concepts, such as life span development; multi-directionality; development as both gains and losses; increased heterogeneity (Hoskins, 2002); individual plasticity or ability to adapt; historical and cultural conditions; context of age, history and norms; and a multidisciplinary concern with human development (Baltes, 1987, 1991). Overall, robust evidence exists for ageing declines, but interest in examining improvements, gains and individual plasticity in health and successful ageing is noted (Ball, Berch, Helmers et al., 2002; Baltes, 1987; Baltes & Baltes, 1990; Carstensen, 2006; Carstensen et al., 2011; Dixon, 2011).

Related, but distinct from a life span developmental perspective, is a life course perspective (Diewald & Mayer, 2008; Mayer, 2002). The ageing process is seen to shape multiple interdependent pathways through life, with trajectories, transitions and events being central

concepts (Elder, 1985; Walker, 2002). The life course has been viewed as a structure through which the life path passes (Settersten Jr & Mayer, 1997), helping to shape the opportunities, constraints, roles and status of all in society (Barrett, 2003). A life course perspective has been explicitly incorporated into an international focus on the prevention and reduction of disease, and the promotion of healthy lifestyles and behaviours at all stages in life to keep individuals active, within the wider social, economic and cultural context (International Longevity Centre-UK & World Health Organization, 2000).

Some limitations are apparent in a life span perspective. For instance, chronological age is a limited measure of differential ageing. Challenges have been voiced identifying alternative indices that are as simple, valid and available as chronological age (Birren, 1999; Dixon, 2011; Wahlin, MacDonald, De Frias et al., 2006), such as felt age and subjective life expectancy. In emphasising the individual's passage through life, subjective ageing perceptions are not well integrated into a life span perspective. Individual interpretations of chronological age and life events have been called neglected (Neugarten, 1969) and the individual's subjective and unique experience of ageing overlooked (Grundy, Fletcher, Smith et al., 2007). Thus, the role and relationship of subjective perceptions and experiences, including that of attitudes towards ageing, are not explicitly incorporated into a life span perspective.

2.8.3 Successful and Healthy Ageing

Underlying much of the physical and mental ageing literature are concepts of successful and healthy ageing. A lack of consensus is apparent in definitions of successful ageing (Montross, Depp, Daly et al., 2006; Pruchno, Wilson-Genderson, Rose et al., 2010). For example, one review paper of 28 studies found 29 different definitions (Depp & Jeste, 2006). Successful ageing is much more than simply longevity (Depp, Vahia & Jeste, 2010), as it involves adding life to the years (Havighurst, 1961). One of the original definitions was ageing without chronic illnesses or disabilities and with a high level of involvement in interpersonal relationships and the community (Rowe & Kahn, 1987), which was then refined to include maintaining high cognitive and physical functional ability (Rowe & Kahn, 1997). Successful ageing initially focused on formulating criteria (Ouweland, de Ridder & Bensing, 2007). A systematic review of 170 publications identified the main constituents of successful ageing as life expectancy; life satisfaction and wellbeing; mental and psychological health, and cognitive function; personal growth and learning; physical health and independent functioning; psychological

characteristics and resources, including a positive outlook; and participation in social networks, community and leisure activities (Bowling & Dieppe, 2005). Being in early-older age, non-smoking and having no disability, arthritis or diabetes are frequently cited as correlates of successful ageing (Depp & Jeste, 2006).

During the past 20 years, the emphasis of successful ageing research has shifted from formulating criteria for successful ageing to describing the processes involved in successful ageing (Ouweland et al., 2007). Increasingly, the literature has generated and developed ideas that successful ageing is not simply based on predictable and universal losses in physical functioning associated with chronological age (Baltes & Carstensen, 1996; Halfon & Hochstein, 2002). Rather, social circumstances, health behaviours and personal outlook can slow or alter trajectories of decline and prolong healthy life (Schafer & Ferraro, 2011). More current definitions view successful ageing as consisting of multiple dimensions, including the avoidance of disease and disability, high cognitive and physical functioning, and engagement with life (Rowe & Kahn, 1997; Strawbridge, Wallhagen, & Cohen, 2002).

At times, the term healthy ageing has been used interchangeably with that of successful ageing. The WHO's definition of health as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (World Health Organization, 1948, p. 100) reflects a strongly multidimensional view of health. Healthy ageing recognises the influence of social, individual and biological factors to facilitate the optimal functioning for each individual over the lifetime (Bengtson, Gans, Putney et al., 2009; Peel et al., 2005). Healthy ageing is based on delaying disease, functional limitation and disability for the longest possible period for each individual (Ryff & Singer, 2009). Considerable variation exists in the pace of ageing amongst individuals. Included in healthy and successful ageing is having a positive, but realistic, attitude (Bowling & Iliffe, 2006; Reichstadt, Depp, Palinkas et al., 2007; Vaillant, 2002).

There has been criticism levelled at the concept of successful ageing. Few older adults are observed to possess all the criteria for successful ageing, especially those who are poor or from ethnic minorities (Depp & Jeste, 2006; Holstein & Minkler, 2003; McLaughlin, Jette & Connell, 2012). Successful ageing is seen as idealistic and the criteria formulated for successful ageing as culturally bound to the United States (Walker, 2008), and overlooking collectivistic views of ageing (Edwards, 2010). Other criticism has labelled successful ageing as being

implicitly negative about older age; neglecting the possibility for continued growth and development with age; and failing to see positive ageing as a human construct, subject to historic and cultural variation (Ryff, 1989).

2.8.4 Summary of Relevant Conceptual Frameworks in the Literature

Subjective ageing literature draws on a broad foundation of conceptual frameworks. The past 15 years has seen a growth in interdisciplinary and integrative theoretical models to explain variations in ageing. Underpinning much psychological research on ageing is a life span perspective, recognising the passage of time through life and the increasing diversity that accompanies chronological ageing. Also of relevance, successful and healthy ageing perspectives have recently focused on the processes involved in optimal and suboptimal ageing.

However, it is the recently proposed Awareness of Age-Related Change (Diehl & Wahl, 2010) that could hold the greatest relevance for the study of attitudes to ageing. The model's emphasis on multidimensionality, diversity and plasticity of human ageing is similar to the other ageing frameworks discussed. Its particular contribution to attitudes to ageing research though lies in the identification of antecedents, processes for perceiving and interpreting age-related changes leading to personal meaning and behavioural regulation, and multidimensional outcomes in physical and functional health, psychological wellbeing and engagement with life. Attitudes to ageing can be seen as part of the processing of age-related change in the model. It is a promising development to have a framework incorporating relevant aspects of attitudes to ageing.

2.9 Ageing Policy Frameworks

Greater awareness of population ageing, a broad understanding of health and wellbeing, and intent to create a society for all ages has resulted in global and national policy frameworks. Good health is seen to lie at the core of any successful response to ageing (World Health Organization, 2012a), and has two core dimensions: how long people live and the quality of their lives (Ministry of Social Development, 2010). These policies incorporate attitude to ageing concepts in addressing the challenges of and creating opportunities for ageing societies, through the challenge of negative age stereotypes and the fostering of positive ageing

concepts. Attitudes towards ageing affect not only the individual, but also impact on wider society through the provision of policies, welfare, equality and inclusion (Kneale, Mason & Bamford, 2012).

2.9.1 Global Ageing Plans

In 2002, the Madrid International Plan of Action on Ageing was adopted at the United Nations Second World Assembly on Ageing (United Nations, 2002b). It grew out of a global concern about population ageing and was endorsed by 192 countries, including New Zealand. The Madrid Plan calls for changes in attitudes, policies and practices at all levels in all sectors, to meet the potential and challenges of ageing in the 21st century. This includes changing social attitudes to help foster healthy and active ageing (World Health Organization, 2012b). A general lifestyle strategy for healthy mental and physical ageing was laid out, which prioritised three strategic directions: ageing as a development issue; advancing health and wellbeing into old age; and ensuring physically enabling and socially supportive environments. Each priority area has a number of recommendations, designed to be a resource for governments and non-governmental organisations to reorient how their societies perceive, interact with and care for their older citizens. However, the Madrid Plan has not yet been made an enforceable international convention, unlike those that protect children, women, indigenous populations, disabled persons and immigrants (Olshansky, Biggs, Andrew et al., 2011).

To encourage cities and communities across the world to plan for the ageing populations' participation, health, security and lifelong learning, the WHO subsequently developed the Age Friendly City programme (World Health Organization, 2007). The checklist of essential age-friendly cities was based on consultation in 33 cities across 22 countries. There are currently 143 cities enrolled in the Age Friendly Cities and Communities programme across 18 countries worldwide (World Health Organization, 2013b), which now includes Tauranga, in New Zealand.

2.9.2 The New Zealand Positive Ageing Strategy

The New Zealand government is also responding to the challenges of population ageing. The New Zealand Positive Ageing Strategy was adopted in 2001 to promote the value and participation of older people in communities (Ministry of Social Policy, 2001). The strategy highlights attitudes in one of its ten goals: that people of all ages have positive attitudes to

ageing and older people. The concept of positive ageing is seen to reflect the attitudes and experiences older people have about themselves and also how younger generations view ageing, including their own ageing. Actions are identified that can change attitudes about ageing. These include ensuring that government advertising and publicity campaigns portray positive images of older people; promoting inter-generational programmes in schools and communities; and fostering collaborative relationships between central and local government, business, non-government and community sectors that promote positive ageing. Underlying the strategy's positive ageing message are concepts of healthy, active and successful ageing. These concepts have been questioned as possibly overlooking the diverse reality of ageing individuals, in particular the frail and dependent older population (Davey & Glasgow, 2006), those living in low socio-economic conditions (Stephens & Flick, 2010), and the importance of cultural identity in New Zealand (Edwards, 2010). Also underlying global and national ageing guiding documents are implicit and explicit constructs of age, which are essential to understanding attitudes to ageing.

2.10 Ageing Research in New Zealand

New Zealand is joining a global expansion in ageing research. The major longitudinal ageing studies covering midlife are the Health, Work and Retirement (HWR) study, which merged with Enhancing Wellbeing in an Ageing Society (EWAS) to form the New Zealand Longitudinal Study of Ageing (NZLSA). The broad goals of the HWR study were to identify the factors in mid and later age that contribute to health, wellbeing and social participation in older age in a sample of 6,662 New Zealand adults aged 55 to 70 years (Alpass, Towers, Stephens et al., 2007). The EWAS study examined a midlife sample of 1,958 New Zealanders, aged 40 to 64 years (Waldegrave & Koopman-Boyden, 2010) and an older sample, aged 65 to 84 years, focusing on the key determinants of wellbeing: health, education, work, leisure, safety, income and housing. The NZLSA sample comprises the 2,500 participants who took part in both waves of the HWR study, with a further 1,500 randomly selected participants from around the country aged 50 to 85 years to investigate health and ageing, including economic and social participation, intergenerational transfers, resilience and health.

Publications from these studies have focused on the impact of socio-economic and lifestyle factors on health (Dulin, Stephens, Alpass et al., 2011; Enright & Scobie, 2010; Pond et al., 2010b; Stephens, Alpass & Towers, 2010; Stephens, Alpass, Towers et al., 2011; Stephens,

Alpass, Towers et al., 2011; Towers, Stephens, Dulin et al., 2011); the development of the Economic Living Standards Index (ELSI)¹² (Breheny, Stephens, Mansvelt et al., 2011); use of the SF-36 to assess self-rated physical and mental health (Stephens, Alpass, Baars et al., 2010); regional summaries (Noone, 2008; Waldegrave & King, 2012); retirement decision-making and attitudes (Enright & Scobie, 2010; Noone, Alpass & Stephens, 2010; Noone, O'Loughlin & Kendig, 2012; Noone, Stephens & Alpass, 2009; Pond, et al., 2010a); and the benefits of volunteering (Dulin, Gavala, Stephens et al., 2012). Relevant reported findings will be referred to in future chapters.

Life and Living in Advanced Age, the Cohort Study in New Zealand LiLACS NZ - Te Puawaitanga o Nga Tapuwae Kia Ora Tonu is a study of over 900 older Māori and non-Māori adults in two regions of New Zealand (Dyall, Kepa, Hayman et al., 2013; Dyall, Kerse, Hayman et al., 2011; Hayman, Kerse, Dyall et al., 2012; Teh, Kerse, Robinson et al., 2012; Wham, Maxted, Dyall et al., 2012). Older Māori reported viewing ageing as a positive experience, despite the presence of poor health. Measurement of self-perceptions of ageing was not specified.

2.10.1 Attitudes to Ageing Research in New Zealand

Attitudes to ageing have been highlighted as a priority for ageing research in New Zealand (Cunningham, 2005), but they have had little direct examination to date. The New Zealand Attitudes and Values Study has investigated a range of attitudes (Sibley & Bulbulia, 2012), but not yet attitudes to ageing. This is a major omission, given the rapidly ageing population in New Zealand. Younger New Zealanders' attitudes to ageing have been the subject of two studies. More contact with older adults and participant age greater than 25 years were associated with more positive attitudes to ageing with 213 health students working in geriatrics, using Kogan's Old People Scale (Stewart, Giles, Paterson et al., 2005). One hundred young New Zealanders, aged 16 to 18 years, in describing their imagined futures at the age of 80 years, perceived themselves to be active agents their ageing (Patterson, Forbes & Peace, 2009). The effect of age stereotypes on older employees has been explored in two studies, finding that both employers and employees, aged 55 years and over, held a number of

¹² The ELSI is a measure of economic wellbeing used to assess the living standards of New Zealanders. It is described in the following chapter.

common negative stereotypes about older workers' adaptability to change, training and new technologies (Gray & McGregor, 2003; McGregor & Gray, 2002).

Attitudes to menopause and hormone replacement therapy (HRT) were the focus of one qualitative (Breheny & Stephens, 2001) and one empirical study (Stephens & Breheny, 2008). The Attitude Toward HRT scale was used (France, Lee & Schofield, 1996), along with the Attitude Towards Menopause Scale (Liao & Hunter, 1995). Attitudes toward HRT and menopause predicted HRT use, and were possibly more important than health variables. A positive attitude among older adults has been included in the concept of resilience, and inextricably connected to relationships with others, resources in the community and opportunities (Wiles, Wild, Kerse et al., 2012). Perceptions of ageing, caregiving and anticipated support needs are the focus of a recent thesis (Malcolm, 2012), which found midlife participants expected to be able to protect their physical and mental health, and live independently in older age.

The Oranga Kāumatua study is possibly the largest New Zealand study to include attitudes to ageing, when it investigated the economic, health and disability status of 429 older Māori (Waldon, 2004). Attitudes to ageing were generally positive, particularly by participants regarded as Kāumatua (respected older Māori). Measures assessing attitudes were not specified and were likely to have been gauged during in-depth interviews and groups. Participants younger than 60 years were more negative than older Māori in all domains on the SF-36, which was explained by high rates of disability. Positive attitudes to ageing among Māori have been noted elsewhere (Edwards, 2010), and are likely to be influenced by respect for older Māori, particularly those with roles and responsibilities (Cunningham, Durie, Fergusson et al., 2002). Despite these New Zealand studies, little research has yet been conducted nationally to examine attitudes towards ageing in depth.

2.11 Summary

An increase in ageing research is apparent in the literature, focused on measuring, evaluating and understanding the social, health and environmental determinants (Kaiser, 2013) of optimal ageing. Great interest is being shown in how individuals acquire, internalise and understand their own ageing and, also, how this changing individual awareness is involved in their perceptions and experiences. Useful recent research has helped clarify the constructs

involved in the subjective, or individualised, experience of ageing. Relevant constructs are identified as attitudes towards ageing and age stereotypes, subjective age, age identity and self-perceptions of ageing. Conceptual frameworks have broadened, merged and further developed, becoming more multidisciplinary and interdisciplinary. Of broad value to the study of attitudes to ageing is the recently proposed Awareness of Age-Related Change (Diehl & Wahl, 2010), building on life span, and successful and healthy ageing perspectives.

Increasingly, multidimensional instruments that incorporate positive as well as negative aspects of ageing are being developed and utilised to measure complex subjective ageing experiences (Laidlaw et al., 2007; Steverink et al., 2001). It is observed that the attitudes and self-perceptions of individuals to their own ageing are of increasing interest in the literature (Bowling & Dieppe, 2005), in contrast to the attitudes and age stereotypes of others that were the prevalent measures of previous decades. Promising instruments, such as the AAQ (Laidlaw et al., 2007), have been successfully used in a range of settings, albeit primarily with older samples. Research on the relationship of attitudes to ageing and health is receiving growing attention in the literature. Overall, the evidence suggests that positive attitudes to ageing have significant associations with better long-term physical and mental health and longer life expectancy (Demakakos et al., 2007; Levy et al., 2002). However, there are gaps in the literature in understanding how attitudes to ageing are related to health and health behaviours, particularly in midlife and these provide a rationale for this study.

Chapter 3:

Research Rationale, Questions and Hypotheses

“Attitude is a little thing that makes a big difference.”

Winston Churchill

3.1 Overview

This exploratory study aimed to investigate the attitudes towards ageing of a midlife sample in Canterbury, New Zealand. Attitudes to ageing were examined with a range of socio-demographic factors, self-rated health, chronic health conditions, current depression and health behaviours. Attitudes to ageing of this midlife New Zealand sample were compared to the only other midlife study reporting on the AAQ (Matthews et al., 2007). Measures of subjective age, age identity and self-perceptions of age were also analysed. Relationships between the five attitudinal measures used were examined. The AAQ was selected as the preferred multidimensional measure with which to assess attitudes to ageing with self-rated health, a range of prevalent physical and mental health conditions, and health behaviours.

A broad Awareness of Age-Related Change framework was applied to the study (Diehl & Wahl, 2010). By midlife, it was expected that attitudes to ageing would reflect a growing awareness of ageing involved with health experiences and behaviours, but it was not known how this awareness would impact on attitudes towards ageing. The study set out to address some of the gaps identified in the literature concerning midlife and extend knowledge of what is known about attitudes to ageing and relationships to health and health behaviours. The following section presents the general research questions examined in this study, supported by a rationale for their inclusion and defines more clearly articulated hypotheses.

3.2 Attitudes of Midlife New Zealanders to their Ageing

Researching attitudes towards ageing has been called a priority for New Zealand (Cunningham, 2005). However, only a small number of studies have reported on attitudes and stereotyping in New Zealand to date, which in the main have focused on the attitudes of health professionals and younger individuals to older adults. Studies on New Zealanders' attitudes to the process and perceptions of their own ageing are lacking, which limits comparisons with international findings. The AAQ has not yet been examined in a New Zealand context, despite being used in a growing number of countries worldwide. It was of interest to know whether AAQ results could be replicated in New Zealand, in comparison with the only study to report midlife attitudes to ageing, in Australia (Matthews et al., 2007). In addition, attitudinal measures of subjective age, age identity and self-perceptions of ageing were examined and compared with the literature. It was expected that midlife New Zealanders would show comparable attitudes towards ageing to midlife samples in western countries.

Hypothesis

1. It was hypothesised that attitudes towards ageing, as measured by the AAQ, would not be statistically different from comparable age groups in western countries.

3.3 Relationships between Attitudinal Measures

As identified in the previous chapter, a number of different instruments measuring attitudinal ageing constructs have been developed, but relationships between measures have largely been overlooked. To date, only the relationship between felt and ideal age has been reported, showing a moderate relationship in the main (Kaufman & Elder 2002; Keyes & Westerhof, 2012; Ward, 2010). No published accounts of relationships between unidimensional attitudinal measures and the multidimensional AAQ are known. The instruments examined measure overlapping attitudinal concepts and were expected to show a degree of concordance. However, some discordance between measures was also expected from relatively independent attitudinal measures or domains in multidimensional measures. Individuals in midlife were expected to be sensitive to physical health triggers and to "feeling older", as older respondents have reported (Low et al., 2013a; Lucas-Carrasco et al., 2012). Stronger relationships between physical change attitudes and other attitudinal measures were anticipated. Findings may be of

value in deciding which measures most effectively assess a full range of attitudes to ageing, which in turn could reduce questionnaire length and participant burden.

Hypothesis

2. It was anticipated that attitudinal measures tested would show a degree of concordance, but that the AAQ subscale of physical change would show the strongest correlations with other attitudinal instruments tested.

3.4 Attitudes to Ageing and Self-Rated Health at Midlife

Self-rated health is a well-used key indicator of health and mortality (Anstey, Butterworth, Windsor et al., 2007). Poor or fair self-rated health has been linked to increased levels of psychological distress in midlife adults (Jorm, Windsor, Dear et al., 2005). Self-perceptions of health are known to be related to self-perceptions of ageing (Barker et al., 2007; Benyamini, Idler, Leventhal et al., 2000; Demakakos et al., 2007; Kim, 2009; Steverink et al., 2001). While the SF-12 has been analysed in conjunction with the AAQ (Bryant et al., 2012, 2014; Chachamovich et al., 2008; Kalfoss et al., 2010; Low et al., 2013a; Lucas-Carrasco et al., 2012), the more comprehensive SF-36 has not been reported on. The SF-12 is a subset of items from the SF-36, with single-item and two-item scales under each of the eight domains (Ware, Kosinski & Keller, 1996). Relationships between the eight self-reported health domains (physical functioning, role limitations due to physical health, role limitations due to emotional problems, bodily pain, general health, vitality/fatigue, social functioning and mental health/emotional well-being) and the three attitudinal domains of the AAQ (psychosocial loss, physical change, and psychological growth) have yet to be reported. This study was able to examine relationships between these multidimensional scales in more depth. Similar subscales in each instrument were expected to show concordance.

Hypothesis

3. It was hypothesised that (a) negative psychosocial loss attitudes would be associated with reduced vitality, social functioning, role limitations (emotional) and mental health; (b) negative physical change attitudes to ageing would be associated with reduced physical functioning, role limitations (physical), bodily pain, general health and vitality; and (c) that negative psychological growth attitudes to ageing would be associated with reduced vitality and role limitations (emotional).

3.5 Attitudes to Ageing and Health at Midlife

Negative attitudes towards ageing have been identified as a risk factor for negative health outcomes in older adults (Stewart et al., 2012). In midlife, attitudes to ageing have been found to influence the process of individual ageing, health and longevity (Levy et al., 2002). However, few studies have focused on associations between measures of subjective age and chronic health conditions (Demakakos et al., 2007), despite physical and mental health appearing to act as resources shaping individuals' attitudes during the ageing process (Bryant et al., 2014). Limited literature examining relationships between the AAQ and a range of prevalent chronic physical conditions in any age group is observed. However, it was expected that individuals in midlife with diagnosed physical chronic health conditions would report negative physical change attitudes, as older adults have (Low et al., 2013a; Lucas-Carrasco et al., 2012). Based on results with older populations (Bryant et al., 2012; Chachamovich et al., 2008; Kalfoss et al., 2010; Lucas-Carrasco et al., 2012; Quinn et al., 2009; Shenkin et al., 2014a), it was predicted that individuals in midlife with current or diagnosed depression would report more negative attitudes towards their ageing, across the three AAQ domains.

Hypotheses

4. It was hypothesised that individuals with diagnosed physical chronic conditions would report more negative physical change attitudes toward ageing.
5. It was also hypothesised that diagnosed depression and meeting criteria for current depression would be generally associated with negative attitudes to ageing.

3.6 Attitudes to Ageing and Health Behaviours at Midlife

Evidence consistently finds that engagement in key health behaviours helps to maintain optimal health and extend longevity (Peel et al., 2005). Health behaviours at midlife, such as body size, smoking and alcohol consumption, have been found to be significant predictors of disability and mortality postponement in older ages (Chakravarty et al., 2012; Khaw et al., 2008; Vaillant & Mukamal, 2002). It was expected that these health behaviours would also be associated with attitudes towards ageing. The relationship between health behaviours and the AAQ has been overlooked to date, apart from one study, whose data is not comparable (Quinn et al., 2009). This study examined a range of health behaviours at midlife with the

AAQ, with the plan to explore those health behaviours that show significant relationships with attitudes to ageing in more depth. It was expected that not all health behaviours would have a relationship with attitudes towards ageing and that the physical change domains of the AAQ would show stronger relationships to key health behaviours than other domains.

Hypothesis

6. It was hypothesised that physical change attitudes towards ageing would be negatively associated with obesity, smoking and hazardous use of alcohol.

3.7 Summary

This study set out to address some apparent gaps in the literature concerning midlife attitudes towards ageing in New Zealand and relationships with self-rated health, a range of prevalent chronic physical and mental health conditions, and engagement in a variety of health behaviours. Research questions and hypotheses were based on existing literature examining the positive relationship of health and attitudes to ageing, but primarily with older populations. It was expected that individual health experiences and involvement in health behaviours would interact with a personal Awareness of Age-Related Change. Physical change attitudes, in particular, were expected to show strong relationships with health and health behaviours at midlife. The following chapter focuses on the methods and measures used in the study.

CHAPTER 4:

Methods

“Ka haere te mātātabi, ka nobo te mātāpuputu.

(Youth rushes in where age deliberates.)”

Mead & Grove, 2004

4.1 Overview

The CHALICE study is a prospective, random cohort study with a sample size of 404 adults aged 50 years at inception living in Canterbury, New Zealand. This doctoral study focuses on baseline data from the first 200 CHALICE participants, aged 49 to 51 years. Drawing on guidelines from the STrengthening the Reporting of OBservational studies in Epidemiology (STROBE) (von Elm, 2007), this chapter describes the methods used in the study, including study design (location, participant selection, eligibility and recruitment); ethical considerations; variables selected; and statistical methods used.

4.2 Study Design

CHALICE was established as a multidisciplinary longitudinal study of ageing from midlife. As a prospective study, it is following a randomly selected sample of Canterbury adults predominantly aged 50 years at baseline, to track their health and wellbeing as they age. The general goals of the study are to explore the interaction of culture, communities, families, environments, lifestyle and genes on healthy ageing and wellbeing; examine the health status of midlife New Zealanders, including both protective factors and risk factors for prevalent chronic conditions; and to report empirically based findings and recommendations to increase our knowledge (Schluter et al., 2013). In assessing individuals at midlife, CHALICE seeks to investigate and understand which factors contribute to health and wellbeing and also which facilitate premature ageing and disability, reflecting a life course approach.

Healthy life expectancy is influenced by a limited number of chronic major conditions that become more common with increasing age (World Health Organization, 1998). These “genetic giants” (Walker, 2009) include cardiovascular diseases (e.g. coronary heart disease),

hypertension, stroke, diabetes, cancer, COPD, musculoskeletal conditions (e.g. arthritis and osteoporosis), mental health or neurological disorders (mostly depression and dementia) and sensory impairment (such as vision and hearing).

These conditions are assessed through the CHALICE study in order to understand the possible paths of development, and how they can be prevented, delayed or have their impact reduced.

4.2.1 Location

Geographically, the study was located within the Canterbury region. Canterbury was selected as it has a relatively stable population and a history of high participation in epidemiological studies, such as the Christchurch Health and Development Study (Fergusson & Horwood, 2001) and the Christchurch Psychiatric Epidemiological Survey (Wells, Bushnell, Hornblow et al., 1989). The other factor of note in locating a longitudinal health and ageing study in the area is that the Canterbury population is ageing more rapidly than most other regions in New Zealand. With 25% of the Canterbury population projected to reach the age of 65 years or older by 2031, Canterbury will age 20 years ahead of most New Zealand regions (Statistics New Zealand, 2012a).

CHALICE participants were residents of the Canterbury District Health Board (CDHB) area on the mid-east of the South Island, stretching from Rangitata in the south, to Arthurs Pass on the west of the Main Divide, up to Kekerengu in the north, and including the cities and towns of Christchurch, Kaikoura, Ashburton and Hanmer Springs. Seventy percent of the CDHB population live in Christchurch. The region is shown in Figure 4.1.

Figure 4.1. CHALICE Sample Region in Canterbury¹³



4.3 CHALICE Participants

This doctoral study recruited the first 200 CHALICE participants. This subsample size was selected to enable interviews to be completed and data entered within two years into the study, allowing time for analysis and writing. A representative sample of adults aged 50 years at inception was drawn from the Statistics New Zealand electoral database in the CDHB area. Voting is compulsory in New Zealand. Stratified random sampling methods were employed. New Zealanders of Māori descent have the choice of being listed under the Māori electoral roll or the general electoral roll. If individuals are descended from Māori, but do not identify as Māori, they opt for the general electoral roll. All New Zealand adults not in the Māori electoral roll are included in the general electoral roll.

The CHALICE study selected four out of five participants from the general electoral roll and one in five through the Māori electoral roll. With respect to sample availability over the

¹³ Reproduced with permission, Ministry of Health website 2013.

recruitment period, this equates to 1:12 Māori and 1:40 non-Māori living in Canterbury in their fiftieth year. The sample and design of the CHALICE study have been fully described elsewhere (Schluter, et al., 2013). The study aimed to oversample Māori participants so as to represent approximately 20% of the total CHALICE sample. The 2006 New Zealand Census reported that Māori made up 4% (or 1,782) of adults aged 50 to 54 years living in Canterbury, compared to 7% of Māori of all age groups living in Canterbury and 15% of Māori in New Zealand (Statistics New Zealand, 2012a). Oversampling of Māori was designed to increase the statistical power for comparisons between Māori and non-Māori and also more accurately reflect the population of New Zealand Māori.

4.3.1 Participant Recruitment

Recruitment commenced in August 2010. It was possible to select residents living within the CDHB area who would be turning 50 years of age over the next 12 months using both the general and the Māori electoral rolls. Randomly selected potential participants were sent a personalised letter outlining the study and inviting them to contact the research team, either by phone or by returning the enclosed post-paid response form.

If no response was received, a follow-up protocol was initiated, including up to eight telephone calls made at various times and days, including evenings and weekends. If contact was unsuccessful, a second letter was sent approximately two to three months after the first and further telephone calls made. Finally, one or two home visits were made to residences within or close to Christchurch city. Following the annual update of the electoral rolls, checks were made to verify the current addresses of potential participants who were not able to be contacted and further efforts made to track them down. Media coverage of the CHALICE study aimed to increase interest in participation. Additional outreach at the outset of the study was made in the Māori community to encourage participation. Once contact was made, the study was outlined and potential participants screened for eligibility. If participants knew the interviewer, an alternative interviewer was available. Christchurch is a relatively small city, with a population of approximately 400,000, so this option was taken up a number of times.

4.3.2 Participant Eligibility

Participants were eligible for the CHALICE study if they were aged 49 to 51 years at entry, intended living in the CDHB region for at least six of the following 12 months, were

community-living (i.e. not in prison or a care facility) and able to complete the required assessment (e.g. able to communicate proficiently in English, physically and mentally able to participate) (Schluter et al., 2013; University of Otago, 2011).

4.4 Consent

Prior to the commencement of the interview, informed written consent¹⁴ was obtained from each participant. Consent asked whether participants wished their general practitioner (GP) notified of CHALICE participation and if they wished their GP to receive a summary copy of results. Consent included accessing medical records through the National Health Index (NHI)¹⁵ database; the storage of blood, plasma, urine and DNA samples for ethics-approved studies; and being contacted in the future about participating in future studies, either in New Zealand or overseas. Participants were specifically informed that involvement was strictly confidential and that no identifying information was to be published. Participants were also informed they could withdraw at any time and request their study samples be destroyed. An option to dispose of surplus samples with an appropriate karakia (Māori prayer) was available. Participants were informed that they would be re-contacted each year by CHALICE staff and further assessments would be conducted each five years. The explanation and signing of the consent form by participants and interviewers was followed by the CHALICE assessment.

4.5 Interview Structure

A team of four conducted the CHALICE interviews. The author conducted 68 of the first 200 interviews and continued to conduct over 100 interviews in total for the CHALICE study. Interviews were most frequently held on a Wednesday and Thursday to coincide with the availability of echocardiogram (ECHO) and electrocardiogram (ECG) heart tests. Interviews took place at the Department of Psychological Medicine. Morning appointments were scheduled, as blood tests required participants to be fasting. Interview duration ranged from just under four hours up to seven hours, averaging about 4.5 hours, including the provision of breakfast.

¹⁴ See Appendices for Consent Form.

¹⁵ The National Health Index (NHI) number is a unique number assigned to each person using health and disability support services in New Zealand.

The CHALICE interview comprised seven separate modules. Modules included physical and blood pressure measurements, blood and urine tests and fundus photographs of the eyes; personal health history, use of health services, use of tobacco and alcohol; family health history, impact of the Canterbury earthquakes and attitudes towards ageing; heart tests with an ECHO and ECG; mental health screening using the Mini International Neuropsychiatric Interview (MINI); cognitive screening using the Montreal Cognitive Assessment (MOCA) and recently developed Consonant Vowel Consonant (CVC) test; and physical activity and nutritional information with diaries to complete. While the CHALICE study has a clear health and wellbeing focus, the breadth of individual participation in wider life was reflected in the extensive range of questions asked of participants.

4.6 Instruments: Attitudinal Measures

Attitudinal instruments measuring relevant constructs in the subjective ageing literature were selected to test hypotheses. Measures include the AAQ as a multidimensional measure of attitudes towards ageing, felt age as a measure of subjective age, ideal age as a measure of age identity, and Experience of Ageing and subjective life expectancy as measures of self-perceptions of ageing.

4.6.1 Attitudes to Ageing Questionnaire (AAQ)

The AAQ was selected as the primary tool to measure attitudes to ageing, because as a scale it has been extensively tested and validated cross-culturally. The AAQ is a self-report measure in which individuals express their own attitudes to the process of ageing (Laidlaw et al., 2007). As described in Section 2.3.2, the AAQ measures the individual perception of the ageing process, including both losses and gains associated with ageing. The final 24-item scale consisted of three subscales (each of eight questions) covering psychosocial loss, physical change and psychological growth domains, in Figure 4.2.

Figure 4.2. Attitudes to Ageing Questionnaire (AAQ)¹⁶

Subscale 1: Psychosocial Loss

Old age is a time of loneliness

Old age is a depressing time of life

¹⁶ Reproduced with permission (Laidlaw et al., 2007).

I find it more difficult to talk about my feelings as I get older
I see old age mainly as a time of loss
I am losing my physical independence as I get older
As I get older I find it more difficult to make new friends
I feel excluded from things because of my age

Subscale 2: Physical Change

It is important to exercise at any age
Growing older has been easier than I thought
I don't feel old
My identity is not defined by my age
Problems with my physical health do not hold me back from doing what I want
My health is better than I expected for my age
I keep as fit and active as possible by exercising

Subscale 3: Psychological Growth

As people get older they are more able to cope with life
It is a privilege to grow old
Wisdom comes with age
There are many pleasant things about growing older
It is very important to pass on the benefits of my experiences to younger people
I believe my life has made a difference
I want to give a good example to younger people

Responses are elicited on a five-point Likert scale ranging from one to five. A higher score reflects stronger endorsement of the predominant theme of the particular subscale. For example, the psychological loss subscale indicates a stronger agreement with a loss-deficit model of ageing. In contrast, higher scores in physical change and psychological growth subscales indicate agreement with more positive attitudes in those domains. This study recoded subscale responses so that a higher score indicated a more positive attitude to ageing in all domains. This was to provide consistency across domains. A number of other studies have also recoded subscales; so high scores reflect more positive attitudes to ageing in each domain (Kalfoss et al., 2010; Low et al., 2013a; Matthews et al., 2007; Molzahn & Gallagher, 2009; Rashid & Ab Manan, 2013; Top, Eriş & Kabalcioglu, 2012a, 2012b). Two participants

(1%) missed one item each from the AAQ. These values were imputed by calculating item scores from the same subscale and dividing by the number of items.

In addition to its face validity, the AAQ has performed well psychometrically. The final 24-item scale showed good fit indices with confirmatory factor analysis (CFI)=0.84, chi-square (χ^2)=4559.9, degrees of freedom (df)=248, and Root Mean Square of Error Approximation (RMSEA)=0.06 (Laidlaw et al., 2007). Good test-retest reliability, discriminant validity and concurrent validity have been reported (Lucas-Carrasco et al., 2012). Cronbach's alpha for psychosocial loss, physical change and psychological growth were acceptable at 0.81, 0.81 and 0.74 respectively (Laidlaw et al., 2007). In this study, Cronbach's alpha for the three subscales were 0.81, 0.77 and 0.75 respectively. A larger CHALICE sample reported similar internal consistency coefficients (Thorpe, Pearson, Schluter et al., 2014).

4.6.2 Felt Age

While chronological age is determined by years of age since date of birth, felt age is the age that individuals feel most of the time (Settersten Jr & Mayer, 1997). The question used in the current study was developed in the mid 1990s by the MIDUS study (Brim, Baltes, Bumpass et al., 1996): "Many people feel older or younger than they actually are. What age do you feel most of the time?" A felt age less than a respondent's chronological age represents a younger felt age, while a felt age older than chronological age reflects an older felt age (Schafer & Shippee, 2010b). Individuals can feel their current chronological age. An age is recorded that can later be compared to the participant's chronological age to develop a felt age difference. This is the difference in years between chronological age and felt age, which can be a positive (older felt age) or negative (younger felt age) value.

Felt age was selected as a primary unidimensional measure of subjective age because of its simple application, wide use internationally (including with midlife samples), and valid and reliable results (Barak, 2009). Multiple studies have reported on felt age, including with midlife populations, most of which are from the United States. Almost always, the measurement of felt age is accompanied by ideal age.

4.6.3 Ideal Age

Ideal age is a unidimensional measure of age identity. Similar to felt age, ideal age was also used as an early measure by the MIDUS study (Brim et al., 1996). It asks individuals to consider the age they would like to be, by asking “Now imagine you could be any age. What age would you like to be?” Like felt age, an age in years is recorded. An age older than chronological age reflects an aspiration to be older, while a younger age indicates a desire to be younger. An “ideal age difference” is the exact difference in years between chronological and ideal age, either as a positive or negative score. Ideal age can be the same as chronological age.

Ideal age was also selected as a measure alongside felt age, replicating many studies in the literature, including those in midlife. Similarly, it is a simple instrument to administer. As an aspirational measure, it is designed to capture what age group individuals identify with, as well as how individuals perceive their own age in relation to age norms, stage in the life course and social roles. Assessment of ideal age enables a comparison between individualistic and collectivistic countries (Barak, 2009).

4.6.4 Experience of Ageing

The Experience of Ageing is a unidimensional measure of self-perceptions of ageing, captured in a single generalised question about growing older: “On the whole, has growing older been a positive or negative experience?” Responses are made on a five-point Likert scale: 1=very positive, 2=positive, 3=neither positive nor negative, 4=negative or 5=very negative. The question was developed for ELSA (Marmot, Banks, Blundell et al., 2003) and is not known to have been used elsewhere. The Experience of Ageing measure was selected as it has been used with a midlife sample in the United Kingdom, allowing comparability of results. It is a simple measure to administer and appears to capture generalised perceptions and experiences of ageing.

4.6.5 Subjective Life Expectancy

Subjective life expectancy is a unidimensional measure of self-perceptions of ageing. It captures a personal approximation of how long individuals think they might live, with the question “To what age do you think you will live?” derived from the ASOC study (Mirowsky,

1997). An age in years is recorded. A comparison with the respondent's chronological age is then possible, resulting in a personal estimation of years left to live.

Subjective life expectancy has been assessed in a number of studies, particularly around retirement preparedness (Bloom et al., 2007; Griffin et al., 2012) and health behaviours (Levy & Meyers, 2004; Sarkisian et al., 2002). It was selected as a measure in the current study as it offers a unique insight into individuals' sense of years remaining, as an aspect of self-perceptions of ageing. Life expectancy in New Zealand is increasing steadily, but it is not known how aware New Zealanders are of life expectancy norms. Subjective life expectancy is a simple instrument to administer, although being asked to consider the possible age of death or years left to live has been reported as a potentially challenging task for some, resulting in "don't know" or omitted responses in the literature (O'Connell, 2011).

4.7 Instruments: Socio-Demographic Factors

Interview questions were taken from or adapted from the 2006/07 New Zealand Health Survey (Ministry of Health, 2008). Demographic information examined in this study includes date of birth, gender, and a number of other measures to be explained further. These questions also offered a "don't know" response. If response numbers were low in certain options, responses were redirected or collapsed with other categories to increase statistical power.

4.7.1 Ethnicity

Ethnicity was self-defined and based on affiliation and self-identification with an ethnic group (Robson & Harris, 2007). Participants were able to report affiliation with multiple ethnicities, including New Zealand European; Māori; Samoan; Cook Island Māori; Tongan; Niuean; Chinese; Indian; and Other (such as Dutch, Japanese and Tokelauan). For the purposes of this study, participants were categorised into Māori and non-Māori, after initial examination showed low numbers in other categories. Any participant who identified as Māori, either wholly or with another ethnicity (such as New Zealand European), was categorised as Māori. Participants were able to report being descended from Māori, but not identify as Māori. Participants not identifying as Māori were defined as non-Māori.

4.7.2 Education

Education level referred to the highest completed qualification that participants had achieved with at least three months' full-time study. Incomplete qualifications or qualifications that took less than three months full-time to complete were omitted. Options included no qualification; secondary school qualification; post-secondary certificate, diploma or trade diploma; university degree; or "other". This study individually reallocated three responses from the "other" category to the most similar qualification option.

4.7.3 Relationship Status

Current marital or relationship status included the following options: married or living de facto for one year or more; separated; divorced; widowed; or never married. Separated, divorced and widowed participants were grouped together in ongoing analyses, as numbers were small.

4.7.4 Household Income

Gross household income from all sources in the past 12 months was initially assessed in 15 bands. For the purposes of these analyses, four household income bands were created that approximated Statistics New Zealand quartiles (Statistics New Zealand, 2012b). These were under \$50,000; \$50,001 to \$80,000; \$80,001 to \$120,000; and \$120,001 or above. These income bands have been used elsewhere in the publication of CHALICE results (Schluter et al., 2013). As of June 2014, the exchange rate of NZ\$1 was US\$0.84.

4.7.5 Economic Living Standards Index (ELSI)

The ELSI-Short Form has been recommended to assess the living standards and economic wellbeing of New Zealanders (Ministry of Health, 2010a). The ELSI is a non-monetary indicator of living standards (Jensen et al., 2005), not simply of deprivation (Perry, 2009). It is a subjective measurement (Enright & Scobie, 2010), which is relative to standards enjoyed by others (Breheny et al., 2011). Subscales include ownership of items; social participation; economising behaviours; self-rated standard of living; satisfaction with standard of living; and self-rated adequacy of income. Scores range from 0 to 31, within seven bands. For the purposes of this study, these seven bands were grouped into three bands: hardship (range 0 to 16); comfortable (range 17 to 24); and good (range 25 to 31).

4.8 Instruments: Health Measures

Health data on the SF-36, chronic conditions prevalent in New Zealand, and depression were collected to test for associations with attitudinal measures in this study.

4.8.1 Short Form 36 (SF-36)

The SF-36 questionnaire is a self-report measure of physical and mental health status in adults over the previous four weeks (Ware, Kosinski, Bjorner et al., 2007). The SF-36 was selected for its widely reported use, allowing for a comparison of results internationally and within local populations (Stephens, Alpass, Baars et al., 2010). The eight domains cover physical functioning; role limitation (physical); bodily pain; general health perceptions; vitality; social functioning; role limitation (emotional); and mental health. Subscales are standardised on scales from 0 to 100. Lower scores imply a poorer perception of health. Each health domain of the SF-36 is independent of each other (Ministry of Health, 2008). Four domains received particular attention in this study with regards to relationships with socio-demographic factors: physical functioning, general health, vitality and mental health.

4.8.2 Chronic Conditions

Interview questions on chronic conditions were primarily taken or adapted from the 2006/07 New Zealand Health Survey (Ministry of Health, 2008). A chronic condition was defined as a physical or mental illness that lasted or was expected to last for more than six months (symptoms could come and go or be present all the time). Participants were asked whether a doctor had ever told them they had the following chronic conditions: heart disease (including heart attack, angina, heart failure, inadequate pumping of the heart, build-up of fluid in the legs or lungs, problems with heart rhythm, problems with heart valves, intermittent claudication or clot in the legs); stroke; diabetes; allergies; asthma; COPD; arthritis (including gout, lupus or psoriatic arthritis); hypertension (high blood pressure); high cholesterol; or cancer. Responses were coded yes or no for each.

4.8.3 Depression

Mental health questions were derived from the MINI (Sheehan, Lecrubier, Sheehan et al., 1998). Participants were assessed for major depressive episode, current and lifetime. Current

depression was assessed by asking “Have you been consistently depressed or down, most of the day, nearly every day, for the past two weeks?” and “In the past two weeks, have you been less interested in most things or less able to enjoy the things that you used to enjoy most of the time?” If the response to either or both of the above criteria was yes, participants were asked whether they experienced a number of further criteria. Participants meeting five criteria were coded as having current depression. Participants meeting the criteria for current depression were also coded as having lifetime depression.

Lifetime depression was assessed by asking “During your lifetime have you had periods of two weeks or more when you felt depressed or down most of the day, nearly every day?” and “During your lifetime, have you been less interested in most things or less able to enjoy the things you used to enjoy most of the time?” Positive responses to these screening questions resulted in further questions being asked of participants. If five of those questions were positive, participants were coded as having lifetime depression. Lifetime prevalence is the proportion of those participants known to have met depression criteria at some time in their lives before the interview.

Diagnosed depression was also assessed. Participants were asked whether a doctor had ever told them that they had any mental health condition, including depression, during their lifetime. The condition needed to have lasted or be expected to last more than six months. Symptoms could come and go or be present all the time. Responses were coded as positive or negative for diagnosed depression. This additional question was derived from the New Zealand Health Survey (Ministry of Health, 2008).

4.9 Instruments: Healthy Lifestyle and Help-Seeking Behaviours

Health behaviours are actions taken by an individual to maintain, attain or regain good health and to prevent illness and disease (Farlex Medical Dictionary, 2012; Nutbeam, 1998). Health behaviours that may be associated with attitudes to ageing selected for analysis were BMI; use of cigarettes; use of alcohol; number of GP visits in the past 12 months; influenza vaccination in the previous year; and regular participation in screening for cancer.

4.9.1 Body Mass Index (BMI)

Body size is often measured in population studies by BMI, an epidemiological measure to classify individuals as underweight, normal weight, overweight or obese. BMI was calculated by measuring the height and weight of CHALICE participants using professional anthropometric equipment (Tanita Body Composition Analyzer TBF-300) and standardised techniques. BMI was calculated by dividing body weight in kilograms by the square of their height in metres (kg/m^2).

BMI cut-off points for adults aged 18 years and over were set by the WHO and used to classify participants as underweight (under $18.5 \text{ kg}/\text{m}^2$); normal range ($18.5 \text{ kg}/\text{m}^2$ to $24.9 \text{ kg}/\text{m}^2$); overweight ($25.0 \text{ kg}/\text{m}^2$ to $29.9 \text{ kg}/\text{m}^2$); or obese (over $30.0 \text{ kg}/\text{m}^2$) (James, Leach, Kalamara & Shayeghi, 2001).

4.9.2 Use of Cigarettes

Tobacco smoking is regarded as the leading cause of preventable death worldwide (Power, 2011). CHALICE applied the WHO definition of a smoker as someone who has smoked more than 100 cigarettes in their lifetime. Current smokers were initially distinguished between daily smokers and irregular smokers, who smoke between at least once a week and at least once a month. For the purposes of ongoing analyses, only current smoking status was employed. Current smokers included both daily and irregular smokers, while all others were defined to be non-smokers.

4.9.3 Use of Alcohol

Alcohol is cited as the most commonly used recreational drug in New Zealand (Ministry of Health, 2009). Participants were asked whether they had had an alcoholic drink in the past year, a question taken from the New Zealand Health Survey (Ministry of Health, 2008). Those participants who had, were asked an additional ten questions developed by the WHO, known as the Alcohol Use Disorders Identification Test, or AUDIT (Bohn, Babor & Kranzler, 1995). The AUDIT questions focus on recent alcohol use, alcohol dependence symptoms, and alcohol-related problems. Hazardous drinking is defined as a pattern of alcohol consumption that increases the risk of damage to physical or mental health or has negative social consequences for the user or others (Babor, Higgins-Biddle, Saunders et al., 2001). An

AUDIT score of eight or more has been used as a cut-off to identify potentially hazardous drinkers (Bohn et al., 1995).

4.9.4 Annual General Practitioner (GP) visit

The local GP is usually the first point of contact individuals have within the health system. Based on New Zealand Health Survey questions, CHALICE assessed whether participants had seen their GP within the past year and if so, how many GP visits they had made (Ministry of Health, 2008).

4.9.5 Immunisation for Influenza

Immunisation is one of the New Zealand government's health targets. Annual vaccination is promoted as the most effective means of reducing the prevalence and severity of influenza (National Influenza Specialist Group, 2012). Participants were asked whether they had had a flu vaccination and, if so, their age at their most recent immunisation.

4.9.6 Screening for Cancer

Cancer screening reduces the risk of dying from cancer in the general population by enabling more precise diagnosis and possible treatment (Ministry of Health, 2004). CHALICE collected data on whether women had regular mammograms (breast x-ray) and cervical smears and whether men had a regular test for prostate cancer.

Breast Cancer Screening

Breast cancer is the most common type of cancer for New Zealand women. Each year, about 2,800 women are diagnosed with breast cancer and 650 women die from the disease. Breast cancer is more common amongst women over the age of 50 and Māori women (Ministry of Health, 2012; The New Zealand Breast Cancer Foundation, 2011). Female CHALICE participants were asked whether they had had a mammogram in the past two years.

Cervical Cancer Screening

About 200 New Zealand women develop cervical cancer per year and about 70 women each year die from the disease (Ministry of Health, 2012). Significant falls in the incidence of cervical cancer over all ethnic and income groups over recent years has been attributed to

cervical screening (Blakely, Shaw, Atkinson et al., 2010). In this study, female CHALICE participants were asked whether they had had a cervical smear (or pap test) in the previous three years, and if not, whether they had had one in the past five years. Women with a hysterectomy were assessed for cervical screening in initial analysis only.

Prostate Cancer Screening

Prostate cancer is the most common type of cancer for New Zealand men, with prevalence increasing over the age of 55 years. Each year, approximately 2,500 men develop the disease with about 560 men dying from it (Cancer Society of New Zealand, 2011). The serum prostate specific antigen (PSA) blood test was developed to detect prostate cancer at an early stage (Bouchardy, Fioretta, Rapiti et al., 2008). While the test can be requested, it is not routinely administered due to insufficient evidence that screening leads to a reduction of morbidity or mortality (Prostate Cancer Foundation of New Zealand, 2010). Male CHALICE participants were asked whether they had had a PSA blood test in the past 12 months.

4.10 Ethics

This doctoral study's ethical clearance fell under the ethical approval for the main CHALICE study. The Upper South A Regional Ethics Committee granted ethical approval for the CHALICE study on 14 June 2010 (reference: URA/10/03/021). This included a comprehensive information form sent out with an invitation to participate, and a consent form that was explained and signed before the CHALICE assessment commenced (see Appendices).

4.11 Data Management

Large, comprehensive longitudinal studies require effective data management (Schluter, et al., 2013). At interview, responses were recorded on questionnaire forms by interviewers. Four short questionnaires were completed at home prior to the interview. Unclear responses and complex results could be reviewed weekly in CHALICE team meetings with the principal investigator. Participant files were kept in locked filing cabinets in the Department of Psychological Medicine. After interviewing, data was entered into a Progeny clinical version 8 database (Progeny Software LLC, Needham, South Suffolk, UK, www.progenygenetics.com). The Progeny database contains no personal identifiers and uses a study identification number

for each participant. Identifying information is kept in separate, secure, password-protected storage.

Data was checked for reliability using double entry of 10% of randomly selected participants, which was compared with the original data entry for disparities. The error rate for the first 200 CHALICE participants was 0.25% per field entered. All individual variables used were also checked for outliers and out-of-range or unusual responses were checked against the original questionnaire form. Any disparity found was then corrected on the Progeny database. To minimise difficulties with missing data, missing responses were dealt with in three ways. Either the participant was contacted immediately after the interview, to complete the missing question; missing data from a scale was imputed with a value calculated from the participant's other responses in the same scale (e.g. AAQ); or missing values on the database were recorded as missing data, resulting in a reduced sample size for that variable.

4.12 Data Analysis

Data from selected variables was exported from the Progeny database to the Statistical Product and Service Solution (SPSS) statistical software version 19 for Windows (IBM Corporation, Somers, NY, USA), via Microsoft Excel 2010 spreadsheets. A range of statistical methods were used including simple summary statistics, such as means, medians, standard deviations (SD) and range; group comparisons, such as Student *t*-tests and one-way analysis of variance (ANOVA); as well as Dunnett's post-hoc tests, Spearman correlations and chi-square tests to explore the direction and strength of relationships between selected variables. Logistic regression was used to explore significant relationships between the AAQ and health behaviours, in order to control for the effects of potentially confounding factors. Confidence intervals, odds ratios and *p*-values were calculated using SPSS (Pallant, 2010), and www.openepi.com (Dean, Sullivan & Soe, 2011). The level of statistical significance was defined as 5% ($p \leq 0.05$). Percentages were rounded to the nearest integer value. To avoid statistical issues associated with small cell size, an *a priori* decision was made to only investigate those chronic conditions with a measured prevalence of $\geq 10\%$. Adjusted analyses were conducted on significant health behaviours. Doctoral supervisors, including the CHALICE study biostatistician, oversaw all analyses.

4.13 Summary

This chapter described the methods used in this doctoral study. Attitudinal measures were selected to test hypotheses outlined in Chapter 3, in association with physical and mental health conditions and health behaviours. Data was collected from the first 200 CHALICE participants from the Canterbury region, randomly selected the year they reached the age of 50 years. Recruitment commenced in September 2010, just prior to the first of the Canterbury earthquakes, and continued to November 2011. The next four chapters presents results on the CHALICE sample: their attitudes to ageing, socio-demographic factors, health and health behaviours.

CHAPTER 5:

Describing the Sample

“I have enjoyed greatly the second blooming ... suddenly you find - at the age of 50, say - that a whole new life has opened before you.”

Agatha Christie

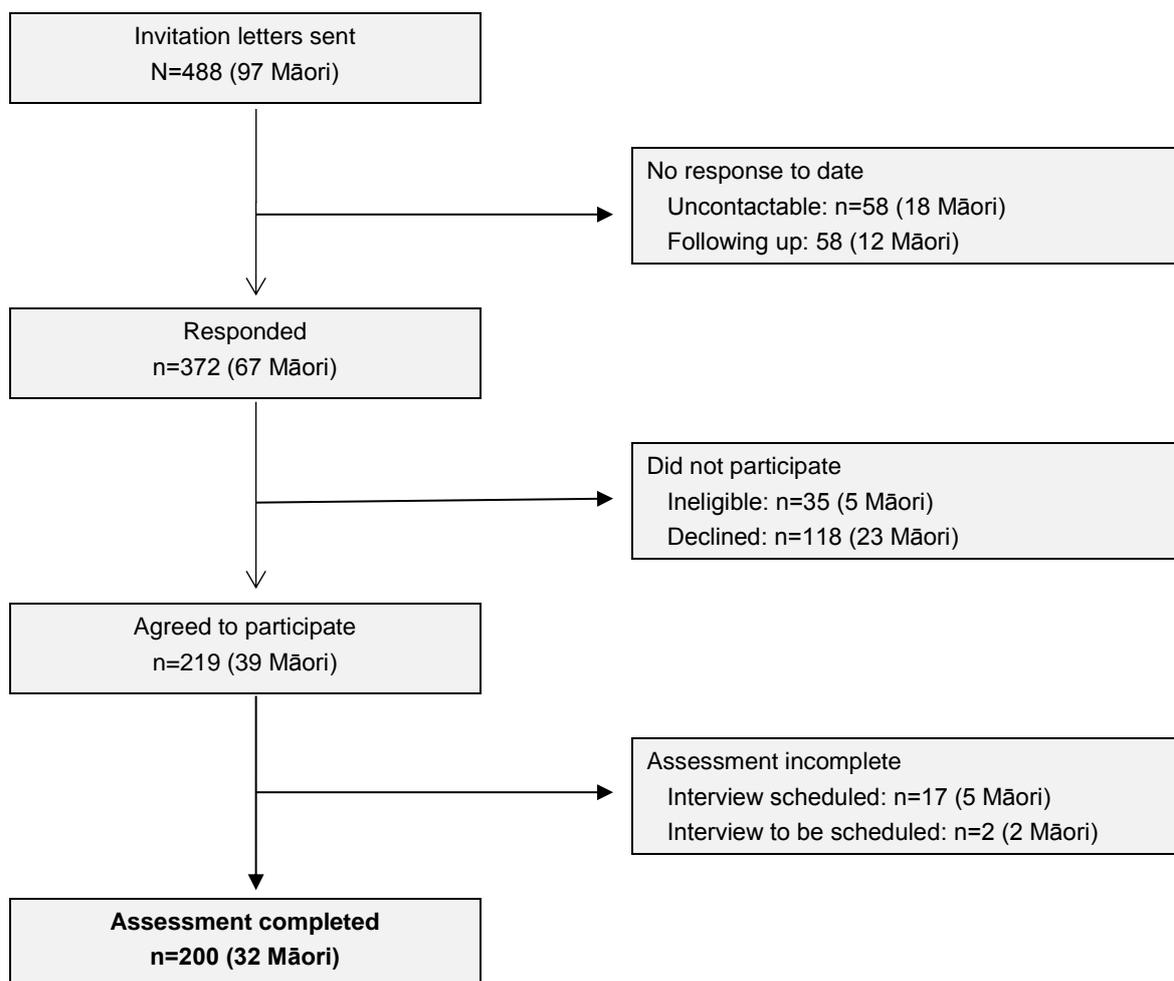
5.1 Overview

Two hundred midlife participants were interviewed from the CHALICE study for this doctoral study. Interviewing commenced a week before the first of the Canterbury earthquakes. The response rate of the study is discussed alongside the ongoing impact of the earthquakes. Socio-demographic details used throughout the study are presented and compared with the Canterbury population. Gender, ethnicity, highest educational qualification, relationship status, household income and ELSI rating are the socio-demographic factors used in analyses with attitudes to ageing, health and health behaviours in following chapters.

5.2 CHALICE Response Rates

To achieve a sample of 200, 488 individuals turning 50 years in the recruitment period were invited to participate in the CHALICE study. The pathways of potential participant contact and response rates to those interviewed are mapped in Figure 5.1. Total numbers of those contacted are shown, including those found to be ineligible or not able to be contacted. Potential Māori participants, randomly selected from the Māori electoral roll, are identified in brackets.

Figure 5.1. CHALICE Participant Flow Chart



Overall the response rate for the first 200 interviewed CHALICE participants was 65.0%, with a 62.5% Māori response rate. This figure excludes those who could not be contacted and those who were ineligible for the study. The reasons for potential participants not being contacted included electoral roll address not current and with no forwarding address; no listed phone number; and contact unsuccessful after two letters, eight phone calls and two home visits (if within Christchurch city limits). Reasons given for ineligibility included individuals who had moved or planned to move from Canterbury, language difficulties, disability or ill health, institutionalisation for alcohol treatment and recent death.

Some discrepancies were identified in participant ethnic identity following interview. Small differences between response rates, in Figure 5.1 above, and data used in subsequent results were detected. This included three participants interviewed from the Māori roll who were not of Māori descent and did not identify as Māori; four participants interviewed from the general

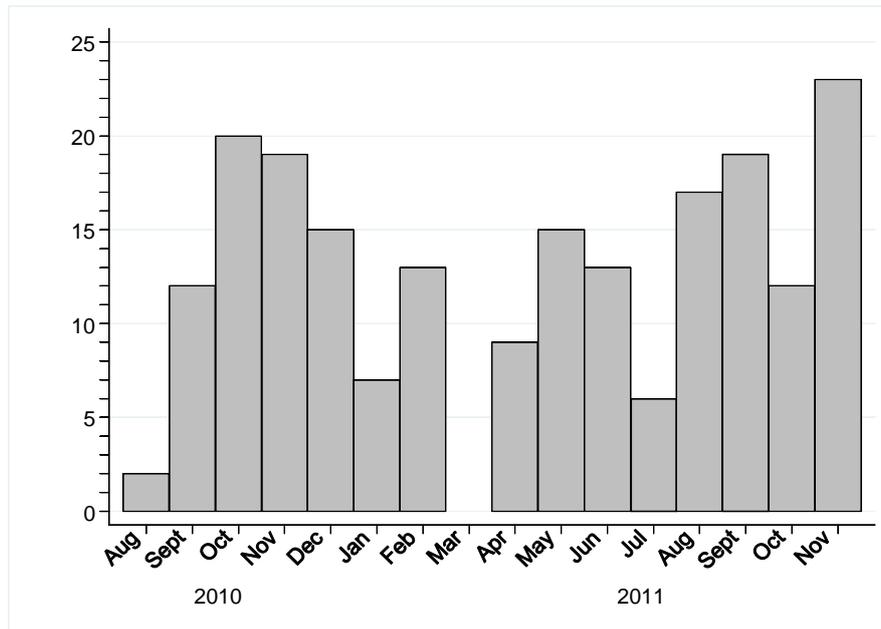
roll reported being of Māori descent, including one who did not identify as Māori; and two participants who were of Māori descent but did not identify as Māori. These last three participants are coded in the CHALICE study results as being non-Māori, whilst all others mentioned are coded as Māori.

5.2.1 Impact of Canterbury Earthquakes

The Canterbury earthquakes affected recruitment. CHALICE interviewing commenced the week prior to the 7.1 earthquake on 4 September 2010. Between then and the 200th interview on 3 November 2011, there were over 10,000 earthquakes and aftershocks (Earthquake Commission, GNS Science, & Land Information New Zealand, 2012). The two other major quakes to strike Christchurch during the interviewing period occurred on 22 February 2011 (magnitude 6.3) causing the deaths of 185 individuals in the city centre and on 13 June 2011 (magnitude 6.3) when hill and eastern suburbs were again severely affected (Bradley & Cubrinovski, 2011; Kaiser, Holden, Beavan et al., 2012; Renouf, 2012). Over 10,000 residents lost homes, thousands of residents subsequently left Christchurch (Statistics New Zealand, 2011) and over 100,000 homes were damaged. Workplaces, schools, business, places to enjoy socialisation and recreation have been lost. Increased mobility within Christchurch has resulted. Some residents moved several times within the recruitment and interviewing period. The physical movement of Christchurch residents within and out of Christchurch resulted in practical difficulties locating potential participants. In addition, many residents in Christchurch suffered from chronic exhaustion, stress and distress (Kemp, Helton, Richardson et al., 2011; Renouf, 2012; Spittlehouse, Joyce, Vierck et al., 2014).

The monthly CHALICE interview rate, reflecting the timing of major earthquakes, is shown in Figure 5.2.

Figure 5.2. CHALICE Participant Interview Numbers per Month



CHALICE monthly interview rates were reduced following major earthquakes on 4 September 2010, 22 February 2011 and 13 June 2011. Interviewing delays arose as a result of some participants being occupied or employed with post-earthquake cleaning, moving, financial arrangements, repairs and rebuilding. In addition, personnel involved in the CHALICE study had restricted access to buildings and facilities for periods of time.

5.3 Socio-Demographic Description of Sample

CHALICE participants were recruited the year they turned 50 years. The age range for interviewing was 49 to 51 years. Most CHALICE participants were aged 50 (31%) or 51 (58%) years. At the lower end were participants who had responded quickly after the new electoral roll list had been released in the middle of the year and at the upper end were those who had taken time to contact or find an agreeable time for interviewing. The frequencies of basic socio-demographic information for participants, including their ELSI rating are shown in Table 5.1. These socio-demographic factors are used in further analyses in results chapters.

Table 5.1. Socio-Demographic Profile of 200 CHALICE Participants

Socio-Demographic Factors	n	(%)
Gender		
Male	87	(57)
Female	113	(44)
Ethnicity		
Māori	32	(16)
Non-Māori	168	(84)
Highest educational qualification		
No formal qualification	36	(18)
Secondary	47	(24)
Post-secondary diploma/certificate	76	(38)
University	40	(21)
Relationship status		
Never married	14	(7)
Married/de facto	150	(75)
Separated	15	(8)
Divorced	16	(8)
Widowed	5	(3)
Household income (NZD)		
≤ \$50,000	44	(22)
\$50,001 - \$80,000	45	(23)
\$80,001 - \$120,000	49	(25)
≥ \$120,001	53	(27)
Unknown	9	(5)
ELSI		
Hardship	19	(10)
Comfortable	53	(27)
Good	128	(64)

Women made up more than half the sample (57%). The majority of participants were of non-Māori descent (84%). Twenty-seven participants reported more than one ethnicity. Among the 168 non-Māori participants, 142 identified as New Zealand European, five identified as Pacific or South East Asian descent and 26 as having another ethnic affiliation. The majority of participants were born in New Zealand (60%) with England being the second most frequent country of birth (10%).

Eighteen percent of participants reported leaving school with no qualifications and a further 24% had secondary school qualifications only. Just over one third (38%) had a post-secondary certificate, diploma or trade diploma. University qualifications were held by 21%.

Three quarters of participants were married or had been living in a de facto relationship for at least a year. The median length of current marriage or de facto relationship was 20 years ($Q_1=2$ years, $Q_3=27$ years). The longest current relationship reported was 36 years ($n=3$), including years spent together before marriage. Examination of relationship length frequencies showed that participants either appeared to be in long-standing relationships or shorter subsequent relationships. In analyses, the categories of separated, divorced and widowed were combined, as individual numbers were small. Relationship status was thus divided into three groupings: never married (7%), married/de facto (75%) and separated/divorced/widowed (18%).

The median household income for CHALICE participants was NZD\$90,000 ($Q_1=\$55,000$, $Q_3=\$135,000$). The lowest income brackets included four participants who reported living in households earning less than \$10,000 per annum. ELSI scores show that the majority of CHALICE participants rated their economic standard of living as good (64%), while 10% rated themselves as living in hardship. This is almost identical to New Zealand rates for adults aged 45 to 54 years (Ministry of Health, 2010a).

Sixteen percent of participants were not in paid employment at the time of interview and 12% had experienced an unwanted period of unemployment for at least one month in the previous year. Social security benefits were being received by 23% of participants at the time of interview. Some participants received more than one type of benefit. Benefit type included Working for Families (10%); Accident Compensation Corporation (ACC) payments (5%); New Zealand Superannuation with participants on a married pension due to the age of their retired spouse (1%); Student Allowance (1%); Unemployment (1%); as well as Domestic Purposes (1%), Sickness (4%), Disability (5%) and Invalid (10%) benefits.

CHALICE results were compared with New Zealand data for Canterbury adults aged 50 to 54 years, from the 2006 Census (Statistics New Zealand, 2012a). More CHALICE participants were female (57%) compared to the Canterbury population aged 50 to 54 years in 2006 (51%). Due to oversampling, 16% of CHALICE participants were Māori, compared to 4% of the Canterbury population in that age group in 2006.

CHALICE participants appeared to be more highly educated than Canterbury adults aged 50 to 54 years in 2006: 18% of CHALICE participants had no qualifications compared to 23% in

Canterbury; 24% of CHALICE participants had secondary school qualifications compared to 48% in Canterbury, 38% of CHALICE participants had a post-secondary diploma or certificate compared to 12% in Canterbury; and 21% of CHALICE participants had university degrees compared to 14% in Canterbury.

The relationship status of CHALICE participants was generally comparable to Canterbury adults aged 50 to 54 years in 2006: 75% were married or in a de facto relationship compared to 77% in Canterbury; 7% had never married compared to 6% in Canterbury; 8% were separated compared to 4% in Canterbury; 8% were divorced compared to 9% in Canterbury; and 3% of CHALICE participants were widowed compared to 2% in Canterbury.

CHALICE participants lived in higher income households compared to Canterbury adults aged 50 to 54 years. The CHALICE annual household median income was \$90,000, compared to just under \$65,000 in 2010 for similar aged Cantabrians, rising to just under \$70,000 in 2011.

5.4 Summary

This chapter presented results on the first 200 participants in the CHALICE study. Interviews were conducted between August 2010 and November 2011, with a response rate of 65%. This was despite the multiple interruptions and severe stress caused by the Canterbury earthquakes.

Comparison with similarly-aged adults living in Canterbury is limited, as Census data refers to New Zealand adults aged 45 to 54 years or Canterbury statistics for adults aged 15 years and over. The CHALICE midlife sample included a greater proportion of females (57%) and Māori (16%) than in the Canterbury population. The difficulties of attracting similar gender recruitment levels have been noted (Rourke & Lakner, 1989). Other midlife studies in New Zealand have also encountered a similar gender imbalance: the HWR study (Dulin et al., 2011); the EWAS study (Waldegrave & Koopman-Boyden, 2010); and Transactions in the Midlife Family study (Hillcoat-Nallétamby & Dharmalingam, 2004). The CHALICE sample was also found to be more highly educated and have a higher income than Canterbury adults aged 50 to 54 years. CHALICE participants lived in households with a median income of \$20,000 higher than the median Canterbury household income for that age group, with two

thirds of participants reporting a good economic standard of living. This sampling bias could influence results analysing attitudes to ageing, health and health behaviours.

Māori were oversampled and comprised 16% of CHALICE participants, compared to 4% of Māori aged 50 to 54 years in the Canterbury population. Pacific and Asian ethnic group representation within the CHALICE study was limited, which prevents ethnic-specific comparisons to be made beyond Māori and non-Māori stratification (Schluter et al., 2013).

CHAPTER 6:

Attitudes to Ageing

“I will never be an old man. To me, old age is always 15 years older than I am.”

Bernard Baruch (1870 - 1965)

6.1 Overview

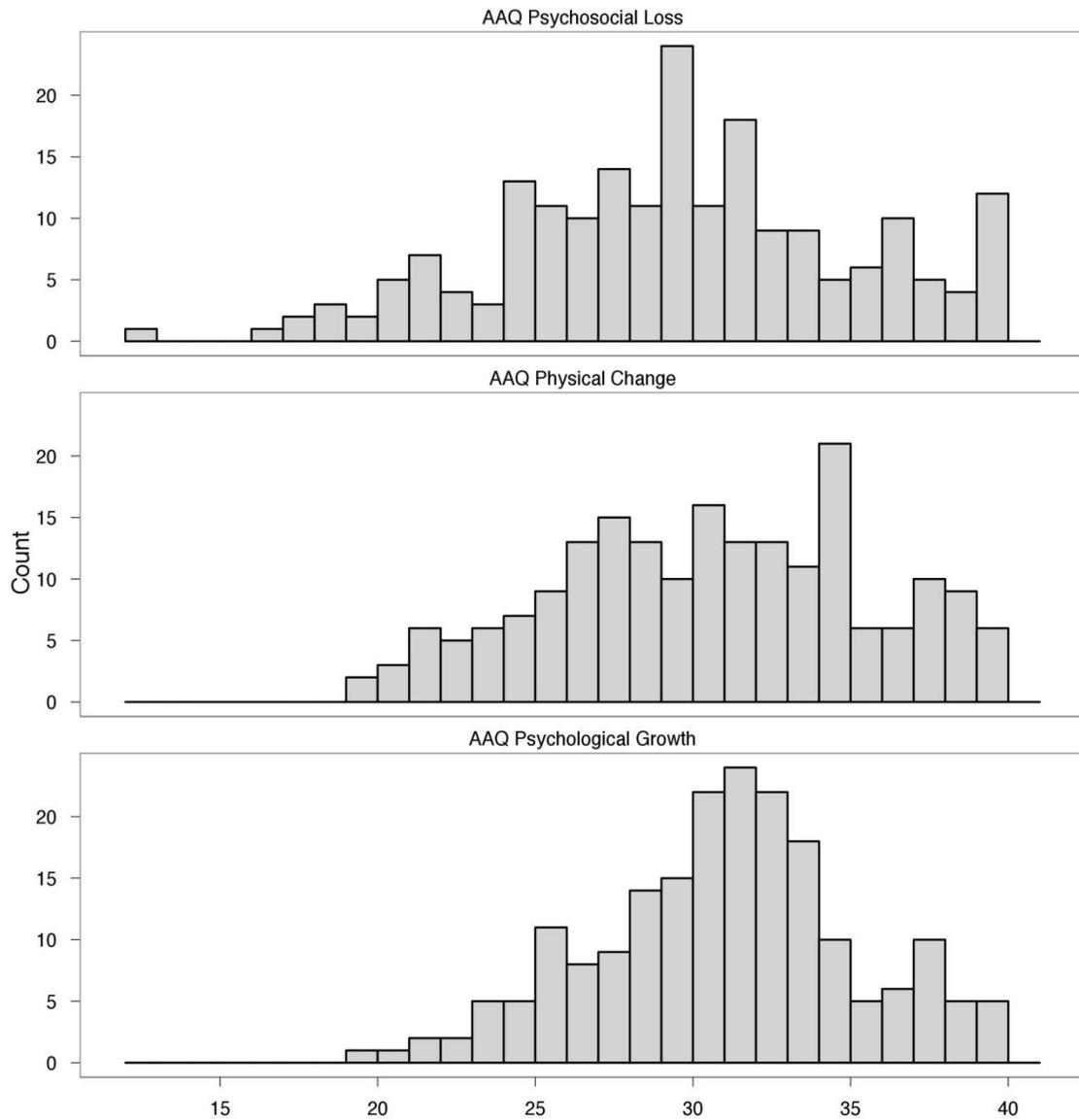
This chapter presents results of the measures of attitudes to ageing, subjective age, age identity and self-perceptions of ageing assessed with the first 200 participants of the CHALICE study: the AAQ; felt age; ideal age; Experience of Ageing; and subjective life expectancy. The study set out to examine the attitudes of a sample of midlife New Zealanders to their own ageing. It was hypothesised that attitudes to ageing, as measured by the AAQ, would not be statistically different from comparable age groups in western countries. Results on the five measures were analysed and compared to the literature. The study was also interested in examining relationships between attitudinal measures assessed. It was anticipated that attitudinal measures tested would show a degree of concordance, but that the AAQ subscale of physical change would show the strongest correlations with other attitudinal instruments tested. Finally, the AAQ was examined with socio-demographic data, to determine whether midlife results replicated findings with older adults. Findings are discussed.

6.2 Attitudes to Ageing Questionnaire (AAQ)

All 200 CHALICE participants completed the AAQ instrument. Psychosocial loss scores were reversed, so that higher scores indicated more positive attitudes across domains. AAQ scores in all three domains were relatively optimistic, with average scores in excess of 30/40 across domains, defined elsewhere (with older adults) as scores $\geq 24/40$, or an average individual item score of 3/5 (Bryant et al., 2012). The three domains showed relatively consistent means and standard deviations (SD): the psychosocial loss mean was reported as 30.0 (SD=5.5); the

physical change mean was 31.1 (SD=5.0) and the psychological growth mean was 31.5 (SD=4.2), from a range of 8-40 points. Figure 6.1 shows the distribution of the three AAQ subscale responses.

Figure 6.1. Histograms of AAQ Subscale Results for 200 CHALICE Participants



Distributions of the AAQ subscales were positively skewed, with evidence of a ceiling effect for some participants. Psychosocial loss showed a greater spread of responses in the lower range, particularly the outlier scoring 13 out of 40.

It was hypothesised that attitudes towards ageing would not be statistically different from comparable age groups in western countries. The majority of studies using the AAQ are with older populations, which limited comparisons. There is one known directly comparable study that analysed a midlife sample using the AAQ, shortly after publication of the AAQ development paper (Laidlaw et al., 2007). The Australian Psychological Society surveyed a subsample of 594 Australians aged 41 to 60 years to explore their attitudes towards ageing in comparison to younger and older subsamples (Matthews et al., 2007). Table 6.1 presents comparative data with significant results highlighted.

Table 6.1. Comparison of AAQ Results between CHALICE (n=200) and the Australian Psychological Society Study (n=594)

AAQ Domains	CHALICE		Australia ^a		Mean Difference	95% CI
	Mean	(SD)	Mean	(SD)		
Psychosocial Loss ^b	30.0	(5.5)	24.6	(4.6)	5.4	(5.1, 6.7)**
Physical Change	31.1	(5.0)	28.0	(5.4)	3.1	(2.3, 3.9)**
Psychological Growth	31.5	(4.2)	28.8	(4.8)	2.7	(2.0, 3.5)**

Note. ** $p < 0.01$; ^a Recoded subscale means were sourced from R. Matthews (personal communication 15 October, 2012); ^b Psychosocial loss mean scores recoded in both studies, so a higher score indicates a more positive result in all subscales.

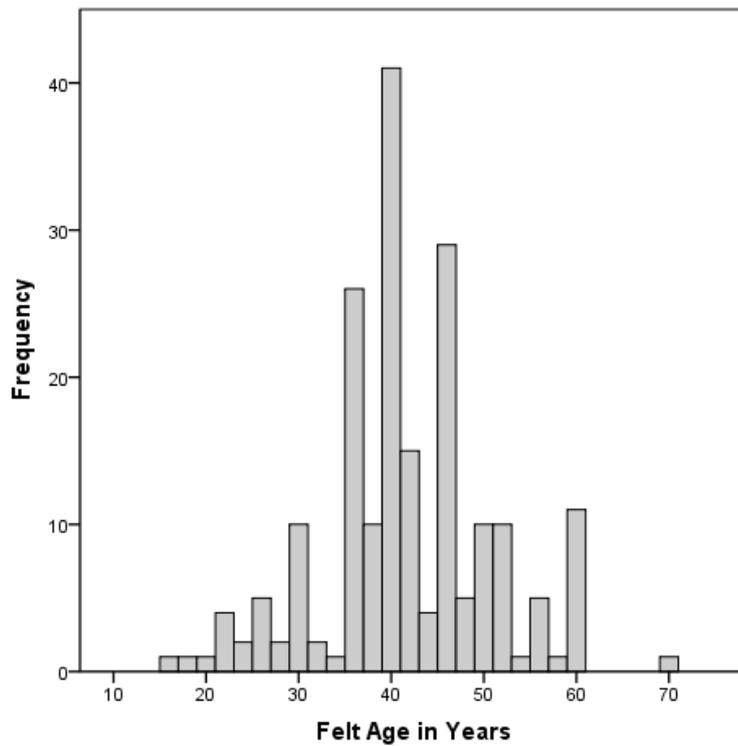
Significant differences between all three subscale means were detected between the two studies, using Student *t*-tests (all $p < 0.001$). The CHALICE sample reported more positive attitudes across the three AAQ domains. The psychosocial loss domain showed the greatest differences between the two studies. Consequently, testing did not support the hypothesis that attitudes to ageing would not be statistically different from comparable age groups in western countries. This New Zealand midlife sample reported significantly more positive AAQ scores across domains than the only comparable study.

6.3 Felt Age

Felt age is the most commonly used measure of subjective age. Participants were asked what age they felt most of the time. Figure 6.2 presents the distribution of felt ages of CHALICE participants. Participant felt ages ranged between 16 and 70 years, with a mean of 41.2 years (SD 9.2). This mean felt age was 10.0 years younger than the mean chronological age of 51.2 years. Three quarters of CHALICE participants felt younger than 45 years, with approximately

one quarter feeling younger than 35 years. About 10% reported feeling older than their chronological age. Responses displayed the influence of anchoring, with prominent peaks at 35, 40 and 45 and lower frequencies at 30, 50 and 60 years.

Figure 6.2. Histogram of Felt Age Results for 198 CHALICE Participants

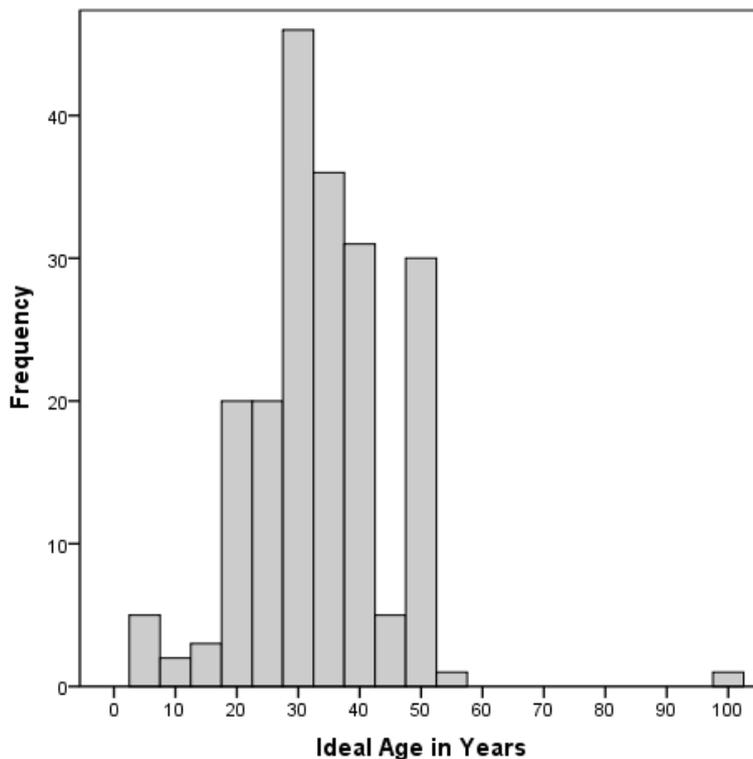


CHALICE results are similar to published data with other midlife samples. From the age of 40 years, felt age has been proposed to be an average of 20% younger than chronological age (Rubin & Bernsten, 2006). CHALICE results supported this calculation, with a 19.6% average being observed. CHALICE results were more similar to findings from MIDUS in the United States than ELSA from the United Kingdom. The MIDUS study reported a mean felt age of 44.6 for 2,691 participants aged 25 to 74 years, 9.7 years younger than chronological age (MIDUS, 2007). MIDUS respondents in their fifties reported a mean felt age that was 9.9 years younger than their mean chronological age, an increase of 2.7 years from the same participants in their forties (Ward, 2010). The ELSA study reported an older mean felt age of 46 years for 840 participants, aged 52 to 54 years (Demakakos et al., 2006).

6.4 Ideal Age

Ideal age is a measure of age identity that asks what age individuals would like to be. Figure 6.3 depicts the distribution of ideal ages of CHALICE participants.

Figure 6.3. Histogram of Ideal Age Results for 200 CHALICE Participants



Ideal ages ranged between five and 100 years of age, with a mean of 34.0 years. Over 80% wanted to be at least ten years younger than they were, while about 14% reported the same ideal age as their chronological age, termed “chronological age satisfaction” (Uotinen et al., 2006). The mean ideal age of CHALICE participants was 17.2 years younger than chronological age. In comparison with felt age, the mean self-reported ideal age of 34.0 years was younger than the mean felt age of 41.2 years. Therefore, while the mean felt age was ten years younger than chronological age, the mean ideal age was 17 years younger.

One participant, of Chinese descent, reported an ideal age of 100 years. The effect of such an outlying value on mean and standard deviations on ideal age differences was examined and sensitivity analyses were repeated excluding this value. The resultant mean of ideal age

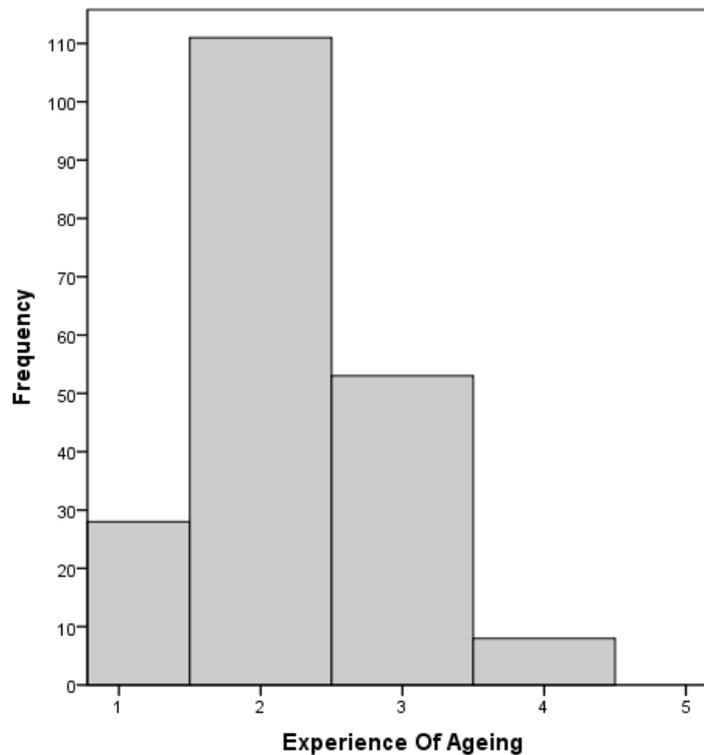
difference was 16.3 years (SD 10.8), somewhat lower than the estimate of 17.2 years (SD 11.7) with this value included.

CHALICE results replicate other studies on ideal age, particularly those from MIDUS. In their fifties, MIDUS participants wished to be an average of 19 years younger than they were, an increase of five years from when the same respondents were in their forties (Ward, 2010). Although not as great a difference, approximately half the 451 older participants in the Evergreen Study in Finland had ideal age ten or more years younger than their actual age (Uotinen et al., 2006).

6.5 Experience of Ageing

The Experience of Ageing is a simple measure that asks whether growing older has been a positive or negative experience. Responses range on a five-point Likert scale from 1 being very positive to 5 being very negative. CHALICE responses are shown in Figure 6.4.

Figure 6.4. Histogram of Experience of Ageing for 200 CHALICE Participants



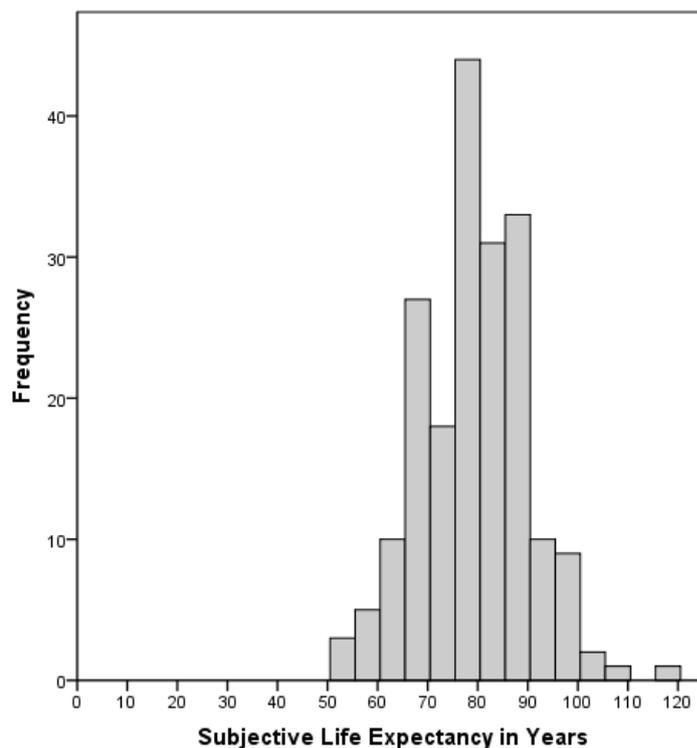
Note. 1=very positive, 2=positive, 3= neither positive nor negative, 4=negative and 5=very negative.

Overall, 69.5% of CHALICE participants felt positive or very positive about their experience of ageing, 26.5% felt neutral and 4% reported feeling negative. No very negative responses were received. A greater proportion of participants in the CHALICE study reported feeling more positive about ageing than that found in the ELSA study, in which 54% of 746 participants aged 52 to 54 years reported feeling positive, 37% felt neutral and 9% felt negative about their experience of ageing (Demakakos et al., 2006).

6.6 Subjective Life Expectancy

Subjective life expectancy is the age to which individuals think they might live. The distribution of responses is shown in Figure 6.5.

Figure 6.5. Histogram of Subjective Life Expectancy Results for 194 CHALICE Participants



Mean subjective life expectancy of CHALICE participants was 80.8 years (SD 10.7). The lowest subjective life expectancy was 53 years (two years from the time of interview). Reasons given at the time point to parental age of death and current health. In contrast, the highest subjective life expectancy was 120 years (69 years from the time of interview). Six participants

(3%) were unable to say to what age they thought they would live, explaining that life expectancy was too difficult to estimate.

In line with New Zealand longevity estimates, men and women had different expectations as to what age they thought they would live to. The mean male subjective life expectancy was 79.5 years (SD 9.9) compared to 81.7 years (SD 11.3) for females. Conditional life expectancy estimates for New Zealand adults aged 50 years in 2010-12 were 81.7 years for males and 84.7 years for females (Statistics New Zealand, 2013c). Therefore, male participants underestimated their life expectancy by 2.2 years and female participants underestimated their life expectancy by 3.0 years. Only 3% of participants were unable to specify to what age they thought they would live, a relatively modest proportion compared to some studies (O'Connell, 2011).

Gender differences were also observed among Māori participants. Mean Māori male subjective life expectancy was 75.5 years (SD 7.7), while mean Māori female subjective life expectancy was 82.2 years (SD 11.0). Conditional life expectancy estimates for New Zealand Māori adults aged 50 years in 2010-12 were 76.6 years for males and 78.9 years for females (Statistics New Zealand, 2013c). Thus, Māori male participants underestimated their average life expectancy by 1.1 year, while Māori female participants overestimated their average life expectancy by 3.3 years. The overestimation of Māori female subjective life expectancy is similar to that shown by black Americans of both genders (Barak, 2009; Bulanda & Zhang, 2009; Hurd & McGarry, 1995; Irby-Shasanmi, 2012; Mirowsky, 1999).

6.7 Attitudinal Findings Compared to the Literature

Together these findings indicate that attitudes towards ageing of this midlife sample were either comparable or more positive than those reported elsewhere. The hypothesis that the attitudes to ageing of midlife New Zealanders would not be statistically different from comparable age groups in western countries was not supported. Attitudes to ageing, as measured by the AAQ, were significantly more positive than the only age-comparable study in Australia (Matthews et al., 2007) and generally more positive than reported findings with older adults. Subjective age, as measured by felt age, was almost identical to MIDUS participants in their fifties (MIDUS, 2007), and supported the calculation that individuals over the age of 40 years feel 20% younger than their chronological age (Rubin & Bernstein, 2006). Age identity was measured by ideal age and results are again consistent with MIDUS participants in

their fifties (Ward, 2010). Consequently, results suggest that felt and ideal ages of this New Zealand sample were similar to individualistic countries, such as the United States (Barak, 2009). Self-perceptions of age were measured by the Experience of Ageing and subjective life expectancy instruments. Findings from this midlife sample were more positive than ELSA participants aged 52 to 54 years (Dimakakos et al., 2006). It is not known whether subjective life expectancy has been reported for midlife samples, but these findings support others (O'Brien et al., 2005; O'Connell, 2011; Griffin et al., 2013) suggesting that individuals underestimate their life expectancy compared to actuarial data and that males are more optimistic about their life expectancy than females, with the exception of Māori participants.

6.8 Relationships between Attitudinal Measures

As CHALICE collected data on a number of attitudinal measures, it was possible to analyse relationships between measures, including the strength of association. It was anticipated that attitudinal measures tested would show a degree of concordance, but that the AAQ subscale of physical change would show the strongest correlations with other attitudinal instruments tested. Table 6.2 contains Spearman correlation coefficients between the three AAQ subscores as well as felt age, ideal age, Experience of Ageing, and subjective life expectancy.

Table 6.2. Spearman Correlations between Attitudinal Measures

Attitudinal Measures	AAQ Psychosocial Loss	AAQ Physical Change	AAQ Psychological Growth	Felt Age	Ideal Age	Experience of Ageing
AAQ Physical Change	0.38**					
AAQ Psychological Growth	0.35**	0.39**				
Felt Age	-0.16*	-0.37**	-0.10			
Ideal Age	0.21**	0.07	0.15*	0.10		
Experience of Ageing	-0.35**	-0.39**	-0.51**	0.12	-0.21**	
Subjective Life Expectancy	0.27**	0.40**	0.24**	-0.27**	0.17*	-0.22**

Note. ** $p < 0.01$, * $p < 0.05$.

As expected, correlations between attitudinal measures showed concordance, with the majority of relationships examined being statistically significant. It was predictable that significant positive correlations would exist between the three AAQ subscales. AAQ subscale correlations ranged between 0.35 and 0.39; it is likely that values are consistent with measurement of different aspects of attitudes. These observed correlations replicate internal validity findings from the original AAQ development paper (Laidlaw et al., 2007). Each of the three AAQ subscales were significantly correlated with the Experience of Ageing and subjective life expectancy at the $p < 0.01$ level.

The psychosocial loss domain showed significant relationships to all other attitudinal measures. Psychosocial loss was negatively correlated with Experience of Ageing ($r_s = -0.39$), indicating that as individuals perceived their experience of ageing more positively, the perception of psychosocial losses associated with ageing also decreased. Psychosocial loss was correlated with subjective life expectancy ($r_s = 0.27$), and with ideal age ($r_s = -0.21$). These results suggest that greater perceived psychosocial loss attitudes were associated with more negative experiences of ageing, expectations of a shorter life and wishing to be younger.

The physical change domain showed moderately significant relationships to all other measures except for ideal age. Physical change was positively correlated with subjective life expectancy ($r_s = 0.40$) and negatively correlated with Experience of Ageing ($r_s = -0.39$), implying that more positive perceptions of the ageing experience were associated with more positive physical change attitudes to ageing. Physical change attitudes were also negatively correlated with felt age ($r_s = -0.35$). These results suggest that more negative physical change attitudes toward ageing were linked to expectations of a shorter life, feeling negative about the experience of ageing and feeling older.

The psychological growth domain showed the largest observed correlation with the Experience of Ageing ($r_s = -0.51$). This negative correlation implies that as ageing was experienced more negatively, psychological growth attitudes were also reported more negatively. Psychological growth was also correlated with subjective life expectancy ($r_s = 0.24$). Consequently, more negative psychological growth attitudes to ageing were associated with negative experiences of ageing and expectations of a shorter life.

6.9 Attitudes to Ageing Questionnaire (AAQ) Rationale

This study examined attitudes to ageing, subjective age, age identity and self-perceptions of ageing measures for the first time in a New Zealand context, and was able to examine relationships between these measures. However, five attitudinal measures were deemed too many to analyse alongside each health and health behaviour variable. Consequently, it was decided to undertake further analyses with one measure that was considered to most fully capture the complexities of attitudes towards ageing.

The multidimensional AAQ was selected as that preferred measure of attitudes towards ageing. Development and testing of the AAQ demonstrated high face validity, construct validity, and psychometric properties with a very large international sample (Laidlaw et al., 2007). Recognition of both the gains and losses associated with ageing over the life span is reflected in the three subscales of the AAQ. It has been argued that the AAQ provides a unique means of conceptualising and measuring attitudes towards ageing across different cultures, under a range of economic, political and social circumstances (Laidlaw et al., 2007). As an instrument, the AAQ has been analysed with health variables in a growing number of studies (Bryant et al., 2012, 2014; Chachamovich et al., 2008; Kalfoss et al., 2010; Low et al., 2013a; Lucas-Carrasco et al., 2012; Molzahn & Gallagher, 2009; Quinn et al., 2009; Shenkin et al., 2014a; Trigg et al., 2012). Internal consistency coefficients of the AAQ with this midlife sample were comparable to those reported with older samples. Additionally, the three domains of the AAQ were observed to have a high number of moderately significant correlations with other attitudinal measures tested. The AAQ was observed to have a good fit with an Awareness of Age-Related Change framework, measuring attitudes towards ageing. Subsequently, a decision was made to continue with the AAQ as the primary attitudinal instrument to analyse alongside socio-demographic factors, chronic health conditions, depression, and health behaviours in this and upcoming results chapters.

6.10 Attitudes to Ageing and Socio-Demographic Factors

AAQ subscales were analysed by gender, ethnicity, education, relationship status, household income and the ELSI. Results are shown in Table 6.3.

Table 6.3. AAQ Subscale Results by Socio-Demographic Factors

Socio-Demographic Factors	n	Psychosocial Loss			Physical Change			Psychological Growth		
		Mean	(SD)	<i>p</i>	Mean	(SD)	<i>p</i>	Mean	(SD)	<i>p</i>
Gender				0.57			0.46			0.34
Male	87	29.8	(5.4)		31.3	(4.6)		31.8	(4.3)	
Female	113	30.2	(5.7)		30.8	(5.3)		31.3	(4.0)	
Ethnicity				0.44			0.18			0.15
Māori	32	30.7	(6.0)		32.1	(5.0)		32.5	(4.4)	
Non-Māori	168	29.9	(5.5)		30.8	(5.0)		31.3	(4.1)	
Education				0.31			0.05			0.37
No qualifications	36	30.8	(5.9)		29.3	(4.5)		31.1	(5.0)	
High school	47	30.7	(5.0)		30.8	(5.6)		32.5	(3.8)	
Diploma/certificate	76	29.3	(5.5)		31.5	(4.6)		31.3	(4.0)	
University	41	29.9	(5.9)		31.5	(5.2)		31.1	(3.8)	
Relationship status				0.05			0.61			0.91
Never married	14	27.1	(4.6)		27.5	(4.0)		30.8	(3.8)	
Married/de facto	150	30.8	(5.5)		31.6	(4.8)		31.7	(4.3)	
Separated/divorced/widowed	36	28.8	(5.2)		30.2	(5.5)		31.1	(3.9)	
Household income				0.03			0.006			0.77
≤ \$50,000	40	28.3	(6.3)		30.1	(5.2)		31.8	(3.9)	
\$50,001 - \$80,000	46	30.2	(4.8)		29.8	(5.3)		30.9	(4.7)	
\$80,001 - \$120,000	51	29.8	(6.1)		31.2	(4.7)		31.8	(3.9)	
≥ \$120,001	54	31.3	(5.0)		32.5	(4.5)		31.5	(4.0)	
ELSI				<0.001			<0.001			0.12
Hardship	19	26.8	(6.3)		29.1	(5.3)		31.2	(4.4)	
Comfortable	53	29.0	(5.1)		29.6	(4.9)		30.9	(3.8)	
Good	128	31.0	(5.4)		32.0	(4.8)		31.8	(4.2)	

Note. AAQ subscale range: 8-40.

Results show that psychological loss and physical change attitudes toward ageing had statistically significant associations with household income and the ELSI. Lower income and greater hardship were associated with a more negative perception of psychosocial losses and physical changes with ageing. Psychosocial losses, but not physical change, were related to relationship status. Being single, separated, divorced or widowed was associated with greater psychosocial loss attitudes to ageing, in contrast to being married or in a de facto relationship. More negative physical change attitudes to ageing were related to lower education. Neither

psychosocial loss nor physical change domains were related to gender or ethnicity, despite a disparity in life expectancy between men and women and Māori and non-Māori.

Psychological growth attitudes to ageing were not related to any measured socio-demographic factors, implying that the items captured in the psychological growth domain were independent of socio-demographic factors examined.

6.11 Discussion of Findings

Results were presented on measures testing attitudes towards ageing, subjective age, age identity and self-perceptions of ageing. Testing did not support the two hypotheses examined in this chapter. Firstly, attitudes to ageing of this midlife New Zealand sample were statistically different from the only comparable study with a similar age group from a western country, as the CHALICE sample reported significantly more positive attitudes. Secondly, physical change attitudes to ageing did not show the greatest associations with other attitudinal measures, although the subscale showed moderately significant relationships with all other measures, but ideal age. Psychosocial loss and subjective life expectancy showed statistically significant associations with all other measures tested, while the psychological growth domain and the Experience of Ageing showed the strongest relationship.

6.11.1 Attitudes to Ageing

Attitudes to ageing were measured by the multidimensional AAQ. One difficulty in evaluating whether midlife New Zealanders held similar attitudes to comparable age groups in western countries lies in the very limited reports of the AAQ with midlife samples. CHALICE participants reported more positive attitudes to ageing in all AAQ domains compared to the one other directly comparable study reporting on a midlife sample (Matthews et al., 2007), clear explanations for which are not immediately apparent, particularly given that the interview period was during the Canterbury earthquake sequence. The younger age of the CHALICE sample is the likely explanation of the more positive estimated AAQ means compared with these studies. A younger age group is less likely to be impacted by the changes brought on by older age, for example, functional limitations due to health conditions, retirement, or the loss of family members or friends.

More negative psychosocial loss and physical change attitudes were associated with lower household income and hardship, similar to findings in Australia (Bryant et al., 2012). Lower living standards have been directly and strongly associated with psychological distress, loneliness, less perceived social support (Stephens et al., 2011), poorer health outcomes, health risk behaviours, health service use, and mortality (Haan, Kaplan & Camacho, 1987; Ministry of Health, 2010a). Low income and hardship cause stress, which has a direct effect on mood (Woods & Mitchell, 1997), and is predictive of negative attitudes to ageing (Bryant et al., 2012; Chachamovich et al., 2008; Kalfoss et al., 2010; Lucas-Carrasco et al., 2012; Shenkin et al., 2014a). Being single, separated, divorced or widowed was related to more negative psychosocial loss attitudes, supporting previous reports (Bryant et al., 2012; Chachamovich et al., 2008); as relationships buffer stress and provide positive emotional input (Pressman & Cohen, 2005). Being in a primary relationship has well-noted mental health advantages (Bierman, Fazio & Milkie, 2006) and has previously been linked with higher subjective wellbeing in midlife New Zealanders (Waldegrave & Koopman-Boyden, 2010). Finding that lower education was associated with negative physical change attitudes to ageing is consistent with other studies (Chachamovich et al., 2008; Lucas-Carrasco et al., 2012).

Unlike the two other AAQ subscales, psychological growth was not significantly related to any socio-demographic factor tested. These results generally support the literature finding fewer correlations between the psychological growth domain and other variables (Chachamovich et al., 2008; Laidlaw et al., 2010; Lucas-Carrasco et al., 2012). This subscale focuses on the psychological growth that comes with ageing, and includes factors, such as more effective coping mechanisms; self-acceptance; valuing of one's life, viewing ageing as a privilege; and perceived wisdom. Even though all AAQ subscales capture a subjective perception of ageing, psychological growth may be more independent of tangible socio-demographic realities, such as income and education.

No gender or ethnicity differences were detected in relation to the AAQ, supporting the lack of a gender relationship in Australia (Bryant et al., 2012). However, gender differences have been observed elsewhere (Chachamovich et al., 2008; Lucas-Carrasco et al., 2012). Because the AAQ has not been tested in New Zealand before, no ethnicity differences between Māori and non-Māori are available for comparison. Cross-cultural differences in the original AAQ development paper were not reported (Laidlaw, et al., 2007), but other papers have compared country of origin, with mixed results.

6.11.2 Subjective Age and Age Identity

Subjective age was measured by felt age and age identity was assessed by ideal age. CHALICE participants generally felt younger than their chronological age and wished to be even younger. Participants reported feeling a mean of ten years younger than their chronological age, but their ideal age was 17 years younger on average. These results are similar to MIDUS participants in their fifties, who had a mean felt age about ten years younger and a mean ideal age of 19 years younger than their chronological age (Ward, 2010; Westerhof & Barrett, 2005). The felt and ideal ages of CHALICE participants is also consistent with findings that after the age of 40 years, individuals feel about 20% younger than their chronological age (Rubin & Bernsten, 2006). In contrast to the prevailing trend to want to be younger than chronological age, one CHALICE participant of Chinese descent reported having an ideal age of 100 years. This outlier raises interesting cultural differences about respect accorded to older adults (Sung, 2004), which is often expressed through filial piety, or respect for one's elders (Laidlaw et al., 2010; Wang et al., 2009).

Similar to results from other Western countries, CHALICE participants reported having younger mean felt and ideal ages than results from Eastern and central European countries (Barak, 2009). Feeling younger is an indication of good health and wellbeing, so it would be expected to capture aspects of countries' morbidity and mortality, and also the dominant cultural value placed on youthfulness common in Western countries (Barak et al., 2001; Demakakos et al., 2007). In contrast, wanting to be younger is said to reflect negative ageing stereotypes, a yearning for youth, and some dissatisfaction with one's age and stage in life (Öberg & Tornstam, 2001). It could be argued that a younger ideal age also reflects positive life experience and a desire for more years left, which for CHALICE participants included wishing to have over and above the approximately 30 years of remaining lifespan. Measures of subjective age and age identity are evidently complex concepts, simultaneously representing optimism and acceptance with an awareness of the cultural norms and individual changes that accompany ageing.

6.11.3 Self-Perceptions of Ageing

Self-Perceptions of Ageing were measured by Experience of Ageing and subjective life expectancy instruments. The majority of CHALICE participants reported that they felt positive about their Experience of Ageing. In total, 70% felt positive or very positive about

their Experience of Ageing in comparison to 54% of similar-aged adults in the ELSA study who felt positive or very positive about ageing (Demakakos et al., 2006). Life satisfaction has been found to be higher in New Zealand than the United Kingdom (OECD, 2011). Consequently, New Zealanders may anticipate a more positive life as they age.

The estimated mean subjective life expectancy was 79.5 years for males and 81.7 years for females in the CHALICE sample. Therefore, both men and women underestimated how long they would live compared with New Zealand longevity data. Life expectancy is increasing at an unprecedented rate and participants did not appear to understand or account for rapid gains in life expectancy. This is the prevailing tendency, according to literature on subjective life expectancy (O'Brien et al., 2005; O'Connell, 2011). In line with actuarial life expectancy differences, gender differences were observed. Males underestimated their average life expectancy 2.2 years, while females underestimated their life expectancy by 3.0 years (Statistics New Zealand, 2013c).

In contrast to the general tendency for individuals to underestimate their life expectancy, female participants of Māori descent overestimated their average life expectancy by 3.3 years compared to longevity estimates (Statistics New Zealand, 2013c). The overestimation of Māori female subjective life expectancy is similar to that shown by black Americans of both genders (Barak, 2009; Bulanda & Zhang, 2009; Hurd & McGarry, 1995; Irby-Shasanmi, 2012; Mirowsky, 1999). It is possible that Māori women in the study recognised general differences in life expectancy by gender, but not those by ethnicity. Underestimating life expectancy has implications for restricted health choices and behaviours (Demakakos et al., 2007; Levy & Myers, 2004; Sarkisian, Hays & Mangione, 2002), as well as more limited retirement planning and financial saving (Bloom et al., 2007; Griffin et al., 2013; Hamermesh, 1985).

6.11.4 Relationships between Attitudinal Measures

Examining the attitudinal measures together revealed a high number of statistically significant correlations. It was expected that the physical change domain of the AAQ would show the strongest associations with other attitudinal instruments, but testing did not support the hypothesis. The subscale predictably showed significant relationships with the other AAQ domains and was also positively correlated to subjective life expectancy, Experience of Ageing and felt age. However, alternate measures showed increased significant relationships.

Relationships between these attitudinal measures have not previously been reported, preventing comparisons.

6.12 Summary

These findings add to the growing body of knowledge about individuals' attitudes towards their own ageing. Midlife New Zealanders attitudes to ageing, subjective age, age identity and self-perceptions of ageing were explored. The two hypotheses tested in this chapter were not supported. Firstly, results show that CHALICE participants held statistically different attitudes towards ageing compared with comparable age groups in western countries. Attitudes to ageing across the three AAQ domains were all more positive than the only other comparable study to report on midlife attitudes towards ageing (Matthews et al., 2007), despite interviewing taking place during the Canterbury earthquake sequence. Other measures, while not statistically compared were either similar or more positive to comparable age groups reported elsewhere. Secondly, relationships between attitudinal measures assessed showed a number of statistically significant correlations, but the physical change domain of the AAQ did not show the greatest associations with other attitudinal instruments. Rather, the psychological growth subscale of the AAQ and the Experience of Ageing showed the strongest association. The psychosocial loss domain and subjective life expectancy showed significant associations with all other measures tested. The AAQ, with its three-domain structure, was selected as the preferred multidimensional measure of attitudes to ageing for further analyses with socio-demographic, health and health behaviour variables. Relationships between the AAQ and socio-demographic factors showed household income and perceived hardship were negatively associated with psychosocial loss and physical change attitudes towards ageing.

CHAPTER 7:

Attitudes to Ageing and Health Status

“A cheerful heart is good medicine”

Proverbs 17:22

7.1 Overview

This chapter describes the relationship of attitudes to ageing, as measured by the AAQ, to selected measured health variables. Health status was assessed by self-rated health, medically diagnosed conditions and current depression as reported by participants from the CHALICE study. Firstly, SF-36 scores and common chronic physical and mental health conditions were examined in association with socio-demographic factors and then with AAQ domains to investigate associations between attitudes to ageing and health. Depression, as the most prevalent mood disorder in New Zealand, was assessed based on responses to the MINI, and examined with AAQ subscale scores.

Three hypotheses were tested relating to the AAQ and health status. Self-rated health, as measured by the SF-36, was examined with the AAQ and it was anticipated that similar domains in each instrument would show significant relationships, as stated in Section 3.3. It was hypothesised that individuals with diagnosed physical chronic conditions would report more negative physical change attitudes and it was also hypothesised that diagnosed depression and meeting criteria for current depression would be generally associated with negative attitudes to ageing. Findings are discussed.

7.2 Short Form-36 (SF-36) Responses

Self-reported health status was assessed through the SF-36. Table 7.1 presents the mean (SD) and associated 95% confidence intervals (CI) of the SF-36 domain scores for the CHALICE sample, and for adults aged 45 to 54 years obtained from the 2006/07 New Zealand Health Survey (Ministry of Health, 2008), which were statistically compared by Student *t*-test analyses.

Table 7.1. Comparison of SF-36 Mean Domains from CHALICE (n=200) and New Zealand Adults Aged 45-54 Years (n=2,079)

SF-36 Domains	CHALICE			New Zealand*			Comparison
	Mean	(SD)	(95% CI)	Mean	(SD)	(95% CI)	<i>p</i> value
Physical functioning	85.7	(18.6)	(83.1, 88.3)	87.4	(25.6)	(86.3, 88.5)	0.36
Role limitation - physical	84.7	(23.0)	(81.5, 87.9)	87.1	(30.2)	(85.8, 88.4)	0.27
Bodily pain	71.1	(23.1)	(67.9, 74.4)	75.2	(36.1)	(73.6, 76.7)	0.12
General health	69.8	(20.9)	(66.9, 72.7)	75.4	(27.9)	(74.2, 76.6)	0.006
Vitality	58.1	(20.1)	(55.3, 60.9)	65.3	(24.4)	(64.2, 66.3)	<0.001
Social functioning	82.9	(22.0)	(79.9, 86.0)	89.6	(24.2)	(88.5, 90.6)	<0.001
Role limitation - emotional	85.5	(21.2)	(82.6, 88.5)	94.0	(22.1)	(93.0, 94.9)	<0.001
Mental health	74.5	(17.3)	(72.0, 76.9)	82.8	(20.9)	(81.9, 83.7)	<0.001

Note. *2006/07 New Zealand Health Survey; 95% CI: 95% Confidence Interval; New Zealand standard deviations (SD) calculated from the 95% CI.

CHALICE results for SF-36 in general health and all mental health domains were significantly lower than the 2006/07 New Zealand Health Survey ($p=0.006$ to $p<0.001$). The HWR study also found lower SF-36 mental and general health norms compared to New Zealand norms, for adults aged over 15 years, which may be explained by the older age of the HWR sample (55 to 70 years) (Alpass et al., 2007). It is likely that significantly lower self-rated mental health and general health results in the CHALICE sample because interviewing took place during the very stressful Canterbury earthquake sequence (Spittlehouse et al., 2014).

7.2.1 SF-36 Responses and Socio-Demographic Factors

Physical functioning, general health, vitality and mental health were four SF-36 domains selected for closer examination in relation to socio-demographic factors. Table 7.2 presents relationships between these SF-36 domains and socio-demographic factors using Student *t*-tests. ANOVA, with Dunnett's post-hoc tests, were employed for significant results.

Table 7.2. Relationships of Four SF-36 Domains to Socio-Demographic Factors

Socio-demographic Factors	SF-36 Domains									
	Total		Physical Functioning		General Health		Vitality		Mental Health	
	n	(%)	Mean	(SD)	Mean	(SD)	Mean	(SD)	Mean	(SD)
Gender										
Male	87	(44)	89.3	(13.3)	70.4	(18.1)	60.3	(20.4)	76.4	(16.4)
Female ^(R)	113	(57)	83.0	(21.4)	69.4	(22.9)	56.5	(19.7)	73.0	(17.8)
Ethnicity										
Māori	32	(16)	86.1	(21.2)	69.8	(20.5)	61.5	(17.5)	74.8	(16.4)
Non-Māori ^(R)	168	(84)	85.6	(18.1)	70.0	(23.0)	57.5	(20.5)	74.4	(17.5)
Education										
No qualifications	36	(18)	81.1**	(20.3)	64.9	(20.7)	55.0	(18.8)	73.3	(19.0)
High school	47	(24)	81.4**	(20.5)	66.5	(21.7)	55.7	(20.0)	75.4	(15.3)
Diploma/certificate	76	(38)	86.2	(19.1)	72.3	(20.7)	57.3	(20.9)	71.9	(19.1)
University ^(R)	40	(21)	93.9	(8.2)	73.4	(19.7)	65.3	(18.5)	79.3	(13.0)
Relationship status										
Never married	14	(7)	75.0**	(22.7)	55.7**	(19.0)	49.6	(15.6)	62.9**	(17.7)
Married/de facto ^(R)	150	(75)	87.7	(15.7)	72.4	(19.5)	59.0	(20.6)	76.6	(16.2)
Separated/widowed	36	(18)	81.5	(18.6)	64.3	(24.2)	57.8	(19.1)	70.0	(19.1)
Household income										
≤ \$50,000	40	(21)	78.4**	(26.2)	61.6**	(21.2)	51.6**	(19.8)	64.1**	(20.7)
\$50,001 - \$80,000	46	(24)	82.5	(18.5)	65.0	(24.1)	53.9	(23.6)	72.9	(16.4)
\$80,001 - \$120,000	51	(27)	89.6	(12.0)	70.1	(20.3)	58.6	(18.9)	75.7	(16.1)
≥ \$120,001 ^(R)	54	(28)	89.8	(16.4)	80.2	(14.4)	65.5	(16.4)	81.0	(11.9)
ELSI										
Hardship	19	(10)	67.6**	(28.8)	50.5**	(20.2)	39.5**	(17.4)	57.9**	(20.2)
Comfortable	53	(27)	87.0	(14.1)	63.1	(21.9)	55.8	(20.4)	69.8	(18.6)
Good ^(R)	128	(64)	87.9	(16.9)	75.5	(18.0)	61.9	(18.7)	78.8	(14.1)

Note. ** $p < 0.01$, * $p < 0.05$; Household income $n = 191$ (9 missing values); ^(R) Reference group.

Key SF-36 and socio-demographic relationships found in Table 7.2 are

- (a) Lower education was significantly associated with lower physical functioning scores ($F_{3, 198} = 4.4, p < 0.005$), with a mean difference of 13 points between those with no qualifications and those with university qualifications;
- (b) Having never been married was significantly associated with lower mean SF-36 scores (12 to 17 points less) in three domains compared to those who were currently married or in a de facto relationship: physical functioning ($F_{2, 198} = 4.2, p = 0.02$); general health ($F_{2, 198} = 5.9, p = 0.003$); and mental health ($F_{2, 198} = 5.8, p = 0.004$). Relatively small numbers of respondents who had never been married were present ($n=14$);
- (c) Low household income was significantly associated with all four domains tested: physical functioning ($F_{3, 198} = 4.2, p = 0.006$); general health ($F_{3, 198} = 8.0, p < 0.001$); vitality ($F_{3, 198} = 4.7, p = 0.003$); and mental health ($F_{3, 198} = 8.6, p < 0.001$). Mean differences of 11 and 19 points were present between those with household incomes under \$50,000 per annum and those in households earning over \$120,000; and
- (d) Hardship, as grouped by the ELSI, was associated with all four domains at the $p < 0.001$ level of significance: physical functioning ($F_{2, 198} = 11.0, p < 0.001$); general health ($F_{2, 198} = 18.3, p < 0.001$); vitality ($F_{2, 198} = 12.0, p < 0.001$); and mental health ($F_{2, 198} = 17.1, p < 0.001$). Mean SF-36 scores were 20 to 25 points lower between those who reported hardship and those who viewed their economic living standards as good.

CHALICE results support a number of findings from the New Zealand HWR study, which reported SF-36 component scores for physical and mental health. Both physical and mental health were positively related to having higher education and higher economic living standards. Mental health was also positively associated with being in a relationship, higher household income (Dulin et al., 2011) and better economic living standards (Stephens, Alpass & Towers, 2010). Results between the two studies differ in that the HWR study found non-Māori reported both better physical and mental health in comparison to Māori (Stephens et al., 2010), whereas this was not found in CHALICE results. Midlife New Zealanders with a higher income in the EWAS study also reported better physical health (Waldegrave & Cameron, 2010). CHALICE results are consistent with Australian studies which have found a strong relationship between low education and poor, or fair, self-rated health (Anstey et al., 2007).

7.3 Attitudes to Ageing and Self-Rated Health

Similar domains in the AAQ and the SF-36 were expected to show concordance. It was hypothesised that (a) negative psychosocial loss attitudes would be associated with reduced vitality, social functioning, role limitations (emotional) and mental health; (b) negative physical change attitudes to ageing would be associated with reduced physical functioning, role limitations (physical), bodily pain, general health and vitality; and (c) that negative psychological growth attitudes to ageing would be associated with reduced vitality and role limitations (emotional). The relationship between the AAQ and SF-36 domains were assessed using Spearman correlation coefficients in Table 7.3.

Table 7.3. Spearman’s Correlation Estimates of AAQ and SF-36 Domains

SF-36 Subscales	Psychosocial Loss	Physical Change	Psychological Growth
Physical functioning	0.25**	0.50**	0.08
Role limitation - physical	0.22**	0.41**	0.11
Bodily pain	0.06	0.26**	-0.03
General health	0.34**	0.58**	0.24**
Vitality	0.50**	0.50**	0.21**
Social functioning	0.12	0.34**	0.12
Role limitation - emotional	0.39**	0.36**	0.15*
Mental health	0.35**	0.37**	0.20**

Note. ** $p < 0.01$ level, * $p < 0.05$.

As predicted, significant correlations were found between similar domains in the AAQ and SF-36 subscales. The physical change domain of the AAQ was significantly associated with all SF-36 subscales: the largest estimated correlation coefficients were with general health, physical functioning and vitality (each in the order of 0.5, $p < 0.01$). The largest estimated correlation coefficient in the psychosocial loss domain was with vitality (0.5, $p < 0.01$). The psychological growth domain showed fewer and smaller significant estimated correlation coefficients with SF-36 subscales. As the AAQ has not yet been examined with the SF-36, results cannot be compared. However, physical and mental health component scores of the SF-12 have been analysed with the AAQ, and physical health declines associated with more negative perceptions of ageing (Bryant et al., 2012; Low et al., 2013a).

7.4 Chronic Conditions

CHALICE participants were asked whether they had ever been diagnosed with any of ten prevalent chronic conditions, as reported by the New Zealand Health Survey (Ministry of Health, 2008), including hypertension; high cholesterol; diabetes; heart disease; cancer; arthritis; stroke; COPD; asthma; and allergies. Table 7.4 presents frequencies and percentages (%) of these conditions, in order of prevalence of the New Zealand Health Survey.

Table 7.4. Prevalence of Lifetime Diagnosed Chronic Conditions for 200 CHALICE Participants

Condition	n	(%)
Hypertension	45	(23)
High cholesterol	52	(26)
Heart disease	25	(13)
Stroke	2	(1)
Diabetes	11	(6)
Asthma	52	(26)
COPD	16	(8)
Arthritis	32	(16)
Cancer	16	(8)
Allergies	51	(26)

The CHALICE sample of adults aged 49 to 51 years reported lifetime diagnoses of all chronic conditions cited by the New Zealand Health Survey (Ministry of Health, 2008). Close to 25% of CHALICE respondents reported having received a diagnosis of hypertension, high cholesterol, asthma or allergies. About 15% of participants reported a diagnosis of arthritis or heart disease. Less than 10% of participants reported a diagnosis of stroke (1%), diabetes (6%), COPD (8%) or cancer (8%). Diagnosed conditions prevalent in less than 10% of CHALICE participants were omitted from future analyses.

It was possible to compare some prevalence estimates between the CHALICE sample and New Zealand data for adults aged 45 to 54 years, as reported by the New Zealand Health Survey (Ministry of Health, 2008). For example, CHALICE and New Zealand estimated rates

were the same for arthritis (16%). However, it was difficult to compare CHALICE rates on other chronic conditions. New Zealand hypertension and asthma figures are restricted to the prevalence of medication use. The New Zealand Health Survey reports on heart attack and angina incidence, while CHALICE includes an increased number of heart disease categories. Allergy and cancer prevalence estimates in New Zealand were not obtainable, due to the wide range of allergy and cancer types. The New Zealand HWR study found that arthritis and hypertension were the most prevalent chronic conditions (both 34%), but the sample was older, being aged 55 to 70 years (Enright & Scobie, 2010).

7.4.1 Health and Socio-Demographic Factors

Table 7.5 presents a summary of the relationship between common ($\geq 10\%$ prevalence) chronic conditions (hypertension, high cholesterol, heart disease, asthma, arthritis and allergies) with socio-demographic factors (gender, ethnicity, education, relationship status, household income and ELSI for CHALICE participants).

Key findings of Table 7.5 are

- (a) Men had significantly higher rates of high cholesterol (OR=3.0), heart disease (OR=2.6) and lower rates of allergies (OR=0.5) than women;
- (b) Māori reported significantly higher rates of hypertension (OR=2.4) than non-Māori;
- (c) Those with no educational qualifications reported significantly higher rates of hypertension (OR=4.9) compared to university-educated participants;
- (d) Those who had been never married or in a de facto relationship had significantly higher rates of asthma (OR=9.1) than participants who were married or in a de facto relationship; and
- (e) Low household income was significantly associated with higher rates of asthma in those from households earning under \$50,000 gross per annum (OR=4.9) and households earning \$50,001 to \$80,000 per annum (OR=2.9) compared to those from households earning over \$120,000 per annum.

CHALICE results finding that men had higher rates of high cholesterol and heart disease than women are comparable with the New Zealand Health Survey, for adults aged 45 to 54 years (Ministry of Health, 2008). Medicated high cholesterol rates for similar-aged men are 10.8% and for women 5.3%. Ischemic heart disease (with a diagnosis of heart attack or angina) rates

Table 7.5. Relationships between Common Chronic Conditions and Socio-Demographic Factors for CHALICE Participants (continued)

Socio-Demographic Factors	Total		Hypertension		High Cholesterol		Heart Disease							
	n	(%)	n	(%)	OR	(95% CI)	n	(%)	OR	(95% CI)				
Gender														
Male	87	(44)	18	(20)	0.8	(0.4, 1.6)	33	(37)	3.0	(1.6, 5.9)**	16	(18)	2.6	(1.1, 6.5)*
Female	113	(57)	27	(30)	1	(reference)	19	(17)	1	(reference)	9	(8)	1	(reference)
Ethnicity														
Māori	32	(16)	12	(38)	2.4	(1.1, 5.5)*	6	(19)	0.6	(0.2, 1.5)	7	(23)	2.3	(0.8, 6.1)
Non-Māori	168	(84)	33	(20)	1	(reference)	46	(27)	1	(reference)	18	(11)	1	(reference)
Education														
No qualifications	36	(18)	13	(36)	4.9	(1.3, 14.0)*	13	(36)	1.4	(0.5, 3.6)	7	(19)	3.0	(0.7, 15.4)
High school	47	(24)	11	(23)	2.2	(0.7, 7.6)	8	(17)	0.5	(0.2, 1.4)	3	(6)	0.9	(0.1, 5.3)
Diploma/certificate	76	(38)	16	(21)	1.9	(0.7, 6.3)	19	(25)	0.8	(0.3, 1.9)	12	(16)	0.4	(0.1, 1.3)
University	40	(21)	5	(13)	1	(reference)	12	(30)	1	(reference)	3	(13)	1	(reference)
Relationship status														
Never married	14	(7)	6	(43)	2.5	(0.8, 8.0)	4	(29)	1.2	(0.3, 4.1)	3	(21)	2.0	(0.4, 7.5)
Married/de facto	150	(75)	34	(23)	1	(reference)	37	(25)	1	(reference)	18	(12)	1	(reference)
Separated/widowed	36	(18)	5	(14)	0.6	(0.2, 1.5)	11	(31)	1.3	(0.6, 3.0)	4	(11)	0.9	(0.3, 2.8)
Household income														
≤ \$50,000	40	(21)	9	(23)	1.1	(0.4, 3.1)	12	(30)	0.4	(0.1, 1.3)	6	(15)	1.7	(0.5, 6.6)
\$50,001 - \$80,000	46	(24)	13	(28)	1.5	(0.6, 4.0)	11	(24)	0.8	(0.3, 1.8)	8	(17)	0.8	(0.1, 4.3)
\$80,001 - \$120,000	51	(27)	10	(20)	1.0	(0.4, 2.5)	11	(22)	0.7	(0.3, 1.6)	6	(12)	1.3	(0.4, 4.9)
≥ \$120,001	54	(28)	11	(20)	1	(reference)	16	(30)	1	(reference)	5	(9)	1	(reference)
ELSI														
Hardship	19	(10)	7	(37)	2.3	(0.8, 6.4)	7	(37)	2.0	(0.7, 5.5)	2	(11)	0.9	(0.1, 3.8)
Comfortable	53	(27)	12	(23)	1.2	(0.5, 2.5)	16	(30)	1.5	(0.7, 3.0)	8	(15)	1.3	(0.5, 3.4)
Good	128	(64)	26	(20)	1	(reference)	29	(23)	1	(reference)	15	(12)	1	(reference)

Socio-Demographic Factors	Total		Asthma		Arthritis		Allergies							
	n	(%)	n	(%)	OR	(95% CI)	n	(%)	OR	(95% CI)				
Gender														
Male	87	(44)	19	(22)	0.7	(0.4, 1.3)	14	(16)	1.0	(0.5, 2.2)	16	(18)	0.5	(0.3, 1.0) *
Female	113	(57)	33	(29)	1	(reference)	18	(16)	1	(reference)	35	(31)	1	(reference)
Ethnicity														
Māori	32	(16)	12	(38)	1.9	(0.8, 4.3)	5	(16)	1.0	(0.3, 2.6)	9	(28)	1.2	(0.5, 2.7)
Non-Māori	168	(84)	40	(24)	1	(reference)	27	(16)	1	(reference)	42	(25)	1	(reference)
Education														
No qualifications	36	(18)	8	(22)	0.8	(0.3, 1.9)	6	(17)	1.8	(0.5, 7.8)	12	(33)	1.5	(0.5, 4.2)
High school	47	(24)	15	(32)	1.3	(0.7, 2.6)	11	(23)	2.7	(0.8, 10.7)	16	(34)	1.5	(0.6, 4.1)
Diploma/certificate	76	(38)	20	(26)	1.0	(0.5, 1.8)	11	(14)	1.5	(0.5, 5.8)	13	(17)	0.6	(0.2, 1.6)
University	40	(21)	52	(23)	1	(reference)	4	(10)	1	(reference)	10	(25)	1	(reference)
Relationship status														
Never married	14	(7)	10	(71)	9.1	(2.7, 35.3) **	3	(21)	1.7	(0.4, 6.2)	5	(36)	1.5	(0.4, 4.8)
Married/de facto	150	(75)	32	(21)	1	(reference)	21	(14)	1	(reference)	40	(27)	1	(reference)
Separated/widowed	88	(18)	10	(26)	1.4	(0.6, 3.2)	8	(22)	1.8	(0.7, 4.3)	6	(17)	0.6	(0.2, 1.4)
Household income														
≤ \$50,000	40	(21)	17	(43)	4.9	(1.8, 14.2) **	7	(18)	1.1	(0.3, 3.2)	11	(28)	1.2	(0.5, 3.1)
\$50,001 - \$80,000	46	(24)	14	(30)	2.9	(1.1, 8.5) *	12	(26)	1.8	(0.7, 4.8)	15	(33)	1.5	(0.6, 3.7)
\$80,001 - \$120,000	51	(27)	11	(22)	1.8	(0.7, 5.5)	4	(8)	0.4	(0.1, 1.5)	11	(22)	0.9	(0.3, 2.2)
≥ \$120,001	54	(28)	7	(13)	1	(reference)	9	(17)	1	(reference)	13	(24)	1	(reference)
ELSI														
Hardship	19	(10)	8	(42)	2.6	(0.9, 7.1)	5	(26)	2.3	(0.7, 7.7)	6	(32)	1.6	(0.5, 4.5)
Comfortable	53	(27)	16	(30)	1.5	(0.7, 3.2)	10	(19)	1.5	(0.6, 3.6)	16	(30)	1.5	(0.7, 3.0)
Good	128	(64)	28	(22)	1	(reference)	11	(9)	1	(reference)	29	(23)	1	(reference)

Note. ** $p < 0.01$, * $p < 0.05$; Household income $n = 191$ (9 missing values); OR: Odds Ratio; 95% CI: 95% Confidence Interval; reference: reference group in CI; OR and 95% CI's estimated from bivariable logistic regression models.

are 4.4% for men and 1.8% for women. While the gender ratio is similar, the CHALICE estimated means are higher, probably as they refer to diagnosed high cholesterol and included a greater range of heart disease types. CHALICE rates for hypertension and asthma also refer to lifetime diagnosis rather than medication rates, reported by the Ministry of Health. Both find higher numbers of Māori diagnosed or medicated for hypertension (Māori were almost 30% more likely to be taking medication for hypertension compared to men in the total population). CHALICE results found that household income was associated with asthma, but not perception of economic living standards, whereas the New Zealand Health Survey found deprivation was associated with higher rates of asthma (32% of women aged 45 to 54 years living in areas of greater deprivation are on medication for asthma).

7.5 Attitudes to Ageing and Chronic Conditions

It was hypothesised that individuals with diagnosed physical chronic conditions would report more negative physical change attitudes. To test this hypothesis, relationships between more commonly diagnosed chronic conditions and the AAQ subscales for CHALICE participants were initially examined using Student *t*-test analyses. All chronic conditions examined had been medically diagnosed at some point for the participant. Results are presented in Table 7.6, in order of prevalence in the New Zealand Health Survey (Ministry of Health, 2008).

Key relationships between AAQ domains and chronic conditions were analysed further through ANOVA and Dunnett's post-hoc tests, with the following results:

- (a) The physical change domain of the AAQ was observed to have the greatest number of statistically significant relationships with diagnosed health conditions, thus supporting the hypothesis that individuals with diagnosed physical chronic conditions would report more negative physical change attitudes. Participants with hypertension, heart disease, asthma and arthritis all reported significantly more negative physical change attitudes to ageing;
- (b) Arthritis showed the largest estimated mean difference with physical change attitudes ($F_{1,198} = 17.4, p < 0.001$) and a mean reduction of 3.9 points;
- (c) Heart disease showed the second largest estimated mean difference to physical change attitudes ($F_{1,198} = 6.9, p = 0.009$) and a mean decline of 2.8 points;

Table 7.6. AAQ Subscale Means and Diagnosed Chronic Conditions for 200 CHALICE Participants

Chronic Condition	n	(%)	Psychosocial Loss			Physical Change			Psychological Growth		
			Mean	(SD)	<i>p</i>	Mean	(SD)	<i>p</i>	Mean	(SD)	<i>p</i>
Hypertension	45	(23)	29.4	(5.6)	0.41	29.7	(5.3)	0.04	31.5	(4.5)	0.96
No hypertension	155	(23)	30.2	(5.5)		31.5	(4.8)		31.5	(4.1)	
High cholesterol	52	(26)	28.8	(5.3)	0.05	30.8	(4.8)	0.64	30.7	(4.1)	0.11
No high cholesterol	148	(74)	30.5	(5.6)		31.2	(5.1)		31.8	(4.2)	
Heart disease	25	(13)	28.7	(4.9)	0.20	28.6	(4.9)	0.009	32.4	(4.9)	0.23
No heart disease	175	(88)	30.2	(5.6)		31.4	(4.9)		31.4	(4.0)	
Asthma	52	(26)	29.9	(5.1)	0.29	29.6	(5.2)	0.02	31.0	(4.4)	0.33
No asthma	148	(74)	30.3	(5.7)		31.6	(4.8)		31.7	(4.1)	
Arthritis	32	(16)	28.7	(5.3)	0.14	27.8	(5.6)	<0.001	30.6	(4.7)	0.16
No arthritis	168	(84)	30.3	(5.6)		31.7	(4.6)		31.7	(4.0)	
Allergies	51	(26)	29.7	(5.1)	0.57	30.0	(5.3)	0.09	31.5	(4.3)	0.96
No allergies	149	(75)	30.2	(5.7)		31.4	(4.8)		31.5	(4.1)	

Note. AAQ subscale range: 8-40.

- (d) Asthma was associated with physical change attitudes ($F_{1,198} = 6.0, p=0.02$) and a mean reduction of 2.0 points;
- (e) Hypertension was related to physical change attitudes ($F_{1,198} = 4.7, p=0.04$) and a mean decrease of 1.8 points;
- (f) The psychosocial loss domain showed one significant result: those with diagnosed high cholesterol reported greater psychosocial losses associated with ageing ($F_{1,198} = 3.8, p=0.05$) as a mean decline of 1.7 points; and
- (g) There was no significant relationship detected between the psychological growth domain and any chronic condition.

Results show the importance of the physical change domain of the AAQ in relation to chronic physical health conditions assessed. Those diagnosed chronic conditions, found to be significantly associated with negative physical change attitudes, were either symptomatic or involved elevated risk, medical management or medication. Psychosocial loss and psychological growth domains were relatively independent from the physical chronic

conditions examined, with the exception of high cholesterol being mildly linked to greater perceptions of psychosocial loss. Comparison with published results is not possible, as the chronic conditions examined have not yet been reported elsewhere.

7.6 Depression

Depression is cited as the most prevalent mood disorder in New Zealand, according to Te Rau Hinengaru: the New Zealand Mental Health Survey (Oakley-Browne, Wells & Scott, 2006). Depression has been described as the greatest contributor to morale (Woo, Ho & Wong, 2005) and the strongest predictor for quality of life (Demura & Sato, 2003). Based on questions from the New Zealand Health Survey (Ministry of Health, 2008), participants were asked if a doctor had ever diagnosed them with depression. Participants were also asked diagnostic questions from the MINI (Sheehan et al., 1998) for current and lifetime depression. Results for prevalence of diagnosed and reported current and lifetime depression at interview are shown in Table 7.7. All those who reported current depression were necessarily included with lifetime depression figures.

Table 7.7. Prevalence of Current and Lifetime Depression for 200 CHALICE Participants

	Depression at interview							
	Never depressed		Lifetime depression		Total			
			Current	Not current				
Diagnosed Depression	n	(%)	n	(%)	n	(%)		
No diagnosed depression	87	(44)	5	(3)	47	(24)	139	(70)
Diagnosed depression	3	(2)	17	(9)	41	(21)	61	(31)
Total	90	(45)	22	(11)	88	(44)	200	(100)

Key results of Table 7.7 include

- (a) Eleven percent of CHALICE participants met the criteria for current depression based on the MINI at interview;
- (b) Fifty-five percent met the criteria for lifetime depression with at least one episode during their lifetime;
- (c) Thirty-one percent of participants had been diagnosed by a doctor with depression at some point in their lifetime;

- (d) Twenty-seven percent of those who had been diagnosed with depression also reported current symptoms of depression (n=17) at interview;
- (e) Almost half of participants reporting symptoms of lifetime depression (47%) had not had depression diagnosed by a doctor; and
- (f) Three participants reported having had depression diagnosed, but not having been depressed.

Prevalence period differences¹⁷ and definition issues¹⁸ complicate the comparison of depression rates between CHALICE participants and New Zealand adults. However, depression rates for CHALICE participants were reported as being between two and three times higher than New Zealand rates. The effects of the Canterbury earthquakes could only explain current depression rates. Medically diagnosed depression rates for CHALICE participants were 31%, compared to 17% of New Zealand adults aged 45 to 54 years in the 2011/12 New Zealand Health Survey (Ministry of Health, 2013b). Eleven percent of CHALICE participants met criteria for current depression, compared to 5% of New Zealand adults aged 45 to 64 years (Oakley-Browne, et al., 2006). More than half CHALICE participants (55%) reported meeting criteria for lifetime depression, compared to an 18% rate of lifetime depression in similar aged New Zealand adults (Oakley-Browne, et al., 2006). Gender differences in depression were apparent. Comparatively more women reported current and lifetime depression in both CHALICE and New Zealand results (Wells, 2006). Current depression was reported in 12% CHALICE women and 9% of men compared to 7% of New Zealand women and 4% of New Zealand men aged 45 to 64 years. Sixty nine percent of CHALICE women and 41% of men reported lifetime depression, compared to 20% of New Zealand women and 11% of New Zealand men.

7.7 Attitudes to Ageing and Depression

Over one in two CHALICE participants reported episodes of depression at some point over their lifetimes, while over one in ten met the criteria for current depression. It was hypothesised that diagnosed depression and meeting criteria for current depression would be generally associated with negative attitudes to ageing. Student *t*-test analyses were conducted

¹⁷ New Zealand Mental Health Survey current depression rates are based on a prevalence period of the past 12 months, compared to a CHALICE prevalence period of the past 2 weeks.

¹⁸ The New Zealand Mental Health Survey does not include brief recurrent hypomania, whereas CHALICE does include it, which increases the rate of bipolar disorder (including depression).

to better understand the relationship between attitudes to ageing and a diagnosis of depression or meeting the criteria for lifetime or current depression. The relationship between mean AAQ subscale values and depression are shown in Table 7.8.

Table 7.8. Relationship of Depression to AAQ Subscale Values

Depression Groupings	n	(%)	Psychosocial Loss			Physical Change			Psychological Growth		
			Mean	(SD)	<i>p</i>	Mean	(SD)	<i>p</i>	Mean	(SD)	<i>p</i>
Diagnosed depression	61	(31)	28.1	(6.1)	0.001	29.3	(5.3)	0.001	31.2	(4.3)	0.47
No diagnosed depression	139	(69)	30.9	(5.1)		31.8	(4.6)		31.7	(4.1)	
Current depression	22	(11)	26.2	(7.1)	<0.001	28.0	(5.4)	0.002	30.5	(3.9)	0.21
No current depression	178	(89)	30.5	(5.1)		31.4	(4.8)		31.6	(4.2)	
Lifetime depression	110	(55)	29.4	(5.8)	0.06	30.4	(5.2)	0.03	31.7	(4.1)	0.40
No lifetime depression	90	(45)	30.8	(5.1)		31.9	(4.5)		31.2	(4.2)	

Note. AAQ subscale range 8-40.

The key finding from Table 7.8 is that psychosocial loss and physical change domains of the AAQ showed significant relationships with depression, including

1. Psychosocial loss and depression:
 - (a) With diagnosed depression ($t= 3.3$, $df=198$, $p=0.001$);
 - (b) With current depression ($t=3.6$, $df=198$, $p<0.001$);
2. Physical change and depression:
 - (a) With diagnosed depression ($t=3.4$, $df=198$, $p=0.001$);
 - (b) With current depression ($t=3.2$, $df=198$, $p=0.002$); and
 - (c) With lifetime depression ($t=2.2$, $df=198$, $p=0.03$).
3. No association between depression and the psychological growth domain of the AAQ was detected.

Thus, while significant relationships were detected between diagnosed, and current, depression to psychosocial loss and physical change attitudes to ageing, this association did not extend to psychological growth attitudes to ageing, which was unexpected.

7.8 Discussion of Findings

This chapter presented results on the health status and attitudes towards ageing of CHALICE participants. Six common chronic conditions prevalent in New Zealand were found in at least 10% of CHALICE participants: heart disease; high cholesterol; hypertension; asthma; arthritis; and allergies. In line with New Zealand data, men reported more diagnosed high cholesterol and heart disease, while women reported more allergies. Māori ethnicity and low education were associated with increased rates of hypertension. Asthma was more prevalent amongst those who were single or lived in low income households. Three hypotheses were tested regarding relationships between the AAQ and self-rated health, chronic conditions and depression and results supported the three hypotheses in part.

7.8.1 Attitudes to Ageing and Self-Rated Health

CHALICE results for the SF-36 were significantly lower than New Zealand estimated means in general health and all four mental health domains. It is of interest that, with the exception of general health, physical health scores were consistent with New Zealand norms. The ongoing impact of the Canterbury earthquakes is the likely reason for lower mental health domain scores (Spittlehouse et al., 2014). An interesting combination of results is apparent in that AAQ scores across domains are relatively positive compared to the literature, while SF-36 general and mental health scores are lower. Similar domains between the AAQ and SF-36 were expected to show concordance.

The hypothesis that (a) negative psychosocial loss attitudes would be associated with reduced vitality, social functioning, role limitations (emotional) and mental health; (b) negative physical change attitudes to ageing would be associated with reduced physical functioning, role limitations (physical), bodily pain, general health and vitality; and (c) that negative psychological growth attitudes to ageing would be associated with reduced vitality and role limitations (emotional) was supported almost in entirety. Relationships between the AAQ and the SF-36 went beyond those hypothesised, with physical change attitudes being significantly associated with all eight SF-36 subscales examined and psychosocial loss attitudes being related to all but bodily pain and social functioning.

Results confirmed expectations that the vitality domain in the SF-36 would show significant relationships to the AAQ, given vitality was recently suggested as a possible fourth dimension

in the AAQ (Shenkin et al., 2014b). Vitality refers to having “a lot of energy” (Ware et al., 2007) and is likely related to perceptions of liveliness, wellbeing and positivity, also captured in the AAQ.

While relationships between the AAQ and the SF-36 have not yet been reported in the literature, the relationship with the abridged SF-12 (Gandek, Ware, Aaronson et al., 1998) has been established. CHALICE results support the close relationships reported between the AAQ and SF-36 component physical and mental health domains. In Australia, more positive attitudes to ageing were significantly associated with better self-reported physical and mental health, and lower levels of depression (Bryant et al., 2012, 2014). In Spain, psychosocial loss and physical change domains were significantly associated with both the mental and physical components of the SF-12, but the psychological growth domain was not (Lucas-Carrasco et al., 2012). Mood was a likely influence on vitality, emotional limitations and mental health subscales of the SF-36, supporting existing literature (Bryant et al., 2012, 2014; Chachamovich et al., 2008; Kalfoss et al., 2010; Lucas-Carrasco et al., 2012).

7.8.2 Attitudes to Ageing and Health

It was hypothesised that individuals with diagnosed physical chronic conditions would report more negative physical change attitudes. Testing supported this hypothesis, as participants with diagnosed hypertension, heart disease, asthma and arthritis had mean AAQ physical change scores significantly lower than participants free of such diagnosed conditions. Psychosocial loss attitudes were more negative amongst those with diagnosed high cholesterol.

No known reports of these specific chronic conditions and their relationship with attitudes to ageing, as measured by the AAQ have been reported, which limits direct comparison. In this study, diagnosed arthritis showed the greatest relationship with physical change attitudes. This is likely because of associated pain, functional limitation, and, for probably some, medication to control symptoms of pain and inflammation. The literature has reported close relationships between arthritis and depression, anxiety and low self-esteem (Gettings, 2010; Katon et al., 2007; McWilliams, Goodwin & Cox, 2004), with co-morbidities exacerbated by chronic pain, reduced energy, impaired mobility and function (Bode, Taal, Westerhof et al., 2012).

CHALICE results found that negative physical change attitudes to ageing were also associated with diagnosed heart disease, hypertension and asthma. These conditions usually involve regular medical check-ups and medication to manage known risk factors. Evidence is reasonably strong linking both heart disease and hypertension to depression. Heart disease has been strongly associated with depression in several review papers (Barth, Schumacher & Hermann-Lingen, 2004; Carney, Freedland, Sheline et al., 2009; Katon, Lin & Kroenke, 2007; Rugulies, 2002). Hypertension diagnosis has been negatively related to happiness and life satisfaction (Blanchflower & Oswald, 2008; Mojon-Azzi & Sousa-Poza, 2011; Ogedegbe, 2010; Steptoe, Wardle & Marmot, 2005; Trevisol, Moreiraa, Kerkhoffa et al., 2011) and depression (Joynt, Whellan & O'Connor, 2003; Ostir, Markides, Peek et al., 2001). The association of diagnosed asthma with negative physical change attitudes may be because asthmatic symptoms can restrict activities and require management and relief through regular medication. Asthma has been related to psychosocial factors in the literature for some time, but results have been mixed and inconclusive (Opolski & Wilson, 2005).

It was unexpected to find that attitudes towards psychosocial losses and psychological growth with ageing largely unrelated to health. The exception of diagnosed high cholesterol and greater psychosocial loss attitudes may support the link between high cholesterol and depression, noted in the literature (Papakostas, Öngür, Iosifescu et al., 2004; While & Keen, 2012). Ill health and impaired function associated with chronic conditions were expected to be linked to more negative perceptions of psychosocial losses and psychological growth. Ill health is known to limit employment, wealth and social connectedness (Banks, Breeze, Lessof et al., 2008; Stephens et al., 2011). Only one other study, with older adults, has reported that chronic disease was not related to psychological growth attitudes to ageing (Kalfoss et al., 2010). The absence of a relationship found between health and psychosocial loss and psychological growth attitudes could be due partly to the age of CHALICE participants. Psychological growth in midlife may involve Erikson's middle adulthood notion of generativity: to help foster the development of others and contribute in some way to society (Erikson, 1950), which could mediate the diagnosis of ill health.

7.8.3 Attitudes to Ageing and Depression

Major depressive disorder is the most common mood disorder in New Zealand. Estimated depression rates among CHALICE participants were at least double New Zealand rates for

similarly aged adults. Current depression rates were 11% compared to 5.7% respectively and lifetime depression rates were 55% compared to 18.4% respectively (Oakley-Browne et al., 2006). Depression had been medically diagnosed in almost twice as many CHALICE participants than the average New Zealand adult (Ministry of Health, 2013b).

The Canterbury earthquakes are likely to have contributed to a rise in current depression rates in Canterbury (Spittlehouse et al., 2014). Depression is known to rise following a disaster (Hussain, Weisæth & Heir, 2011), by between ten and 45% (Kristensen, Weisæth & Heir, 2012). However, the Canterbury earthquakes do not explain the increase in diagnosed or lifetime depression rates amongst CHALICE participants. Two regional studies have observed rates of lifetime depression. The Christchurch Psychiatric Epidemiology Study found a lifetime prevalence rate of 13% in 498 adults aged 18 to 64 years (Wells et al., 1989) and a younger sample of 964 participants aged 21 years from the Christchurch Health and Development Study also reported a 13% rate of developing depression between the ages of 14 and 16 years (Fergusson & Woodward, 2002). The latter also proposed that depression recall was likely to be markedly underestimated (Galambos et al., 2005). CHALICE results for lifetime depression were greater than both these regional studies, but were more similar to the Dunedin Multi-disciplinary Health and Development Study, which estimated that the lifetime prevalence of depression affected about half the population (Andrews, Poulton & Scoog, 2005). Timing mental health questions so that they were about three hours into the CHALICE interview may have increased rapport, consequently reducing underestimation and producing a greater number of positive responses to depression questions.

It was hypothesised that diagnosed depression and meeting criteria for current depression would be generally associated with negative attitudes to ageing. This hypothesis was supported in part. Depression was significantly correlated with psychosocial loss and physical change attitudes of the AAQ, but not psychological growth attitudes. These results support relationships already strongly noted in the literature between psychosocial loss and physical change domains of the AAQ and depression (Bryant et al., 2012; Chachamovich et al., 2008; Kalfoss et al., 2010; Lucas-Carrasco et al., 2012; Shenkin et al., 2014a). Perceiving old age as a depressing time of life is one of the items in the psychosocial loss subscale, in addition to perceptions of loneliness, loss and social exclusion. It is expected that these items be related to depression. The physical change subscale captures perceptions of individuals' functional health, activity and how old they feel, which are likely related to vitality levels and wellbeing.

It was surprising to find psychological growth attitudes toward ageing in the CHALICE sample unrelated to current, lifetime or diagnosed depression, supporting only one study (Lucas-Carrasco et al., 2012). It was expected that perceptions of wisdom, coping, contribution to others, and feeling like one's life has made a difference would show a relationship to depression, as have been generally established in the literature (Bryant et al., 2012; Chachamovich et al., 2008; Kalfoss et al., 2010; Shenkin et al., 2014a). It is suggested that at the time of interviewing, participants were drawing on deep personal reserves, as part of the "honeymoon period" recognised soon after disasters (Raphael, 1986). The extraordinary demands placed on individuals by the Canterbury earthquakes likely triggered a heightened perception in individuals of the fundamentals of survival and connectedness. The psychological growth domain would likely capture these heightened perceptions and connections.

7.9 Summary

Findings extend what is known about the relationships of individual attitudes to ageing and health. Self-rated health, chronic conditions and mood showed significant relationships with attitudes to ageing and confirmed the importance of the physical change domain of the AAQ in relation to health variables. Testing, in the main, supported the three hypotheses examined in this chapter. The AAQ and SF-36 were examined together and showed greater generalised relationships between similar domains than expected. The physical change domain, in particular, had significant correlations with all eight SF-36 domains. The physical change subscale of the AAQ was also found to be the most significant domain in relation to a range of diagnosed physical chronic health conditions. Depression was found to have significant associations with psychosocial loss and physical change attitudes, but not psychological growth attitudes to ageing.

CHAPTER 8:

Attitudes to Ageing and Health Behaviours

“Ki te kore ngā pūtake e mākūkūngia, e kore te rākau e tupu...

(If the roots of the tree are not watered, the tree will never grow...)”

(Robson & Harris, 2007)

8.1 Overview

Health behaviours are modifiable actions with the potential to improve health and longevity. Causal pathways between health behaviours and attitudes towards ageing are generally not well understood. Recent emphasis has stressed how attitudes to ageing might influence individual motivation to engage in select health behaviours, in positive or negative directions (Hess, 2006; Kalfoss et al., 2010; Levy & Meyers, 2004; Quinn et al., 2009). Select health behaviours at midlife, such as body size, smoking and alcohol consumption have been linked with better health and longevity in later years (Chakravarty et al., 2012; Khaw et al., 2008; Vaillant & Mukamal, 2002). These factors were expected to show relationships with attitudes towards physical ageing. It was hypothesised that physical change attitudes towards ageing would be negatively associated with obesity, smoking and hazardous use of alcohol. Health behaviours of CHALICE participants were observed and analysed with socio-demographic factors and comparisons made with available national and local data. Health behaviours were then examined with attitudes towards ageing, as measured by the AAQ and significant relationships examined in more detail. Findings are discussed.

8.2 Healthy Lifestyle and Help-Seeking Behaviours

Health behaviours analysed in this study include BMI measurements, calculated using measured data from the interview; self-reported smoking frequency; alcohol consumption patterns; number of GP visits in the past 12 months; influenza vaccination in the previous 12 months; and regularity of cancer screening (mammogram and cervical smear for women, and PSA blood test for men). The frequency of health behaviours reported by CHALICE

participants is shown in Table 8.1. Student *t*-tests were used to compare CHALICE and New Zealand results.

Table 8.1. Health Behaviour Distribution for 200 CHALICE Participants

Health Behaviour	Total	
	n	(%)
BMI		
Underweight (BMI ≤ 18.5 kg/m ²)	1	(1)
Normal weight (BMI 18.5-24.9 kg/m ²)	54	(27)
Overweight (BMI 25.0-29.9 kg/m ²)	75	(38)
Obese (BMI ≥ 30.0 kg/m ²)	70	(35)
Tobacco use		
Don't smoke	173	(87)
Smoke less than daily	5	(3)
Daily smoker	22	(11)
Alcohol use		
Don't drink alcohol	21	(11)
Non-hazardous drinking	131	(66)
Hazardous drinking	48	(24)
GP visits		
No GP visit in past year	38	(19)
1 GP visit in past year	49	(25)
2-3 GP visits in past year	60	(30)
4-5 GP visits in past year	32	(16)
≥ 6 GP visits in last year	21	(11)
Influenza vaccination		
Flu vaccination in past year	75	(38)
No flu vaccination in past year	123	(62)
Don't know	2	(1)
Screening for women (n=113)		
Mammogram in past 2 years	100	(88)
No mammogram in past 2 years	13	(12)
Cervical Smear in past 3 years	87	(77)
Cervical Smear in past 5 years	5	(4)
No smear in past 5 years	18	(16)
Don't know	3	(3)
Screening for men (n=87)		
PSA blood test in past year	19	(22)
No PSA blood test in past year	62	(71)
Don't know	6	(7)

8.2.1 Body Mass Index (BMI)

The mean BMI for CHALICE participants was 29.1 kg/m² (SD=7.1 kg/m²), with range 17.4 to 63.4 kg/m². Twenty-seven percent of CHALICE participants were classified within the normal BMI range, 38% were classified as overweight and 35% were classified as being obese. The prevalence of obesity among CHALICE participants was not significantly greater than the New Zealand obesity rate of 30.5% for adults aged 45 to 54 years ($p=0.32$) (Ministry of Health, 2008).

8.2.2 Tobacco Use

Overall, 89 (45%) participants reported smoking at least 100 cigarettes during their lifetime. At the time of interview, 22 (11%) participants were smoking at least once a day and were classified as current smokers. An additional five (3%) participants were smoking on an irregular basis. Subsequent analyses classify irregular smokers as current smokers (total of 14%).

The 2006/07 New Zealand Health Survey reported that 21.1% adults aged 45 to 54 years were current smokers (Ministry of Health, 2008), while the 2009 New Zealand Tobacco Survey found that 15.9% of adults aged 50 to 59 years were current smokers (Ministry of Health, 2010b). CHALICE smoking rates (14%) were significantly lower than New Zealand Health Survey prevalence rates ($p=0.009$), but not significantly different from the New Zealand Tobacco Survey ($p=0.10$).

8.2.3 Alcohol Use

Results show that 179 (90%) CHALICE participants had consumed alcohol over the past year, an AUDIT range of 1 to 33 ($Q_1=2$, $Q_3=7$). Of those who reported drinking alcohol over the past year, 131 (73%) were assessed as drinking within a non-hazardous range and 48 (27%) participants reported potentially hazardous use of alcohol, with an AUDIT score of eight or above (Bohn et al., 1985).

CHALICE participants reported an increased rate of having consumed alcohol within the previous year compared to New Zealand adults aged 45 to 54 years in the 2006/07 New Zealand Health Survey (Ministry of Health, 2008) (90 % and 83.4% respectively). CHALICE

rates of potentially hazardous use of alcohol were observed to be significantly higher than New Zealand rates. The New Zealand Health Survey estimated mean hazardous drinking rate for adults aged 45 to 54 years to be 11.5% (Ministry of Health, 2008), approximately half the rate of CHALICE participants ($p < 0.001$). Te Rau Hinengaro: The New Zealand Mental Health Survey reported a mean hazardous drinking rate of 17.0% for adults aged 50 to 59 years (Wells & Sellman, 2010), compared with CHALICE ($p = 0.02$).

8.2.4 General Practitioner (GP) Visits

In total, 162 (81%) participants had made at least one visit to their GP in the past 12 months, while 38 (19%) had made no GP visit. The median number was two ($Q_1 = 1$, $Q_3 = 4$). The most frequent band of GP attenders comprised 21 participants (11%) who had made six or more visits in the previous year, including one participant making 33 visits (approximately one visit every ten days). The New Zealand Health Survey 2006/07 reported that just over 80.9% of those aged 45 to 54 years had visited their primary health care provider in the previous 12 months (Ministry of Health, 2008). CHALICE visit results are almost identical to these New Zealand figures ($p = 0.99$).

8.2.5 Influenza Vaccination

Seventy-five (38%) participants reported having had a vaccination for influenza in the previous 12 months. This vaccination rate is significantly higher than the national rate of 17.0% for adults aged 45 to 54 years (Ministry of Health, 2008) ($p < 0.001$).

8.2.6 Screening for Cancer

CHALICE participants were assessed for three types of preventative screening for cancer: breast and cervical screening for women and prostate screening for men.

Breast Screening

There was a high uptake of women in CHALICE who reported having mammograms within the recommended time frame of two years, as part of the national breast-screening programme. Overall, 100 (88%) CHALICE women had had recent mammograms, which is higher than the 67.2% of New Zealand women in the 50 to 54 year age group (Ministry of

Health, 2008) ($p < 0.001$). Canterbury is known to have a high uptake of mammograms compared to national figures, although supporting figures were not published (Reid, 2010).

Cervical Screening

In total, 87 (77%) CHALICE women reported having a cervical smear within the three year recommended time frame. An additional five (4%) CHALICE women recalled having a smear within the past five years, while three (3%) could not remember whether or not they had a cervical smear in the previous three or five years. Seventeen (9%) women had previously undergone a hysterectomy, six (7%) of whom reported having had a cervical smear within the past three years. Cervical screening uptake was similar to the national cervical screening programme figures of 76.9% for women aged 25 to 69 years (Ministry of Health, 2013a), but less than 85.8% for women aged 50 to 54 years in the 2006/07 New Zealand Health Survey (Ministry of Health, 2008) ($p = 0.02$).

Prostate Screening

Despite the absence of a national screening programme for prostate cancer, 19 (22%) CHALICE men reported having a PSA blood test during the previous year, with an additional six (7%) unable to remember whether or not they had had one. Figures for prostate screening are not included in the New Zealand Health Survey 2006/07.

8.3 Health Behaviours and Socio-Demographic Factors

The relationship of health behaviours in CHALICE participants was analysed with socio-demographic factors. Health behaviours were all analysed as binary variables using logistic regression: with the health behaviour or without. Body size categories were reduced to non-obese and obese. Alcohol use was collapsed into non-hazardous drinking (including non-drinkers) and hazardous drinking categories. Current smokers included participants who smoked irregularly. It was decided to omit male screening from further analyses due to the controversial value of the PSA test for prostate cancer. Screening for female participants depended on a mammogram within the recommended time frame of two years plus a cervical smear in the previous three years. Those women who reported having had a hysterectomy and no cervical smear within five years were assessed on the basis of mammogram only. All “don’t know” responses were omitted. Table 8.2 presents the results of associations between body size, tobacco use, alcohol use, annual GP visit, annual influenza vaccination and regular female

Table 8.2. Relationship of Health Behaviours and Socio-Demographic Factors in 200 CHALICE Participants (continued)

Socio-Demographic Factors	Body Size				Alcohol Use			
	Total	Non-obese	Obese	ρ	Non-hazardous drinking	Hazardous drinking	ρ	
	n (%)	n (%)	n (%)		n (%)	n (%)		
Gender								
Male	87 (44)	62 (71)	25 (29)	0.14	59 (68)	28 (32)	0.02	
Female	113 (57)	68 (60)	45 (40)		93 (82)	20 (18)		
Ethnicity								
Māori	32 (16)	18 (56)	14 (44)	0.31	18 (56)	14 (44)	0.004	
Non-Māori	168 (84)	112 (67)	56 (33)		134 (80)	34 (20)		
Education								
No qualifications	36 (18)	19 (53)	17 (47)	0.16	22 (61)	14 (39)	0.05	
High school	47 (24)	28 (60)	19 (40)		34 (72)	13 (28)		
Diploma/certificate	77 (38)	53 (69)	24 (31)		65 (84)	12 (16)		
University	40 (21)	30 (75)	10 (25)		31 (78)	9 (23)		
Relationship status								
Never married	14 (7)	9 (64)	5 (36)	0.41	9 (64)	5 (36)	0.54	
Married/de facto	150 (75)	101 (67)	49 (33)		116 (77)	34 (23)		
Separated/widowed	36 (18)	20 (56)	16 (44)		27 (75)	9 (25)		
Household income								
≤\$50,000	40 (21)	24 (60)	16 (40)	0.83	34 (85)	6 (15)	0.10	
\$50,001-\$80,000	46 (24)	29 (63)	17 (37)		34 (74)	12 (26)		
\$80,001-\$120,000	51 (27)	35 (69)	16 (31)		33 (65)	18 (35)		
≥\$120,001	54 (28)	36 (67)	18 (33)		44 (81)	10 (19)		
ELSI								
Hardship	19 (10)	6 (32)	13 (68)	0.004	18 (95)	1 (5)	0.08	
Comfortable	53 (27)	34 (64)	19 (36)		42 (79)	11 (21)		
Good	128 (64)	90 (70)	38 (30)		92 (72)	36 (28)		

Socio-Demographic Factors	Tobacco Use				GP Visit Past Year		
	Total	Non-Smoker	Smoker	<i>p</i>	GP Visit	No GP Visit	<i>p</i>
	n (%)	n (%)	n (%)		n (%)	n (%)	
Gender							
Male	87 (44)	77 (89)	10 (11)	0.30	70 (80)	17 (20)	0.86
Female	113 (57)	96 (85)	17 (15)		92 (81)	21 (19)	
Ethnicity							
Māori	32 (16)	26 (81)	6 (19)	0.34	28 (88)	4 (13)	0.31
Non-Māori	168 (84)	147 (88)	21 (13)		134 (80)	34 (20)	
Education							
No qualifications	36 (18)	28 (78)	8 (22)	0.14	33 (92)	3 (8)	0.06
High school	47 (24)	39 (83)	8 (17)		39 (83)	8 (17)	
Diploma/certificate	76 (38)	68 (88)	9 (12)		63 (82)	14 (18)	
University	40 (21)	38 (95)	2 (5)		27 (68)	13 (33)	
Relationship status							
Never married	14 (7)	9 (64)	5 (36)	0.005	12 (86)	2 (14)	0.15
Married/de facto	150 (75)	136 (91)	14 (9)		117 (78)	33 (22)	
Separated/widowed	36 (18)	28 (78)	8 (22)		33 (92)	3 (8)	
Household income							
≤\$50,000	40 (21)	30 (75)	10 (25)	0.04	32 (80)	8 (20)	0.91
\$50,001-\$80,000	46 (24)	38 (83)	8 (17)		39 (85)	7 (15)	
\$80,001-\$120,000	51 (27)	47 (92)	4 (8)		41 (80)	10 (20)	
≥\$120,001	54 (28)	50 (93)	4 (7)		43 (80)	11 (20)	
ELSI							
Hardship	19 (10)	15 (79)	4 (21)	0.03	17 (89)	2 (11)	0.60
Comfortable	53 (27)	41 (77)	12 (23)		43 (81)	10 (19)	
Good	128 (64)	117 (91)	11 (9)		102 (80)	26 (20)	

Socio-Demographic Factors	Influenza Vaccination Past Year				Regular Breast and Cervical Screening (Female)		
	Total	Vaccination	No Vaccination	<i>p</i>	Screening	No Screening	<i>p</i>
	n (%)	n (%)	n (%)		n (%)	n (%)	
Gender							
Male	87 (44)	29 (34)	56 (66)	0.02			
Female	113 (57)	58 (51)	55 (49)		95 (84)	18 (16)	
Ethnicity							
Māori	32 (16)	14 (45)	17 (55)	0.88	12 (67)	6 (33)	0.03
Non-Māori	168 (84)	73 (44)	94 (56)		83 (87)	12 (13)	
Education							
No qualifications	36 (18)	11 (32)	23 (68)	0.20	13 (93)	1 (7)	0.31
High school	47 (24)	18 (38)	29 (62)		30 (86)	5 (14)	
Diploma/certificate	76 (38)	36 (47)	41 (53)		32 (76)	10 (24)	
University	40 (21)	22 (55)	18 (45)		20 (91)	2 (9)	
Relationship status							
Never married	14 (7)	6 (57)	8 (43)	0.91	5 (71)	2 (29)	0.44
Married/de facto	150 (75)	64 (43)	84 (57)		71 (87)	11 (13)	
Separated/widowed	36 (18)	17 (47)	19 (53)		19 (79)	5 (21)	
Household income							
≤\$50,000	40 (21)	15 (38)	25 (63)	0.57	20 (80)	5 (20)	0.93
\$50,001-\$80,000	46 (24)	24 (52)	22 (48)		22 (85)	4 (15)	
\$80,001-\$120,000	51 (27)	24 (47)	27 (53)		23 (86)	4 (14)	
≥\$120,001	54 (28)	23 (43)	30 (57)		25 (86)	4 (14)	
ELSI							
Hardship	19 (10)	8 (42)	11 (58)	0.89	11 (85)	2 (15)	0.96
Comfortable	53 (27)	22 (42)	31 (58)		24 (86)	4 (14)	
Good	128 (64)	57 (45)	69 (55)		60 (83)	12 (17)	

Note. Influenza vaccination n=198 (2 unknown); Male screening (PSA) omitted; Household income n=191 (9 unknown).

cancer screening with gender, ethnicity, education, relationship status, household income and ELSI.

Key findings of Table 8.2 are

- (a) Men were significantly more likely to report potentially hazardous use of alcohol ($p=0.02$);
- (b) Māori participants reported significantly higher rates of potentially hazardous use of alcohol than non-Māori and Māori women were less likely to regularly participate in cancer screening programmes;
- (c) Those with no educational qualifications were significantly more likely to have used alcohol in a potentially hazardous way ($p=0.05$);
- (d) Those who were single were significantly more likely to be a current smoker ($p=0.005$) than those currently married or in a de facto relationship;
- (e) Those from low income households ($\leq \$50,000$ per annum) were significantly more likely to be current smokers ($p=0.04$);
- (f) Those reporting more hardship, as classified by the ELSI, were significantly more likely to have higher rates of obesity ($p=0.004$) and to smoke ($p=0.03$) than those perceiving their economic living standards as good; and
- (g) There were no socio-demographic associations of significance observed with GP visit during the past 12 months.

8.3.1 Comparison of Health Behaviours between CHALICE and New Zealand

Female CHALICE participants showed higher rates of obesity than New Zealand estimated norms for women aged 45 to 54 years, at 40% and 30% respectively ($p=0.03$). However, men were more likely to be overweight in both the CHALICE sample and in the New Zealand Health Survey (Ministry of Health, 2008). Unlike New Zealand obesity figures, no significant differences were detected on the basis of ethnicity.

Smoking rates among CHALICE participants were lower than those reported by the 2006/07 New Zealand Health Survey, at 14% and 21.1% respectively ($p=0.009$), and less than the New Zealand HWR study, which reported current smoking rates of 24% for adults aged 55 to 70 years (Enright & Scobie, 2010). Nine percent of CHALICE men and 12% of women were current smokers compared to 23% of New Zealand men and 19% of women aged 45 to 54

years (Ministry of Health, 2008). Māori CHALICE participants were almost half as likely to currently smoke as Māori aged 15 years and above living in Canterbury (19% and 37% respectively) (Reid, 2010).

Potentially hazardous drinking by CHALICE participants significantly exceeded that reported by the 2006/07 New Zealand Health Survey for adults aged 45 to 54 years (Ministry of Health, 2008). Thirty-two percent of CHALICE men and 18% of CHALICE women scored eight or over on the alcohol AUDIT, compared to 18.3% of New Zealand men ($p=0.003$) and 6.0% of women aged 45 to 54 years ($p<0.001$). CHALICE results also exceeded the New Zealand HWR study¹⁹ heavy drinking rate of 12% (Enright & Scobie, 2010), but lent support to the HWR finding that being male was a consistent predictor of more hazardous drinking (Towers et al., 2011). The HWR study found that wealth was associated with more hazardous drinking, a finding not supported in this study. Hazardous drinking rates for all adults in Canterbury were reported as higher than the New Zealand total in the 2006/07 New Zealand Health Survey (18.4% and 17.7% respectively) (Ministry of Health, 2008). High rates of alcohol dependence have been also noted in the Christchurch Psychiatric Epidemiological Study²⁰: 32% for men and 6% for women (Wells et al., 1989). Comparative issues are noted, given the use of different instruments to measure hazardous drinking.

Māori participants reported more hazardous use of alcohol compared to non-Māori participants in CHALICE, and New Zealand Māori adults aged 45 to 54 years in the 2006/07 New Zealand Health Survey. Māori participants were more than twice as likely to score eight or more in the AUDIT compared to non-Māori participants (44% and 20% respectively, $p=0.004$). The prevalence of hazardous drinking amongst all New Zealand Māori adults aged 15 years and above was 32.9%, compared to 17.7% for European New Zealanders (Ministry of Health, 2008). Māori living in Canterbury have previously reported higher hazardous drinking rates. The Hauora Waitaha health profile²¹ reported that Māori adults in Canterbury aged 15 years and over had a hazardous drinking rate of 29.0%, while the non-Māori rate was 22.1% (Reid, 2010).

¹⁹ The HWR study used the AUDIT-C (Bush, Kivlahan, McDonell, Fihn & Bradley, 1998), with three items relating to frequency, quantity and bingeing.

²⁰ The Christchurch Psychiatric Epidemiological Study used DSM-III diagnostic criteria (American Psychiatric Association, 1994) in face-to-face interviews.

²¹ Data was drawn from the New Zealand Health Survey and the Health and Disability Information Unit, using the AUDIT.

The Christchurch Health and Development Study²² also observed higher rates of alcohol use and dependence among Māori at the age of 21 years (Marie, Fergusson & Boden, 2012).

While Table 8.2 groups breast and cervical screening for women, differences in ethnicity were observed in screening rates for women. Māori CHALICE participants reported lower rates of breast and cervical cancer screening than non-Māori participants, similar to Canterbury rates (Reid, 2010). In total, 67% of Māori women participants reported having a mammogram and cervical smear within recommended time frames, compared to 87% of non-Māori women ($p=0.03$). Māori women aged 45 to 69 years in Canterbury had a 69.9% rate of breast screening compared to 82.0% of non-Māori women. Just under half of Māori women in Canterbury (47%) were reported to have had a cervical smear in the preceding three years compared to 77% of non-Māori women.

8.4 Attitudes to Ageing and Health Behaviours

The association between attitudes to ageing scores using the AAQ subscales and participant health behaviours was examined. It was hypothesised that physical change attitudes to ageing would be negatively associated with obesity, smoking and hazardous use of alcohol. In this analysis, some categories were simplified or omitted. For example, the single participant with a BMI classified as underweight was included in the normal weight category. Due to the inconclusive benefit of male screening, screening applies to only female participants: whether women have had mammograms within the past two years, as well as a cervical smear within the past three years (women with a hysterectomy were assessed on the basis of mammogram only). All “don’t know” responses were omitted. Relationships between the AAQ subscales and health behaviours are shown in Table 8.3, using Student *t*-test and ANOVA analyses; with further ANOVA and Dunnett’s post-hoc tests for significant results.

²² The Christchurch Health and Development Study used DSM-IV criteria (American Psychiatric Association, 1994).

Table 8.3. Relationship of AAQ Subscales to Health Behaviours for 200 CHALICE Participants

Health Behaviour	n (%)	Psychosocial Loss			Physical Change			Psychological Growth		
		Mean	(SD)	<i>p</i>	Mean	(SD)	<i>p</i>	Mean	(SD)	<i>p</i>
BMI				0.88			0.001			0.93
Normal	55 (28)	30.1	(5.2)		32.7	(4.9)		31.4	(4.0)	
Overweight	75 (38)	30.2	(5.6)		31.4	(4.8)		31.6	(4.0)	
Obese	70 (35)	29.8	(5.8)		29.4	(4.8)		31.5	(4.5)	
Cigarette use				0.61			0.004			0.60
Non-smoker	173 (87)	30.1	(5.7)		31.5	(5.0)		31.6	(4.2)	
Current smoker	27 (14)	29.5	(4.5)		28.5	(4.3)		31.1	(3.6)	
Alcohol use				0.10			0.35			0.28
Non-drinking	21 (11)	27.6	(7.1)		30.7	(4.0)		30.1	(4.2)	
Normal drinking	131 (66)	30.3	(5.2)		31.4	(5.2)		31.7	(4.1)	
Hazardous drinking	48 (24)	30.4	(5.6)		30.2	(4.6)		31.6	(4.4)	
GP visit in past year				0.07			<0.001			0.002
None	38 (19)	31.6	(5.5)		32.8	(4.1)		33.0	(4.2)	
1 visit	49 (25)	30.8	(5.1)		33.2	(4.1)		32.4	(3.4)	
2-3 visits	60 (30)	29.7	(5.0)		30.9	(4.8)		31.2	(4.0)	
4-5 visits	32 (16)	29.1	(6.8)		29.6	(4.9)		30.7	(4.5)	
≥ 6 visits	21 (11)	27.7	(5.3)		25.5	(4.1)		29.0	(4.3)	
Influenza vaccination				0.12			0.85			0.95
Vaccination in last year	87 (44)	30.7	(5.2)		31.1	(4.8)		31.5	(4.2)	
No vaccination	111 (56)	29.4	(5.8)		31.0	(5.3)		31.5	(4.1)	
Screening (female)				0.69			0.95			0.77
Regular screening	95 (84)	30.7	(6.9)		30.9	(5.8)		31.1	(3.9)	
No regular screening	18 (16)	30.1	(5.5)		30.8	(5.2)		30.0	(4.9)	

Note. AAQ subscale range 8-40.

Key findings of Table 8.3 are

- (a) Obesity was significantly associated with negative physical change means ($F_{1, 198} = 13.0, p=0.001$);
- (b) Current smoking was significantly associated with negative physical change ($F_{1, 198} = 8.6, p=0.004$); and

- (c) Increased frequency of GP visits over the past 12 months was significantly associated with negative attitudes to ageing in physical change ($F_{4, 198} = 13.3$, $p < 0.001$) and psychological growth ($F_{4, 198} = 4.9$, $p = 0.002$) domains. AAQ means across domains were observed to steadily decrease from none or one visit to the GP in the past year to the most frequent GP visit band (six visits or more) during the past year. The lowest estimated mean was observed in the physical change subscale (25.5).

The hypothesis, that physical change attitudes towards ageing would be negatively associated with obesity, smoking and hazardous use of alcohol, was supported in part. Three out of the six health behaviours examined showed statistically significant relationships to the physical change domain in the AAQ. Obesity and current smoking did show significant relationships to physical change attitudes to ageing, but hazardous use of alcohol did not. It was not expected to find that the frequency of GP visit was the most significant health behaviour for physical change and psychological growth domains of the AAQ. It was also observed that few participants with diagnosed heart disease, high cholesterol, arthritis and hypertension made no visits to the GP in the previous year (between 1 and 4 participants). Hazardous drinking, influenza vaccination and female cancer screening showed no significant relationship to any AAQ domain.

To date, only one study has reported on the relationship between health behaviours and the AAQ. This Scottish study compared health-related behaviours²³ in two, relatively small, older samples: one group with a mental health diagnosis and one group without (Quinn et al., 2009). Health behaviours included preventative health actions, such as having regular medical check-ups, but frequency of medical check-up was not described. Significantly fewer health behaviours were reported by those with negative attitudes to ageing, but the use of different measures of health behaviours restricts comparison of data.

8.4.1 Adjusted Health Behaviours

Three health behaviours were found to yield significant relationships with AAQ domains. Obesity and current smoking were related to physical change attitudes and frequent GP visits over the past 12 months were associated with physical change and psychological growth

²³ The Reported Health Behaviours Checklist (RHBC) covers preventative health actions, e.g. taking vitamin, undertaking regular aerobic exercise, having regular medical check-ups, as well as cognitive/affective items (Prochaska et al., 1985).

attitudes to ageing. Socio-demographic factors and physical and mental health may have a mediating effect on the relationship of attitudes to ageing and health behaviours. Logistic regression was therefore conducted to control for the effect of gender, ethnicity, the six chronic conditions prevalent in over 10% of CHALICE participants (high cholesterol, hypertension, heart disease, allergies, arthritis and asthma); as well as diagnosed, current and lifetime depression.²⁴

Attitudes to Ageing and Obesity

Seventy (35%) CHALICE participants were measured with a BMI over 30kg/m². Table 8.4 shows unadjusted and adjusted results for AAQ domains with BMI over 30kg/m² as the dependent variable.

Table 8.4. Relationship of AAQ Subscales to Obesity for 200 CHALICE Participants

AAQ Subscales	BMI ≥ 30kg/m ²					
	Unadjusted			Adjusted		
	OR	(95% CI)	<i>p</i>	OR	(95% CI)	<i>p</i>
Psychosocial loss	0.99	(0.94, 1.04)	0.62	1.03	(0.96, 1.11)	0.37
Physical change	0.90	(0.84, 0.96)	0.001	0.89	(0.82, 0.97)	0.01
Psychological growth	1.00	(0.93, 1.07)	0.99	1.06	(0.96, 1.16)	0.28

Note. Reference group: BMI<30.0; variables adjusted for include gender, ethnicity, common chronic conditions (heart disease, high cholesterol, hypertension, asthma, arthritis and allergies), current depression, lifetime depression and diagnosed depression.

The physical change domain of the AAQ remained statistically significant for participants with a BMI≥30kg/m² after controlling for selected health and socio-demographic factors. The relationship of obesity to physical change attitudes weakened somewhat after taking into account gender, ethnicity, chronic conditions and depression, but significance remained (*p*=0.01). Several health factors were of importance in the adjusted model. Participants with a BMI in the obese range were significantly more likely to report hypertension (OR=4.9), current depression (OR=2.3) and arthritis (OR=2.2).

²⁴ See Appendices for full regression models.

Attitudes to Ageing and Current Smoking

Twenty-seven (14%) CHALICE participants reported being current smokers. Table 8.5 shows unadjusted and adjusted results for AAQ subscales with current smokers as the dependent variable.

Table 8.5. Relationship of AAQ Subscales to Current Smoking for 200 CHALICE Participants

AAQ Subscales	Current Smoker					
	Unadjusted			Adjusted		
	OR	(95% CI)	<i>p</i>	OR	(95% CI)	<i>p</i>
Psychosocial loss	0.98	(0.91, 1.06)	0.61	1.04	(0.94, 1.14)	0.48
Physical change	0.88	(0.81, 0.96)	0.005	0.85	(0.76, 0.95)	0.005
Psychological growth	0.97	(0.88, 1.07)	0.60	1.02	(0.91, 1.15)	0.75

Note. Current smokers include less than daily smokers; reference group is non-smokers; variables adjusted for include gender, ethnicity, common chronic conditions (heart disease, high cholesterol, hypertension, asthma, arthritis and allergies), current depression, lifetime depression and diagnosed depression.

The physical change domain of the AAQ remained statistically significant for current smokers after controlling for prevalent chronic conditions, depression, gender and ethnicity ($p=0.005$). The strength of relationship between smoking and negative physical change attitudes did not decrease after adjustment. Māori participants were twice as likely to smoke cigarettes as non-Māori (OR=2.0) and allergies showed the greatest health relationship in the adjusted model (OR=1.75).

Attitudes to Ageing and Frequent GP Visits

Frequent attendance at GPs is generally defined as the top 10% of patients (Dryden, Williams, McCowan & Themessl-Huber, 2012; Smits, Brouwer, ter Riet & van Weert, 2009; Vedsted & Christensen, 2005). The number of GP visits closest to 10% for CHALICE participants was six or more visits in the past 12 months. Twenty one (11%) participants reported making six or more visits in the previous year and were defined as frequent GP users. Table 8.6 shows unadjusted and adjusted results for AAQ domains with frequent users of GPs as the dependent variable.

Table 8.6. Relationship of AAQ Subscales to High GP Use for 200 CHALICE Participants

AAQ Subscales	High GP Use					
	Unadjusted			Adjusted		
	OR	(95% CI)	<i>p</i>	OR	(95% CI)	<i>p</i>
Psychosocial loss	0.92	(0.85, 1.00)	0.05	1.11	(0.94, 1.31)	0.21
Physical change	0.73	(0.64, 0.83)	<0.001	0.82	(0.69, 0.97)	0.02
Psychological growth	0.85	(0.76, 0.95)	0.004	0.83	(0.66, 1.03)	0.09

Note. High GP use ≥ 6 visits to the GP in the past 12 months; reference group made 0-5 visits in past 12 months; factors in adjusted factors include: gender, ethnicity, common chronic conditions (heart disease, high cholesterol, hypertension, asthma, arthritis and allergies), current depression, lifetime depression and diagnosed depression.

The physical change domain of the AAQ remained statistically significant with frequent GP use, after controlling for prevalent chronic conditions, depression, gender and ethnicity in the model. Psychosocial loss and psychological growth ceased to be significant in relation to frequent GP use. Attitudes to ageing were less associated with frequent GP visits when taking into account gender, ethnicity, chronic conditions and depression. However, there were several mediating variables that exerted a significant influence on frequent GP attendance: hypertension (OR=9.0); arthritis (OR=6.2); diagnosed depression (5.3); high cholesterol (4.8); heart disease (OR=3.1); female gender (OR=2.2); and lifetime depression (OR=2.0).

In summary, results show that the physical change subscale of the AAQ continued to be significantly predictive of obesity, current smoking and frequent GP visits over the past 12 months, following adjustment for gender, ethnicity, chronic conditions and depression. Four out of six prevalent physical chronic conditions tested (hypertension, arthritis, high cholesterol and heart disease) influenced the frequency of GP visits. It is likely that GP visits are associated with medical check-ups and getting a prescription in some of the above health conditions (e.g. hypertension and high cholesterol). It was surprising that symptoms of current depression did not influence frequent GP visits, while both diagnosed depression and meeting criteria for lifetime depression did.

8.5 Discussion of Findings

This chapter focused on measured health behaviours reported by CHALICE participants and observed relationships with attitudes to ageing, as measured by the AAQ. It was recognised that not all health behaviours have similar uptake. For example, rates of obesity and hazardous drinking are more prevalent during midlife than rates of cigarette smoking (Ministry of Health, 2008). It was also acknowledged that not all health behaviours have a similar impact on later health and life expectancy. Despite the range of different health behaviours, it was generally expected that motivation to actively engage in them would reflect more positive attitudes towards physical ageing. It was hypothesised that physical change attitudes towards ageing would be negatively associated with obesity, smoking and hazardous use of alcohol. Testing supported this hypothesis in part, but also provided some surprising results.

8.5.1 Attitudes to Ageing and Frequent GP Visits

While not expected, the most significant health behaviour found to have a relationship with attitudes to ageing was the frequency of GP visit. The more GP visits participants had made in the past 12 months, the more negative their physical change and psychological growth attitudes towards ageing. After adjusting for gender, ethnicity, common chronic conditions and depression, negative physical change attitudes remained significantly more negative for frequent GP attenders. In contrast, non-attendance or low attendance of GP services in the previous 12 months was significantly associated with more positive attitudes to ageing.

It is not surprising that the presence of diagnosed chronic conditions mediated the frequency of participant attendance to their GP, given attendance for the purposes of medical check-ups and medication prescriptions. To date, little has been published on the reasons why frequent GP attenders feel negative about ageing. There has been only one study reporting on the AAQ with healthy behaviours (including regular medical check-ups), but neither the number of GP visits, nor their association with attitudes to ageing, were reported (Quinn et al., 2009). The MIDUS study has briefly reported that frequent GP attenders had a felt age older than chronological age, in contrast to the prevailing pattern to feel about ten years younger (MIDUS, 2007). Making frequent visits to the GP frequently may reflect and reinforce anxiety about health, low mood and a sense of accelerated ageing; factors likely to be associated with negative attitudes towards ageing.

This study defined frequent attenders as those 11% of the sample making the most GP visits; the proportion which was most similar to the literature. A number of review or large sample publications have focused on the top 10% attenders of primary health services, who account for 30 to 50% of all contacts (Dryden et al., 2012; Scaife, Gill, Heywood & Neal, 2000; Smits et al., 2009; Vedsted & Christensen, 2005). Frequent GP consulting is associated with multiple, complex health conditions and social situations (Townsend, Wyke & Hunt, 2008). Findings from this study are consistent with the literature, that frequent attenders are more likely to be female; suffer from psychological distress and/or chronic conditions; and have mental health problems, such as depression (Bellón, Delgado, De Dios Luna et al., 1999; Eastin & Guinsler, 2006; Knox & Britt, 2004; Taylor et al., 2012).

While diagnosed depression and meeting criteria for lifetime depression influenced frequent attenders' GP visits, meeting criteria for current depression did not. This is an interesting pattern of results, which may contradict other studies, such as the European SHARE study with 31,000 adults aged over 50 years (Ladin, 2012). Frequent GP visits have also been found to predict future depression diagnosis (Andersson, Magnusson, Carstensen et al., 2011). CHALICE results suggest that those experiencing symptoms of current depression are among the almost half (44%) who either did not visit their GP in the past year at all or only made one visit. Non-attenders of GP services are of interest, as they have higher cardiovascular risk factors than attenders; value their health less highly; are less likely to believe in the efficacy of health checks; and feel less control over their health (Dryden, Williams, McCowan et al., 2012).

8.5.2 Attitudes to Ageing and Obesity and Cigarette Smoking

Obesity and cigarette smoking were significantly associated with more negative physical change attitudes to ageing, both before, and after, adjusting for gender, ethnicity, common chronic conditions and depression. This is not surprising. While body size and use of tobacco in relation to the AAQ have not yet been reported in the literature, those who maintain a healthy weight and do not smoke are known to have more positive perceptions of ageing (Levy & Myers, 2004). It is likely that health behaviours, such as not smoking and maintaining a healthy body weight, have a beneficial effect on mood (Steptoe et al., 2009) and attitudes to ageing. Differences and similarities can be observed between smoking and obesity. Smoking has been found to have a greater impact on mortality than morbidity, whereas obesity has a greater

impact on morbidity than mortality (Jia & Lubetkin, 2010), including obesity in midlife (Buckley, 2008). But both share similarities in terms of their effect on health and wellbeing.

This study found a relationship between obesity and several socio-demographic and health factors, including perceived hardship, hypertension, current depression and arthritis. Obesity has been widely shown to confer negative consequences on health perception, physical functioning and psychosocial aspects of quality of life (Ford, Moriarty, Zack et al., 2001; Kushner & Foster, 2000; White, O'Neil, Kolotkin et al., 2012; Yan, Daviglius, Liu et al., 2004), especially if accompanied with pain (Heo, Allison, Faith et al., 2012). A New Zealand study found obesity was significantly associated with negative physical health scores in the SF-36 (Ni Mhurchu, Bennett, Lin et al., 2004). Individuals who are obese have been found to hold negative perceptions of health, physical function and quality of life (Ford et al., 2001; Kushner & Foster, 2000; White et al., 2012; Yan et al., 2004). Consequently, obesity is negatively associated with a range of physical and mental health outcomes, knowledge and experience of which may engender more negative attitudes toward physical ageing.

Smoking among CHALICE participants was associated with never having been married, low household income, perceived hardship and being Māori. Cigarette smoking has been widely associated with poorer physical health (Enright & Scobie, 2010), chronic disease, reduced longevity (Ministry of Health, 2008), poorer physical health-related quality of life (Holahan, Holahan, North et al., 2013; Mulder, Tijhuis, Smit et al., 2001), lower life satisfaction (Steptoe et al., 2009), a pessimistic outlook (Steptoe, Wright, Kunz-Ebrecht et al., 2006) and reduced subjective wellbeing (Piper, 2012). Thus, smoking is associated with important health outcomes, which may get internalised by individuals into more negative attitudes toward their physical ageing.

8.5.3 Attitudes to Ageing and Unrelated Behaviours

Alcohol consumption, influenza vaccination and cancer screening for women were not significantly associated with attitudes to ageing. Consequently, the hypothesis that hazardous use of alcohol would be negatively associated with more negative physical change scores in the AAQ was not supported. It was unsurprising that health behaviours such as influenza vaccination and screening for cancer were not associated with attitudes to ageing. A review of 30 longitudinal studies found that vaccination and screening programmes were unlikely to have

an independent effect on happiness (Veenhoven, 2008). In addition, screening for cancer is not comparable between men and women. While the effectiveness of breast and cervical screening for women is well proven with established national screening programmes, the value of testing for prostate cancer is debatable (Prostate Cancer Taskforce, 2012; U.S. Preventative Services Task Force, 2008). The lack of comparability between screening for men and women is reflected in the uptake of screening among CHALICE participants. Consequently, it was not possible to analyse screening equally between men and women.

8.5.4 CHALICE Sample Representativeness

The CHALICE sample appeared to be more active in some health behaviour areas than national norms. For example, current cigarette smoking was half the national rate (including among Māori), influenza vaccination rates were twice as high, and mammograms and cervical screening were more frequent among CHALICE women than national figures. Māori women were less likely to regularly participate in cancer screening programmes, which was similar to national rates. Less activity in certain health behaviours was also observed in comparison to New Zealand norms. Obesity was more frequent than the national rate, especially for women and those from low income households. Potentially hazardous use of alcohol was twice as high for CHALICE men and three times as high for women compared to nationally. Māori and those with no educational qualifications also reported higher rates of hazardous drinking. While CHALICE smoking rates were lower, smoking was more frequent among single CHALICE participants and those from low income households.

Questions were raised as to why the CHALICE rates for potentially hazardous drinking were twice as high as adults aged 45 to 54 years in the 2006/07 New Zealand Health Survey (Ministry of Health, 2008). Both studies used face-to-face interviews and the same threshold of eight or above in the AUDIT. The recent Canterbury earthquakes may be a contributing factor, as individuals struggled to cope with increased and persistent stress. However, a systematic review of alcohol use after ten major disasters found that 99% of alcohol use disorders were pre-existing, rather than an acute new drinking pattern (North, Ringwalt, Downs et al., 2011). It may be that women's hazardous drinking has been underestimated by assigning the same AUDIT threshold as men, given that women have generally been found to have lower alcohol tolerance (Di Castelnuovo, Costanzo, Bagnardi et al., 2006; Rehm, Gutjahr & Gmel, 2001). It has been argued that older New Zealanders are drinking more hazardously than previously and

the rate of older adults requiring treatment is predicted to increase over the next ten years (Towers et al., 2011).

8.6 Summary

Findings contribute to the understanding of attitudes to ageing and health behaviours, particularly as health behaviours have not been reported in isolation with the AAQ previously. The hypothesis, that physical change attitudes towards ageing would be negatively associated with obesity, smoking and hazardous use of alcohol, was supported in part. The physical change domain of the AAQ did show significant relationships with obesity and current smoking, but no relationship was found with hazardous alcohol consumption. The most interesting result was that the top 11% of GP attenders over the past year reported significantly more negative AAQ scores in physical change and psychological growth domains. Physical change attitudes to ageing continued to be significant after controlling for socio-demographic, chronic conditions and current depression. Obesity and current smoking were associated with physical change attitudes, both before, and after, controlling for the same factors. This is the final results chapter. The following chapter concludes the thesis.

CHAPTER 9:

Discussion and Conclusions

“Many current attitudes to ageing were developed during the 20th century when there were far fewer older people and when social patterns were very different. These patterns of thinking can limit our capacity to identify the real challenges, and to seize the opportunities, of population ageing in the 21st century. We need to develop new models of ageing that will help us create the future society in which we want to live.”

World Health Organization, 2012a

9.1 Overview

The key findings of this cross-sectional study of 200 midlife New Zealanders are that individuals report similar or more positive attitudes to ageing compared to existing literature, and the importance of the physical change domain of the AAQ in relationships with health and health behaviour variables. This chapter concludes the thesis by summarising findings to research questions and hypotheses. Interesting and, at times paradoxical, patterns of results are highlighted and also contextualised within an Awareness of Age-Related Change framework. The contribution and limitations of the study are identified, including methodological considerations in using the AAQ. Finally, recommendations are made, both for future research in the area of attitudes towards ageing and the need to challenge negative age stereotypes and encourage more positive attitudes towards ageing, as society's age.

9.2 Findings regarding Attitudes to Ageing

Guided by the research questions and hypotheses, the AAQ was the primary instrument used to investigate attitudes to ageing in relation to a range of socio-demographic factors, self-rated health, chronic health conditions, current depression and health behaviours.

9.2.1 Attitudes to Ageing of Midlife New Zealanders

Attitudes to ageing have not been comprehensively examined before in New Zealand. It was hypothesised that attitudes to ageing, as measured by the AAQ, would not be statistically different from comparable age groups in western countries. There has only been one comparable study reporting AAQ scores for a midlife sample (Matthews et al., 2007). CHALICE participants express significantly more positive scores in psychosocial loss, physical change and psychological growth domains than reported in this Australian study, consequently not supporting the hypothesis. CHALICE AAQ scores were also more positive than studies with older adults, which make up most of the literature reporting on the AAQ. While longitudinal reports of AAQ scores are yet to be published, it is possible that attitudes to ageing will be perceived more positively as individuals age. The same Australian study (Matthews et al., 2007; Matthews, 2012) reports older adults were more positive across domains than younger adults, particularly in their attitudes to physical changes. Consequently, increasing age may positively influence attitudes towards ageing (Low et al., 2013a; Matthews et al., 2007), despite the challenges experienced by ageing individuals.

CHALICE participants also trend towards more positive or similar attitudes for their subjective age, age identity and self-perceptions of ageing, compared to midlife samples in the literature. Felt and ideal age results confirm American results (MIDUS, 2007; Rubin & Bernstein, 2006; Ward, 2010), and were more positive than English findings, using the Experience of Ageing measure (Demakakos et al., 2006). Subjective life expectancy results generally show individuals under-estimate their longevity, similar to the literature (O'Brien et al., 2005; O'Connell, 2011; Griffen et al., 2013). Together, these results show that attitudes towards ageing of this sample of midlife New Zealanders were relatively positive compared to the literature, despite being assessed during the destructive Canterbury earthquakes.

9.2.2 Relationships between Attitudinal Measures

The AAQ has not previously been examined in relation to alternate attitudinal measures. This study examined relationships between the three domains of the AAQ (psychosocial loss, physical change and psychological growth), felt age, ideal age, the Experience of Ageing and subjective life expectancy. It was expected that attitudinal measures tested would show a degree of concordance, but that based on the importance of the physical change domain in the literature (Bryant et al., 2012; Chachamovich et al., 2008; Lucas-Carrasco et al., 2012; Kalfoss et

al., 2010), the physical change subscale would show the strongest correlations with other attitudinal instruments tested. This research question is not supported in the main, although the physical change subscale shows moderately strong relationships with all other measures, except for ideal age.

Other attitudinal measures showed either stronger or more widespread relationships. The psychological growth domain of the AAQ and the Experience of Ageing are most closely related, demonstrating the greatest concordance between measures. This may be because they capture a similar sense of the ageing psychological self, rather than a social or physical self. The psychosocial loss domain and subjective life expectancy show significant relationships with all other attitudinal instruments tested, though at lower levels than the physical change subscale. This suggests that attitudes of psychosocial losses with age and expectations of life expectancy are broad attitudinal measures, overlapping with other attitudes towards ageing domains, subjective age, age identity and self-perceptions of age. These results do not necessarily undermine the importance of the physical change domain of the AAQ in relation to other attitudinal measures, as physical change attitudes were consistently significant to other measures, except for ideal age, which may be a more independent and possibly less reliable measure (Ward, 2010).

9.2.3 Attitudes to Ageing and Self-Rated Health at Midlife

Self-rated health was measured by the SF-36. Examining the relationship between subscales of the AAQ and the SF-36 for the first reported time, it was hypothesised that (a) negative psychosocial loss attitudes would be associated with reduced vitality, social functioning, role limitations (emotional) and mental health; (b) negative physical change attitudes to ageing would be associated with reduced physical functioning, role limitations (physical), bodily pain, general health and vitality; and (c) that negative psychological growth attitudes to ageing would be associated with reduced vitality and role limitations (emotional). This hypothesis is supported in the main, with the exception that no relationship was found between psychosocial loss attitudes and self-rated social functioning. Relationships between the two self-rated scales extend beyond those anticipated between similar domains in the two scales, particularly as the physical change domain is significantly associated with all SF-36 domains. Relationships between the AAQ and the briefer SF-12 are established in the literature, notably with self-rated mental health (Bryant et al., 2012; Zhang & Niu, 2013).

9.2.4 Attitudes to Ageing and Health at Midlife

For the first time, the AAQ was examined in relation to a range of prevalent, diagnosed chronic conditions: hypertension; high cholesterol; heart disease; asthma; arthritis; allergies; and depression. Two hypotheses were generated. Firstly, it was hypothesised that individuals with diagnosed physical chronic conditions would report more negative physical change attitudes. The hypothesis is supported in part. Individuals with a diagnosis of heart disease, hypertension, asthma and arthritis are significantly more likely to feel negative about the physical changes related to ageing. A diagnosis of high cholesterol is weakly associated with more negative psychosocial loss attitudes only. Psychological growth attitudes do not appear to be related to any physical chronic condition examined. Psychological growth attitudes appear to be relatively independent from physical health factors. These findings confirm a limited, but growing, body of research with older adults, that those with positive attitudes to ageing generally report feeling healthy (Molzahn & Gallagher, 2009), with better physical and mental health (Bryant et al., 2012), and greater health satisfaction (Kalfoss et al., 2010), whereas those with a greater number of chronic conditions express more negative attitudes to ageing (Lucas-Carrasco et al., 2012).

The second hypothesis testing the relationship of attitudes to ageing and health focused on depression. It was hypothesised that diagnosed depression and meeting criteria for current depression would be generally associated with negative attitudes to ageing. The hypothesis is supported in the main, as participants with both diagnosed depression and current depression report significantly more negative attitudes towards psychosocial losses and physical changes with ageing. Individuals reporting lifetime depression also report more negative physical changes scores. In general, these results confirm other findings that mental health, anxiety and depression are significantly and negatively associated with attitudes to ageing, as measured by the AAQ (Bryant et al., 2012; Chachamovich et al., 2008; Kalfoss et al., 2010; Lucas-Carrasco et al., 2012; Quinn et al., 2009; Trigg et al., 2012). However, it is unexpected to find psychological growth attitudes not significantly associated with depression. This lack of relationship supports only one reported study (Lucas-Carrasco et al., 2012). Psychological growth attitudes were likely heightened during the Canterbury earthquake sequence, a time when individuals needed to draw on psychological reserves to cope with prolonged and extraordinarily challenging circumstances (Opinions Market Research, 2014; Spittlehouse et al., 2014).

9.2.5 Attitudes to Ageing and Health Behaviours at Midlife

A range of help seeking and healthy lifestyle behaviours was examined with the AAQ for the first time, to determine whether engagement in key health behaviours, known to contribute to important health outcomes and longevity in later life (Chakravarty et al., 2012; Khaw et al., 2008; Vaillant & Mukamal, 2002), were related to attitudes towards physical ageing. It was hypothesised that physical change attitudes towards ageing would be negatively associated with obesity, smoking and hazardous use of alcohol. The hypothesis is supported in part. Obesity and current smoking are significantly associated with more negative physical change attitudes, but hazardous drinking is not related. However, the most important finding is that individuals who make frequent GP visits (six times or more in the past year) are significantly more likely to feel negative about their ageing in terms of physical change and psychological growth. After adjusting for gender, ethnicity, chronic conditions and depression, individuals who visit the GP frequently, are obese or smoke still express significantly more negative physical change attitudes to ageing.

It is an interesting and original finding that frequent attenders of GPs hold negative attitudes toward their own physical ageing. Chronic conditions and depression not appear to mediate attitudes to ageing, when examining frequent GP attenders. This finding is in seeming contradiction to findings from this and other studies that physical and mental health are related to attitudes to ageing (Bryant et al., 2012; Kalfoss et al., 2010; Lucas-Carrasco et al., 2012; Molzahn & Gallagher, 2009). It is also unexpected to find that current depression is not involved in physical change attitudes among those who make frequent GP visits, when evidence points to depression being a common factor behind frequent GP visits (Andersson et al., 2011, Ladin, 2012). More negative physical change attitudes to ageing amongst frequent GP attenders may reflect marked health anxiety (Eastin & Guinsler, 2006; Tyrer, Cooper, Crawford et al., 2011). It is also possible that participants sought reassurance from their GP in the aftermath of the earthquakes; resulting in increased frequency of GP visits from those interviewed in the latter half of data collection.

9.3 Pattern of Results

Apparent paradoxes are observed in the combination of results from this study (Rappaport, 1981). Positive, or similar, attitudes to ageing were expressed by this midlife New Zealand sample, compared to existing studies. This is unexpected for several reasons. Recruitment for

the 200 CHALICE participants in this study took place during 10,000 Canterbury earthquakes and aftershocks, which caused considerable loss of life and widespread destruction. At the time of interview, many CHALICE participants faced ongoing issues with land remediation, repairs, rebuilding and insurance cover, causing significant stress, distress and uncertainty (Canterbury Earthquake Recovery Authority, 2012; Dorahy, 2012; Fergusson, Horwood, Boden et al., 2014; Helton, Head & Kemp, 2011; Kemp et al., 2011; Renouf, 2012; University of Canterbury, 2012). Probably as a consequence, CHALICE participants report significantly lower mental health and general health in comparison to SF-36 norms for similar-aged New Zealanders (Ministry of Health, 2008; Spittlehouse et al., 2014).

CHALICE participants also report more hazardous use of alcohol and higher rates of current depression than comparable groups in New Zealand and Canterbury (Ministry of Health, 2008), but are simultaneously more educated and wealthier than comparable age groups (Statistics New Zealand, 2012a). It is somewhat surprising that CHALICE participants' attitudes towards ageing are still relatively positive, or similar to comparable samples in the literature, despite also reporting poorer general and mental health, increased depression and hazardous drinking rates, in a highly stressful environment. This combination of results could be partially due to sampling bias, given the higher levels of education and wealth observed.

It is of interest that positive attitudes to ageing are expressed in conjunction with adverse situations and negative results. It is known that positive and negative experiences and emotions coexist (Larsen, Hemenover, Norris et al., 2003). Negativity, expressed in these results as poor mental health, high depression and hazardous drinking rates, could be understood as not unexpected and, at times, an adaptive response (Held, 2004) following the Canterbury earthquakes. Paradoxically, the extraordinary context of the Canterbury earthquakes need to be considered as an influence on the relatively positive attitudes to ageing reported at the time of interviewing. Expressing relatively positive attitudes to ageing simultaneously with negative aspects may be because participants perceived that they were personally resilient at a time when extraordinary personal demands were being made of them.

Post-disaster literature has identified "unrealistic optimism" in the months following the 1989 California earthquake (Burger & Palmer, 1992), and positive attitudes (thankfulness, gratitude and hopefulness) in the months following Hurricane Katrina (Henderson, Roberto & Kamo, 2010). CHALICE participants likely felt relieved to have survived the earthquakes, unlike the

185 others whose lives were cut short. In the 14.5 months of interviewing, while earthquakes and aftershocks were occurring, Canterbury residents were recognised as having greater engagement with family, friends and neighbours, which may have increased a sense of personal meaning and social connectedness, positively influencing their attitudes towards ageing. However, over time attitudes may change, as the “honeymoon” period in the wake of the earthquakes gets replaced with greater disillusionment and negative perceptions (Raphael, 1986), given the prolonged recovery period (Opinions Market Research, 2014; Spittlehouse et al., 2014). Consequently, it would be unsurprising if participants reported more negative attitudes to ageing upon future reassessment.

Findings that midlife New Zealanders report comparatively positive attitudes towards their own ageing could also be due partly to the quality of life in New Zealand. Quality of life perceptions have been found to influence attitudes toward ageing (Low et al., 2013b). New Zealanders are reported as having a relatively high quality of life, in terms of the natural environment, life expectancy, education standards and home ownership (OECD, 2013), despite growing divisions in New Zealand in terms of income. However, examination finds that many quality of life factors are rated more highly in Australia than New Zealand (OECD, 2013), meaning that quality of life is unlikely to be the cause of the CHALICE study’s more positive AAQ scores compared to the midlife sample in Australia (Matthews et al., 2007). The relatively high quality of life in New Zealand, as well as the higher income and education levels of CHALICE participants, may have offset some of the negative impact of the earthquakes on attitudes towards ageing.

9.4 Findings Contextualised

Awareness of Age-Related Change (Diehl & Wahl, 2010) is the primary conceptual framework for the study, alongside the multidimensional AAQ as the primary measure of attitudes towards ageing. The Awareness of Age-Related Change framework is found to be a broadly compatible and relevant model for conceptualising attitudes towards ageing, as it is focused on the awareness of growing older as a major subjective experience during adulthood and incorporates physical and mental health as antecedents and outcomes. However, shortcomings are apparent, not least of which are a lack of life span perspective, which proved problematic for studying a midlife population, and a lack of clarity around key conceptual terms, such as attitudes towards ageing.

In a promising development, these limitations have been recently addressed by the original authors and colleagues. The revised model, Awareness of Ageing, was developed in response to a perceived theoretical gap explaining processes of ageing-related awareness (Diehl et al., 2014). The model is intended to serve as a heuristic, or investigative, framework to guide and stimulate new research as well as provide testable hypotheses and predictions. It is described as a “superordinate construct”, integrating existing concepts of subjective ageing and major theories of adult development. Ageing over the life span is conceptualised as incorporating chronological age and objective age-related changes, but also personalised Awareness of Ageing processes. Over the life span, ageing individuals are seen to integrate and internalise self-awareness of ageing into their self-concept and personal identity.

Awareness of Ageing integrates developmental research on subjective ageing and offers valuable clarity of constructs and conceptual relationships. Key ageing constructs are usefully defined as attitudes towards ageing and age stereotypes, subjective age, age identity/identification, self-perceptions of ageing and Awareness of Age-Related Change. Under each construct, limited examples of multidimensional and unidimensional measures are provided. Attitudes towards ageing measures are identified as the multidimensional AAQ and the unidimensional Attitudes toward Aging Subscale of the Philadelphia Geriatric Morale Scale (Lawton, 1975). Consequently, the revised model explicitly offers conceptual clarity to better understand attitudes towards ageing, related constructs, their influences, relationships and outcomes. The new framework also provides potential for promoting attitudes and behaviours to optimise individuals’ capacity and chances to age successfully (Diehl et al., 2014).

Awareness of Age-Related Change and its more recent revision, Awareness of Ageing, can be conceptually applied to this study of attitudes towards ageing and relationships to health and health behaviours. Understanding the attitudes to ageing of a midlife cohort involves recognising the crucial role chronological age plays for individuals’ awareness of their progression along the life span (Settersten & Meyer, 1997). Midlife is a critical period of transitions and responsibilities (Dainese et al., 2011), in which the pace of ageing increases and awareness of health constraints and mortality grows (Walker, 2002). While the Awareness of Age-Related Change model does not explicitly incorporate movement along the life span, the revised Awareness of Ageing does. It was expected that by midlife, attitudes to ageing would reflect a growing Awareness of Ageing. At this time, the ageing process becomes more self-

relevant, including increasing reminders about chronological ageing, the internalisation of negative stereotypes about ageing, and age attributions about ill health (Levy et al., 2009).

Attitudes towards ageing are related to health in the current study. The Awareness of Age-Related Change model identifies health status as a distal antecedent, while Awareness of Ageing defines it as a developmental influence; impacting on physical health and psychological wellbeing outcomes. While not explicitly detailed in either model, symptoms of chronic conditions (such as arthritic pain or low mood) could be expected to act as internal triggers to the ageing individual, while medical diagnosis of chronic conditions (such as heart disease, hypertension, high cholesterol, asthma and arthritis) could act as external triggers. Triggers may stimulate a perception of accelerated ageing (Campbell, Sheets & Strong, 1999) and probably act as ageing signals in individuals, by increasing awareness both of ageing and of a potentially shorter life. Consequently, individuals may become aware of the potential impact of these conditions on the quality and duration of their lives and possibly feel more negative about ageing (Harrison et al., 2008).

Those with a diagnosis of a potentially life threatening condition may interpret their condition as one that ages them, holds them back, makes them feel less healthy than they expect for their age, or makes it more difficult to keep physically active. These are items measured in the physical change subscale of the AAQ. It was expected that adults in midlife would show awareness of physical changes in their ageing triggered by diagnosis or experiencing symptoms of health conditions, which would be captured by the physical change subscale of the AAQ. Comparatively less awareness of ageing in psychosocial or psychological domains was expected to be present in midlife adults, as generally this age group generally have more active lives with family, friends and employment.

Attitudes to ageing are strongly associated with mood in this and other studies. While both models identify health as an influence on awareness of age processes, neither explicitly acknowledge the significance of mood on age awareness. This is an omission in the model, as mood is an important antecedent, affecting perceptions and interpretations of ageing, as well as behavioural choices and outcomes. It is suggested that mood be included as a psychological antecedent to Awareness of Ageing, as well as an outcome of negative attitudes towards ageing, affecting wellbeing and engagement with life.

Attitudes towards ageing are negatively associated with some health behaviours in the study, notably frequent GP visits, obesity and smoking. Individuals who make frequent GP visits are likely to have increased anxiety about their health status and fewer psychological resources, as identified in the Awareness of Ageing model. Health anxiety has been called an antecedent to negative attitudes towards ageing (Depaola et al., 2003). Frequent GP attenders may interpret their health diagnoses and symptoms as proof of ageing, implicitly feeling negative about ageing. Individuals who are obese or smoke report negative physical change attitudes to ageing. Both factors are known to influence functional health and longevity; which are developmental outcomes in the Awareness of Ageing model (Diehl et al., 2014). While individuals may wish to mitigate the effects of age-related change by reducing weight or stopping smoking, these factors can be challenging to control and modify. Negative meanings about body size and smoking may reduce individual expectations and compound negative attitudes towards ageing.

Authors of the Awareness of Ageing model have called for future research to describe and explain the precise mechanisms and pathways by which attitudes toward ageing influence and shape adults' subjective age and self-perceptions of age (Diehl et al., 2014). In response, it is probably too simplistic to equate more negative attitudes toward ageing with greater Awareness of Ageing. Positive attitudes towards ageing probably coexist alongside increasing Awareness of Ageing. In fact, two studies using the AAQ suggest that generally attitudes towards ageing become more positive with increasing age (Low et al., 2013a; Matthews et al., 2007). More positive perceptions of mental health have also been linked to increased age in New Zealand (Stephens et al., 2011). This may be in part because adults feel increasing younger than their chronological age, which may delay an Awareness of Ageing, given findings that at the age of 50 years, individuals feel on average ten years younger. However, underestimations of life expectancy may also influence Awareness of Ageing. Longitudinal tracking of individuals' attitudes towards their own ageing and the interface with Awareness of Ageing would be of value.

9.5 Study Contribution

This study is a response to the call for countries to be involved in subjective ageing research using diverse instruments (Mock & Eibach, 2011) to measure attitudes towards ageing, subjective age, age identity and self-perceptions of ageing in conjunction with chronic conditions prevalent in ageing populations (Hubley & Russell, 2009). This is one of the first

studies to apply a relatively new conceptual framework, Awareness of Age-Related Change (Diehl & Wahl, 2010), to the conceptualisation of attitudes towards ageing, promisingly revised as Awareness of Ageing (Diehl et al., 2014). Use of the model has allowed suggestions for model improvements. In New Zealand, studies into attitudes towards ageing have been found lacking (Cunningham, 2005). Despite being rigorously tested and refined in 20 centres worldwide (Laidlaw et al., 2007), the AAQ has not previously been used with a New Zealand population. In spite of most measures being widely used, felt age as a measure of subjective age, ideal age as a measure of age identity, and the Experience of Ageing and subjective life expectancy as measures of self-perceptions of ageing have not been previously reported in a New Zealand context.

It is the first time that relationships between the AAQ, felt and ideal age, the Experience of Ageing and subjective life expectancy have been described. It is the first time psychometric properties of the AAQ with midlife adults have been reported, suggesting that the AAQ may be also reliably be used with respondents under the age of 60 years. Attitudes to ageing are analysed with a range of prevalent health conditions facing ageing populations, for the first known time. While the AAQ has been analysed with the SF-12, this study is the first to report on the more comprehensive SF-36, with its eight physical and mental health domains. Health behaviours have not previously been reported in detail with the AAQ. While it was not intentional to study attitudes to ageing during a major natural disaster, an opportunity was provided to examine relationships during extraordinary and testing times.

In examining a midlife sample, this study targets a relatively under-researched sector of the population, compared to younger and older adults. Midlife is a critical period in the pathway of successful ageing (Dainese et al., 2011). Being healthy in midlife makes a difference for future health (Britton et al., 2008; Kalache & Kickbusch, 1997). Large numbers of individuals in midlife are moving towards retirement age over the next 15 years. The ageing of the baby boom generation influences not only the health of significant numbers of adults in midlife, but also the welfare of the younger and older generations that they support. Promoting health behaviours in midlife has been found beneficial for successful ageing, and may have the consequence of reducing social inequalities in health at older ages (Britton et al., 2008). Further investigation into the midlife experiences of ageing on mental and physical health outcomes and health behaviour has been called for (Bode et al., 2012).

9.6 Methodological Considerations

The AAQ was a straightforward instrument to administer. A small number of methodological issues were raised using the data. The original development paper advised that psychosocial loss be differently scored from the other two subscales, so that a higher score indicates greater psychosocial loss associated with ageing (Laidlaw et al., 2007). Rescoring of the psychosocial loss subscale (so that high scores in all three subscales consistently indicate positive attitudes) has been suggested to improve the model (Chachamovich et al., 2008). The CHALICE study did rescore the psychosocial loss subscale, as have about half the studies publishing results on the AAQ (Chachamovich et al., 2008; Kalfoss et al., 2010; Low et al., 2013a; Matthews et al., 2007; Molzahn & Gallagher, 2009; Rashid & Ab Manan, 2013; Top, Eriş, & Kabalcioğlu, 2012a, 2012b). However, scoring differences with the AAQ likely make comparability of research results more complex (Reynolds, 2008).

If the psychosocial loss subscale is rescored, a total AAQ score can be used. The AAQ total is a simple composite option, which has been reported, in addition to subscale results, by a number of studies (Chachamovich et al., 2008; Matthews et al., 2007; Quinn et al., 2009; Rashid & Ab Manan, 2013; Top et al., 2012a, 2012b). But benefits were found using AAQ subscales in the current study, in that a greater number of significant results emerged. For example, the power of the physical change domain and the relative independence of the psychological growth domain would not have been observed by solely using an AAQ total. It is noted that the 24-item AAQ takes several minutes to administer; the longest time of all attitudinal measures used in this study. Questionnaire length may be an issue researchers wish to explore, in order to reduce participant burden.

Finally, the AAQ was developed to assess attitudes to ageing across the older adult lifespan (Laidlaw et al., 2007). Consequently, the questionnaire has primarily been used with samples aged over 60 years (Bryant et al., 2012, 2014; Chachamovich et al., 2008; Kalfoss et al., 2010; Laidlaw, 2010; Laidlaw et al., 2007, 2010; Low et al., 2013a, 2013b; Lucas-Carrasco et al., 2012; Molzahn & Gallagher, 2009; Quinn et al., 2009; Rashid & Ab Manan, 2013; Shenkin et al., 2014a, 2014b; Top et al., 2012a, 2012b; Trigg et al., 2012; Wang et al., 2009). Preliminary psychometric testing with this midlife sample found that internal consistency coefficients were comparable to published Cronbach's alphas from studies with older participants. It is suggested that the AAQ could be tested further with adults in their midlife years.

9.7 Study Limitations

While the multi-disciplinary, comprehensive breadth of domains, oversampling of Māori and longitudinal design has several strengths, the CHALICE study is exposed to potential weaknesses (Schluter et al., 2013). The first 200 CHALICE participants in this study are a relatively small sample size, which reduces the statistical power of results. The CHALICE cohort was an age slice of the Canterbury population, with participants recruited in their fiftieth year. Consequently, research findings are for adults aged 49 to 51 years and are geographically localised, which may limit the external validity and generalisability of findings. Oversampling of Māori was included in the CHALICE recruitment design, resulting in 16% Māori participants in the sample, four times the proportion of Māori adults aged 50 to 54 years living in Canterbury (Statistics New Zealand, 2012a). The purpose of oversampling Māori in the sample was to increase statistical power for ethnic-specific comparisons between Māori-non-Māori (Schluter et al., 2013). The low numbers of Pacific and Asian participants recruited to the CHALICE study reflect the cultural diversity of Canterbury more closely than that of New Zealand, but provide insufficient numbers for analysis. Similar to other New Zealand midlife studies (Dulin et al., 2011; Hillcoat-Nallétamby & Dharmalingam, 2004; Waldegrave & Koopman-Boyden, 2010), women comprised a larger proportion of the sample than the population from which they were drawn (Statistics New Zealand, 2012a).

A response rate of 65% was achieved during extraordinary difficulties and delays created by the Canterbury earthquakes. The extended period of earthquakes and aftershocks during the recruitment period had a profound effect on Canterbury residents and CHALICE participants (Schluter et al., 2013; Spittlehouse et al., 2014). There was a marked rise of Canterbury residents leaving the region following the earthquakes. Selection bias may have been present in those individuals who stayed. It is possible that those individuals who agreed to participate in the CHALICE study at that time were those who had the psychological resources and time to participate. A number of differences were detected with New Zealand and Canterbury norms. The CHALICE sample appeared to be more highly educated and from higher income households, factors which are likely linked to health behaviours, such as lower rates of tobacco use, and increased rates of influenza vaccination and screening for cancer (Cutler & Lleras-Muney, 2010). CHALICE participants also reported more negative self-rated mental and general health, increased rates of medically diagnosed and self-reported depression rates, and two to three times the rate of potentially hazardous drinking than the Canterbury population in

the 2011/12 New Zealand Health Survey (Ministry of Health, 2013b). Consequently, the sample was recruited in highly unusual times and also displays some bias in its characteristics.

The AAQ was selected as the multidimensional measure best that captures attitudes towards ageing. Therefore, felt age as a measure of subjective age; ideal age as a measure of age identity; and Experience of Ageing and subjective life expectancy as measures of self-perceptions of ageing, were not analysed with socio-demographic, health and health behaviour variables. Common chronic conditions present in less than 10% of the CHALICE sample (diabetes, stroke, COPD and cancer) were omitted from analysis with attitudes to ageing. This strategy increased the statistical power of selected analyses, but reduced the range of analyses with prevalent chronic conditions in New Zealand. Not all health behaviours were selected for examination. Physical activity and nutritional intake are influential, potentially modifiable variables linked to health and wellbeing (American Dietetic Association, 2005; Paterson & Warburton, 2010; Taylor, Kolt, Vandelanotte et al., 2013; Vogel, Brechat, Leprêtre et al., 2009), but were not examined in this thesis. The relationship of influential personality traits (such as optimism) and psychological resources (such as resilience) on attitudes (Armor & Taylor, 1998; Bohner & Dickel, 2011; Bryant et al., 2014; Shenkin et al., 2014a; Windle, Markland & Woods, 2008) were also not included in this thesis. Of those variables selected, screening was analysed for females only, given the lack of agreement over the value of male screening.

Lastly and importantly, data from the first wave of the CHALICE study was used, meaning that results are cross-sectional, reflecting attitudes to ageing at a particular point in midlife. Cause and effect relationships cannot be inferred. While the AAQ was the dependent variable in analyses, it cannot be known from this study whether attitudes to ageing caused or were a result of socio-demographic factors, health or health behaviours. It is also not possible to examine whether CHALICE participant attitudes toward their own ageing become more positive with age, remain steady or become more negative, as Canterbury enters the disillusionment phase of recovery, following the earthquake disaster. It cannot be determined whether different domains of the AAQ respond along different trajectories to increasing age. These concerns aside, analyses presented have demonstrated that the AAQ is a reliable instrument to use with a midlife sample, and that attitudes toward ageing have significant relationships with several socio-demographic, health and health behaviour variables at midlife.

9.8 Recommendations

Positive attitudes and supportive living environments for ageing populations are aided by policies and programmes, such as the Madrid International Plan of Action on Ageing (United Nations, 2002b), with its focus on changing social attitudes to foster healthy and active ageing (World Health Organization, 2012b), and the Age Friendly Cities programme (World Health Organization, 2007), which actively encourages inclusive built environments (World Health Organization, 2013b). However, making the Madrid Plan an enforceable international convention and rolling out Age Friendly Cities more widely would offer more genuine protection against negative ageing stereotypes and help foster environments for positive attitudes towards ageing. Likewise, the New Zealand Positive Ageing Strategy (Ministry of Social Policy, 2001) could evaluate ageing stereotypes and attitudes towards ageing and implement more effective ways of supporting positive ageing, as New Zealand faces unprecedented ageing. Ageing policies focus primarily on populations over the age of 65 years, and extending this focus to those in midlife, who are the older population of the near and medium future, would enable more effective planning for ageing societies.

One of the next steps required in attitude to ageing research with the AAQ is longitudinal measurement, in order to examine changes in attitudes over time (Bryant et al., 2014; Quinn et al., 2009). It is of importance to determine to what degree attitudes to ageing are predictive, or an outcome, of health and health behaviours. It is likely that a dynamic, reciprocal relationship exists between attitudes towards ageing and health. Positive attitudes probably have a role in protecting individuals from poor health outcomes in later life, and good health a role in supporting positive attitudes. Findings support the call for longitudinal research to be conducted into attitudes to ageing in conjunction with chronic conditions that affect adults as they age, across different cultures (Hubley & Russell, 2009).

It is paradoxical that increasing age has been associated with more positive attitudes towards ageing (Low et al., 2013a; Matthews et al., 2007). It could be expected that experiences of increasing isolation and health challenges with increasing age would be linked to more negative attitudes towards ageing. Rather, attitudes across AAQ domains have been reported as becoming more positive with increasing age, particularly attitudes to physical change (Matthews et al., 2007). Given these findings, it is possible that CHALICE participants will report more positive attitudes toward ageing in the future. However, the disillusionment phase of recovery

from the Canterbury earthquakes may have a negative bearing on attitudes towards ageing. With planned reassessment, the CHALICE study will be in a position to test the interaction of attitudes towards ageing over the life span, and their relationship to changing factors, such as health and health behaviours in the years following the earthquakes.

Tackling negative attitudes to ageing is important (Marques et al., 2014). If attitudes do have a predictive influence over time, as researchers such as Levy and colleagues have found (2000, 2002, 2003, 2004, 2005, 2009, 2012), targeted programmes to effectively challenge negative age stereotypes and enhance positivity towards ageing may assist in improving health and longevity. Interventions targeting negative attitudes of midlife adults toward their own ageing are a promising means of promoting successful ageing (Diehl et al., 2014). This could include education to develop individuals' awareness of ageing and to challenge age-stereotypes.

A more in-depth understanding is required of attitudes towards ageing in midlife. This age group is the largest in history to date and is predictably growing into the largest older population in the near future. Given that the prevalence of chronic conditions increases with age, those in midlife are faced with an increased likelihood of health issues as they age further. In addition to awareness-raising with individuals about attitudes towards their own ageing, it may also be helpful to educate health practitioners about links between diagnosis of chronic conditions and negative attitudes towards physical ageing. The role of frequent GP attendance with attitudes to ageing may be interesting to investigate further.

Awareness of Age-Related Change (Diehl & Wahl, 2010) and more particularly the revised Awareness of Ageing (Diehl et al., 2014) are found to be promising conceptual frameworks for attitude to ageing research. Awareness of Ageing usefully accommodates the understanding of attitudes to ageing and relationships to optimising health and wellbeing. As the revised framework incorporates a life span perspective, Awareness of Ageing offers a relevant conceptual model for understanding how individuals in midlife can be encouraged and supported to adopt health behaviours that extend healthy years as they age. With increased application and modification, the Awareness of Ageing framework will be able to be refined further. As a tool for assessing attitudes toward ageing in midlife, the AAQ was found to have internal consistency coefficients comparable to older samples and is recommended for further testing (Thorpe et al., 2014). The three domain structure of the multidimensional AAQ appeared to capture the often implicit complexities of attitudes toward ageing. It would be of

value to further examine the role of vitality in the AAQ, based on the work of Shenkin and colleagues (2014b).

Examining the role of psychological resilience in attitudes to ageing more closely would be useful. Perceiving less psychosocial loss and more psychological growth with ageing may be related to resilience, to help maintain, recover or improve mental and physical health following adversity or ill health (Fredrickson, Tugade, Waugh et al., 2003; Rutter, 1987; Ryff, Friedman, Fuller-Rowell et al., 2012; Tugade & Fredrickson, 2004; Windle, Woods & Markland, 2010). Attitudes are seen to contribute toward resilience, and coping with the challenges of ageing (Wiles et al., 2012). It is known that mental health can improve with age, while physical health declines (Stephens et al., 2010). The relationship between poor health, positive attitudes and wellbeing is worthy of more investigation (Ong, 2010), as positive attitudes and perceptions of wellbeing may help moderate poor health into the future.

9.9 Conclusions

Compared to research with similar-aged samples, CHALICE participants report more positive attitudes to ageing, as measured by the AAQ (Matthews et al., 2007) and the Experience of Ageing (Demakakos et al., 2007); similar attitudes to ageing, as measured by felt and ideal age (Rubin & Bernsten, 2006; Ward, 2010; Westerhof & Barrett, 2005); and similar underestimations in subjective life expectancy (O'Brien et al., 2005; O'Connell, 2011). The physical change domain of the AAQ shows the most significant relationships with socio-demographic factors, chronic conditions, depression, and selected health behaviours, followed by the psychosocial loss domain. These results confirm the importance of physical change and psychosocial loss domains of the AAQ with health satisfaction, health status and the presence of chronic disease (Kalfoss et al., 2010; Lucas-Carrasco et al., 2012).

The psychological growth domain is associated with frequent GP visits only, but only before controlling for potentially confounding socio-demographic and health factors. Psychological growth is not related to socio-demographic factor, physical chronic conditions, depression or the majority of health behaviours examined. The limited relationships found between psychological growth attitudes with health and health behaviours are surprising and noteworthy. In this study, psychological growth attitudes appear to be independent of the experience of health, which may tap into individual resilience, generativity, optimism about ageing, and a

belief in life itself (Keyes, 2009). These are likely qualities captured by the psychological growth subscale in the months during and shortly after the demanding Canterbury earthquakes.

Attitudes towards ageing are of increasing interest, as societies try to maximise the number of years of health and wellbeing (Quinn et al., 2009; World Health Organization, 2011). Governments and organisations are seeking to prolong healthy years, compress physical and mental ill health, and rein in burgeoning health spending. Knowledge of how attitudes to ageing operate and change could feed into targeted prevention and intervention strategies to help activate health-promoting pathways and interrupt health-damaging ones, assisting health-care professionals, social services and policy makers (Braveman, Egerter & Williams, 2011; Ong, 2010). This includes challenging negative age stereotypes, which reinforce individual negative attitudes toward ageing (Levy et al., 2000). Similar to subjective wellbeing, positive attitudes to ageing contribute to keeping individuals well and happy (Bryant et al., 2012; Diener & Chan, 2011; Stephens & Flick, 2010). Understanding and fostering positive attitudes to ageing at both individual and societal levels can contribute to a reduction of ill health, an improvement of wellbeing over the life span, and possibly to longer life.

In closing, profound population ageing is taking place around the world and in New Zealand. Ageing is a universal and inevitable part of life. Attitudes to ageing are a complex, personalised perspective on the experience of ageing through the life span. Research into attitudes towards ageing gives additional insight into the inner health and wellbeing of individuals, as well as their anticipated physical, psychological and social futures.

BIBLIOGRAPHY

- Aboderin, I., Archibald, G., Beard, J., Biggs, S., Blewitt, R., Bloom, D. E., . . . Daniels, N. (2012). Global Population Ageing: Peril or promise? In W. E. Forum (Ed.), *Program on the Global Demography of Aging* (Vol. 89): Harvard Initiative for Global Health.
- Abrams, D., Vaclair, C.-M., & Swift, H. (2011). Predictors of Attitude to Age across Europe. In Dept for Work and Pensions, (pp. 1-100): University of Kent.
- Ajzen, I., & Fishbein, M. (1977). Attitude-Behavior Relations: A theoretical analysis and review of empirical research. *Psychological Bulletin*, *84*(5), 888-918.
- Ajzen, I., & Fishbein, M. (1980). *Understanding Attitudes and Predicting Social Behavior*. Englewood Cliffs, NJ: Prentice Hall.
- Allen, P. D., Cherry, K. E., & Palmore, E. (2009). Self-Reported Ageism in Social Work Practitioners and Students. *Journal of Gerontological Social Work*, *52*(2), 124-134.
- Almeida, D. M., Serido, J., & McDonald, D. (2006). Daily Life Stressors of Early and Late Baby Boomers. In S. K. Whitbourne & S. L. Willis (Eds.), *The Baby Boomers Grow Up*. New York: Routledge (pp. 165-184). Mahwah, NJ: Lawrence Erlbaum Associates.
- Alpass, F., Towers, A., Stephens, C., Fitzgerald, E., Stevenson, B., & Davey, J. (2007). Independence, Well-being, and Social Participation in an Aging Population. *Annals of the New York Academy of Sciences*, *1114*(1), 241-250. doi: 10.1196/annals.1396.009.
- American Dietetic Association. (2005). Position paper of the American Dietetic Association: Nutrition across the spectrum of aging. *Journal of the American Dietetic Association*, *105*(4), 616-633. doi: 10.1016/j.jada.2005.02.026.
- American Psychiatric Association. (1994). *Diagnostic and Statistical Manual of Mental Disorders: DSM-IV*. 4th Edition. Washington, DC: American Psychiatric Association.
- Andersson, D., Magnusson, H., Carstensen, J., & Borgquist, L. (2011). Co-morbidity and Health Care Utilisation Five Years Prior to Diagnosis for Depression: A register-based study in a Swedish population. *BMC Public Health*, *11*(1), 552-560. doi: 10.1186/1471-2458-11-552
- Andrews. (1999). The Seductiveness of Agelessness. *Ageing and Society*, *19*(3), 301-318. doi: 10.1017/s0144686x99007369.
- Andrews, G., Poulton, R., & Skoog, I. (2005). Lifetime Risk of Depression: Restricted to a minority or waiting for most? *The British Journal of Psychiatry*, *187*(6), 495-496. doi: 10.1192/bjp.187.6.495.
- Anstey, K. J., Butterworth, P., Windsor, T. D., Burns, R., Sargent-Cox, K., von Sanden, C., . . . Kendig, H. (2007). The Value of Comparing Health Outcomes in Cohort Studies: An example of self-rated health in seven studies including 79,653 participants. *Australasian Journal on Ageing*, *26*(4), 194-200. doi: 10.1111/j.1741-6612.2007.00261.x.
- Armor, D., A., & Taylor, S. E. (1998). Situated Optimism: Specific outcome expectancies and self-regulation. *Advances in Experimental Social Psychology*, *30*, 309-379.
- Baars, J. (2009). Problematic Foundations: Theorizing time. In V. Bengtson, D. Gans, N. Putney & M. Silverstein (Eds.), *Handbook of Theories of Aging* (2nd edition, pp. 87-100). New York: Springer.

- Babor, T. F., Higgins-Biddle, J. C., Saunders, J. B., & Monteiro, M. G. (2001). AUDIT: The Alcohol Use Disorders Identification Test - Guidelines for use in primary care (second ed.). World Health Organization, Department of Mental Health and Substance Abuse, Geneva. WHO/MSD/MSB/01.6a.
- Ball, K., Berch, D. B., Helmers, K. F., Jobe, J. B., & Leveck, M. D. (2002). Effects of Cognitive Training Interventions with Older Adults: A randomized controlled trial. *Journal of the American Medical Association*, *288* (18), 2271-2281. doi:10.1001/jama.288.18.2271.
- Baltes, M. M., & Carstensen, L. L. (1996). The Process of Successful Ageing. *Ageing and Society*, *16*(4), 397-422.
- Baltes, M. M., Wahl, H.-W., & Schmid-Furstoss, U. (1990). The Daily Life of Elderly Germans: Activity patterns, personal control, and functional health. *Gerontology*, *45*, 173-179.
- Baltes, P. B. (1987). Theoretical Propositions of Life-Span Developmental Psychology: On the dynamics between growth and decline. *Developmental Psychology*, *23*(5), 611.
- Baltes, P. B. (1991). The Many Faces of Human Ageing: Toward a psychological culture of old age. *Psychological Medicine*, *21*(4), 837-854.
- Baltes, P. B., Staudinger, U. M., & Lindenberger, U. (1999). Lifespan psychology: Theory and application to intellectual functioning. *Annual Review of Psychology*, *50*(1), 471-507.
- Banks, J., Breeze, E., Lessof, C., & Nazroo, J. (2008). Living in the 21st Century: Older people in England *The 2006 English Longitudinal Study of Ageing (Wave 3)*. London: Institute for Fiscal Studies.
- Barak, B. (1998). Inner-Ages of Middle-Aged Prime-Lifers. *International Journal of Aging & Human Development*, *46*(3), 189-228.
- Barak, B. (2009). Age Identity: A cross-cultural global approach. *International Journal of Behavioral Development*, *33*(1), 2-11. doi: 10.1177/0165025408099485.
- Barak, B., & Gould, S. (1985). Alternative Age Measures: A research agenda. *Advances in Consumer Research*, *12*(1), 53-58.
- Barak, B., Mathur, A., Lee, K., & Zhang, Y. (2001). Perceptions of Age-Identity: A cross-cultural inner-age exploration. *Psychology & Marketing*, *18*(10), 1003-1029.
- Barak, B., & Schiffman, L. G. (1981). Cognitive Age: A non-chronological age variable. *Advances in Consumer Research*, *8*(1), 602-606.
- Barak, B., & Stern, B. (1986). Subjective Age Correlates: A research note. *The Gerontologist*, *26*(5), 571-578. doi: 10.1093/geront/26.5.571.
- Barak, B., Stern, B., & Gould, S. (1988). Ideal Age Concepts: An exploration. *Advances in Consumer Research*, *15*, 146-152.
- Barefoot, J. C., Brummett, B. H., Williams, R. B., Siegler, I. C., Helms, M. J., Boyle, S. H., . . . Mark, D. B. (2011). Recovery Expectations and Long-Term Prognosis of Patients with Coronary Heart Disease. *Archives of Internal Medicine*, *171*(10), 929-935. doi: 10.1001/archinternmed.2011.41.
- Barker, M., O'Hanlon, A., McGee, H. M., Hickey, A., & Conroy, R. M. (2007). Cross-Sectional Validation of the Aging Perceptions Questionnaire: A multidimensional instrument for assessing self-perceptions of aging. *BMC Geriatrics*, *7*(1), 9-22. doi: 10.1186/1471-2318-7-9.

- Barnes-Farrell, J. L., & Piotrowski, M. J. (1989). Workers Perceptions of Discrepancies between Chronological Age and Personal Age: You're only as old as you feel. *Psychology and Aging*, 4(3), 376-377.
- Barrett, A. E. (2003). Socioeconomic Status and Age Identity: The role of dimensions of health in the subjective construction of age. *Journals of Gerontology Series B-Psychological Sciences and Social Sciences*, 58(2), 101-109.
- Barrett, A. E. (2005). Gendered Experiences in Midlife: Implications for age identity. *Journal of Aging Studies*, 19(2), 163-183. doi: 10.1016/j.jaging.2004.05.002.
- Barth, J., Schumacher, M., & Hermann-Lingen, C. (2004). Depression as a Risk Factor for Mortality in Patients With Coronary Heart Disease: A meta-analysis. *Psychosomatic Medicine*, 66(6), 802-813. doi: 10.1097/01.psy.0000146332.53619.b2.
- Baum, S. K., & Boxley, R. L. (1983). Age Identification in the Elderly. *The Gerontologist*, 23(5), 532-537. doi: 10.1093/geront/23.5.532.
- Bekker, L. D., & Taylor, C. (1966). Attitudes Toward the Aged in a Multi-Generational Sample. *Journal of Gerontology*, 21(1), 115-118. doi: 10.1093/geronj/21.1.115.
- Bellón, J. Á., Delgado, A., De Dios Luna, J., & Lardelli, P. (1999). Psychosocial and Health Belief Variables Associated with Frequent Attendance in Primary Care. *Psychological Medicine*, 29(6), 1347-1357.
- Bengtson, V. L., Gans, D., Putney, N. M., & Silverstein, M. (Eds.). (2009). *Handbook of Theories of Aging* (2nd ed.). New York: Springer.
- Benitez-Silva, H., & Ni, H. (2008). Health Status and Health Dynamics in an Empirical Model of Expected Longevity. *Journal of Health Economics*, 27(3), 564-584.
- Benito-Leon, J., Louis, E. D., Rivera-Navarro, J., Medrano, M. J., Vega, S., & Bermejo-Pareja, F. (2010). Low Morale is Associated with Increased Risk of Mortality in the Elderly: A population-based prospective study (NEDICES). *Age and Ageing*, 39(3), 366-373. doi: 10.1093/ageing/afq028.
- Benyamini, Y., Idler, E. L., Leventhal, H., & Leventhal, E. A. (2000). Positive Affect and Function as Influences on Self-Assessments of Health: Expanding our view beyond illness and disability. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 55(2), 107-116. doi: 10.1093/geronb/55.2.107.
- Bennett, R., & Eckman, J. (1973). Attitudes Towards Aging: A critical examination of recent literature and implications for future research. In C. Eisdorfer & M. P. Lawton (Eds.), *The Psychology of Adult Development and Aging* (pp. 575-597). Washington: American Psychological Society.
- Bierman, A., Fazio, E. M., & Milkie, M. A. (2006). A Multifaceted Approach to the Mental Health Advantage of the Married: Assessing how explanations vary by outcome measure and unmarried group. *Journal of Family Issues*, 27(4), 554-582.
- Biggs, S., Phillipson, C., Leach, R., & Money, A. (2007). Baby Boomers and Adult Ageing: Issues for social and public policy. *Quality in Ageing and Older Adults*, 8(3), 32-40.
- Birren, J. E. (Ed.). (1999). *Theories of Aging: A personal perspective*. New York: Springer.
- Blakely, T., Shaw, C., Atkinson, J., Tobias, M., Bastiampillai, N., Sloane, K., . . . Cunningham, R. (2010). Cancer Trends: Trends in incidence by ethnic and socio-economic group, New Zealand 1981–2004. Wellington: University of Otago and Ministry of Health.

- Blakely, T., Tobias, M., Robson, B., Ajwani, S., Bonné, M., & Woodward, A. (2005). Widening Ethnic Mortality Disparities in New Zealand 1981–99. *Social Science & Medicine*, *61*(10), 2233-2251. doi: 10.1016/j.socscimed.2005.02.011.
- Blanchflower, D. G., & Oswald, A. J. (2008). Hypertension and Happiness across Nations. *Journal of Health Economics*, *27*(2), 218-233. doi: 10.1016/j.jhealeco.2007.06.002.
- Blau, Z. S. (1956). Changes in Status and Age Identification. *American Sociological Review*, *21*(2), 198-203.
- Bloom, D. E., Canning, D., Moore, M., & Song, Y. (2007). The Effect of Subjective Probabilities on Retirement and Wealth in the United States. *The WDA - HSG Discussion Paper Series on Demographic Issues* (No. 12688, pp. 1-41). Cambridge, MA: University of St Gallen. <http://www.nber.org/papers/w12688>.
- Bode, C., Taal, E., Westerhof, G. J., van Gessel, L., & van de Laar, M. (2012). Experience of Aging in Patients with Rheumatic Disease: A comparison with the general population. *Aging & Mental Health*, *16*(5), 666-672. doi: 10.1080/13607863.2011.651438.
- Bodner, E., & Lazar, A. (2008). Ageism among Israeli Students: Structure and demographic influences. *International Psychogeriatrics*, *20*(5), 1046-1058.
- Bohn, M. J., Babor, T. F., & Kranzler, H. R. (1995). The Alcohol Use Disorders Identification Test (AUDIT): Validation of a screening instrument for use in medical settings. *Journal of Studies on Alcohol and Drugs*, *56*(4), 423-432.
- Bohner, G., & Dickel, N. (2011). Attitudes and Attitude Change. *Annual Review of Psychology*, *62*, 391-417.
- Boston, J., & Davey, J. A. (Eds.) (2006). *Implications of Population Ageing: Opportunities and risks* (1st ed.). Wellington: Institute of Policy Studies.
- Bouchardy, C., Fioretta, G., Rapiti, E., Verkooijen, H. M., Rapin, C. H., Schmidlin, F., . . . Zanetti, R. (2008). Recent Trends in Prostate Cancer Mortality show a Continuous Decrease in Several Countries. *International Journal of Cancer*, *123*(2), 421-429. doi: 10.1002/ijc.23520.
- Bowles, C. (1986). Measure of Attitude toward Menopause using the Semantic Differential Model. *Nursing Research*, *35*(2), 81-85.
- Bowling, A., & Dieppe, P. (2005). What is Successful Ageing and Who should Define it? *British Medical Journal*, *331*(7531), 1548-1551.
- Bowling, A., & Iliffe, S. (2006). Which Model of Successful Ageing should be Used? Baseline findings from a British longitudinal survey of ageing. *Age and Ageing*, *35*, 607-614.
- Bradley, B. A., & Cubrinovski, M. (2011). Near-Source Strong Ground Motions Observed in the 22 February 2011 Christchurch Earthquake. *Seismological Research Letters*, *82*(6), 853-865. doi: 10.1785/gssrl.82.6.853.
- Braunholtz, S., Davidson, S., & King, S. (2004). Well? What do you think?: The second national Scottish survey of public attitudes to mental health, mental well-being and mental health problems. In M. Scotland (Ed.), *Health and Community Care Research Programme* (Vol. 44). Edinburgh: Scottish Executive Social Research.
- Braveman, P., Egerter, S., & Williams, D. R. (2011). The Social Determinants of Health: Coming of age. *Annual Review of Public Health*, *32*, 381-398.

- Breheny, M., & Stephens, C. (2001). The Importance of Attitudes in Predicting Hormone Replacement Therapy use by Mid-Aged Women in a New Zealand Community Sample. *Women & Health, 34*(1), 29-43.
- Breheny, M., Stephens, C., Mansvelt, J., & Horrell, B. (2011). Developing a Measure of Living Standards for Elders in New Zealand. Palmerston North: Massey University.
- Brim, O. G. (2000). MacArthur Foundation Study of Successful Midlife Development. *Inter-University Consortium for Political and Social Research, 20*(4), 1-5.
- Brim, O. G., Baltes, P. B., Bumpass, L. L., Cleary, P., D., Featherman, D. L., Hazzard, W. R., . . . Shweder, R. A. (1996). National Survey of Midlife Development in the United States (MIDUS), 1995-1996. In *Inter-University Consortium for Political and Social Research* (Ed.). Ann Arbor, MI.
- Britton, A., Shipley, M., Singh-Manoux, A., & Marmot, M. G. (2008). Successful Aging: The contribution of early-life and midlife risk factors. *Journal of the American Geriatrics Society, 56*(6), 1098-1105. doi: 10.1111/j.1532-5415.2008.01740.x.
- Bryant, C., Bei, B., Gilson, K., Komiti, 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/S1041610212000774.
- Bryant, C., Bei, B., Gilson, K.-M., Komiti, A., Jackson, H., & Judd, F. (2014). Antecedents of Attitudes to Aging: A study of the roles of personality and well-being. *The Gerontologist*. doi: 10.1093/geront/gnu041.
- Bryant, L. L., Beck, A., & Fairclough, D. L. (2000). Factors That Contribute to Positive Perceived Health in an Older Population. *Journal of Aging and Health, 12*(2), 169-192. doi: 10.1177/089826430001200202.
- Buckley, J. (2008). Baby Boomers, Obesity, and Social Change. *Obesity Research, 2*(2), 73-82. doi: 10.1016/j.orcp.2008.04.002.
- Bulanda, J. R., & Zhang, Z. M. (2009). Racial-Ethnic Differences in Subjective Survival Expectations for the Retirement Years. *Research on Aging, 31*(6), 688-709. doi: 10.1177/0164027509343533.
- Bultena, G. L., & Powers, E. A. (1978). Denial of Aging: Age identification and reference group orientations. *Journals of Gerontology, 33*(5), 748-754.
- Burger, J. M., & Palmer, M. L. (1992). Changes in and Generalization of Unrealistic Optimism Following Experiences with Stressful Events: Reactions to the 1989 California Earthquake. *Personality & Social Psychology Bulletin, 18*(1), 39-43. doi: 10.1177/0146167292181006.
- Bush, K., Kivlahan, D. R., McDonell, M. B., Fihn, S. D., & Bradley, K. A. (1998). The AUDIT Alcohol Consumption Questions (AUDIT-C): An effective brief screening test for problem drinking. *Archives of Internal Medicine, 158*(16), 1789-1795.
- Butler, R. (1969). Ageism: Another Form of Bigotry. *Gerontologist, 9*, 243-246.
- Campbell, M. L., Sheets, D., & Strong, P. S. (1999). Secondary Health Conditions among Middle-Aged Individuals with Chronic Physical Disabilities: Implications for unmet needs for services. *Assistive Technology, 11*(2), 105-122.
- Cancer Society of New Zealand. (2011). Cancer Statistics Retrieved 8/11/12. www.cancernz.org.nz/divisions/auckland/about/cancer-statisticsCached

- Canterbury Earthquake Recovery Authority. (2012). CERA Wellbeing Survey 2012. No. 20132, AC Nielsen, Christchurch.
- Carney, R. M., Freedland, K. E., Sheline, Y. I., & Weiss, E. S. (2009). Depression and Coronary Heart Disease: A review for cardiologists. *Clinical Cardiology*, *20*(3), 196-200.
- Carstensen, L. L. (2006). The Influence of a Sense of Time on Human Development. *Science*, *312*(5782), 1913-1915. doi: 10.1126/science.1127488.
- Carstensen, L. L., & Mikels, J. A. (2005). At the Intersection of Emotion and Cognition: Aging and the positivity effect. *Current Directions in Psychological Science*, *14*(3), 117-121.
- Carstensen, L. L., Scheibe, S., Ersner-Hershfield, H., Brooks, K. P., Turan, B., Ram, N., . . . Nesselrode, J. R. (2011). Emotional Experience Improves with Age: Evidence based on over 10 years of experience sampling. *Psychology and Aging*, *26*(1), 21-33. doi: 10.1037/a0021285.
- Chachamovich, E., Fleck, M., Laidlaw, K., & Power, M. (2008). Impact of Major Depression and Subsyndromal Symptoms on Quality of Life and Attitudes Toward Aging in an International Sample of Older Adults. *The Gerontologist*, *48*(5), 593-602. doi: 10.1093/geront/48.5.593.
- Chachamovich, E., Fleck, M. P., Trentini, C. M., Laidlaw, K., & Power, M. J. (2008). Development and Validation of the Brazilian Version of the Attitudes to Aging Questionnaire (AAQ): An example of merging classical psychometric theory and the Rasch measurement model. *Health and Quality of Life Outcomes*, *6*(5), 1-10.
- Chakravarty, E. F., Hubert, H. B., Krishnan, E., Bruce, B. B., Lingala, V. B., & Fries, J. F. (2012). Lifestyle Risk Factors Predict Disability and Death in Healthy Aging Adults. *The American Journal of Medicine*, *125*(2), 190-197. doi: 10.1016/j.amjmed.2011.08.006.
- Charles, S. T., Reynolds, C. A., & Gatz, M. (2001). Age-Related Differences and Change in Positive and Negative Affect over 23 Years. *Journal of Personality and Social Psychology*, *80*(1), 136-151.
- Cherry, K. E., & Palmore, E. (2008). Relating to Older People Evaluation (ROPE): A measure of self-reported ageism. *Educational Gerontology*, *34*(10), 849-861.
- Chida, Y., & Steptoe, A. (2008). Positive Psychological Well-Being and Mortality: A Quantitative Review of Prospective Observational Studies. *Psychosomatic Medicine*, *70*(7), 741-756. doi: 10.1097/PSY.0b013e31818105ba.
- Clare, L., Wilson, B. A., Carter, G., Roth, I., ., & Hodges, J. R. (2002). Assessing Awareness in Early-Stage Alzheimer's Disease: Development and piloting of the Memory Awareness Rating Scale. *Neuropsychological Rehabilitation*, *12*(4), 341-362.
- Costa, P. T., & McCrae, R. R. (1992). Normal Personality Assessment in Clinical Practice: the NEO Personality Inventory. *Psychological Assessment*, *4*(1), 5.
- Crano, W. D., & Prislin, R. (2006). Attitudes and Persuasion. *Annual Review of Psychology*, *57*, 345-374.
- Crimmins, E. M., & Beltrán-Sánchez, H. (2011). Mortality and Morbidity Trends: Is there compression of morbidity? *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, *66*(1), 75-86.
- Crimmins, E. M., Kim, J. K., & Solé-Auró, A. (2011). Gender Differences in Health: Results from SHARE, ELSA and HRS. *The European Journal of Public Health*, *21*(1), 81-91. doi: 10.1093/eurpub/ckq022.

- Cuddy, A. J. C., & Fiske, S. T. (2002). Doddering But Dear: Process, content, and function in stereotyping of older persons. In T. D. Nelson (Ed.), *Ageism: Stereotyping and prejudice against older persons* (pp. 3-26). Boston: MIT Press.
- Cuddy, A. J. C., Norton, M. I., & Fiske, S. T. (2005). This Old Stereotype: The pervasiveness and persistence of the elderly stereotype. *Journal of Social Issues, 61*(2), 267-285.
- Cummings, S. M., Kropf, N. P., & De Weaver, K. L. (2000). Knowledge of and Attitudes toward Aging among Non-Elders: Gender and race differences. *Journal of Women & Aging, 12*(1-2), 77-91.
- Cunningham, C. (2005). Ageing Research in New Zealand: An independent view report to Ministers (Draft). Wellington: Ministry of Social Development.
- Cunningham, C., Durie, M., Fergusson, D., Fitzgerald, E., Hong, B., Horwood, J., . . . Stevenson, B. (2002). Ngā Ahuatanga Noho o te Hunga Pakeke Māori: Living standards of older Māori. Wellington: Ministry of Social Development.
- Cutler, D. M., & Lleras-Muney, A. (2010). Understanding Differences in Health Behaviors by Education. *Journal of Health Economics, 29*(1), 1-28. doi: 10.1016/j.jhealeco.2009.10.003.
- Cyrus-Lutz, C., & Gaitz, C. M. (1972). Psychiatrists' Attitudes Toward the Aged and Aging. *The Gerontologist, 12*(2 Part 1), 163-167. doi: 10.1093/geront/12.2_Part_1.163.
- Dainese, S. M., Allemand, M., Ribeiro, N., Bayram, S., Martin, M., & Ehler, U. (2011). Protective Factors in Midlife: How do people stay healthy? *GeroPsych: The Journal of Gerontopsychology and Geriatric Psychiatry, 24*(1), 19-29.
- Danner, D. D., Snowdon, D. A., & Friesen, W. V. (2001). Positive Emotions in Early Life and Longevity: Findings from the Nun Study. *Journal of Personality and Social Psychology, 80*(5), 804-813. doi: 10.1037/0022-3514.80.5.804.
- Davey, J., & Glasgow, K. (2006). Positive Ageing – A critical analysis. *Policy Quarterly, 2*(4), 21-27.
- Dean, A. G., Sullivan, K. M., & Soe, M. M. (2011). OpenEpi: Open Source Epidemiologic Statistics for Public Health. www.OpenEpi.com Version 2.3.1.
- Delavande, A., & Rohwedder, S. (2011). Differential Survival in Europe and the United States: Estimates based on subjective probabilities of survival. *Demography, 48*(4), 1377-1400.
- Demakakos, P., Gjonca, E., & Nazroo, J. (2007). Age Identity, Age Perceptions, and Health - Evidence from the English Longitudinal Study of Ageing. *Healthy Aging and Longevity, 1114*(1), 279-287. doi: 10.1196/annals.1396.021.
- Demakakos, P., Hacker, E., & Gjonca, E. (2006). Perceptions of Ageing. In J. Banks, E. Breeze, C. Lessof & J. Nazroo (Eds.), *Retirement, Health and Relationships of the Older Population in England: The 2004 English Longitudinal Study of Ageing* (pp. 339 - 367). London: The Institute for Fiscal Studies.
- Demakakos, P., McMunn, A., & Steptoe, A. (2010). Wellbeing in Older Age: A multidimensional perspective. In J. Banks, C. Lessof, J. Nazroo, N. Rogers, M. Stafford & A. Steptoe (Eds.), *Financial Circumstances, Health and Wellbeing of the Older Population in England: The 2008 English Longitudinal Study of Ageing (Wave 4)* (pp. 115-177). London: The Institute for Fiscal Studies.
- Demakakos, P., Nazroo, J., Breeze, E., & Marmot, M. (2008). Socioeconomic Status and Health: The role of subjective social status. *Social Science, 67*(2), 330-340. doi: 10.1016/j.socscimed.2008.03.038.

- Demura, S., & Sato, S. (2003). Relationships between Depression, Lifestyle and Quality of Life in the Community Dwelling Elderly: A comparison between gender and age groups. *Journal of Physiological Anthropology and Applied Human Science*, 22(3), 159-166.
- Depaola, S. J., Griffin, M., Young, J. R., & Neimeyer, R. A. (2003). Death Anxiety and Attitudes towards the Elderly among Older Adults: The role of gender and ethnicity. *Death Studies*, 27(4), 335-354.
- Depp, C., & Jeste, D. (2006). Definitions and Predictors of Successful Aging: A comprehensive review of larger quantitative studies. *American Journal of Geriatric Psychiatry*, 14(1), 6-20.
- Depp, C., Vahia, I. V., & Jeste, D. (2010). Successful Aging: Focus on cognitive and emotional health. *Annual Review of Clinical Psychology*, 6(1), 527-550. doi: 10.1146/annurev.clinpsy.121208.131449.
- Di Castelnuovo, A., Costanzo, S., Bagnardi, V., Donati, M. B., Iacoviello, L., & de Gaetano, G. (2006). Alcohol Dosing and Total Mortality in Men and Women: An updated meta-analysis of 34 prospective studies. *Archives of Internal Medicine*, 166(22), 2437-2445.
- Diehl, M. K., & Wahl, H.-W. (2010). Awareness of Age-Related Change: Examination of a (mostly) unexplored concept. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 65B(3), 340-350. doi: 10.1093/geronb/gbp110.
- Diehl, M., Wahl, H. -W., Barrett, A. E., Brothers, A. F., Miche, M., Montepare, J. M., . . . Wurm, S. (2014). Awareness of Aging: Theoretical considerations on an emerging concept. *Developmental Review*, 1-21. doi: 10.1016/j.dr.2014.01.001.
- Diener, E., & Chan, M. Y. (2011). Happy People Live Longer: Subjective well-being contributes to health and longevity. *Applied Psychology: Health and Well-Being*, 3(1), 1-43. doi: 10.1111/j.1758-0854.2010.01045.x.
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction with Life Scale. *Journal of Personality Assessment*, 49(1), 71-75.
- Diewald, M., & Mayer, K. U. (2009). The Sociology of the Life Course and Life Span Psychology: Integrated paradigm or complementing pathways? *Advances in Life Course Research*, 14(1), 5-14.
- Dinkel, R. M. (1944). Attitudes of Children toward Supporting Aged Parents. *American Sociological Review*, 9(4), 370-381.
- Dixon, R. A. (2011). Enduring Theoretical Themes in Psychological Aging: Derivations, functions, perspectives and opportunities. In K. W. Schaie & S. L. Willis (Eds.), *Handbook of the Psychology of Aging* (7th ed., pp. 3-23). London: Elsevier.
- Dorahy, M. J. (2012). Psychological Distress Following the 2010 Christchurch Earthquake: A community assessment of two differentially affected suburbs. *Journal of Loss & Trauma*, 17(3), 203-217. doi: 10.1080/15325024.2011.616737.
- Drake, J. T. (1957). Some Factors Influencing Students' Attitudes toward Older People. *Social Forces*, 35(3), 266-271.
- Draper, B., Gething, L., Fethney, J., & Winfield, S. (1999). The Senior Psychiatrist Survey III: Attitudes towards Personal Ageing, Life Experiences and Psychiatric Practice. *Australian and New Zealand Journal of Psychiatry*, 33(5), 717-722.
- Dryden, R., Williams, B., McCowan, C., & Themessl-Huber, M. (2012). What Do We Know About Who Does and Does Not Attend General Health Checks? Findings from a

- narrative scoping review. *BMC Public Health*, 12(1), 723-746. doi: 10.1186/1471-2458-12-723.
- Dulin, P. L., Gavala, J., Stephens, C., Kostick, M., & McDonald, J. (2012). Volunteering predicts Happiness among Older Māori and Non-Māori in the New Zealand Health, Work, and Retirement Longitudinal Study. *Ageing & Mental Health*, 16(5), 617-624.
- Dulin, P. L., Stephens, C., Alpass, F., Hill, R. D., & Stevenson, B. (2011). The Impact of Sociocontextual, Physical and Lifestyle Variables on Measures of Physical and Psychological Wellbeing among Māori and non-Māori: The New Zealand Health, Work and Retirement Study. *Ageing and Society*, 31(8), 1406-1424. doi: 10.1017/S0144686X10001479.
- Dyall, L., Kepa, M., Hayman, K., Teh, R., Moyes, S., Broad, J. B., & Kerse, N. (2013). Engagement and Recruitment of Māori and non-Māori people of Advanced Age to LiLACS NZ. *Australian and New Zealand Journal of Public Health*, 37(2), 124-131.
- Dyall, L., Kerse, N., Hayman, K., & Keeling, S. (2011). Pinnacle of Life - Māori living to advanced age. *The New Zealand Medical Journal*, 124(1331), 75-86.
- Eagly, A. H., & Chaiken, S. (1993). *The Psychology of Attitudes*. Fort Worth, TX: Harcourt Brace Jovanovich College Publishers.
- Earthquake Commission, GNS Science, & Land Information New Zealand. (2012). New Zealand GeoNet Project. Retrieved 28.11.12. <http://www.geonet.org.nz/>.
- Eastin, M. S., & Guinsler, M. A. (2006). Worried and Wired: Effects of health anxiety on information-seeking and health care utilization behaviors. *Cyberpsychology & Behavior*, 9(4), 494-498. doi: 10.1089/cpb.2006.9.494.
- Edwards, W. J. W. (2010). *Taupāenui: Maori positive ageing*. PhD, Massey, Palmerston North.
- Elder, G. H. (1975). Age Differentiation and the Life Course. *Annual Review of Sociology*, 1, 165-190.
- Elder, G. H. (1985). *Life Course Dynamics: Trajectories and transitions, 1968-1980*. Ithaca, NY: Cornell University Press.
- Elder, T. E. (2007). Subjective Survival Probabilities in the Health and Retirement Study: Systematic biases and predictive validity *Michigan Retirement Research Center Research Paper* (Vol. 159). Michigan: University of Michigan.
- Enright, J., & Scobie, G. M. (2010). Healthy, Wealthy and Working: Retirement decisions of older New Zealanders (Vol. 10). Wellington: New Zealand Treasury.
- Erikson, E. H. (1950). *Childhood and Society*. New York: Norton.
- Falba, T. A., & Busch, S. H. (2005). Survival Expectations of the Obese: Is excess mortality reflected in perceptions? *Obesity*, 13(4), 754-761.
- Farlex. (2012). Medical Dictionary in *Free Dictionary*. Retrieved 1 Nov 2012. <http://medical-dictionary.thefreedictionary.com/>.
- Fergusson, D. M., & Horwood, J. L. (2001). The Christchurch Health and Development Study: Review of findings on child and adolescent mental health. *Australian and New Zealand Journal of Psychiatry*, 35(3), 287-296. doi: 10.1046/j.1440-1614.2001.00902.x.
- Fergusson, D. M., Horwood, L., Boden, J. M., & Mulder, R. T. (2014). Impact of a Major Disaster on the Mental Health of a Well-Studied Cohort. *Journal of the American Medical Association Psychiatry*. doi: 10.1001/jamapsychiatry.2014.652.

- Fergusson, D. M., & Woodward, L. J. (2002). Mental Health, Educational, and Social Role Outcomes of Adolescents with Depression. *Archives of General Psychiatry*, 59(3), 225-231. doi: 10.1001/archpsyc.59.3.225.
- Festinger, L. (1957). *A Theory of Cognitive Dissonance* (Vol. 2) Stanford: Stanford University Press.
- Folstein, M. F., Folstein, S. E., & McHugh, P. R. (1975). *Mini-Mental State (MMSE): A practical method for grading the cognitive state of patients for the clinician*. Oxford: Pergamon Press.
- Ford, E. S., Moriarty, D. G., Zack, M. M., Mokdad, A. H., & Chapman, D. P. (2001). Self-Reported Body Mass Index and Health-Related Quality of Life: Findings from the Behavioral Risk Factor Surveillance System. *Obesity Research*, 9(1), 21-31. doi: 10.1038/oby.2001.4.
- Fraboni, M., Saltstone, R., & Hughes, S. (1990). The Fraboni Scale of Ageism (FSA): An attempt at a more precise measure of ageism. *Canadian Journal on Aging/La Revue canadienne du vieillissement*, 9(01), 56-66. doi:10.1017/S0714980800016093.
- France, K., Lee, C., & Schofield, M. (1996). Hormone Replacement Therapy: Knowledge, attitudes, and well-being among middle-aged Australian women. *International Journal of Behavioral Medicine*, 3(3), 202-220.
- Fraser, G. E., & Shavlik, D. J. (2001). Ten Years of Life: Is it a matter of choice? *Archives of Internal Medicine*, 161(13), 1645-1652. doi: 10.1001/archinte.161.13.1645.
- Fredrickson, B. L., Tugade, M. M., Waugh, C. E., & Larkin, G. R. (2003). What Good are Positive Emotions in Crises? A prospective study of resilience and emotions following the terrorist attacks on the United States on September 11th, 2001. *Journal of Personality and Social Psychology*, 84(2), 365-376.
- Furstenberg, A. L. (2002). Trajectories of Aging: Imagined pathways in later life. *International Journal of Aging & Human Development*, 55(1), 1-24.
- Galambos, N. L., Turner, P. K., & Tilton-Weaver, L. C. (2005). Chronological and Subjective Age in Emerging Adulthood. *Journal of Adolescent Research*, 20(5), 538-556. doi: 10.1177/0743558405274876.
- Galasko, D., Bennett, D., Sano, M., Ernesto, C., Thomas, R., Grundman, M., & Ferris, S. (1997). An Inventory to Assess Activities of Daily Living for Clinical Trials in Alzheimer's Disease: The Alzheimer's Disease Cooperative Study. *Alzheimer Disease and Associated Disorders*, 11, 33-39.
- Gandek, B., Ware, J. E., Aaronson, N. K., Apolone, G., Bjorner, J. B., Brazier, J. E., . . . Prieto, L. (1998). Cross-Validation of Item Selection and Scoring for the SF-12 Health Survey in Nine Countries: Results from the IQOLA Project. International Quality of Life Assessment. *Journal of Clinical Epidemiology*, 51(11), 1171-1178.
- Gans, D., Putney, N. W., Bengston, V., & Silverstein, M. (2009). The Future of Theories of Aging. In V. Bengston, D. Gans, N. M. Putney & M. Silverstein (Eds.), *Handbook of Theories of Aging* (2nd ed., pp. 723-737). New York: Springer.
- Gattuso, S., & Saw, C. (1998). Reactions to Ageing Among Australian Students: A rural-urban comparison. *Australasian Journal on Ageing*, 17(1), 38-39.
- George, L. K., Mutran, E. J., & Pennybacker, M. R. (1980). The Meaning and Measurement of Age Identity. *Experimental Aging Research*, 6(3), 283-298.

- Gething, L. (1994). Health Professional Attitudes Towards Ageing and Older People: Preliminary report of the Reactions to Ageing Questionnaire. *Australasian Journal on Ageing, 13*(2), 77-81. doi: 10.1111/j.1741-6612.1994.tb00646.x.
- Gething, L., Fethney, J., McKee, K., Goff, M., Churchward, M., & Matthews, S. (2002). Knowledge, Stereotyping and Attitudes Towards Self-Ageing. *Australasian Journal on Ageing, 21*(2), 74-79.
- Gettings, L. (2010). Psychological Well-Being in Rheumatoid Arthritis: A review of the literature. *Musculoskeletal Care, 8*(2), 99-106. doi: 10.1002/msc.171.
- Gluth, S., Ebner, N. C., & Schmiedek, F. (2010). Attitudes toward Younger and Older Adults: The German Aging Semantic Differential. *International Journal of Behavioral Development, 34*(2), 147-158. doi: 10.1177/0165025409350947.
- Goldberg, L. R. (1999). A Broad-Band Width, Public Domain, Personality Inventory Measuring the Lower-Level Facets of Several Five-Factor Models. *Personality Psychology in Europe, 7*, 7-28.
- Goldberg, D., & Williams, P. (1988). *A User's Guide to the General Health Questionnaire*. Windsor, UK: NFER-Nelson.
- Goldsmith, R. E., & Heiens, R. A. (1992). Subjective Age: A test of five hypotheses. *Gerontologist, 32*(3), 312-317.
- Gray, L., & McGregor, J. (2003). Human Resource Development and Older Workers: Stereotypes in New Zealand. *Asia Pacific Journal of Human Resources, 41*(3), 338-353.
- Griffin, B., Hesketh, B., & Loh, V. (2012). The Influence of Subjective Life Expectancy on Retirement Transition and Planning: A longitudinal study. *Journal of Vocational Behavior, 81*(2), 129-137. doi: 10.1016/j.jvb.2012.05.005.
- Griffin, B., Loh, V., & Hesketh, B. (2013). A Mental Model of Factors associated with Subjective Life Expectancy. *Social Science & Medicine, 82*, 79-86. doi: 10.1016/j.socscimed.2013.01.026.
- Grundy, E., Fletcher, A., Smith, S., & Lamping, D. (2007). Successful Ageing and Social Interaction: A policy brief (pp. 1-8). London: International Longevity Centre-UK.
- Haan, M., Kaplan, G. A., & Camacho, T. (1987). Poverty and Health: Prospective evidence from the Alameda County Study. *American Journal of Epidemiology, 125*(6), 989-998.
- Halfon, N., & Hochstein, M. (2002). Life Course Health Development: An integrated framework for developing health, policy, and research. *Milbank Quarterly, 80*(3), 433-479.
- Hall, G. S. (1922). *Senescence: The last half of life*. New York: Appleton and Company.
- Hamermesh, D. S. (1985). Expectations, Life Expectancy, and Economic Behavior. *The Quarterly Journal of Economics, 100*(2), 389-408.
- Hamermesh, D. S., & Hamermesh, F. W. (1983). Does Perception of Life Expectancy reflect Health Knowledge. *American Journal of Public Health, 73*(8), 911-914.
- Harper, A., & Power, M. (1998). Development of the World Health Organization WHOQOL-BREF Quality of Life Assessment. *Psychological Medicine, 28*(3), 551-558.
- Harrison, T., Blozis, S., & Stuifbergen, A. (2008). Longitudinal Predictors of Attitudes toward Aging among Women with Multiple Sclerosis. *Psychology and Aging, 23*(4), 823-832. doi: 10.1037/a0013802.

- Hartman-Stein, P., & Potkanowicz, E. S. (2003). Behavioral Determinants of Healthy Aging: Good news for the baby boomer generation. *Online Journal of Issues in Nursing*, 8(2), 127-146.
- Havighurst, R. J. (1961). Successful Aging. *The Gerontologist*, 1(1), 8-13. doi: 10.1093/geront/1.1.8.
- Havighurst, R. J., Neugarten, B. L., & Bengtson, V. L. (1966). A Cross-National Study of Adjustment to Retirement. *Gerontologist*, 6(3), 137-138.
- Hayman, K., Kerse, N., Dyal, L., Kepa, M., Teh, R., Wham, C., . . . Connolly, M. J. (2012). Life and Living in Advanced Age: A Cohort Study in New Zealand-Te Puāwaitanga o Nga Tapuwae Kia Ora Tonu, LiLACS NZ: Study protocol. *BioMed Central Geriatrics*, 12(1), 33-46.
- Heckhausen, J., Dixon, R. A., & Baltes, P. B. (1989). Gains and Losses in Development throughout Adulthood as Perceived by Different Age Groups. *Developmental Psychology*, 25(1), 109-121.
- Heckhausen, J., & Krueger, J. (1993). Developmental Expectations for the Self and Most Other People: Age grading in three functions of social comparison. *Developmental Psychology*, 29(3), 539-548.
- Held, B. S. (2004). The Negative Side of Positive Psychology. *Journal of Humanistic Psychology*, 44(1), 9-46.
- Helmes, E. (2012). Attitudes toward Older Workers among Undergraduates: Does status make a difference? *Educational Gerontology*, 38(6), 391-399. doi: 10.1080/03601277.2011.559848.
- Helton, W. S., Head, J., & Kemp, S. (2011). Natural Disaster Induced Cognitive Disruption: Impacts on action slips. *Consciousness and Cognition*, 20(4), 1732-1737. doi: 10.1016/j.concog.2011.02.011.
- Henderson, T. L., Roberto, K. A., & Kamo, Y. (2010). Older Adults' Responses to Hurricane Katrina Daily Hassles and Coping Strategies. *Journal of Applied Gerontology*, 29(1), 48-69.
- Hendrick, T. A. M., Fischer, A. R. H., Tobi, H., & Frewer, L. J. (2013). Self-Reported Attitude Scales: Current practice in adequate assessment of reliability, validity, and dimensionality. *Journal of Applied Social Psychology*. doi: 10.1111/jasp.12147.
- Heo, M., Allison, D. B., Faith, M. S., Zhu, S., & Fontaine, K. R. (2012). Obesity and Quality of Life: Mediating effects of pain and comorbidities. *Obesity Research*, 11(2), 209-216.
- Hess, T. M. (2006). Attitudes toward Aging and their Effects on Behavior. In T. M. Hess, J. E. Birren & K. W. Schaie (Eds.), *Handbook of the Psychology of Aging* (Vol. 6, pp. 379-406).
- Hillcoat-Nallétamby, S., & Dharmalingam, A. (2004). *Solidarity across Generations in New Zealand: Factors influencing parental support for children within a three-generational context*. Hamilton: University of Waikato, Population Studies Centre.
- Holahan, C. K., Holahan, C. J., North, R. J., Hayes, R. B., Powers, D. A., & Ockene, J. K. (2013). Smoking Status, Physical Health-Related Quality of Life, and Mortality in Middle-Aged and Older Women. *Nicotine & Tobacco Research*, 15(3), 662-669. doi: 10.1093/ntr/nts182.
- Holroyd, A., Dahlke, S., Fehr, C., Jung, P., & Hunter, A. (2009). Attitudes Toward Aging: Implications for a caring profession. *Journal of Nursing Education*, 48(7), 374-380. doi: 10.3928/01484834-20090615-04.

- Holstein, M. B., & Minkler, M. (2003). Self, Society, and the "New Gerontology". *The Gerontologist*, 43(6), 787-796. doi: 10.1093/geront/43.6.787.
- Hoskins, I. (2002). *Active Ageing and Health: From the evidence to policy and practice*. Paper presented at the Ageing, Intergenerational Solidarity and Age-Specific Vulnerabilities workshop. Den Hague, NL: Network for Integrated European Population Studies.
- Hubley, A. M., & Hultsch, D. F. (1994). The Relationship of Personality Trait Variables to Subjective Age Identity on Older Adults. *Research on Aging*, 16(4), 415-439.
- Hubley, A. M., & Russell, L. B. (2009). Prediction of Subjective Age, Desired Age, and Age Satisfaction in Older Adults: Do some health dimensions contribute more than others? *International Journal of Behavioral Development*, 33(1), 12-21. doi: 10.1177/0165025408099486.
- Hummert, M. L. (2011). Age Stereotypes and Aging. In K. W. Schaie & S. L. Willis (Eds.), *Handbook of the Psychology of Aging* (7th ed., pp. 249-262). London: Elsevier.
- Hummert, M. L., Garstka, T. A., Shaner, J. L., & Strahm, S. (1995). Judgements about Stereotypes of the Elderly: Attitude, age associations and typicality ratings of young, middle-aged, and elderly adults. *Research on Aging*, 17(2), 168-190. doi: 10.1177/0164027595172004.
- Hurd, M. D., & McGarry, K. (1995). Evaluation of the Subjective Probabilities of Survival in the Health and Retirement Study. *Journal of Human Resources*, 30, S268-S292.
- Hurd, M. D., & McGarry, K. (2002). The Predictive Validity of Subjective Probabilities of Survival. *The Economic Journal*, 112(482), 966-985.
- Hussain, A., Weisæth, L., & Heir, T. (2011). Psychiatric Disorders and Functional Impairment among Disaster Victims after Exposure to a Natural Disaster: A population based study. *Journal of Affective Disorders*, 128(1-2), 135-141. doi: 10.1016/j.jad.2010.06.018.
- Idler, E. L., & Benyamini, Y. (1997). Self-Rated Health and Mortality: A review of 27 community studies. *Journal of Health and Social Behavior*, 38(1), 21-37.
- International Longevity Centre-UK, & World Health Organization. (2000). *A Life Course Approach to Health* (pp. 1-12). London, Geneva: ILCUK, WHO.
- Irby-Shasanmi, A. (2012). Predictors of Subjective Life Expectancy Among African Americans. *Research on Aging*, 35(3), 322-347. doi: 10.1177/0164027512442945.
- James, P. T., Leach, R., Kalamara, E., & Shayeghi, M. (2001). The Worldwide Obesity Epidemic. *Obesity Research*, 9(S11), 228S-233S. doi: 10.1038/oby.2001.123.
- Jang, Y., Poon, L. W., Kim, S.-Y., & Shin, B.-K. (2004). Self-Perception of Aging and Health among Older Adults in Korea. *Journal of Aging Studies*, 18(4), 485-496.
- Jensen, J., Spittal, M., & Krishnan, V. (2005). *ELSI Short Form: User manual for a direct measure of living standards*: Ministry of Social Development Wellington, New Zealand.
- Jetten, J., & Pachana, N. A. (2012). Not Wanting to Grow Old: A social identity model of identity change (SIMIC) analysis of driving cessation among older adults. In J. Jetten, C. Haslam & S. A. Haslam (Eds.), *The Social Cure: Identity, health and well-being* (pp. 97-113). East Sussex, UK: Psychology Press.
- Jia, H., & Lubetkin, E. I. (2010). Trends in Quality-Adjusted Life-Years Lost Contributed by Smoking and Obesity. *American Journal of Preventive Medicine*, 38(2), 138-144. doi: 10.1016/j.amepre.2009.09.043.

- Jones, P. W., Quirk, F. H., Baveystock, C. M., & Littlejohns, P. (1992). A Self-Complete Measure of Health Status for Chronic Airflow Limitation: The St. George's Respiratory Questionnaire. *American Journal of Respiratory and Critical Care Medicine*, 145(6), 1321-1327.
- Jopp, D., & Smith, J. (2006). Resources and Life-Management Strategies as Determinants of Successful Aging: On the protective effect of selection, optimization, and compensation. *Psychology and Aging*, 21(2), 253-265.
- Jorm, A. F., Windsor, T. D., Dear, K. B. G., Anstey, K. J., Christensen, H., & Rodgers, B. (2005). Age Group Differences in Psychological Distress: The role of psychosocial risk factors that vary with age. *Psychological Medicine*, 35(9), 1253-1263.
- Joung, I. M. A., van der Meer, J. B. W., & Mackenbach, J. P. (1995). Marital Status and Health Care Utilization. *International Journal of Epidemiology*, 24(3), 569-575. doi: 10.1093/ije/24.3.569.
- Joynt, K. E., Whellan, D. J., & O'Connor, C. M. (2003). Depression and Cardiovascular Disease: Mechanisms of interaction. *Biological Psychiatry*, 54(3), 248-261. doi: 10.1016/S0006-3223(03)00568-7.
- Jylhä, M. (2011). Self-Rated Health and Subjective Survival Probabilities as Predictors of Mortality. In R. G. Rogers & E. M. Crimmins (Eds.), *International Handbook of Adult Mortality* (Vol. 2, pp. 329-344). New York: Springer.
- Kafer, R. A., Rakowski, W., Lachman, M., & Hickey, T. (1980). Aging Opinion Survey: A report on instrument development. *The International Journal of Aging and Human Development*, 11(4), 319-333.
- Kaiser, A. (2013). A Review of Longitudinal Datasets on Ageing. *Journal of Population Ageing*, 6(2), 5-27.
- Kaiser, A., Holden, C., Beavan, J., Beetham, D., Benites, R., Celentano, A., . . . Dellow, G. (2012). The Mw 6.2 Christchurch Earthquake of February 2011: Preliminary Report. *New Zealand Journal of Geology and Geophysics*, 55(1), 67-90.
- Kalache, A., Aboderin, I., & Hoskins, I. (2002). Compression of Morbidity and Active Ageing: Key priorities for public health policy in the 21st century. *Bulletin of the World Health Organization*, 80(3), 243-244.
- Kalache, A., & Kickbusch, I. (1997, July-Aug 1997). A Global Strategy for Healthy Ageing. *World Health*, 50, 4-5.
- Kalavar, J. M. (2001). Examining Ageism: Do male and female college students differ? *Educational Gerontology*, 27(6), 507-513.
- Kalfoss, M. H., Low, G., & Molzahn, A. E. (2010). Reliability and Validity of the Attitudes to Ageing Questionnaire for Canadian and Norwegian Older Adults. *Scandinavian Journal of Caring Sciences*, 24, 75-85. doi: 10.1111/j.1471-6712.2010.00786.x.
- Karp, D. A. (1988). A Decade of Reminders: Changing age consciousness between 50 and 60 years old. *Gerontologist*, 28(6), 727-738.
- Kastenbaum, R., Derbin, V., Sabatini, P., & Artt, S. (1972). "The Ages of Me": Toward personal and interpersonal definitions of functional aging. *The International Journal of Aging and Human Development*, 3(2), 197-211.
- Katon, W., Lin, E. H. B., & Kroenke, K. (2007). The Association of Depression and Anxiety with Medical Symptom Burden in Patients with Chronic Medical Illness. *General Hospital Psychiatry*, 29(2), 147-155. doi: 10.1016/j.genhosppsych.2006.11.005.

- Kaufman, G., & Elder, G. H. (2002). Revisiting Age Identity - A research note. *Journal of Aging Studies, 16*(2), 169-176.
- Kavirajan, H., Vahia, I. V., Thompson, W. K., Depp, C., Allison, M., & Jeste, D. V. (2011). Attitude toward own Aging and Mental Health in Post-Menopausal Women. *Asian Journal of Psychiatry, 4*(1), 26-30. doi: 10.1016/j.ajp.2011.01.006.
- Keller, M. L., Leventhal, E. A., & Larson, B. (1989). Aging: The lived experience. *The International Journal of Aging and Human Development, 29*(1), 67-82.
- Keller-Olaman, S., Williams, S., Knight, R., & McGee, R. (2004). The Self-Rated Health of Women in Midlife: A cross sectional and longitudinal study of a New Zealand sample. *New Zealand Journal of Psychology, 33*(2), 68-77.
- Kemp, S., Helton, W. S., Richardson, J. J., Blampied, N. M., & Grimshaw, M. (2011). Sleeplessness, Stress, Cognitive Disruption and Academic Performance following the September 4, 2010, Christchurch Earthquake. *Australasian Journal of Disaster and Trauma Studies, 2*, 11-18.
- Keyes, C. L. M. (2009). The Black-White Paradox in Health: Flourishing in the face of social inequality and discrimination. *Journal of Personality, 77*(6), 1677-1706. doi: 10.1111/j.1467-6494.2009.00597.x.
- Keyes, C. L. M., & Simoes, E. J. (2012). To Flourish or Not: Positive mental health and all-cause mortality. *American Journal of Public Health, 102*(11), 2164-2172. doi: 10.2105/ajph.2012.300918.
- Keyes, C. L. M., & Westerhof, G. J. (2012). Chronological and Subjective Age Differences in Flourishing Mental Health and Major Depressive Episode. *Aging & Mental Health, 16*(1), 67-74. doi: 10.1080/13607863.2011.596811.
- Khaw, K.-T., Wareham, N., Bingham, S., Welch, A., Luben, R., & Day, N. (2008). Combined Impact of Health Behaviours and Mortality in Men and Women: The EPIC-Norfolk Prospective Population Study. *PLoS Med, 5*(1), e12-e12. doi: 10.1371/journal.pmed.0050012.
- Khwaja, A., Sloan, F., & Chung, S. (2007). The Relationship between Individual Expectations and Behaviors: Mortality expectations and smoking decisions. *Journal of Risk and Uncertainty, 35*(2), 179-201.
- Kilty, K. M., & Feld, A. (1976). Attitudes toward Aging and toward the Needs of Older People. *Journal of Gerontology, 31*(5), 586-594.
- Kim, S. H. (2009). Older People's Expectations Regarding Ageing, Health-Promoting Behaviour and Health Status. *Journal of Advanced Nursing, 65*(1), 84-91. doi: 10.1111/j.1365-2648.2008.04841.x.
- Kinsella, K., & He, W. (2009). *An Aging World: 2008* (Vol. 1, no. 1) Washington, DC: Government Printing Office.
- Kirchner, W., Lindbom, T., & Paterson, D. G. (1952). Attitudes toward the Employment of Older People. *Journal of Applied Psychology, 36*(3), 154-156.
- Kite, M. E., & Johnson, T. E. (1988). Attitudes toward Older and Younger Adults: A meta-analysis. *Psychology and Aging, 3*(3), 233-244. doi: 10.1037/0882-7974.3.3.233.
- Kite, M. E., Stockdale, G. D., Whitley, B. E., & Johnson, B. T. (2005). Attitudes Toward Younger and Older Adults: An updated meta-analytic review. *Journal of Social Issues, 61*(2), 241-266.

- Kleinspehn-Ammerlahn, A., Kotter-Grühn, D., & Smith, J. (2008). Self-Perception of Aging: Do subjective age and satisfaction with aging change with old age? *Journal of Gerontology: Psychological Sciences*, *63B*(6), 377-385.
- Kneale, D., Mason, M., & Bamford, S.-M. (2012). Population Ageing: Pomp or circumstance (pp. 1-41). London: International Longevity Centre - UK.
- Knight, R. G., Williams, S., McGee, R., & Olaman, S. (1998). Caregiving and Well-being in a Sample of Women in Midlife. *Australian and New Zealand Journal of Public Health*, *22*(5), 616-620.
- Knox, S. A., & Britt, H. (2004). The Contribution of Demographic and Morbidity Factors to Self-Reported Visit Frequency of Patients: A cross-sectional study of general practice patients in Australia. *BMC Family Practice*, *5*(1), 1-7. doi: 10.1186/1471-2296-5-17.
- Kogan, N. (1961). Attitudes Toward Old People: The development of a scale and an examination of correlates. *Journal of Abnormal and Social Psychology*, *62*(1), 44-54.
- Kornadt, A. E., & Rothermund, K. (2011). Contexts of Aging: Assessing Evaluative Age Stereotypes in Different Life Domains. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, *66B*(5), 547-556. doi: 10.1093/geronb/gbr036.
- Kornadt, A. E., & Rothermund, K. (2012). Internalization of Age Stereotypes into the Self-Concept via Future Self-Views: A general model and domain-specific differences. *Psychology and Aging*, *27*(1), 164-172.
- Kotter-Grühn, D., & Hess, T. M. (2012). The Impact of Age Stereotypes on Self-perceptions of Aging Across the Adult Lifespan. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, *67*(5), 563-571. doi: 10.1093/geronb/gbr153.
- Kotter-Grühn, D., Kleinspehn-Ammerlahn, A., Gerstorf, D., & Smith, J. (2009). Self-Perceptions of Aging Predict Mortality and Change with Approaching Death: 16-year longitudinal results from the Berlin Aging Study. *Psychology and Aging*, *24*(3), 654-667. doi: 10.1037/a0016510.
- Kristensen, P., Weisæth, L., & Heir, T. (2012). Bereavement and Mental Health after Sudden and Violent Losses: A review. *Psychiatry: Interpersonal & Biological Processes*, *75*(1), 76-97.
- Kuper, H., & Marmot, M. (2003). Intimations of Mortality: Perceived age of leaving middle age as a predictor of future health outcomes within the Whitehall II study. *Age and Ageing*, *32*(2), 178-184.
- Kushner, R. F., & Foster, G. D. (2000). Obesity and Quality of Life. *Nutrition*, *16*(10), 947-952. doi: 10.1016/S0899-9007(00)00404-4.
- Kutlu, Y., Kucuk, L., & Yildiz Findik, U. (2012). Psychometric Properties of the Turkish Version of the Fraboni Scale of Ageism. *Nursing & Health Sciences*, *14*(4), 464-471. doi: 10.1111/j.1442-2018.2012.00717.x.
- Lachman, M. E., & Agrigoroaei, S. (2010). Promoting Functional Health in Midlife and Old Age: Long-term protective effects of control beliefs, social support, and physical exercise. *PLoS one*, *5*(10), e13297.
- Ladin, K. (2012). Decomposing Differences in Utilization of Health Services between Depressed and Non-Depressed Elders in Europe. *European Journal of Ageing*, *9*(1), 51-64. doi: 10.1007/s10433-011-0213-5.

- Laditka, S. B., Fischer, M. L., James, N., & Segal, D. R. (2004). Attitudes about Aging and Gender among Young, Middle Age, and Older College-Based Students. *Educational Gerontology, 30*(5), 403-421. doi: 10.1080/03601270490433602.
- Laidlaw, K. (2010). Are Attitudes to Ageing and Wisdom Enhancement Legitimate Targets for CBT for Late Life Depression? *Nordic Psychology, 62*(2), 27-42.
- Laidlaw, K., Power, M. J., Schmidt, S., & WHOQOL-OLD Group. (2007). The Attitudes to Ageing Questionnaire (AAQ): Development and psychometric properties. *International Journal of Geriatric Psychiatry, 22*(4), 367-379.
- Laidlaw, K., Wang, D., Coelho, C., & Power, M. (2010). Attitudes to Ageing and Expectations for Filial Piety across Chinese and British Cultures: A pilot exploratory evaluation. *Aging & Mental Health, 14*(3), 283-292. doi: 10.1080/13607860903483060.
- Lakra, D. C., Ng, R., & Levy, B. R. (2012). Increased Longevity from Viewing Retirement Positively. *Ageing and Society, 32*(8), 1418-1427.
- Lang, I., Wallace, R. B., Huppert, F. A., & Melzer, D. (2007). Moderate Alcohol Consumption in Older Adults is Associated with Better Cognition and Well-Being than Abstinence. *Age and Ageing, 36*(3), 256-261. doi: 10.1093/ageing/afm001.
- Larsen, J. T., Hemenover, S. H., Norris, C. J., & Cacioppo, J. T. (2003). Turning Adversity to Advantage: On the virtues of the coactivation of positive and negative emotions. In L. G. Aspinwall & U. M. Staudinger (Eds.), *A Psychology of Human Strengths: Fundamental questions and future directions for a positive psychology* (pp. 211-225). Washington, DC: American Psychological Association.
- Lasher, K. P., & Faulkender, P. J. (1993). Measurement of Aging Anxiety: Development of the Anxiety about Aging Scale. *International Journal of Aging and Human Development, 37*(4), 247-259.
- Law, J., Laidlaw, K., & Peck, D. (2010). Is Depression Viewed as an Inevitable Consequence of Age? The "understandability phenomenon" in older people. *Clinical Gerontologist, 33*(3), 194-209. doi: 10.1080/07317111003773627.
- Lawton, M. P. (1975). Philadelphia Geriatric Center Morale Scale: A revision. *Journal of Gerontology, 30*(1), 85-89.
- Levy, B. R. (2003). Mind Matters: Cognitive and physical effects of aging self-stereotypes. *Journals of Gerontology Series B-Psychological Sciences and Social Sciences, 58*(4), 203-211.
- Levy, B. R. (2009). Stereotype Embodiment: A psychosocial approach to aging. *Current Directions in Psychological Science, 18*(6), 332-336.
- Levy, B. R., Hausdorff, J. M., Hencke, R., & Wei, J. Y. (2000). Reducing Cardiovascular Stress With Positive Self-Stereotypes of Aging. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences, 55*(4), 205-213. doi: 10.1093/geronb/55.4.P205.
- Levy, B. R., Kasl, S. V., & Gill, T. M. (2004). Image of Aging Scale. *Perceptual and Motor Skills, 99*(1), 208-210.
- Levy, B. R., & Leifheit-Limson, E. (2009). The Stereotype-Matching Effect: Greater influence on functioning when age stereotypes correspond to outcomes. *Psychology and Aging, 24*(1), 230-233. doi: 10.1037/a0014563.
- Levy, B. R., & Myers, L. M. (2004). Preventive Health Behaviors Influenced by Self-Perceptions of Aging. *Preventive Medicine, 39*(3), 625-629. doi: 10.1016/j.ypmed.2004.02.029.

- Levy, B. R., & Myers, L. M. (2005). Relationship between Respiratory Mortality and Self-Perceptions of Aging. *Psychology & Health, 20*(5), 553-564.
- Levy, B. R., Slade, M. D., & Kasl, S. V. (2002). Longitudinal Benefit of Positive Self-Perceptions of Aging on Functional Health. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences, 57*(5), 409-417.
- Levy, B. R., Slade, M. D., Kunkel, S. R., & Kasl, S. V. (2002). Longevity Increased by Positive Self-Perceptions of Aging. *Journal of Personality and Social Psychology, 83*(2), 261-270. doi: 10.1037//0022-3514.83.2.261.
- Levy, B. R., Slade, M. D., May, J., & Caracciolo, E. A. (2006). Physical Recovery after Acute Myocardial Infarction: Positive age self-stereotypes as a resource. *The International Journal of Aging and Human Development, 62*(4), 285-301.
- Levy, B. R., Slade, M. D., Murphy, T. E., & Gill, T. M. (2012). Association between Positive Age Stereotypes and Recovery from Disability in Older Persons. *Journal of the American Medical Association, 308*(19), 1972-1973. doi: 10.1001/jama.2012.14541.
- Levy, B. R., Zonderman, A. B., Slade, M. D., & Ferrucci, L. (2009). Age Stereotypes Held Earlier in Life Predict Cardiovascular Events in Later Life. *Psychological Science, 20*(3), 296-298. doi: 10.1111/j.1467-9280.2009.02298.x.
- Liang, J., & Bollen, K. A. (1983). The Structure of the Philadelphia Geriatric Center Morale Scale: A reinterpretation. *Journal of Gerontology, 38*(2), 181-189.
- Liao, K. L.-M., & Hunter, M. S. (1995). Knowledge and Beliefs about Menopause in a General Population Sample of Mid-Aged Women. *Journal of Reproductive and Infant psychology, 13*(2), 101-114.
- Linn, M. W., & Hunter, K. (1979). Perception of Age in the Elderly. *Journals of Gerontology, 34*(1), 46-52.
- Löckenhoff, C. E., de Fruyt, F., Terracciano, A., McCrae, R. R., De Bolle, M., Costa Jr, P. T.,... Alcalay, L. (2009). Perceptions of Aging across 26 Cultures and their Culture-Level Associates. *Psychology and Aging, 24*(4), 941-954.
- Logan, J. R., Ward, R., & Spitze, G. (1992). As Old as You Feel: Age identity in middle and later life. *Social Forces, 71*(2), 451-467.
- Low, G., Molzahn, A., & Kalfoss, M. (2013c). Cultural Frames, Qualities of Life, and the Aging Self. *Western Journal of Nursing Research, 36*(5), 643-663. doi: 10.1177/0193945913507635.
- Low, G., Molzahn, A. E., & Schopflocher, D. (2013b). Attitudes to Aging Mediate the Relationship Between Older Peoples' Subjective Health and Quality of Life in 20 Countries. *Health and Quality of Life Outcomes, 11*, 146. doi: 10.1186/1477-7525-11-146.
- Low, G., Ross, C., Stickland, M., Wilson, D., & Wong, E. (2013a). Perspectives of Aging Among Persons Living With Chronic Obstructive Pulmonary Disease. *Western Journal of Nursing Research, 35*(7), 884-904. doi: 10.1177/0193945913478844.
- Lucas-Carrasco, R., Laidlaw, K., Gómez-Benito, J., & Power, M. J. (2012). Reliability and Validity of the Attitudes to Ageing Questionnaire (AAQ) in Older People in Spain. *International Psychogeriatrics, 25*(3), 490-499. doi:10.1017/S1041610212001809.
- Ludwig, A., & Zimper, A. (2008). A Parsimonious Choquet Model of Subjective Life Expectancy. *Center for Retirement Research Working Paper no. 20* (pp. 1-38).
- Maier, H., & Smith, J. (1999). Psychological Predictors of Mortality in Old Age. *Journals of Gerontology Series B-Psychological Sciences and Social Sciences, 54*(1), 44-54.

- Malcolm, H. A. (2012). *Ageing Baby Boomers: Mid-life adults' attitudes, plans and expectations of their future ageing in New Zealand*. PhD, University of Auckland, Auckland.
- Maples, M. F., & Abney, P. C. (2006). Baby Boomers Mature and Gerontological Counseling comes of Age. *Journal of Counseling & Development, 84*(1), 3-9.
- Marcoen, A., Coleman, P., & O'Hanlon, A. (2012). Psychological Ageing. In J. Katz, S. Peace & S. Spurr (Eds.), *Adult Lives: A life course perspective* (pp. 78-88). Bristol: Policy Press.
- Marie, D., Fergusson, D. M., & Boden, J. M. (2012). The Links Between Ethnicity, Cultural Identity and Alcohol Use, Abuse and Dependence in a New Zealand Birth Cohort. *Alcohol and Alcoholism, 47*(5), 591-596. doi: 10.1093/alcalc/ags070.
- Markides, K. S., & Boldt, J. S. (1983). Change In Subjective Age among the Elderly: A longitudinal analysis. *The Gerontologist, 23*(4), 422-427. doi: 10.1093/geront/23.4.422.
- Marmot, M., Banks, J., Blundell, R., Lessof, C., & Nazroo, J. (2003). Health, Wealth and Lifestyles of the Older Population in England: The 2002 English Longitudinal Study of Ageing. London: Institute for Fiscal Studies.
- Marques, S., Swift, H. J., Vauclair, C.-M., Lima, M. L., Bratt, C., & Abrams, D. (2014). 'Being Old and Ill' Across Different Countries: Social status, age identification and older people's subjective health. *Psychology and Health, 1-16*. doi: 10.1080/08870446.2014.938742.
- Matthews, R., Lindner, H., & Collins, L. (2007). Attitudes towards Ageing: A survey conducted by the Australian Psychological Society. *InPsych: The Bulletin of the Australian Psychological Society, 29*(6), 22-25.
- Mayer, K. U. (2003). The Sociology of the Life Course and Lifespan Psychology: Diverging or converging pathways? In U. M. Staudinger & E. R. Lindenberger (Eds.), *Understanding Human Development: Dialogues with Lifespan Psychology* (pp. 463-481). Dordrecht, the Netherlands: Springer.
- McConatha, J. T., Hayta, V., Rieser-Danner, L., & McConatha, D. (2004). Turkish and U.S. Attitudes Toward Aging. *Educational Gerontology, 30*(3), 169-183. doi: 10.1080/03601270490272106.
- McConatha, J. T., Schnell, F., Volkwein, K., Riley, L., & Leach, E. (2003). Attitudes toward Aging: A comparative analysis of young adults from the United States and Germany. *The International Journal of Aging and Human Development, 57*(3), 203-215.
- McGee, H., Morgan, K., Hickey, A., Burke, H., & Savva, G. (2011). Quality Of Life And Beliefs About Ageing. In A. Barrett, G. Savva, V. Timonen & R.-A. Kenny (Eds.), *Fifty Plus in Ireland 2011* (pp. 265-292). Dublin: Trinity College.
- McGregor, J., & Gray, L. (2002). Stereotypes and Older Workers: The New Zealand experience. *Social Policy Journal of New Zealand, 18*, 163-177.
- McGuire, W. J. (1969). The Nature of Attitudes and Attitude Change. In G. Lindzey & E. Aronson (Eds.), *Handbook of Social Psychology* (Vol. 3, pp. 136-314). Boston: Addison-Wesley.
- McLaughlin, S. J., Jette, A. M., & Connell, C. M. (2012). An Examination of Healthy Aging Across a Conceptual Continuum: Prevalence estimates, demographic patterns, and validity. *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences, 67*(7), 783-787. doi: 10.1093/gerona/blr234.

- McWilliams, L. A., Goodwin, R. D., & Cox, B. J. (2004). Depression and Anxiety Associated with Three Pain Conditions: Results from a nationally representative sample. *Pain*, *111*(1–2), 77-83. doi: 10.1016/j.pain.2004.06.002.
- Meisner, B. A. (2012). A Meta-Analysis of Positive and Negative Age Stereotype Priming Effects on Behavior Among Older Adults. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, *67*(1), 13-17. doi: 10.1093/geronb/gbr062.
- Miche, M., Wahl, H.-W., Diehl, M., Oswald, F., Kaspar, R., & Kolb, M. (2013). Natural Occurrence of Subjective Aging Experiences in Community-Dwelling Older Adults. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 1-14. doi: 10.1093/geronb/gbs164.
- MIDUS. (2007). Subjective Aging: Importance of how old you feel. *Midlife in the United States Newsletter* (pp. 1-6). Madison WI: University of Wisconsin. <http://www.midus.wisc.edu/newsletter/>
- Ministry of Health. (2008). A Portrait of Health: Key results of the 2006/07 New Zealand Health Survey (pp. 361). Wellington: Ministry of Health.
- Ministry of Health. (2009). Alcohol Use in New Zealand: Key results of the 2007/08 New Zealand Alcohol and Drug Use Survey. Wellington: Ministry of Health.
- Ministry of Health. (2010a). Living Standards and Health: New Zealand 2006/07. Wellington: Ministry of Health.
- Ministry of Health. (2010b). Tobacco Use in New Zealand: Key findings from the 2009 New Zealand Tobacco Use Survey. Wellington: Ministry of Health. 978-0-478-37408-7.
- Ministry of Health. (2013a). National Screening Programme Coverage, 2013 quarter. Wellington, Ministry of Health. http://www.nsu.govt.nz/files/NCSP/Quarterly_Coverage_Report_March_2013_National.pdf
- Ministry of Health. (2013b). The Health of New Zealand Adults 2011/12: Key findings from the 2011/12 New Zealand Health Survey. Wellington.
- Ministry of Social Development. (2010). The Social Report. Wellington: Ministry of Social Development.
- Ministry of Social Policy. (2001). *The New Zealand Positive Ageing Strategy*. Wellington: Ministry of Social Policy.
- Mirowsky, J. (1997). Age, Subjective Life Expectancy, and the Sense of Control: The horizon hypothesis. *Journals of Gerontology Series B-Psychological Sciences and Social Sciences*, *52*(3), S125-S134.
- Mirowsky, J. (1999). Subjective Life Expectancy in the US: Correspondence to actuarial estimates by age, sex and race. *Social Science & Medicine*, *49*(7), 967-979.
- Mirowsky, J., & Ross, C. E. (2000). Socioeconomic Status and Subjective Life Expectancy. *Social Psychology Quarterly*, *63*(2), 133-151.
- Mock, S. E., & Eibach, R. P. (2011). Aging Attitudes Moderate the Effect of Subjective Age on Psychological Well-Being: Evidence from a 10-year longitudinal study. *Psychology and Aging*, *26*(4), 979-986. doi: 10.1037/a0023877.
- Mojon-Azzi, S., & Sousa-Poza, A. (2011). Hypertension and Life Satisfaction: An analysis using data from the Survey of Health, Ageing and Retirement in Europe. *Applied Economics Letters*, *18*(2), 183-187. doi: 10.1080/13504850903508291.

- Mokken, R. J., & Lewis, C. (1982). A Nonparametric Approach to the Analysis of Dichotomous Item Responses. *Applied Psychological Measurement, 6*(4), 417-430.
- Molzahn, A. E., & Gallagher, E. (2009). Attitudes of Older Adults to Aging. In D. Cloutier, L. T. Foster & D. Hultsch (Eds.), *Health and Aging in British Columbia: Vulnerability and Resilience* (pp. 271-281). Victoria: Western Geographical Press.
- Montepare, J. M. (1996a). An Assessment of Adults' Perceptions of their Psychological, Physical and Social Ages. *Journal of Clinical Geropsychology, 2*, 117-128.
- Montepare, J. M. (1996b). Actual and Subjective Age-Related Differences in Women's Attitudes toward their Bodies across the Life Span. *Journal of Adult Development, 3*(3), 171-182. doi: 10.1007/bf02285777.
- Montepare, J. M. (2009). Subjective Age: Toward a guiding lifespan framework. *International Journal of Behavioral Development, 33*(42), 42-46. doi: 10.1177/0165025408095551.
- Montepare, J. M., & Lachman, M. E. (1989). "You're Only as Old as You Feel": Self perceptions of age, fears of aging, and life satisfaction from adolescence to old age. *Psychology and Aging, 4*(1), 73-78.
- Montross, L. P., Depp, C., Daly, J., Reichstadt, J., & Golshan, S. (2006). Correlates of Self-Rated Successful Aging Among Community-Dwelling Older Adults. *American Journal of Geriatric Psychiatry, 14*(1), 43-51.
- Moss-Morris, R., Weinman, J., Petrie, K., Horne, R., Cameron, L., & Buick, D. (2002). The Revised Illness Perception Questionnaire (IPQ-R). *Psychology and Health, 17*(1), 1-16.
- Mulder, I., Tijhuis, M., Smit, H. A., & Kromhout, D. (2001). Smoking Cessation and Quality of Life: The effect of amount of smoking and time since quitting. *Preventive Medicine, 33*(6), 653-660. doi: 10.1006/pmed.2001.0941.
- Murphy, C. (2009). *Perception is Reality: The power of subjective age and its effect on physical, psychological, and cognitive health*. M.A., Brandeis University, Boston, MA.
- Mutran, E., & George, L. K. (1982). Alternative Methods of Measuring Role Identity- A research note. *Social Forces, 60*(3), 866-876. doi: 10.2307/2578399.
- Neugarten, B. L. (1968). Perspectives of the Aging Process: Developmental perspectives. *Psychiatric Research Reports, 23*, 42-48.
- Neugarten, B. L. (1969). Continuities and Discontinuities of Psychological Issues into Adult Life. *Human Development, 12*(2), 121-130.
- Neugarten, B. L., & Garron, D. C. (1959). Attitudes of Middle-Aged Persons Toward Growing Older. *Geriatrics, 14*(1), 21-24.
- Neugarten, B. L., & Moore, J. W. (1968). *Middle Age and Aging: A Reader in Social Psychology*. Chicago: University of Chicago Press.
- Ni Mhurchu, C., Bennett, D., Lin, R., Hackett, M., Jull, A., & Rodgers, A. (2004). Obesity and Health-Related Quality of Life: Results from a weight loss trial. *New Zealand Medical Journal, 117*(1207), 1-9. doi: 117-1207/1211/.
- Noone, J. (2008). "Cantabrians" Perspectives on Work, Retirement, and Retirement Planning: Some preliminary findings from the first wave of the Health, Work and Retirement Survey. Christchurch: 40+ Employment Support Trust.
- Noone, J., Alpass, F., & Stephens, C. (2010). Do Men and Women Differ in Their Retirement Planning? Testing a theoretical model of gendered pathways to retirement preparation. *Research on Aging, 32*(6), 715-738. doi: 10.1177/0164027510383531.

- Noone, J., O'Loughlin, K., & Kendig, H. (2012). Socioeconomic, Psychological and Demographic Determinants of Australian Baby Boomers' Financial Planning for Retirement. *Australasian Journal on Ageing*, 31(3), 194-197. doi: 10.1111/j.1741-6612.2012.00600.x.
- Noone, J., Stephens, C., & Alpass, F. M. (2009). Pre-Retirement Planning and Well-Being in Later Life: A prospective study. *Research on Aging*, 31(3), 295-317. doi: 10.1177/0164027508330718.
- North, C. S., Ringwalt, C. L., Downs, D., Derzon, J., & Galvin, D. (2011). Post-Disaster Course of Alcohol Use Disorders in Systematically Studied Survivors of 10 Disasters. *Archives of General Psychiatry*, 68(2), 173-180. doi: 10.1001/archgenpsychiatry.2010.131.
- Nutbeam, D. (1998). Health Promotion Glossary. *Health Promotion International*, 13(4), 349-364.
- O'Brien, C., Fenn, P., & Diacon, S. (2005). How Long do People Expect to Live? Results and implications (Vol. 1, pp. 1-55). Nottingham: Centre for Risk and Insurance Studies, Nottingham University Business School.
- O'Connell, A. (2011). How Long Do We Expect to Live? A Review of the evidence. *Journal of Population Ageing*, 4(3), 185-201. doi: 10.1007/s12062-011-9049-1.
- Oakley-Browne, M. A., Wells, J. E., & Scott, K. M. (2006). Te Rau Hinengaro: The New Zealand Mental Health Survey. Wellington: Ministry of Health.
- Öberg, P., & Tornstam, L. (2001). Youthfulness and Fitness - Identity ideals for all ages? *Journal of Aging and Identity*, 6(1), 15-29. doi: 10.1023/a:1009524612420.
- OECD. (2011). Subjective Well-Being, in *How's Life?: Measuring Well-being* (pp. 265-282): OECD Publishing. <http://dx.doi.org/10.1787/9789264121164-en>.
- OECD. (2013). Better Life Index Retrieved 10/03/14, <http://www.oecdbetterlifeindex.org/countries/new-zealand/>
- Ogedegbe, G. (2010). Labeling and Hypertension: It is time to intervene on its negative consequences. *Hypertension*, 56(3), 344-345.
- Olshansky, S. J., Biggs, S., Andrew, A. W., Davison, G. C., Fried, L., Gutman, G., . . . Butler, R. (2011). The Global Agenda Council on the Ageing Society: Policy Principles. *Global Policy*, 2(1), 97-105. doi: 10.1111/j.1758-5899.2010.00053.x.
- Ong, A. D. (2010). Pathways Linking Positive Emotion and Health in Later Life. *Current Directions in Psychological Science*, 19(6), 358-362. doi: 10.1177/0963721410388805.
- Ontario Welfare Council. (1971). *Opinions about People: Guidelines and manual for an instrument dealing with attitudes toward aging and the aged, for use in educational and training programs in the field of aging*: Toronto: Office on Aging, Homes for the Aged Branch.
- Opinions Market Research. (2014). All Right? Becoming all right? (pp. 1-8). Christchurch: Canterbury District Health Board, Mental Health Foundation, Healthy Christchurch.
- Opolski, M., & Wilson, I. (2005). Asthma and Depression: A pragmatic review of the literature and recommendations for future research. *Clinical Practice and Epidemiology in Mental Health*, 1(1), 1-18.
- Ory, M., Kinney Hoffman, M., Hawkins, M., Sanner, B., & Mockenhaupt, R. (2003). Challenging Aging Stereotypes: Strategies for creating a more active society. *American Journal of Preventive Medicine*, 25(3), 164-171.
- Ostir, G. V. (2004). Onset of Frailty in Older Adults and the Protective Role of Positive Affect. *Psychology and Aging*, 19(3), 402-408. doi: 10.1037/0882-7974.19.3.402.

- Ostir, G. V., Markides, K. S., Peek, M. K., & Goodwin, J. S. (2001). The Association between Emotional Wellbeing and the Incidence of Stroke in Older Adults. *Psychosomatic Medicine*, 63(2), 210-215.
- Ouwehand, C., de Ridder, D. T. D., & Bensing, J. M. (2007). A Review of Successful Aging Models: Proposing pro-active coping as an important additional strategy. *Clinical Psychology Review*, 27(8), 873-884.
- Pachana, N. A., Byrne, G. J., Siddle, H., Koloski, N., Harley, E., & Arnold, E. (2007). Development and Validation of the Geriatric Anxiety Inventory. *International Psychogeriatrics*, 19(1), 103-114.
- Palmore, E. (1977). Facts on Aging: A short quiz. *The Gerontologist*, 17(4), 315-320.
- Palmore, E. (1980). The Facts on Aging Quiz: A review of findings. *The Gerontologist*, 20(6), 669-672. doi: 10.1093/geront/20.6.669.
- Palmore, E. (1982). Attitudes toward the Aged: What we know and need to know. *Research on Aging*, 4(3), 333-348. doi: 10.1177/0164027582004003004.
- Papakostas, G. I., Öngür, D., Iosifescu, D. V., Mischoulon, D., & Fava, M. (2004). Cholesterol in Mood and Anxiety Disorders: Review of the literature and new hypotheses. *European Neuropsychopharmacology*, 14(2), 135-142. doi: 10.1016/S0924-977X(03)00099-3.
- Parnell, V., Worthington, M., Nursing, R., & Bender, M. (2001). My Body is Ugly Because it is Old: Ageism and its internalisation. *PSIGE British Psychological Society Newsletter*, 74, 12-18.
- Paterson, D. H., & Warburton, D. E. R. (2010). Physical Activity and Functional Limitations in Older Adults: A systematic review related to Canada's Physical Activity Guidelines. *International Journal of Behavioral Nutrition and Physical Activity*, 7(38), 1-22.
- Patterson, L. G., Forbes, K. E., & Peace, R. M. (2009). Happy, Stable and Contented: Accomplished ageing in the imagined futures of young New Zealanders. *Ageing and Society*, 29(3), 431-454.
- Peel, N. M., McClure, R. J., & Bartlett, H. P. (2005). Behavioral Determinants of Healthy Aging. *American Journal of Preventative Medicine*, 28(3), 298-304.
- Pepin, R., Segal, D. L., & Coolidge, F. L. (2009). Intrinsic and Extrinsic Barriers to Mental Health Care among Community-Dwelling Younger and Older Adults. *Ageing and Mental Health*, 13(5), 769-777.
- Perozek, M. (2008). Using Subjective Expectations to Forecast Longevity: Do survey respondents know something we don't know? *Demography*, 45(1), 95-113.
- Perry, B. (2009). Non-Income Measures of Material Wellbeing and Hardship: First results from the 2008 New Zealand Living Standards Survey, with international comparisons. Wellington: Ministry of Social Development.
- Peters, G. R. (1971). Self-Conceptions of the Aged, Age identification, and aging. *The Gerontologist*, 11(4 Part 2), 69-73. doi: 10.1093/geront/11.4_Part_2.69.
- Piazza, J. R., Charles, S. T., & Almeida, D. M. (2007). Living with Chronic Health Conditions: Age differences in affective well-being. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 62(6), 313-321.
- Pinquart, M., & Sorensen, S. (2000). Influences of Socioeconomic Status, Social Network, and Competence on Subjective Well-Being in Later Life: A meta-analysis. *Psychology and Aging*, 15(2), 187-224. doi: 10.1037//0882-7974.15.2.187.

- Piper, M. E. (2012). Smoking Cessation and Quality of Life: Changes in Life Satisfaction Over 3 Years Following a Quit Attempt. *Annals of Behavioral Medicine, 43*(2), 262-270. doi: 10.1007/s12160-011-9329-2.
- Pitama, S., Wells, J. E., Faatoese, A., Tikao-Mason, K., Robertson, P., Huria, T., . . . Cameron, V. A. (2011). A Kaupapa Māori Approach to a Community Cohort Study of Heart Disease in New Zealand. *Australian and New Zealand Journal of Public Health, 35*(3), 249-255.
- Polizzi, K. G., & Millikin, R. J. (2002). Attitudes toward the Elderly: Identifying problematic usage of ageist and over-extended terminology in research instructions. *Educational Gerontology, 28*(5), 367-377.
- Pond, R., Stephens, C., & Alpass, F. (2010a). How Health Affects Retirement Decisions: Three pathways taken by middle-older aged New Zealanders. *Ageing & Society, 30*(3), 527-545. doi:10.1017/S0144686X09990523.
- Pond, R., Stephens, C., & Alpass, F. (2010b). Virtuously Watching One's Health: Older adults' regulation of self in the pursuit of health. *Journal of Health Psychology, 15*(5), 734-743. doi: 10.1177/1359105310368068.
- Popham, F., & Mitchell, R. (2007). Self-Rated Life Expectancy and Lifetime Socio-Economic Position: Cross-sectional analysis of the British Household Panel Survey. *International Journal of Epidemiology, 36*(1), 58-65. doi: 10.1093/ije/dyl241.
- Popham, L. E., Kennison, S. M., & Bradley, K. I. (2011). Ageism and Risk-Taking in Young Adults: Evidence for a link between death anxiety and ageism. *Death Studies, 35*(8), 751-763.
- Potempa, K. M., Butterworth, S. W., Flaherty-Robb, M., K., & Gaynor, W. L. (2010). The Healthy Ageing Model: Health behaviour change for older adults. *Collegian, 17*(2), 51-55. doi: 10.1016/j.colegn.2010.04.008.
- Power, M., Kuyken, W., Orley, J., Hermann, H., Shofield, H., Murphy, B., . . . Mutambirwa, J. (1998). The World Health Organisation Quality of Life Assessment (WHOQOL) - Development and general psychometric properties. *Social Science and Medicine 46*(12), 1569-1585.
- Power, M., Quinn, K., & Schmidt, S. (2005). Development of the WHOQOL-Old module. *Quality of Life Research, 14*(10), 2197-2214.
- Pressman, S. D., & Cohen, S. (2005). Does Positive Affect Influence Health? *Psychological Bulletin, 131*(6), 925-971.
- Prislin, R., & Crano, W. D. (2008). Attitudes and Attitude Change: The fourth peak. In W. D. Crano & R. Prislin (Eds.), *Attitudes and Attitude Change* (pp. 3-18). New York: Psychology Press.
- Prochaska, T. R., Leventhal, E. A., Leventhal, H., & Keller, M. L. (1985). Health Practices and Illness Cognition in Young, Middle Aged, and Elderly Adults. *Journal of Gerontology, 40*(5), 569-578. doi: 10.1093/geronj/40.5.569.
- Prostate Cancer Taskforce. 2012. *Diagnosis and Management of Prostate Cancer in New Zealand Men: Recommendations from the Prostate Cancer Taskforce*. Wellington: Ministry of Health. [http://www.prostate.org.nz/documents/diagnosis-management-prostate-cancer-nz-men_\(3\).pdf](http://www.prostate.org.nz/documents/diagnosis-management-prostate-cancer-nz-men_(3).pdf).

- Pruchno, R. A., Wilson-Genderson, M., Rose, M., & Cartwright, F. (2010). Successful Aging: Early influences and contemporary characteristics. *Gerontologist*, *50*(6), 821-833. doi: 10.1093/geront/gnq041.
- Quine, S., & Carter, S. (2006). Australian Baby Boomers' Expectations and Plans for their Old Age. *Australasian Journal on Ageing*, *25*(1), 3-8. doi: 10.1111/j.1741-6612.2006.00147.x.
- Quinn, K. M., Laidlaw, K., & Murray, L. K. (2009). Older Peoples' Attitudes to Mental Illness. *Clinical Psychology & Psychotherapy*, *16*(1), 33-45.
- Radloff, L. S. (1977). The CES-D scale A self-report depression scale for research in the general population. *Applied Psychological Measurement*, *1*(3), 385-401.
- Raphael, B. (1986). *When Disaster Strikes: How individuals and communities cope with catastrophe*. New York: Basic Books.
- Rappaport, J. (1981). In Praise of Paradox: A social policy of empowerment over prevention. *American Journal of Community Psychology*, *9*(1), 1-25.
- Rashid, A., & Ab Manan, A. (2013). The Quality of life of Elderly Living in a Home for the Aged in Penang Malaysia. *Middle East Journal of Age and Ageing*, *10*(2), 1-9.
- Rehm, J., Gutjahr, E., & Gmel, G. (2001). Alcohol and All-Cause Mortality: A pooled analysis. *Contemporary Drug Problems*, *28*, 337-343.
- Reichstadt, J., Depp, C. A., Palinkas, L. A., Folsom, D. P., & Jeste, D. V. (2007). Building Blocks of Successful Aging: A focus group study of older adults' perceived contributors to successful aging. *American Journal of Geriatric Psychiatry*, *15*(3), 194-201.
- Reid, M. (2010). Hauora Waitaha I: Health profile for Māori in Canterbury (pp. 21). Christchurch: Canterbury District Health Board.
- Renouf, C. A. (2012). *Do the Psychological Effects of Ongoing Adversity in a Natural Context Accumulate or Lessen over Time? The case of the Canterbury Earthquakes*. M.A., University of Canterbury, Christchurch.
- Reynolds, S. L. (2008). Successful Aging in Spite of Bad Habits: Introduction to the special section on 'Life style and health expectancy'. *European Journal of Ageing*, *5*(4), 275-278. doi: 10.1007/s10433-008-0095-3.
- Reynolds, S. L., Saito, Y., & Crimmins, E. M. (2005). The Impact of Obesity on Active Life Expectancy in Older American Men and Women. *The Gerontologist*, *45*(4), 438-444.
- Robson, B., & Harris, R. (2007). *Hauora: Māori Standards of Health IV: A study of the years 2000-2005*. Wellington: Te Ropu Rangahau Hauora a Eru Pomare.
- Rosencranz, H. A., & McNevin, T. E. (1969). A Factor Analysis of Attitudes Toward the Aged. *The Gerontologist*, *9*(1), 55-59. doi: 10.1093/geront/9.1.55.
- Ross, C. E., & Mirowsky, J. (2002). Family Relationships, Social Support and Subjective Life Expectancy. *Journal of Health and Social Behavior*, *43*(4), 469-489.
- Rothermund, K., & J., B. (2003). Age Stereotypes and Self-Views in Later Life: Evaluating rival assumptions. *International Journal of Behavioral Development*, *27*(6), 549-554. doi: 10.1080/01650250344000208.
- Rourke, D. O., & Lakner, E. (1989). Gender Bias: Analysis of factors causing male under-representation in surveys. *International Journal of Public Opinion Research*, *1*(2), 164-176. doi: 10.1093/ijpor/1.2.164.
- Rowe, J. W., & Kahn, R. L. (1987). Human Aging: Usual and successful. *Science*, *237*(4811), 143-149.

- Rowe, J. W., & Kahn, R. L. (1997). Successful Aging. *Gerontologist*, 37(4), 433-440.
- Rubin, D. C., & Bernstein, D. (2006). People over forty feel 20% younger than their age: Subjective age across the lifespan. *Psychonomic Bulletin and Review*, 13(5), 776-780.
- Rugulies, R. (2002). Depression as a Predictor for Coronary Heart Disease: A review and meta-analysis. *American Journal of Preventive Medicine*, 23(1), 51-61. doi: 10.1016/S0749-3797(02)00439-7.
- Rupp, D. E., Vodanovich, S. J., & Credé, M. (2005). The Multidimensional Nature of Ageism: Construct validity and group differences. *The Journal of Social Psychology*, 145(3), 335-362. doi: 10.3200/socp.145.3.335-362.
- Rutter, M. (1987). Psychosocial Resilience and Protective Mechanisms. *American Journal of Orthopsychiatry*, 57(3), 316-331.
- Ryff, C. D., Friedman, E., Fuller-Rowell, T., Love, G., Miyamoto, Y., Morozink, J., . . . Tsenkova, V. (2012). Varieties of Resilience in MIDUS. *Social and Personality Psychology Compass*, 6(11), 792-806.
- Ryff, C. D. (1989). Beyond Ponce de Leon and Life Satisfaction: New directions in quest of successful ageing. *International Journal of Behavioral Development*, 12(1), 35-55. doi: 10.1177/016502548901200102.
- Ryff, C. D., & Singer, B. H. (2009). Understanding Healthy Aging: Key components and their integration. In V. Bengtson, D. Gans, N. Putney & M. Silverstein (Eds.), *Handbook of Theories of Aging* (2nd edition ed., pp. 117-144). New York: Springer.
- Salter, C. A., & Salter, C. d. L. (1976). Attitudes Toward Aging and Behaviors Toward the Elderly Among Young People as a Function of Death Anxiety. *The Gerontologist*, 16(3), 232-236. doi: 10.1093/geront/16.3.232.
- Sargent-Cox, K. A., Anstey, K. J., & Luszcz, M. A. (2012). Change in Health and Self-Perceptions of Aging over 16 Years: The role of psychological resources. *Health Psychology*, 31(4), 423-432. doi: 10.1037/a0027464.
- Sargent-Cox, K. A., Anstey, K. J., & Luszcz, M. A. (2013). Longitudinal Change of Self-Perceptions of Aging and Mortality. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*. doi: 10.1093/geronb/gbt005.
- Sarkisian, C. A., Hays, R. D., & Mangione, C. M. (2002). Do Older Adults Expect to Age Successfully? The association between expectations regarding aging and beliefs regarding healthcare seeking among older adults. *Journal of the American Geriatrics Society*, 50(11), 1837-1843. doi: 10.1046/j.1532-5415.2002.50513.x.
- Sarkisian, C. A., Hays, R. M., Berry, S., & Mangione, C. M. (2002). Development, Reliability, and Validity of the Expectations Regarding Aging (ERA-38) Survey. *The Gerontologist*, 42(4), 534-542. doi: 10.1093/geront/42.4.534.
- Sarkisian, C. A., Steers, W. N., Hays, R. D., & Mangione, C. M. (2005). Development of the 12-Item Expectations Regarding Aging Survey. *The Gerontologist*, 45(2), 240-248. doi: 10.1093/geront/45.2.240.
- Scaife, B., Gill, P. S., Heywood, P. L., & Neal, R. D. (2000). Socio-Economic Characteristics of Adult Frequent Attenders in General Practice: Secondary analysis of data. *Family Practice*, 17(4), 298-304. doi: 10.1093/fampra/17.4.298.
- Scales, J., & Scase, R. (2000). Fit and Fifty: A report prepared for the Economic and Social Research Council. Essex: Institute for Social and Economic Research, University of

- Essex and the University of Kent at Canterbury, UK. doi: 139.91.151.66/pdf/Intro007.pdf.
- Schafer, M. H., & Ferraro, K. F. (2011). Childhood Misfortune as a Threat to Successful Aging: Avoiding disease. *The Gerontologist*, 52(1), 111-120. doi: 10.1093/geront/gnr071.
- Schafer, M. H., & Shippee, T. P. (2010a). Age Identity in Context: Stress and the Subjective Side of Aging. *Social Psychology Quarterly*, 73(3), 245-264. doi: 10.1177/0190272510379751.
- Schafer, M. H., & Shippee, T. P. (2010b). Age Identity, Gender, and Perceptions of Decline: Does feeling older lead to pessimistic dispositions about cognitive aging? *Journals of Gerontology Series B-Psychological Sciences and Social Sciences*, 65(1), 91-96. doi: 10.1093/geronb/gbp046.
- Schluter, P. J., Spittlehouse, J. K., Cameron, V. A., Chambers, S., Garry, R., Jamieson, H. A., . . . Joyce, P. J. (2013). Canterbury Health, Ageing and Life Course (CHALICE) Study: Rationale, design and methodology. *New Zealand Medical Journal*, 126(1375), 1-15.
- Schwarz, N. (2007). Attitude Construction: Evaluation in context. *Social Cognition*, 25(5), 638-656.
- Schwarz, N., & Bohner, G. (2001). The Construction of Attitudes. In A. Tesser & N. Schwarz (Eds.), *Blackwell Handbook of Social Psychology: Intra-individual processes* (pp. 436-457). Oxford: Blackwell.
- Secombe, K., & Ishikuntz, M. (1991). Perceptions of Problems Associated with Aging: Comparisons among four older age cohorts. *Gerontologist*, 31(4), 527-533.
- Settersten Jr, R. A., & Mayer, K. U. (1997). The Measurement of Age, Age structuring, and the Life Course. *Annual Review of Sociology*, 23(1), 233-261.
- Sexton, E., King-Kallimanis, B. L., Morgan, K., & McGee, H. (2014). Development of the Brief Ageing Perceptions Questionnaire (B-APQ): A confirmatory factor analysis approach to item reduction. *BMC Geriatrics*, 14, 44. doi: 10.1186/1471-2318-14-44.
- Sheehan, D. V., Lecrubier, M. D., Sheehan, K. H., Amorim, P., Janavs, J., Weiller, E., . . . Dunbar, G. C. (1998). The Mini-International Neuropsychiatric Interview (M.I.N.I.): The development and validation of a structured diagnostic psychiatric interview for DSM-IV and ICD-10. *Journal of Clinical Psychiatry*, 59(suppl 20), 22-33.
- Shenkin, S. D., Laidlaw, K., Allerhand, M., Mead, G. E., Starr, J. M., & Deary, I. J. (2014a). Life Course Influences of Physical and Cognitive Function and Personality on Attitudes to Aging in the Lothian Birth Cohort 1936. *International Psychogeriatrics*, 26(9), 1417-1430. doi: 10.1017/S1041610214000301.
- Shenkin, S. D., Watson, R., Laidlaw, K., Starr, J. M., & Deary, I. J. (2014b). The Attitudes to Ageing Questionnaire: Mokken scaling analysis. *PLoS one*, 9(6), e99100. doi: 10.1371/journal.pone.0099100.
- Sherman, S. R. (1994). Changes in Age Identity: Self perceptions in middle and late life. *Journal of Aging Studies*, 8(4), 397-412.
- Siahpush, M., Spittal, M., & Singh, G. K. (2008). Happiness and Life Satisfaction Prospectively Predict Self-Rated Health, Physical Health, and the Presence of Limiting, Long-Term Health Conditions. *American Journal of Health Promotion*, 23(1), 18-26. doi: 10.4278/ajhp.061023137.

- Sibley, C. G., & Bulbulia, J. (2012). Faith after an Earthquake: A longitudinal study of religion and perceived health before and after the 2011 Christchurch New Zealand earthquake. *PLoS one*, 7(12), e49648. doi: 10.1371/journal.pone.0049648.
- Siegel, M., Bradley, E. H., & Kasl, S. V. (2003). Self-Rated Life Expectancy as a Predictor of Mortality: Evidence from the HRS and AHEAD surveys. *Gerontology*, 49(4), 265-271. doi: 10.1159/000070409.
- Silva, P. A. (1990). The Dunedin Multidisciplinary Health and Development Study: A 15 year longitudinal study. *Paediatric and Perinatal Epidemiology*, 4(1), 76-107.
- Smits, F. T. M., Brouwer, H. J., ter Riet, G., & van Weert, H. C. P. (2009). Epidemiology of Frequent Attenders: A 3-year historic cohort study comparing attendance, morbidity and prescriptions of one-year and persistent frequent attenders. *BMC Public Health*, 9(1), 36-42. doi: 10.1186/1471-2458-9-36.
- Spittlehouse, J. K., Joyce, P. R., Vierck, E., Schluter, P. J., & Pearson, J. F. (2014). Ongoing Adverse Mental Health Impact of the Earthquake Sequence in Christchurch, New Zealand. *Australian and New Zealand Journal of Psychiatry*, 0004867414527522.
- Statistics New Zealand. (2009). National Population Projections 2009 (base) - 2061 http://www.stats.govt.nz/browse_for_stats/population/estimates_and_projections/NationalPopulationProjections_HOTP09base-61/Commentary.aspx.
- Statistics New Zealand. (2011). Estimating Local Populations after the 2010/11 Canterbury Earthquakes. http://www.stats.govt.nz/browse_for_stats/population/estimates_and_projections/estimating-pop-after-chch-quakes-paper.aspx.
- Statistics New Zealand. (2012a). Quick Stats about Canterbury Region. <http://www.stats.govt.nz/Census/2006CensusHomePage/QuickStats/AboutAPlace/SnapShot.aspx?id=1000013&type=region&ParentID=1000009>.
- Statistics New Zealand. (2012b). Regional Summary Tables by Regional Council. <http://www.stats.govt.nz/~media/Statistics/Census/2006-reports/Regional%20Summary%20Tables/Regional-Summary-Tables-Regional-Council.xls>.
- Statistics New Zealand. (2013a, 16 April 2013). Narrowing Gap Between Māori and Non-Māori Life Expectancy, *Media Release*. <http://www.stats.govt.nz/~media/Statistics/Browse%20for%20stats/NZLifeTables/MR10-12/NZLifeTables10-12MR.pdf>.
- Statistics New Zealand. (2013b). New Zealand in Profile Retrieved 13 April, 2013, from <http://www.stats.govt.nz/~media/Statistics/browse-categories/snapshots-of-nz/nz-in-profile/2013/NZiP13-multiple.pdf>.
- Statistics New Zealand. (2013c). New Zealand Period Life Tables 2010-12. http://www.stats.govt.nz/browse_for_stats/health/life_expectancy/NZLifeTables_HOTP10-12.aspx.
- Statistics New Zealand. (2013d). Period Life Tables Retrieved 20 March, 2013, from http://www.stats.govt.nz/browse_for_stats/health/life_expectancy/period-life-tables.aspx.

- Statistics New Zealand. (2013e). Quick Stats about New Zealand Population and Dwellings. <http://www.stats.govt.nz/Census/2006CensusHomePage/QuickStats/quickstats-about-a-subject/nzs-population-and-dwellings/population-counts.aspx>.
- Stephan, Y., Chalabaev, A., Kotter-Grühn, D., & Jaconelli, A. (2013). "Feeling Younger, Being Stronger": An experimental study of subjective age and physical functioning among older adults. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 68(1), 1-7. doi: 10.1093/geronb/gbs037.
- Stephan, Y., Demulier, V., & Terracciano, A. (2012). Personality, Self-Rated Health, and Subjective Age in a Life-Span Sample: The moderating role of chronological age. *Psychology and Aging*, 27(4), 875-880. doi: 10.1037/a0028301.
- Stephens, C., Alpass, F., Baars, M., Towers, A., & Stevenson, B. (2010). SF-36v2 Norms for New Zealanders Aged 55–69 Years. *The New Zealand Medical Journal*, 123(1327), 1-11.
- Stephens, C., Alpass, F., & Towers, A. (2010). Economic Hardship Among Older People in New Zealand: The effects of low living standards on social support, loneliness, and mental health. *New Zealand Journal of Psychology*, 39(2), 49-55.
- Stephens, C., Alpass, F., Towers, A., Noone, J., & Stevenson, B. (2011). The Effects of Socio-Economic Inequalities of Working Life on Health: Implications for an ageing population. *Kotuitui: New Zealand Journal of Social Sciences Online*, 6(1-2), 73-85. doi: 10.1080/1177083x.2011.614264.
- Stephens, C., Alpass, F., Towers, A., & Stevenson, B. (2011). The Effects of Types of Social Networks, Perceived Social Support, and Loneliness on the Health of Older People Accounting for the Social Context. *Journal of Aging and Health*, 23(6), 887-911.
- Stephens, C., & Breheny, M. (2008). Menopause and the Virtuous Woman: The importance of the moral order in accounting for medical decision making. *Health* 12(1), 7-24. doi: 10.1177/1363459307083695.
- Stephens, C., & Flick, U. (2010). Health and Ageing - Challenges for health psychology research. *Journal of Health Psychology*, 15(5), 643-648. doi: 10.1177/1359105310368178.
- Stephoe, A., Dockray, S., & Wardle, J. (2009). Positive Affect and Psychobiological Processes Relevant to Health. *Journal of Personality*, 77(6), 1747-1776. doi: 10.1111/j.1467-6494.2009.00599.x.
- Stephoe, A., & Wardle, J. (2012). Enjoying Life and Living Longer. *Archives of Internal Medicine*, 172(3), 273-275. doi: 10.1001/archinternmed.2011.1028.
- Stephoe, A., Wardle, J., & Marmot, M. (2005). Positive Affect and Health-Related Neuroendocrine, Cardiovascular, and Inflammatory Processes. *Proceedings of the National Academy of Sciences*, 102(18), 6508-6512. doi: 10.1073/pnas.0409174102.
- Stephoe, A., Wright, C., Kunz-Ebrecht, S. R., & Iliffe, S. (2006). Dispositional Optimism and Health Behaviour in Community-Dwelling Older People: Associations with healthy ageing. *British Journal of Health Psychology*, 11(1), 71-84. doi: 10.1348/135910705x42850.
- Steverink, N., Westerhof, G. J., Bode, C., & Dittmann-Kohli, F. (2001). The Personal Experience of Aging, Individual Resources, and Subjective Well-Being. *Journals of Gerontology Series B-Psychological Sciences and Social Sciences*, 56(6), 364-373.
- Stewart, T. L., Chipperfield, J. G., Perry, R. P., & Weiner, B. (2012). Attributing Illness to 'Old Age': Consequences of a self-directed stereotype for health and mortality. *Psychology & Health*, 27(8), 881-897. doi: 10.1080/08870446.2011.630735.

- Stewart, J. J., Giles, L., Paterson, J. E., & Butler, S., J. (2005). Knowledge and Attitudes Towards Older People: New Zealand students entering health professional degrees. *Physical & Occupational Therapy in Geriatrics*, 23(4), 25-36. doi: 10.1080/J148v23n04_02.
- Strawbridge, W. J., Wallhagen, M. I., & Cohen, R. D. (2002). Successful Aging and Well-Being: Self-rated compared with Rowe and Kahn. *Gerontologist*, 42(6), 727-733.
- Stuart-Hamilton, I. (2000). Attitudes to Aging Questionnaires: Some evidence for potential bias in their design. *Educational Gerontology*, 26(1), 37-47.
- Sung, K.-T. (2004). Elder Respect among Young Adults: A cross-cultural study of Americans and Koreans. *Journal of Aging Studies*, 18(2), 215-230.
- Swiery, D., & Willitts, M. (2012). Attitudes to Age in Britain 2010/11. *DWP In-House Research* (Vol. 7). Sheffield: Department for Work and Pensions.
- Taylor, P. J., Kolt, G. S., Vandelanotte, C., Caperchione, C. M., Mummery, W. K., George, E. S., . . . Ribeiro, J. C. (2013). A Review of the Nature and Effectiveness of Nutrition Interventions in Adult Males – A guide for intervention strategies. *International Journal of Behavioral Nutrition and Physical Activity*, 10(1), 1-13.
- Taylor, R. E., Marshall, T., Mann, A., & Goldberg, D. P. (2012). Insecure Attachment and Frequent Attendance in Primary Care: A longitudinal cohort study of medically unexplained symptom presentations in ten UK general practices. *Psychological Medicine*, 42(4), 855-864.
- Teh, R. O., Kerse, N. M., Robinson, E. M., Doughty, R. N., & Whalley, G. A. (2012). Which Cardiovascular Risk Factors are Associated with Cardiovascular Disease and Predict Future Events in Advanced Age in New Zealand? *Australasian Journal on Ageing*, (33)(1), 14-21. doi: 10.1111/j.1741-6612.2012.00626.x.
- Terry, D. F., Pencina, M. J., Vasan, R. S., Murabito, J. M., Wolf, P. A., Hayes, M. K., . . . Benjamin, E. J. (2005). Cardiovascular Risk Factors Predictive for Survival and Morbidity-Free Survival in the Oldest-Old Framingham Heart Study Participants: Predictive factors for morbidity-free survival. *Journal of the American Geriatrics Society*, 53(11), 1944-1950. doi: 10.1111/j.1532-5415.2005.00465.x.
- The New Zealand Breast Cancer Foundation. (2011). Breast Cancer in New Zealand: Breast health information kit 2011. http://www.nzbcf.org.nz/images/stories/pdfs/2011/bhe_kit_2011_-_breast_cancer_facts_in_nz_april_final.pdf.
- Thorpe, A. M., Pearson, J., Schluter, P. J., Spittlehouse, J. K., & Joyce, P. R. (2014). Attitudes to Aging in Midlife are Related to Health Conditions and Mood. *International Psychogeriatrics*, 26(12), 2061–2071. doi:10.1017/S1041610214001550.
- Thorson, J. A., Whatley, L., & Hancock, K. (1974). Attitudes Toward the Aged as a Function of Age and Education. *The Gerontologist*, 14(4), 316-318. doi: 10.1093/geront/14.4.316.
- Tobias, M. I., Yeh, L. C., Salzano, S., Smith, C., Pinkerton, J., & Lash, B. (2009). Longer Life, Better Health? Trends in health expectancy in New Zealand 1996 - 2006. Wellington: Ministry of Health and Statistics New Zealand.
- Tobin, S. S., & Neugarten, B. L. (1961). Life Satisfaction and Social Interaction in the Aging. *Journal of Gerontology*, 16(4), 344-346.
- Tokor, A., & Murphy, V. M. (1967). Some Psychological Correlates of Subjective Life Expectancy. *Journal of Clinical Psychology*, 23(1), 21-24.

- Toothman, E. L., & Barrett, A. E. (2011). Mapping Midlife: An examination of social factors shaping conceptions of the timing of middle age. *Advances in Life Course Research, 16*(3), 99-111. doi: 10.1016/j.alcr.2011.08.003.
- Top, M., Eriş, H., & Kabalcıoğlu, F. (2012a). Quality of Life and Attitudes Toward Aging Among Older Women in Turkey. *Affilia, 27*(4), 406-419. doi: 10.1177/0886109912464477.
- Top, M., Eriş, H., & Kabalcıoğlu, F. (2012b). Quality of Life (QOL) and Attitudes Toward Aging in Older Adults in Şanlıurfa, Turkey. *Research on Aging, 1*-30. doi: 10.1177/0164027512447822.
- Towers, A., Stephens, C., Dulin, P., Kostick, M., Noone, J., & Alpass, F. (2011). Estimating Older Hazardous and Binge Drinking Prevalence Using AUDIT-C and AUDIT-3 Thresholds Specific to Older Adults. *Drug and Alcohol Dependence, 117*(2-3), 211-218. doi: 10.1016/j.drugalcdep.2011.02.008.
- Townsend, A., Wyke, S., & Hunt, K. (2008). Frequent Consulting and Multiple Morbidity: A qualitative comparison of 'high' and 'low' consulters of GPs. *Family Practice, 25*(3), 168-175. doi: 10.1093/fampra/cmn017.
- Trevisol, D. J., Moreiraa, L. B., Kerkhoffa, A., Fuchsa, S. C., & Fuchsa, F. D. (2011). Health-Related Quality of Life and Hypertension: A systematic review and meta-analysis of observational studies. *Journal of Hypertension, 29*(2), 179-188. doi: 10.1097/HJH.0b013e328340d76f.
- Trigg, R., Skevington, S. M., & Jones, R. W. (2007). How Can We Best Assess the Quality of Life of People with Dementia? The Bath Assessment of Subjective Quality of Life in Dementia (BASQID). *The Gerontologist, 47*(6), 789-797.
- Trigg, R., Watts, S., Jones, R., Tod, A., & Elliman, R. (2012). Self-Reported Quality of Life Ratings of People with Dementia: The role of attitudes to aging. *International Psychogeriatrics, 24*(7), 1085-1093. doi:10.1017/S1041610212000038.
- Tuckman, J., & Lorge, I. (1953). Attitudes toward Old People. *The Journal of Social Psychology, 37*, 249-260.
- Tuckman, J., & Lorge, I. (1958). Attitude toward Aging of Individuals with Experiences with the Aged. *The Journal of Genetic Psychology, 92*(2), 199-204.
- Tugade, M. M., & Fredrickson, B. L. (2004). Resilient Individuals use Positive Emotions to Bounce back from Negative Emotional Experiences. *Journal of Personality and Social Psychology, 86*(2), 320-333. doi: 10.1037/0022-3514.86.2.320.
- Tyack, M. T. (2009). *An Examination of the Properties and Clinical Utility of the Reactions to Ageing Questionnaire*. Doctor of Clinical Psychology, University of Queensland, Brisbane.
- Tyrer, P., Cooper, S., Crawford, M., Dupont, S., Green, J., Murphy, D., . . . Tyrer, H. (2011). Prevalence of Health Anxiety Problems in Medical Clinics. *Journal of Psychosomatic Research, 71*(6), 392-394. doi: 10.1016/j.jpsychores.2011.07.004.
- United Nations. (2002a). Report of the Second World Assembly on Ageing *Madrid International Plan of Action on Ageing, 2002*. Geneva: United Nations.
- United Nations. (2002b). Political Declaration and Madrid International Plan of Action on Ageing. New York: United Nations.
- United Nations. (2004). The United Nations on World Population in 2300. *Population and Development Review, 30*(1) 181-187. doi: 10.1111/j.1728-4457.2004.00009.x.

- United States Census Bureau. (2014). World Population Clock. *International database* Retrieved 28/07/14, 2014, from <http://www.census.gov/population/popclockworld.html>.
- University of Canterbury. (2012). Stress, Anxiety and Depression Common in Quake Hit Areas, on 23 October 2012. <http://www.scoop.co.nz/stories/GE1210/S00095/stress-anxiety-and-depression-common-in-quake-hit-areas.htm>.
- University of Otago Christchurch. (2011). CHALICE Canterbury Health, Ageing and LifeCourse Study Information Sheet. Christchurch: University of Otago Christchurch.
- Uotinen, V. (2005). I'm as Old as I Feel: Subjective age in Finnish adults. Academic dissertation. Jyväskylä: University of Jyväskylä. ISBN: 951-39-2394-0.
- Uotinen, V., Rantanen, T., & Suutama, T. (2005). Perceived Age as a Predictor of Old Age Mortality: A 13-year prospective study. *Age and Ageing*, 34(4), 368-372. doi: 10.1093/ageing/afi091.
- Uotinen, V., Rantanen, T., Suutama, T., & Ruoppila, I. (2006). Change in Subjective Age Among Older People Over an Eight-Year Follow-Up: "Getting older and feeling younger?". *Experimental Aging Research*, 32(4), 381-393. doi: 10.1080/03610730600875759.
- U.S. Preventative Services Task Force. (2008). Screening for Prostate Cancer: U.S. Preventive Services Task Force Recommendation Statement. *Annals of Internal Medicine*, 149(3), 185-191. doi: 10.7326/0003-4819-149-3-200808050-00008.
- Vahia, I. V., Thompson, W. K., Depp, C. A., Allison, M., & Jeste, D. V. (2011). Developing a Dimensional Model for Successful Cognitive and Emotional Aging. *International Psychogeriatrics*, 24(4), 515-523. doi: 10.1017/S1041610211002055.
- Vaillant, G. E. (2002). *Ageing Well: Surprising guideposts to a happier life from the landmark Harvard Study of Adult Development* (1st ed.). Boston: Little, Brown and Company.
- Vaillant, G. E., & Mukamal, K. K. (2001). Successful Aging. *The American Journal of Psychiatry*, 158(6), 839-847.
- van Doorn, C., & Kasl, S. V. (1998). Can Parental Longevity and Self-Rated Life Expectancy Predict Mortality Among Older Persons? Results from an Australian cohort. *Journals of Gerontology Series B-Psychological Sciences and Social Sciences*, 53(1), S28-S34.
- van Solinge, H., & Henkens, K. (2010). Living Longer, Working Longer? The impact of subjective life expectancy on retirement intentions and behaviour. *The European Journal of Public Health*, 20(1), 47-51. doi: 10.1093/eurpub/ckp118.
- Vedsted, P., & Christensen, M. B. (2005). Frequent Attenders in General Practice Care: A literature review with special reference to methodological considerations. *Public Health*, 119(2), 118-137. doi: 10.1016/j.puhe.2004.03.007.
- Veenhoven, R. (2008). Healthy Happiness: Effects of happiness on physical health and the consequences for preventive health care. *Journal of Happiness Studies*, 9(3), 449-469. doi: 10.1007/s10902-006-9042-1.
- Vogel, T., Brechat, P. H., Leprêtre, P. M., Kaltenbach, G., Berthel, M., & Lonsdorfer, J. (2009). Health Benefits of Physical Activity in Older Patients: A review. *International Journal of Clinical Practice*, 63(2), 303-320. doi: 10.1111/j.1742-1241.2008.01957.x.
- Wahlin, Å., MacDonald, S. W. S., de Frias, C. M., Nilsson, L.-G., & Dixon, R. A. (2006). How do Health and Biological Age influence Chronological Age and Sex Differences in Cognitive Aging: Moderating, mediating, or both? *Psychology and Aging*, 21(2), 318.

- Waldegrave, C., & Cameron, M. P. (2010). The Impact of Poverty on Wellbeing during Midlife. *New Zealand Journal of Psychology, 39*(2), 32-40.
- Waldegrave, C., & King, P. (2012). Aucklanders 50 and Over: A health, social, economic and demographic summary analysis of the life experiences of older Aucklanders. Auckland: Auckland Council.
- Waldegrave, C., & Koopman-Boyden, P. (Eds.). (2010). *Midlife New Zealanders Aged 40-64 in 2008: Enhancing Wellbeing in an Ageing Society*. Wellington, Hamilton: Family Centre, University of Waikato.
- Walker, & Mollenkopf, H. (2007). International and Multidisciplinary Perspectives on Quality of Life in Old Age: Conceptual issues *Social Indicators Research Series (31)*, 3 -13. Springer Netherlands.
- Walker, A. (2008). Commentary: The emergence and application of active aging in Europe. *Journal of Aging & Social Policy, 21*(1), 75-93. doi: 10.1080/08959420802529986.
- Walker, A. (2009). *Active Ageing: Its promise and potential*. Paper presented at the NZ Association of Gerontology and Age Concern New Zealand conference: Living in an Ageing Society - Shaping Tomorrow Today, 7-9 October 2009, Wellington, New Zealand.
- Walker, C. A. (2002). Transformative Aging: How mature adults respond to growing older. *Journal of Theory Construction and Testing, 6*(2), 109-116.
- Wang, D., Laidlaw, K., Power, M. J., & Shen, J. (2009). Older People's Belief of Filial Piety in China: Expectation and non-expectation. *Clinical Gerontologist, 33*(1), 21-38. doi: 10.1080/07317110903347771.
- Ward, R. A. (1977). The Impact of Subjective Age and Stigma on Older Persons. *Journal of Gerontology, 32*(2), 227-232. doi: 10.1093/geronj/32.2.227.
- Ward, R. A. (2010). How Old am I? Perceived age in middle and later life. *International Journal of Aging & Human Development, 71*(3), 167-184. doi: 10.2190/AG.71.3.a.
- Wardle, J., & Steptoe, A. (2003). Socioeconomic Differences in Attitudes and Beliefs about Healthy Lifestyles. *Journal of Epidemiology and Community Health, 57*(6), 440-443. doi: 10.1136/jech.57.6.440.
- Ware, J. E., Kosinski, M., Bjorner, J. B., Turner-Bowker, D. M., Gandek, B., & Maruish, M. E. (2007). *User's Manual for the SF-36-v2 Health Survey* (2nd ed.). Lincoln, RI: QualityMetric.
- 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*(3), 220-233.
- Weiss, D., & Lang, F. R. (2009). Thinking About My Generation: Adaptive effects of a dual age identity in later adulthood. *Psychology and Aging, 24*(3), 729-734.
- Weiss, L. J. & Malone, M. (2013). On the Critical List? A MetLife report on the health status of the 40+ population. In MetLife Mature Market Institute (Ed.), *White Paper*. New York: Center for Healthy Aging.
- Weiss, D., & Lang, F. R. (2012). "They" are Old but "I" Feel Younger: Age-group dissociation as a self-protective strategy in old age. *Psychology and Aging, 27*(1), 153-163. doi: 10.1037/a0024887.
- Wells, J. E., Bushnell, J. A., Hornblow, A. R., Joyce, P. R., & Oakley-Browne, M. A. (1989). Christchurch Psychiatric Epidemiology Study, Part I: Methodology and lifetime

- prevalence for specific psychiatric disorders. *Australian and New Zealand Journal of Psychiatry*, 23(3), 315-326. doi:10.3109/00048678909068289.
- Wells, J. E., & Sellman, D. (2010). AUDIT Age and Gender (dataset from J. E. Wells) *Te Rau Hinengaro The New Zealand Mental Health Survey*. Christchurch.
- Weltzien, M. (2007). A Lifespan Portrait of Aging Expectations and Health Behaviors. *UW-L Journal of Undergraduate Research*, X, 1-6. <http://www.uwlax.edu/URC/JUR-online/PDF/2007/weltzien.pdf>.
- Westerhof, G. J., & Barrett, A. E. (2005). Age Identity and Subjective Well-Being: A comparison of the United States and Germany. *Journal of Gerontology: Social Sciences*, 60B(3), S129-S136.
- Westerhof, G. J., Barrett, A. E., & Steverink, N. (2003). Forever Young? A comparison of age identities in the United States and Germany. *Research on Aging*, 25(4), 366-383. doi: 10.1177/0164027503252840.
- Westerhof, G. J., Whitbourne, S. K., & Freeman, G. P. (2012). The Aging Self in a Cultural Context: The relation of conceptions of aging to identity processes and self-esteem in the United States and the Netherlands. *Journals of Gerontology Series B-Psychological Sciences and Social Sciences*, 67(1), 52-60. doi: 10.1093/geronb/gbr075.
- Wham, C., Maxted, E., Dyall, L., Teh, R., & Kerse, N. (2012). Korero te Kai o te Rangatira: Nutritional wellbeing of Māori at the pinnacle of life. *Nutrition & Dietetics*, 69(3), 213-216.
- While, A., & Keen, L. (2012). The Effects of Statins on Mood: A review of the literature. *European Journal of Cardiovascular Nursing : Journal of the Working Group on Cardiovascular Nursing of the European Society of Cardiology*, 11(1), 85-96. doi: 10.1016/j.ejcnurse.2010.08.008.
- Whitbourne, S. K., & Collins, K. J. (1998). Identity Processes and Perceptions of Physical Functioning in Adults: Theoretical and clinical implications. *Psychotherapy*, 35(4), 519-530. doi: 10.1037/h0087666.
- White, M. A., O'Neil, P. M., Kolotkin, R. L., & Byrne, T. K. (2012). Gender, Race, and Obesity: Related quality of life at extreme levels of obesity. *Obesity Research*, 12(6), 949-955.
- Wiest, M., Schüz, B., Webster, N., & Wurm, S. (2011). Subjective Well-Being and Mortality Revisited: Differential effects of cognitive and emotional facets of well-being on mortality. *Health Psychology*, 30(6), 728-735.
- Wiles, J. L., Wild, K., Kerse, N., & Allen, R. E. S. (2012). Resilience from the Point of View of Older People: 'There's still life beyond a funny knee'. *Social Science and Medicine*, 74(3), 416-424. doi: 10.1016/j.socscimed.2011.11.005.
- Willcox, B. J., He, Q., Chen, R., Yano, K., Masaki, K. H., Grove, J. S., . . . Curb, J. D. (2006). Midlife Risk Factors and Healthy Survival in Men. *Journal of the American Medical Association*, 296(19), 2343-2350. doi: 10.1001/jama.296.19.2343.
- Williams, B., Anderson, M. C., & Day, R. (2007). Undergraduate Nursing Students' Knowledge of and Attitudes toward Aging: Comparison of context-based learning and a traditional program. *Journal of Nursing Education*, 46(3), 115-120.
- Willis, S. L., & Martin, M. (2005). *Middle Adulthood: A lifespan perspective*. Thousand Oaks, CA: Sage Publications.

- Windle, G., Markland, D. A., & Woods, R. T. (2008). Examination of a Theoretical Model of Psychological Resilience in Older Age. *Aging & Mental Health, 12*(3), 285-292. doi: 10.1080/13607860802120763.
- Windle, G., Woods, R. T., & Markland, D. A. (2010). Living with Ill-Health in Older Age: The role of a resilient personality. *Journal of Happiness Studies, 11*(6), 763-777.
- Winter, J. (2008). Expectations and Attitudes. In A. Borsch-Supan, A. Brugiavini, H. Jurges, J. Mackenbach, J. Siegrist & G. Weber (Eds.), *First Results from the Survey of Health, Ageing and Retirement in Europe (2004–2007) - Starting the Longitudinal Dimension* (pp. 306-311). Mannheim.: Mannheim Institute of Economics.
- Woo, J., Ho, S. C., & Wong, E. M. C. (2005). Depression is the Predominant Factor Contributing to Morale as Measured by the Philadelphia Geriatric Morale Scale in Elderly Chinese aged 70 Years and Over. *International Journal of Geriatric Psychiatry, 20*(11), 1052-1059.
- Wood, W. (2000). Attitude Change: Persuasion and social influence. *Annual Review of Psychology, 51*(1), 539-570.
- Woods, N. F., & Mitchell, E. S. (1997). Pathways to Depressed Mood for Midlife Women: Observations from the Seattle Midlife Women's Health Study. *Research in Nursing & Health, 20*(2), 119-129. doi: 10.1002/(sici)1098-240x(199704)20:2<119::aid-nur4>3.0.co;2-n.
- World Health Organization. (1948). World Health Organization Constitution, as adopted by the International Health Conference, 19-22 June 1946, New York. Geneva: WHO.
- World Health Organization. (1998). Life in the 21st Century: A vision for all (pp. 226). Geneva: WHO.
- World Health Organization. (2002). Active Ageing: A policy framework (pp. 60). Geneva: WHO.
- World Health Organization. (2007). Global Age Friendly Cities: A guide (pp. 77). Geneva: WHO.
- World Health Organization, US National Institute on Aging. (2011). Global Health and Aging. (No. 11-7737, pp. 1-32). Geneva: WHO.
- World Health Organization. (2012a). Good Health adds Life to Years: Global brief for World Health Day 2012. Geneva: WHO.
- World Health Organization. (2012b). Knowledge Translation on Ageing and Health: A framework for policy development (pp. 1-23) Geneva: WHO.
- World Health Organization. (2013a). 10 Facts on Ageing and the Life Course. Geneva: WHO. www.who.int/features/factfiles/ageing/en/.
- World Health Organization. (2013b). Age Friendly World: Adding life to years. Geneva: WHO. <http://www.agefriendlyworld.org/facts-figures>.
- Wray, S. (2007). Women Making Sense of Midlife: Ethnic and cultural diversity. *Journal of Aging Studies, 21*(1), 31-42.
- Wurm, S., Tomasik, M. J., & Tesch-Römer, C. (2010). On the Importance of a Positive View on Ageing for Physical Exercise among Middle-Aged and Older Adults: Cross-sectional and longitudinal findings. *Psychology and Health, 25*(1), 25-42.

- Yan, L. L., Daviglius, M. L., Liu, K., Pirzada, A., Garside, D. B., Schiffer, L., . . . Greenland, P. (2004). BMI and Health-Related Quality of Life in Adults 65 Years and Older. *Obesity Research, 12*(1), 69-76. doi: 10.1038/oby.2004.10.
- Yesavage, J. A., Brink, T. L., Rose, T. L., Lum, O., Huang, V., Adey, M., & von Leirer, O. (1983). Development and Validation of a Geriatric Depression Screening Scale: A preliminary report. *Journal of Psychiatric Research, 17*(1), 37-49.
- Young, Y., Frick, K. D., & Phelan, E. A. (2009). Can Successful Aging and Chronic Illness Coexist in the Same Individual? A multidimensional concept of successful aging. *Journal of the American Medical Directors Association, 10*(2), 87-92.
- Zaninotto, P., Falaschetti, E., & Sacker, A. (2009). Age Trajectories of Quality of Life Among Older Adults: Results from the English Longitudinal Study of Ageing. *Quality of Life Research, 18*(10), 1301-1309. doi: 10.1007/s11136-009-9543-6.
- Ziegelmann, J. P., Lippke, S., & Schwarzer, R. (2006). Subjective Residual Life Expectancy in Health Self-Regulation. *The Journal of Gerontology Series B: Psychological Sciences and Social Sciences, 61*(4), 195-201.
- Zhang, M., Wang, D., Power, M., & Laidlaw, K. (2011). The Features of Significant Others' Social Support and its Relationship with the Attitudes toward Aging Among Older Adults. *Xin Li Ke Xue / Chinese Journal of Psychology Science, 34*(2), 446.
- Zhang, W., & Niu, W. (2013). Creativity in the Later Life: Factors associated with the creativity of the Chinese elderly. *The Journal of Creative Behavior, 47*(1), 60-76. doi: 10.1002/jocb.23.
- Zola, I. K. (1962). Feelings About Age Among Older People. *Journal of Gerontology, 17*(1), 65-68. doi: 10.1093/geronj/17.1.65.

APPENDICES

	Page
Appendix A. CHALICE Ethics Approval	214
Appendix B. CHALICE Invitation Letters	217
Appendix C. CHALICE Information and Consent Form	220
Appendix D. CHALICE Module 1: SF-36 questions	229
Appendix E. CHALICE Module 2: Personal Health History	234
Appendix F. CHALICE Module 3: Attitudes and Beliefs	272
Appendix G. CHALICE Module 5: Mental Health Interview	289
Appendix H. Regression models of AAQ and Health Behaviours	323

Appendix A.

CHALICE ethics approval
Upper A Regional Ethics Committee

14 June 2010

Professor Peter Joyce
Department of Psychological Medicine
Christchurch School of Medicine & Health Sciences
P O Box 4345
Christchurch

Attn: Janet Spittlehouse

Dear Professor Joyce,

URA/10/03/021 Canterbury Health, Ageing and Life Course Study
Investigators Prof P Joyce, Mr C Lacey, A/Prof V Cameron, Prof S Chambers,
Dr R Gearry, Dr H Jamieson, Prof M Kennedy

This study was given ethical approval by the Upper South A Regional Ethics Committee on 14 June 2010.

Approved Documents

- Protocol version 2.1 dated 18.05.10
- Information sheet and Consent form version 2.1 dated 12.05.10
- CHALICE Yearly health questionnaire version 1.0 dated 02.06.10

This approval is valid until 31 August 2016, provided that Annual Progress Reports are submitted (see below).

Access to ACC

For the purposes of section 32 of the Accident Compensation Act 2001, the Committee is satisfied that this study is not being conducted principally for the benefit of the manufacturer or distributor of the medicine or item in respect of which the trial is being carried out. Participants injured as a result of treatment received in this trial will therefore be eligible to be considered for compensation in respect of those injuries under the ACC scheme.

Amendment

s and Protocol Deviations

All significant amendments to this proposal must receive prior approval from the Committee. Significant amendments include (but are not limited to) changes to:

- the researcher responsible for the conduct of the study at a study site
- the addition of an extra study site
- the design or duration of the study
- the method of recruitment
- information sheets and informed consent procedures.

Significant deviations from the approved protocol must be reported to the Committee as soon as possible.

Annual Progress Reports and Final Reports

The first Annual Progress Report for this study is due to the Committee by 30 June 2011. The Annual Report Form that should be used is available at www.ethicscommittees.health.govt.nz. Please note that if you do not provide a progress report by this date, ethical approval may be withdrawn.

A Final Report is also required at the conclusion of the study. The Final Report Form is also available at www.ethicscommittees.health.govt.nz.

Requirements for the Reporting of Serious Adverse Events (SAEs)

For the purposes of the individual reporting of SAEs occurring in this study, the Committee is satisfied that the study's monitoring arrangements are appropriate.

SAEs occurring in this study must be individually reported to the Committee within 7-15 days only where they:

- are *unexpected* because they are not outlined in the investigator's brochure, and
- are not defined study end-points (e.g. death or hospitalisation), and
- occur in patients located in New Zealand, and
- if the study involves blinding, result in a decision to break the study code.

There is no requirement for the individual reporting to ethics committees of SAEs that do not meet all of these criteria. However, if your study is overseen by a data monitoring committee, copies of its letters of recommendation to the Principal Investigator should be forwarded to the Committee as soon as possible.

Please see www.ethicscommittees.health.govt.nz for more information on the reporting of SAEs, and to download the SAE Report Form.

We wish you all the best with your study.

Yours sincerely

Alieke Dierckx

Administrator

Upper South A Regional Ethics Committee

Email: alieke_dierckx@moh.govt.nz

Appendix B.

CHALICE Invitation Letters



CHALICE

Canterbury Health, Ageing and Lifecourse Study

Tena koe

This is an invitation to be part of a new health research project to look at healthy ageing for Māori. We are trying to find out why Māori have shorter lives and what could help Māori to live healthier, longer lives.

You are being contacted because your name has been chosen from a random selection of the electoral roll. You do not have to take part in this study if you do not want to; it is completely voluntary. You have not been chosen because of your health being good or bad.

We are looking for Māori men or women who are about 50 years old, and who are living within the area of Mana Whenua ki Waitaha - Canterbury. Among the people who are 50 years old, we expect that there will be a full range of health, wellbeing and disease. We would like to be able to study this diversity of health issues.

By taking part in the CHALICE study you may help strengthen the health and wellbeing of future generations. Also, every participant will have the opportunity of receiving individual feedback regarding the results of some of the tests that are carried out during the assessment.

The Canterbury District Health Board supports this study and will allow their employees a day of sick leave to be taken to participate in this study.

If you are willing to take part in CHALICE, please complete the response form enclosed, and return it in the Freepost envelope. We will contact you soon.

If you have any questions about this health research or would prefer to respond to the questions by phone please call:

Anna Thorpe

CHALICE Interviewer

03 378 6541

Heoi ano

Anna Thorpe
CHALICE Interviewer
Department of Psychological Medicine
University of Otago, Christchurch

Dr Cameron Lacey (Te Ati Awa)
Lead Māori Investigator – CHALICE
Māori / Indigenous Health Institute (MIHI)
University of Otago, Christchurch



CHALICE

Canterbury Health, Ageing and Lifecourse Study

Dear

You are invited to participate in a major new study called CHALICE, which focuses on health, wellbeing, active ageing and disorders associated with ageing such as heart disease, hypertension, diabetes, dementia, bowel disease and depression. CHALICE is a longitudinal study which means that we would like to observe people over a number of years.

Over the next few years we need about three thousand people living in Canterbury who are about fifty years of age to participate in this study. Your name has been selected randomly from the Canterbury Electoral Rolls and we invite you to take part in CHALICE. This study has received ethical approval from the Upper South A Regional Ethics Committee. We are looking for a varied group of people from the Canterbury population and we very much hope that you will be able to take part.

A wide range of factors will be looked at, including lifestyle, diet, attitudes, environmental, social factors and genetics. This will involve donating a sample of blood, urine, photographing your eyes, an echocardiogram (ECG) of your heart, as well as answering a number of questions. Your samples and personal information will be kept strictly confidential. Please find enclosed an information sheet with more details.

Every participant will have the opportunity of being sent the results of some of the tests that are carried out during the assessment.

If you are willing to take part in CHALICE, please complete the response form enclosed, and return it in the Freepost envelope. We will contact you soon.

There is no obligation to participate in the study. If you do not want to take part, please tick the appropriate box and return the response form to us in the enclosed Freepost envelope.

We hope that you will agree to participate in CHALICE, as it is the first study concerned with the ageing of our population in Canterbury. The Canterbury District Health Board supports this study and will allow their employees a day of sick leave to be taken to participate in this study.

Please call us if you have any questions:

Anna Thorpe	CHALICE Interviewer	03 378 6541
Professor Peter Joyce	CHALICE Principal Investigator	03 378 6411

Yours sincerely

Anna Thorpe
CHALICE Interviewer

Professor Peter Joyce
Principal Investigator

Appendix C.

CHALICE Information and Consent Form



CHALICE

Canterbury Health, Ageing and Lifecourse Study

University of Otago, Christchurch

Telephone (03) 378 6468

INFORMATION SHEET

CHALICE; what is it?

CHALICE is a longitudinal study of health, wellbeing and active ageing. Longitudinal studies observe people over time. For CHALICE, we are inviting people from the Canterbury region to an initial assessment when they are about 50 years old. We intend to follow people up for the rest of their lives. This will involve a brief yearly questionnaire which can be answered by post, email or over the phone. In addition there will be a detailed assessment every 5 years.

CHALICE will examine a broad range of factors including diet, lifestyle, attitudes, personality, social factors and genetics which may impact on health. Within this study, we will attempt to better understand health, wellbeing and healthy ageing as well as factors related to diseases associated with ageing, including heart disease, high blood pressure, diabetes, stroke, dementia, eye disease, infections, bowel cancer and depression.

Why is it important?

The population of New Zealand is ageing. New Zealand's population of over 65 year olds is expected to double by 2050. In Canterbury this may happen twenty years earlier than other regions of New Zealand. We need to better understand both the determinants of health, wellbeing and active ageing as well as the risk factors for diseases associated with ageing.

Previous research has shown that Māori have different rates for a variety of diseases and a diminished life expectancy. Within this study we attempt to better understand differences in health, wellbeing and active ageing as well as differences in rates of diseases between Māori and non-Māori.

Who will take part?

We aim to see between one and three thousand people from 2010 and 2014, who are about fifty years of age and live in the Canterbury District Health Board area. People will be selected at random from the electoral rolls. The final numbers are related to our ability to obtain ongoing research funding. We want a fully representative sample of fifty year olds, including people of all ethnicities, cultures, social background, employment and health status. This allows us to better understand the full range of health issues in our population.

Taking part is voluntary and participants are free to withdraw at any time and for any reason. If you choose not to take part or choose to withdraw from the study, this will in no way affect your future health care. If you take part in CHALICE you can be notified of some of your results from the assessment day. We can also send a copy to your GP.

What will taking part involve?

Names of individuals will be obtained from the electoral rolls. Initial contact will be via a letter followed by phone calls. During this communication the study will be outlined, initial consent obtained and arrangements made, for people who agree to participate, to come to our assessment centre.

The assessment is made up of seven modules and will involve physical tests, interviews and questionnaires. Most of the questionnaires are completed with one of the research staff, while some may be completed alone or on a computer (with help if necessary). The seven modules are:

1. **Physical:** When you arrive you will be asked to complete two questionnaires and provide written consent (unless you have posted it to us). Our research nurse will then measure your height, weight, body composition (percentage of body muscle and fat), blood pressure and heart rate. After the physical measurements the nurse will prepare you for taking a photograph of the retina of your eye. Then our nurse will take a sample of blood (100mls) and you will also be asked to provide a urine sample (50mls). We will then take a photograph of the retina of your eye and provide you with breakfast.
2. **Health history:** One of our interviewers will then ask you a series of questions about yourself, your physical health history, your use of health services, and what prescribed and complementary medication (e.g. vitamin supplements) you are taking. Our interviewer will also ask about your alcohol and tobacco use.
3. **Family and social:** Our interviewer will then ask about whether others in your family have particular diseases. If some family members and/or close friends have particular diseases we will ask about how this impacts on you. Then our interviewer will ask you about friendships and relationships, your attitudes to health and ageing, recent life experiences, how you deal with stress, your beliefs and your experience of discrimination.
4. **Heart:** You will be accompanied to a heart health assessment at the hospital. We will take a recording of the electrical activity of the heart, an ECG (or electrocardiogram) and an ultrasound scan of the heart (echocardiography). These are painless, non-invasive tests.
5. **Mental health:** We will ask you about your mental health history, including questions about mood, anxiety, habits and substance use. You will be asked to complete a questionnaire about your personality.
6. **Cognitive:** We will then ask questions about memory and thinking and ask you to complete a brief computer based assessment of related tasks.
7. **Lifestyle:** The last module will be about your lifestyle history, with questions about exercise, diet and digestive health. After the assessment we will ask you to complete a log of the exercise you do over the following week and fill in a diary of the food you eat. We expect that the food and exercise diary may take approximately half an hour each day to complete.

You do not have to do all the physical tests, answer all the interview questions or every question in the questionnaires at one time and you can stop the interview at any time. The assessment will take approximately four hours.

As part of the study we wish, with your consent, to have access to your medical records, via your NHI (National Health Index) number. This will allow us to check on all diagnoses made by your doctors, to check on prescribed medications and number of visits to health services. The records will only be accessed by researchers involved with the CHALICE study. Other researchers, who may use CHALICE data and samples, will not have access to your medical records and they will not know your personal details. All data and samples will be identified by a number to ensure confidentiality.

We plan to invite all participants to an assessment every 5 years. Additionally, we will contact you each year to complete a questionnaire of about 30 questions, which will take approximately 15 minutes to complete.

Sample collection

We would like you to come to the assessment centre fasting (having not eaten or drunk anything overnight). Taking a fasting blood sample is desirable for some measures such as triglycerides (a type of fat present in the blood) and glucose levels (an indication of how well your body handles sugar). We will provide you with breakfast after the blood samples have been taken and morning tea later on. We would also like to take a urine sample for measurement of hormones and kidney function.

Some samples will be sent for immediate testing. Other samples will be frozen for later analysis, so the results will not be immediately available.

Any samples you give (including plasma and DNA extracted from your blood) will be securely stored for the duration of the study which could be as long as 50 years. Medical testing of samples is always advancing and we may be able to learn more about your health by further testing at a later date. Any samples that are still in storage at the end of the study will be disposed of. You have the option of choosing a standard disposal method or disposal with karakia (blessing).

Some samples provided by you may be sent to overseas laboratories and analysed by people who are collaborating with CHALICE. This is because we may need to do tests, relevant to our understanding of the processes involved in aging, which are not available within New Zealand laboratories. All the samples sent away for analysis will be identified by a number and will not have any personal information (for example, your name or date of birth) on it. Any samples or parts of a sample that are sent overseas and are not used will be returned to the CHALICE study for standard disposal or disposal with karakia (blessing).

Genetic considerations

Part of the blood sample you provide will be used to obtain samples of your DNA so that we can examine genetic factors. Genes are inherited portions of DNA that make each person an individual. For example, we have genes that may influence our height or hair colour and also the likelihood of developing certain health conditions and diseases that tend to run in families. Some health conditions and diseases have not yet been identified as being hereditary (genetic). CHALICE will investigate genetic make-up to look for any link. Some of your DNA will be collected from the blood sample to look for markers of disease and other traits of medical interest. DNA samples will only be analysed when we have collected samples from many people.

The genetic information gathered by CHALICE will be confidential. Most of the genetic studies proposed will measure minor genetic differences that have small effects. These effects can usually only be detected when comparing large groups of participants, and the genetic findings provide little or no information about personal risk of disease. Therefore, individual genetic data will not normally be released to research participants. However, in the unlikely event that we discover genetic markers for which there is good evidence of an adverse and treatable impact on health, we will seek advice via a medical geneticist about the need for confirmatory testing and appropriate feedback to you. Our researchers or sponsors will not claim any right, ownership or property of your individual genetic information or that of your kinship group, hapu or iwi.

Are there any advantages or risks to taking part?

The main advantage of taking part in this study is to increase understanding of why some people are healthy as they age and others are less so. We are investigating what determines physical and mental wellbeing and what protects some people from developing certain health conditions. This information may help strengthen the health and wellbeing of future generations. The research may allow us to predict the problems people have as they age and allow health care providers to develop appropriate treatments to improve peoples' wellbeing in the future.

People who take part will be able to have the results of some of the blood tests carried out. Furthermore, the ECG and the ultrasound scan of the heart will be reported on by a cardiologist (a heart specialist) and this report will also be available to you. Copies of your results can be provided to your GP if you wish.

Taking part in CHALICE should not cause you any harm. You may feel some discomfort when blood is taken, although our staff are specially trained to minimise the risk. To take a photograph of your eyes at the start of the visit, we will need to dilate the pupils of both eyes with eye drops. This is likely to lead to blurred vision and sensitivity to light in the eyes for a short time. While this is the case, interviews will continue. The dilating eye drops are used routinely in eye examinations, but in very rare situations, may aggravate pre-existing eye disease. In this unlikely event, we would arrange immediate access to an ophthalmologist.

If, during the course of CHALICE, we find previously undiagnosed health problems, we will inform you and, with your consent, provide a copy to your GP.

Confidentiality

This study has received ethical approval from the Upper South A Regional Ethics Committee. All the research data we collect will be anonymous. This means that any samples that are analysed or any data from the study that we report will be identified only by an ID number. No information which could personally identify you will be used in any reports or sample analysis based on this study. All data will be stored securely.

Can people agree to take part and then change their mind?

Participation in this study is entirely voluntary. If you choose not to participate, you don't have to give a reason why. If you do participate, you are free to withdraw from the study at any time without having to give a reason. People who withdraw from the study will have the option of having their stored blood and urine samples destroyed, including the option of a karakia (blessing) before disposal. However, it is not possible for data that has already been collected to be removed from our database.

CHALICE is a long-term research project. It will be very helpful to have participants' involvement for the longer term, as we are planning to re-assess participants every 5 years. This will help us to understand how people age, what the risk factors might be and what may protect people from illness. This long-term aspect is similar to other valued longitudinal studies in New Zealand.

Each 5 years when we undertake further detailed assessments we will ask for further consent. It is possible that other related research projects will be added to the study. Any such study would require further ethical approval and your consent.

Compensation

In the unlikely event of a physical injury as a result of your participation in this study, you may be covered by ACC under the 2002 Injury Prevention, Rehabilitation and Compensation Act. ACC assesses each case individually. Cover and compensation is not automatic. There is no cover for mental injury, unless it is the result of physical injury. If you have ACC cover, this will generally affect your right to sue the research investigators. If you have any questions about ACC, contact your nearest ACC office or the investigator. You are also advised to check whether participation in this study would affect any indemnity cover you have or are considering, such as medical insurance, life insurance and superannuation.

If an interpreter is requested

Participants will need to be reasonably fluent in English; however an interpreter may be available.

English	I wish to have an interpreter	Yes	No
Deaf	I wish to have a NZ sign language interpreter	Yes	No
Māori	E hiahia ana ahau ki tetahi kaiwhaka Māori/kaiwhaka pakeha korero	Ae	Kao
Cook Island Māori	Ka inangaro au i tetai tangata uri reo	Ae	Kare
Fijian	Au gadreva me dua e vakadewa vosa vei au	Io	Sega
Niuean	Fia manako au ke fakaaoga e taha tagata fakahokohoko kupu	E	Nakai
Sāmoan	Ou te mana'o ia i ai se fa'amatala upu	loe	Leai
Tokelaun	Ko au e fofou ki he tino ke fakaliliu te gagana Peletania ki na gagana o na motu o te Pahefika	loe	Leai
Tongan	Oku ou fiema'u ha fakatonulea	Io	Ikai

Advocacy

If you have any questions or concerns about your rights as a participant in this research study you can contact an independent health and disability advocate. This is a free service provided under the Health and Disability Commissioner Act.

Telephone: (NZ wide) 0800 555 050

Free Fax (NZ wide): 0800 2787 7678 (0800 2 SUPPORT)

Email (NZ wide): advocacy@hdc.org.nz

Who is planning the research?

There is a large group of researchers planning the study. They bring together a diverse range of expertise and experience. They have been involved in successful past and present research projects. They are as follows:

Principal Investigator: Professor Peter Joyce (psychiatrist)

Professor Vicky Cameron (molecular geneticist)

Professor Steve Chambers (infectious diseases)

Associate Professor Richard Gearry (gastroenterologist)

Dr Hamish Jamieson (geriatrician/physician)

Professor Martin Kennedy (molecular geneticist)

Dr Cameron Lacey (psychiatrist, Māori health)

Professor David Murdoch (infectious diseases)

Professor Philip Schluter (biostatistician)

Dr John Pearson (biostatistician)

Professor Richard Porter (psychiatrist)

Professor Mark Richards (cardiologist)

Ms Janet Spittlehouse (psychology, study coordinator)

Associate Professor Richard Troughton (cardiologist)

Who is involved with the research?

In addition to those involved in the initial planning, a number of staff will be involved in contacting interviewing, assessing of participants and in the analysis of data. These people currently include:

Robyn Abbott

Associate Professor Mark Elder

Dr Sandy Mandic

Dr Paula Skidmore

Dr Esther Vierck

Dr Margaret DeAngelis

Bridget Kimber

Julia Martin

Anna Thorpe

Catherine Wall

Who is paying for the research?

To date the research has been funded by the University of Otago, the University of Otago Christchurch, Lottery Health and Canterbury Community Trust. We will continue to seek funds from a wide variety of other sources.

Further Questions?

If you have any questions or would like to know more, please contact:

Janet Spittlehouse
Chalice Project Research Coordinator
University of Otago, Christchurch
10 Oxford Terrace
PO Box 4345
Christchurch 8140

Tel: 03 378 6468

Email: janet.spittlehouse@otago.ac.nz



CHALICE

Canterbury Health, Ageing and Lifecourse Study

University of Otago, Christchurch

Telephone (03) 378 6468

CONSENT FORM

Full Name: _____ **[if known]**
NHI Number: _____

Participant Number [office use only]: _____ **Date of Birth:** ____/____/19____

- I have read and understand the information sheet about this study, and I understand what is involved.
- I have been given the opportunity to discuss this study and to ask questions about it. I am satisfied with the answers I have been given.
- I have had enough time to consider whether to take part, and to discuss my decision with a person of my choice.
- I know who to contact if I have questions about the study.

I understand that:

(Please tick)

- I will be asked to complete questionnaires about my medical history and lifestyle.
- I will be asked to provide blood and urine samples.
- I will have an electrocardiograph (ECG).
- I will have an ultrasound examination of heart (echocardiograph).
- I will have a fundus photograph taken of my retina, using eye drops to dilate my pupil.

(Please read)

- Taking part is voluntary and I am free to withdraw at any time and for any reason.
- I will be contacted by CHALICE staff after my assessment day to organise the return of the CHALICE food and activity diaries and to clarify further details, if necessary.
- I will be re-contacted by CHALICE staff each year and in 4 to 5 years time for another assessment.
- I will be asked to provide contact details for 2 family and/or friends, and I understand that they may be contacted in the event that CHALICE staff are unable to contact me.
- My participation in this study is confidential and no information that could identify me will be used in any reports on this study.
- This study has received ethical approval from the Upper South A Regional Ethics Committee.

Please Circle

I consent to have my General Practitioner notified of my participation in this study
..... **YES / NO**

I wish to receive a summary of my results including any previously undiagnosed
problems or abnormal laboratory results.....**YES / NO**

I wish for my GP to receive a summary of my results including any previously
undiagnosed problems or abnormal laboratory results.....**YES / NO**

I consent for my medical records to be accessed through the
National Health Index (NHI) database.....**YES / NO**

I consent to researchers storing my samples for later use;

Blood and plasma **YES / NO**

Urine **YES / NO**

DNA **YES / NO**

I consent to being contacted in future to ask about participating in related studies..... **YES / NO**

I consent to the non-identifying use of my information in related studies **YES / NO**

I am aware that the study will collect, store and examine my DNA (genetic make-up)
in relation to medically relevant traits and I consent to such analysis being performed
..... **YES / NO**

I understand that if I consent to such analysis, I am not giving up any rights
and no rights will be created for the researcher to my genetic information **YES / NO**

I consent to researchers using my samples and DNA for later use as part of
research with other New Zealand research collaborators (subject to approval
by a NZ Ethics Committee) **YES / NO**

I consent to researchers storing my samples and DNA for later use as a part of future
research with international researcher collaborators **YES / NO**

I consent to my samples and DNA being sent overseas **YES / NO**

I understand that I can request to have my samples and DNA destroyed at any time
..... **YES / NO**

I elect to have all my samples disposed of with an appropriate karakia **YES / NO**

I wish to receive copies of newsletters which will contain general findings of this study
..... **YES / NO**

I _____ (print full name) hereby consent to take part in this study.

Signature: _____

Date: _____

Consent obtained by:

CHALICE staff signature: _____

Date: _____

CHALICE staff name: _____

Appendix D.

CHALICE Module 1: SF-36 Questions



CHALICE

Canterbury Health, Ageing and Lifecourse Study

Date of Assessment		Participant Study Number	
Interviewer's Name	Anna Thorpe	Interviewer's Number	003

Thank you for agreeing to take part in the Chalice study. We really appreciate you giving up your time to help complete this important research project. Please will you take a few minutes to read over and answer the following questions?

HEALTH STATUS (SF-36v2)

For each of the following questions, please select the one response that best describes your answer. **Please enter the date that you are completing this questionnaire: ___/___/___**

1. **In general, would you say that your health is:**

1. Excellent
2. Very good
3. Good
4. Fair
5. Poor

2. **Compared to one year ago, how would you rate your health in general now?**

- Much better now than one year ago
- Somewhat better now than one year ago
- About the same as one year ago
- Somewhat worse now than one year ago
- Much worse now than one year ago

3. **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?**

	1 Yes, limited a lot	2 Yes, limited a little	3 No, not limited at all
(a) <u>Vigorous activities</u>, such as running, lifting heavy objects, participating in strenuous sports.			
(b) <u>Moderate activities</u>, such as moving a table, pushing a vacuum cleaner, bowling or playing golf.			
(c) Lifting or carrying groceries.			
(d) Climbing <u>several</u> flights of stairs.			
(e) Climbing <u>one</u> flight of stairs.			
(f) Bending, kneeling or stooping.			

(g) Walking <u>more than a kilometre</u> .			
(h) Walking <u>half a kilometre</u> .			
(i) Walking <u>100 metres</u> .			
(j) Bathing, showering or dressing yourself			

4. 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?

	1 All of the time	2 Most of the time	3 Some of the time	4 A little of the time	5 None of the time
(a) Cut down on the <u>amount of time</u> you spent on work or other activities.					
(b) <u>Accomplished less</u> than you would like.					
(c) Were limited in the <u>kind</u> of work or other activities.					
(d) Had <u>difficulty</u> performing the work or other activities (for example, it took extra effort).					

5. 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 (such as feeling depressed or anxious)?

	1 All of the time	2 Most of the time	3 Some of the time	4 A little of the time	5 None of the time
(a) Cut down on the <u>amount of time</u> you spent on work or other activities.					
(b) <u>Accomplished less</u> than you would like.					
(c) Did work or activities <u>less carefully than usual</u> .					

6. 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?

- Not at all
- A little bit
- Moderately
- Quite a bit
- Extremely

7. How much **bodily** pain have you had during the **past 4 weeks**?

- 2. No bodily pain
- 3. Very mild
- 4. Mild
- 5. Moderate
- 6. Severe
- 7. Very severe

8. During the **past 4 weeks**, how much did **pain** interfere with your normal work (including both work outside the home and housework)?

- (a) Not at all
- (b) A little bit
- (c) Moderately
- (d) Quite a bit
- (e) Extremely

9. These questions are about how you feel and how things have been with you **during the past 4 weeks**. For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the **past 4 weeks**.....

	1 All of the time	2 Most of the time	3 Some of the time	4 A little of the time	5 None of the time
(a) Did you feel full of life?					
(b) Have you been very nervous?					
(c) Have you felt so down in the dumps that nothing could cheer you up?					
(d) Have you felt calm and peaceful?					
(e) Did you have a lot of energy?					
(f) Have you felt downhearted and depressed?					
(g) Did you feel worn out?					
(h) Have you been happy?					
Did you feel tired?					

10. During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting friends, relatives, etc)?

- All of the time
- Most of the time
- Some of the time
- A little of the time
- None of the time

11. How TRUE or FALSE is each of the following statements for you?

	1 Definitely true	2 Mostly true	3 Don't know	4 Mostly false	5 Definitely false
(a) I seem to get sick a little easier than other people					
(b) I am as healthy as anybody I know					
(c) I expect my health to get worse					
(d) My health is excellent					

Appendix E.

CHALICE Module 2: Personal Health History

Module 2 Questionnaire

Personal Health History

Date of Assessment		Participant Study Number	
Interviewer's Name	Anna Thorpe	Interviewer's Number	003

TABLE OF CONTENTS

1. DEMOGRAPHICS.....	2
Date of birth and ethnicity.....	2
Relationship status.....	3
Education, income and employment.....	4
ELSI-SF: Economic Living Standards Index Short Form.....	6
Home ownership and medical Insurance.....	8
2. CHRONIC CONDITIONS.....	9
Current medication.....	9
Long-term conditions.....	11
Infection and immunisation history.....	22
Digestive disease.....	23
Sleep patterns.....	24
3. HEALTH SERVICE UTILISATION.....	26
GP use.....	26
Medical Specialists.....	26
Complementary or alternative health care workers.....	28
Secondary Health Care Services (Hospital Use).....	29
4. RISK AND PROTECTIVE FACTORS.....	31
Screening programmes.....	31
Environmental conditions.....	32
Tobacco.....	33
Alcohol.....	33

1. DEMOGRAPHICS

First, I am going to ask you some general questions about you and your household. Then we will go on to talk about your health.

1.01 **You are male/female...? [Circle one]**

- 1 Male
- 2 Female

Date of birth

1.02 **Firstly, what is your date of birth? [Record]**

 Enter eight digit date (e.g. 4 March 1946 = 04031946).

____/____/____

99 Refused

Ethnicity

[Showcard 1.03a]

1.03a **Which ethnic group or groups do you belong to? Call the number or numbers of the ones that apply to you from Card 1.03a. [record all mentioned]**

- 1 New Zealand European
- 2 Māori
- 3 Samoan
- 4 Cook Island Māori
- 5 Tongan
- 6 Niuean
- 7 Chinese
- 8 Indian
- 9 Other, such as Dutch, Japanese, Tokelauan
- 98 Don't know

GO TO THE QUESTIONNAIRE FOR MAORI PARTICIPANTS

GO TO 1.03b

1.03b **What other ethnicity or ethnicities do you belong to? [Record]**

1.04a **Are you descended from Māori? That is did you have a Māori ancestor? [Circle one]**

- 1 Yes
- 0 No
- 98 Don't remember
- 99 Refused

GO TO 1.05a

1.04b **What are your iwi affiliations? [Record all]**

- _____
- 98 Don't remember
 - 99 Refused

1.05a Which country were you born in? [Circle one]

- 1 New Zealand
- 2 Australia
- 3 England
- 4 Scotland
- 5 China (People's Republic of)
- 6 South Africa
- 7 Samoa
- 8 Cook Islands
- 9 Other [specify the present name of the country] _____
- 98 Don't know
- 99 Refused



1.05b In what year did you arrive to live in New Zealand? [Record 4 digit year]

- _____
- 98 Don't remember
 - 99 Refused

1.06 How long have you lived in Canterbury? [Record years and months]

- Years _____ Months _____
- 98 Don't remember
 - 99 Refused

Marital/Relationship Status

[Showcard 1.07a]

1.07a Looking at Card 1.07a, which one of these statements is true about your **CURRENT** relationship status?

- 1 I am married (or living together for 1 year or more)
- 2 Separated
- 3 Divorced
- 4 Widowed
- 5 Never married
- 98 Don't know
- 99 Refused

1.07b Are you currently in a relationship? How long (in years) have you been in your current relationship?

1.08 How long (in years) is/was the longest intimate relationship you've had in your life?

Sexuality

[Showcard 1.09]

1.09 Looking at Card 1.09, which of the following best describes yourself?

- 1 Heterosexual ("straight")
- 2 Gay
- 3 Lesbian
- 4 Bisexual
- 5 Transsexual
- 6 Can't choose
- 98 Don't know
- 99 Refused

Education

[Showcard 1.10]

1.10 What is your highest qualification? Please do not count incomplete qualifications or qualifications that take less than 3 months of full-time study to get. Please tell us your **highest** qualification, shown on Card 1.10. [Record one]

- 1 No qualification
- 2 Secondary school qualifications
- 3 Post secondary certificate, diploma, or trade diploma
- 4 University degree
- 5 Other [specify] _____
- 98 Don't know
- 99 Refused

Income support and employment

[Showcard 1.11]

1.11 Looking at Card 1.11, are you **currently** receiving any of these types of income support? [Circle yes or no and, if yes, circle all mentioned]

- 1 Yes
- 0 No
- 98 Don't know/unsure
- 99 Refused

- 1 NZ Superannuation
- 2 Working for Families (Family Support, In Work Payment, Family Tax Credit)
- 3 Unemployment benefit
- 4 Domestic purposes benefit
- 5 Sickness benefit
- 6 Invalid's benefit
- 7 Student allowance
- 8 Disability allowance
- 9 ACC (as income support, *not* reimbursement for health services)
- 10 Other government benefits (independent youth benefit, war pension, etc)
- 98 Don't know
- 99 Refused

1.12 In the past 12 months, have you been out of paid work at any time for more than one month? Please do not include time out of paid work which was from your own choice, such as being a homemaker, caregiver, or full-time student.

- 1 Yes
- 0 No
- 98 Don't know/unsure
- 99 Refused

1.13 What is your trained trade or profession? [Record]

[Showcard 1.14a]

1.14a **Which of the statements on Card 1.14a best describes your current work situation. Please also say if you are self employed. [Circle one]**

Working in paid employment (1) includes students (full time or part time) if they have any paid employment.

1 Working in paid employment. **[Tick if self employed]**

2 Not in paid work, and looking for a job

GO TO 1.15

3 Not in paid work, and not looking for a job (for any reason, such as being retired, a homemaker, caregiver, or full-time student).

GO TO 1.15

Specify reason not working and not looking for a job:

4 Other **Specify** _____

98 Don't know 99 Refused

1.14b **How many hours a week do you usually work? [Record hours]**

98 Don't know
99 Refused

1.14c **What is your current occupation? (What is your job called? What kind of work do you do?) [Record]**

[Showcard 1.15]

1.15 **Looking at Card 1.15, in the last 4 weeks, which of these have you done, without pay? [Circle yes or no and, if yes, circle all mentioned]**

1 Yes
0 No
98 Don't know/unsure
99 Refused

- 1 Household work, cooking, repairs, gardening, etc, for my own household
- 2 Looked after a child who is a member of my household
- 3 Looked after a member of my household who is ill or has a disability
- 4 Looked after a child (who does NOT live in my household)
- 5 Helped someone who is ill or has a disability (who does NOT live in my household)
- 6 Other voluntary work for or through any organisation, group or marae
- 7 Studied for 20 hours or more per week at school or any other place
- 8 Studied for less than 20 hours per week at school or any other place
- 98 Don't know
- 99 Refused

Income

[Showcard 1.16]

1.16 Looking at Card 1.16, what is the total income that you yourself got from all sources, before tax or anything was taken out of it, in the last 12 months? [Record one]

- 1 Less than \$5,000
- 2 \$5,001 - \$10,000
- 3 \$10,001 - \$15,000
- 4 \$15,001 - \$20,000
- 5 \$20,001 - \$25,000
- 6 \$25,001 - \$30,000
- 7 \$30,001 - \$40,000
- 8 \$40,001 - \$50,000
- 9 \$50,001 - \$60,000
- 10 \$60,001 - \$70,000
- 11 \$70,001 - \$80,000
- 12 \$80,001 - \$100,000
- 13 \$100,001 - \$120,000
- 14 \$120,001 - \$150,000
- 15 \$150,001 or more
- 98 Don't know 99 Refused

Household income

[Showcard 1.16]

1.17 Still looking at Card 1.16, what is the total income that your household got from all sources, before tax or anything was taken out of it, in the last 12 months? [Record one]

- 1 Less than \$5,000
- 2 \$5,001 - \$10,000
- 3 \$10,001 - \$15,000
- 4 \$15,001 - \$20,000
- 5 \$20,001 - \$25,000
- 6 \$25,001 - \$30,000
- 7 \$30,001 - \$40,000
- 8 \$40,001 - \$50,000
- 9 \$50,001 - \$60,000
- 10 \$60,001 - \$70,000
- 11 \$70,001 - \$80,000
- 12 \$80,001 - \$100,000
- 13 \$100,001 - \$120,000
- 14 \$120,001 - \$150,000
- 15 \$150,001 or more
- 98 Don't know
- 99 Refused

ELSI (Economic Living Standard Index)

[Showcard 1.18]

1.18 I'm now going to ask you some questions about things you may or may not have access to in your household. Looking at card 1.18 for the answer, do you have.....

☐ If respondent asks: "Does this include a cellphone?": Access to a telephone in the household is the key concept, for example, if there is a cellphone and no landline then 'Yes', but only if cellphone is in the house whenever the respondent is home and they can make a phone call on it.

	1 Yes	2 No (don't want it)	3 No (due to the cost)	4 No (other reason)	Refused (R) Don't know (K)
(a) Telephone (see note above)					
(b) Washing machine					
(c) Heating available in all main rooms					
(d) A good pair of shoes					
(e) A best outfit for special occasions					
(f) Personal computer					
(g) Home contents insurance					
(h) Enough room for family to stay the night					

[Showcard 1.18]

1.19 Still looking at Card 1.18 for the answer, do you do the following activities?

	1 Yes	2 No (don't want it)	3 No (due to the cost)	4 No (other reason)	Refused (R) Don't know (K)
(a) Give presents to family and friends on birthdays					
(b) Visit the hairdresser at least once every 3 months					
(c) Have holidays away from home every year					
(d) Have a holiday overseas at least once every 3 years					
(e) Have a night out at least once a fortnight					
(f) Have family or friends over for a meal at least once a month					

[Showcard 1.20]

1.20 Now I'm going to ask you about some things some people do to help keep costs down. Looking at Card 1.20, in the last 12 months, have you done any of these things not at all, a little, or a lot?

	1 Not at all	2 A little	3 A lot	Refused (R) Don't know (K)
(a) Gone without fresh fruit and vegetables to keep costs down				
(b) Continued wearing clothing that was worn out because you couldn't afford a replacement				
(c) Put off buying clothes for as long as possible to help keep down costs				
(d) Stayed in bed longer to save on heating costs				
(e) Postponed or put off visits to the doctor to help keep down costs				
(f) NOT picked up a prescription to help keep down costs				
(g) Spent less on hobbies than you would like to help keep down costs				
(h) Gone without or cut back on trips to the shops or other local places to help keep down costs				

The next questions are about your material standard of living – the things that money can buy. Your material standard of living does NOT include your capacity to enjoy life. You should NOT take your health into account for these questions.

[Showcard 1.21]

1.21 Looking at Card 1.21, generally, how would you rate your material standard of living? Would you say that it is high, fairly high, medium, fairly low or low? [Circle one]

- 1 High
- 2 Fairly high
- 3 Medium
- 4 Fairly low
- 5 Low
- 98 Don't know 99 Refused

[Showcard 1.22]

1.22 Looking at Card 1.22, generally, how satisfied are you with your material standard of living? Would you say you were very satisfied, satisfied, neither satisfied nor dissatisfied, dissatisfied or very dissatisfied? [Circle one]

- 1 Very satisfied
- 2 Satisfied
- 3 Neither satisfied nor dissatisfied
- 4 Dissatisfied
- 5 Very dissatisfied
- 98 Don't know
- 99 Refused

[Showcard 1.23]

1.23 Looking at Card 1.23, how well does your (and your partner's combined) total income meet your everyday needs for such things as accommodation, food, clothing and other necessities? Would you say you have not enough money, just enough money, enough money, or more than enough money? [Circle one]

By total income we mean all the money respondent has access to for everyday necessities

- 1 Not enough
- 2 Just enough
- 3 Enough
- 4 More than enough
- 98 Don't know
- 99 Refused

Home Ownership

[Showcard 1.24]

1.24 Who owns your home? [Circle one]

- 1 You own or partly own your house or flat (with or without a mortgage)
- 2 Family members
- 3 A family trust
- 4 A private landlord
- 5 A local authority or city council
- 6 Housing New Zealand
- 7 Other **[specify]** _____
- .K Don't know .R Refused

Medical Insurance

1.25 Are you covered by any health or medical insurance scheme? [Circle one]

- 1 Yes
- 0 No
- 98 Don't know 99 Refused

2. CHRONIC CONDITIONS

The next section of this survey is about **chronic** health conditions you may have. A chronic condition is a physical or mental illness that has lasted, or is expected to last, for more than six months. The symptoms may come and go or be present all the time.

First, I would like to know about any medications you are taking.

Current Medication

2.01 What are your current medications/prescriptions for yourself? Please include all medications such as Inhalers, aerosol, injections, tablets and ‘over the counter medication’ etc.

 Please copy from the packet or bottle the drug name, dose and number taken per day.

2.01a Drug Name - Prescription drugs from a Dr	2.01b Dose	2.01c Number/day
2.01d Drug Name – Non-prescription drugs	2.01e Dose	2.01f Number/day

2.01g Have you had any adverse reactions to drugs? [Circle one]

- 1 Yes [specify] _____
- 0 No
- 98 Don't know
- 99 Refused

[Showcard 2.02 part 1 and part 2]

2.02 Have you ever been told by a doctor that you have or have had [Circle all mentioned]

1 Heart disease including:

→ **GO TO 2.03a Page 11**

Heart attack
Angina
Heart failure
Inadequate pumping of the heart
Build-up of fluid in the legs or lungs
Problems with heart rhythm (atrial fibrillation, supraventricular tachycardia (SVT), ventricular tachycardia (VT), ectopic beat)
Problems with heart valves (leaky or blocked)
Intermittent claudication (vascular spasm in the legs)
Clot in the leg (venous thrombosis)

2 Stroke

→ **GO TO 2.10a Page 13**

3 Diabetes

→ **GO TO 2.11a Page 14**

4 Allergies

→ **GO TO 2.12a Page 14**

5 Asthma

→ **GO TO 2.13a Page 15**

6 Chronic bronchitis or emphysema (COPD)

→ **GO TO 2.14a Page 16**

7 Arthritis (including gout, lupus and psoriatic arthritis)

→ **GO TO 2.15a Page 17**

→ **GO TO 2.16a Page 18**

8 High blood pressure

9 High cholesterol

→ **GO TO 2.17a Page 19**

10 Cancer

→ **GO TO 2.18a Page 20**

☐ If none of the above GO TO 2.19a Page 21

☐ Go to each relevant section in turn.

☐ Remember to complete the “ACCESS TO SERVICES” questionnaire for participants who have diagnosed heart disease, diabetes, COPD, high blood pressure or high cholesterol **and** they have seen their GP about this condition in the last 12 months. If a participant has more than one of these conditions, ask them which has been most significant in the last 12 months and use this condition to answer the access to services questionnaire. You only need to complete one per participant.

Heart disease

The first few questions are about heart disease. Please **do not** include high blood pressure or high blood cholesterol here, as I will ask you about those later.

2.03a **Have you ever been told by a doctor that you have had a heart attack? [Circle one]**

1 Yes
0 No
98 Don't know
99 Refused

→ **GO TO 2.04a**

2.03b **Have you ever been admitted to hospital with a heart attack? [Circle one]**

1 Yes
0 No
98 Don't know
99 Refused

→ **GO TO 2.04a**

2.03c **How old were you when you were first admitted to hospital with a heart attack? [Record age]**

98 Don't know
99 Refused

2.03d **In the past 12 months, have you been admitted to hospital with a heart attack? [Circle one]**

1 Yes
0 No
98 Don't know
99 Refused

2.04a **Have you ever been told by a doctor that you have angina? (*interviewer probe – angina is typically chest pain when you walk or do exercise*) [Circle one]**

1 Yes
0 No
98 Don't know
99 Refused

→ **GO TO 2.05a**

2.04b **How old were you when you were told by a doctor that you had angina? [Record age]**

98 Don't know
99 Refused

2.05a **Have you ever been told by a doctor that you have heart failure? That is inadequate heart pumping, or a build-up of fluid in the lungs or legs. [Circle one]**

1 Yes
0 No
98 Don't know
99 Refused

→ **GO TO 2.06**

2.05b How old were you when you were told by a doctor that you had heart failure? [Record age]

If from birth record 0

98 Don't know

99 Refused

2.06 Have you ever been told by a doctor that you have any other heart disease? Please **include** problems with heart rhythm (atrial fibrillation, supraventricular tachycardia (SVT), ventricular tachycardia (VT), ectopic beat), heart valves (eg leaky or blocked valve), intermittent claudication (cramping and/or pain in the legs, usually when walking. Sometimes called vascular spasm in the legs) and clot in the leg (venous thrombosis) but **not** high blood pressure or high cholesterol. [Circle one]

If the respondent has a leaking or blocked heart valve please ask "which valve" and record below.

1 Yes [specify] _____

0 No

98 Don't know

99 Refused

2.07 Have you been to a GP about your heart disease in the past 12 months?

1 Yes

0 No

98 Don't know

99 Refused

GO TO THE QUESTIONNAIRE ABOUT ACCESS TO SERVICES

[Showcard 2.08]

2.08 Looking at Card 2.08, what treatments do you **now** have for your heart condition(s)? [Circle yes or no and, if yes, circle all mentioned]

Probe "Any others?" until no other treatment mentioned

1 Yes

0 No

98 Don't know

99 Refused

1 Medicines, tablets or pills (including spray under the tongue or patches on the skin)

2 Diet

3 Exercise

4 Other [specify] _____

2.09a Have you ever had bypass surgery or angioplasty (sometimes called a stent) for your heart condition(s)? [Circle one]

1 Yes

0 No

98 Don't know

99 Refused

GO TO 2.10a

2.09b How old were you when you had bypass surgery or angioplasty? [Record age]

98 Don't know

99 Refused

Stroke

2.10a **Have you ever been told by a doctor that you have had a stroke? Please do not include “mini-stroke” or transient ischaemic attack. [Circle one]**

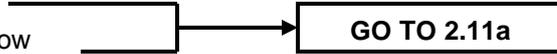
A stroke is a definite event that has left permanent neurological damage (eg lost vision or feeling etc.)

1 Yes

0 No

98 Don't know

99 Refused



2.10b **How old were you when you were first told by a doctor that you had had a stroke? [Record age or circle appropriate answer]**

98 Don't know

99 Refused

2.10c **Have you had a stroke during the past 12 months? [Circle one]**

1 Yes

0 No

98 Don't know

99 Refused

[Showcard 2.10d]

2.10d **What treatments do you now have for your stroke? [Circle yes or no and, if yes, circle all mentioned]**

Probe “Any others?” until no other treatment mentioned

1 Yes

0 No

98 Don't know

99 Refused

1 Medicines, tablets or pills

2 Diet

3 Exercise or rehabilitation (include speech therapy, occupational therapy, physiotherapy)

4 Other **[specify]** _____

Diabetes

2.11a **Have you ever been told by a doctor that you have diabetes? <IF RESPONDENT IS FEMALE, ADD...> Please do not include diabetes during pregnancy. [Circle one]**

1 Yes

0 No

98 Don't know

99 Refused



2.11b **Is that type I or type II?**

1 Type I

2 Type II

98 Don't know

99 Refused

2.11c **How old were you when you were first told by a doctor that you had diabetes?**
[Record age or circle appropriate answer]

If from birth record 0

98 Don't know 99 Refused

2.11d **Have you been to a GP about your diabetes in the past 12 months?**

1 Yes

0 No

98 Don't know

GO TO THE QUESTIONNAIRE ABOUT ACCESS TO SERVICES

99 Refused

[Showcard 2.11e]

2.11e **What treatments do you *now* have for your diabetes?**

[Circle yes or no and, if yes, circle all mentioned]

Probe "Any others?" until no other treatment mentioned

1 Yes

0 No

98 Don't know

99 Refused

1 Medicines, injections, tablets or pills

2 Diet

3 Exercise

4 Other [specify] _____

2.11f **In the past 12 months have you had a "Get Checked" free annual diabetes check with your GP or nurse? [Circle one]**

1 Yes

0 No

98 Don't know

99 Refused

Allergies

2.12a **Have you ever been told by a doctor that you have allergies? [Circle one]**

1 Yes

0 No

98 Don't know

99 Refused

GO TO 2.13a

[Showcard 2.12b]

2.12b **Looking at Card 2.12b, what substances are you allergic to? [Multiple answers allowed]**

1 Pollen

2 Mould

3 Dust mites

4 Animals

5 Chemicals

6 Shellfish

7 Peanuts

8 Gluten

9 Fish

10 Eggs

11 Not identified

12 Other [specify] _____

98 Don't know

99 Refused
2.12c In the last 12 months, have you had problems with allergies? [Circle one]

1 Yes
0 No
98 Don't know
99 Refused

→ **GO TO 2.12e**

[Showcard 2.12b]

2.12d Looking again at card 1.12b, which allergies have affected you in the last 12 months?
(If respondent answers more than one kind, say: Which affects you most?) [Circle all allergies mentioned and underline the 'most']

- 1 Pollen
- 2 Mould
- 3 Dust mites
- 4 Animals
- 5 Chemicals
- 6 Shellfish
- 7 Peanuts
- 8 Gluten
- 9 Fish
- 10 Eggs
- 11 Not identified
- 12 Other [specify] _____
- 98 Don't know
- 99 Refused

[Showcard 2.12e]

2.12e What treatments do you now have for allergies?

[Circle yes or no and, if yes, circle all mentioned]

Probe "Any others?" until no other treatment mentioned

- 1 Yes
- 0 No
- 98 Don't know
- 99 Refused

- 1 Medicines, tablets or pills
- 2 Avoidance
- 3 Nasal steroids
- 4 Immunotherapy
- 5 Other [specify] _____

Asthma

2.13a Have you ever been told by a doctor that you have asthma? [Circle one]

1 Yes
0 No
98 Don't know
99 Refused

→ **GO TO 2.14a**

2.13b How old were you when you were first told by a doctor that you had asthma?
[Record age]

If from birth record 0

- _____
- 98 Don't know
 - 99 Refused

[Showcard 2.13c]

2.13c In the last 12 months, how many asthma attacks have you had? [Circle one]

- 1 None
- 2 1-5
- 3 6-10
- 4 11-15
- 5 More than 15
- 98 Don't know
- 99 Refused

2.13d In the last 12 months, have you been woken by an attack or shortness of breath at any time? [Circle one]

- 1 Yes
- 0 No
- 98 Don't know
- 99 Refused

[Showcard 2.13e]

2.13e What treatments do you now have for asthma?

[Circle yes or no and, if yes, circle all mentioned]

Probe "Any others?" until no other treatment mentioned

- 1 Yes
- 0 No
- 98 Don't know
- 99 Refused

- 1 Inhalers, aerosol, or tablets
- 2 Other [specify] _____

COPD (Chronic obstructive pulmonary disease)

2.14a Have you ever been told by a doctor that you have chronic bronchitis or emphysema? [Circle one]

- 1 Yes
- 0 No
- 98 Don't know
- 99 Refused

GO TO 2.15a

2.14b How old were you when you were told by a doctor that you had this condition? [Record age]

- _____
- 98 Don't know
- 99 Refused

2.14c Have you been to a GP about your chronic bronchitis or emphysema in the past 12 months?

- 1 Yes
- 0 No
- 98 Don't know
- 99 Refused

GO TO THE QUESTIONNAIRE ABOUT ACCESS TO SERVICES

[Showcard 2.14d]

2.14d **What treatments do you now have for this condition?**

[Circle yes or no and, if yes, circle all mentioned]

Probe “Any others?” until no other treatment mentioned

- 1 Yes
- 0 No
- 98 Don't know
- 99 Refused

- 1 Inhalers, aerosol, or tablets
- 2 Physiotherapy
- 3 Oxygen
- 4 Other **[specify]** _____

Arthritis

2.15a **Have you ever been told by a doctor you have arthritis? Please include gout, lupus and psoriatic arthritis. [Circle one]**

- 1 Yes
- 0 No
- 98 Don't know
- 99 Refused



2.15b **What kind of arthritis was that? *One answer only (If respondent answers more than one kind, say: Which affects you most?)* [Circle one only]**

- 1 Rheumatoid
- 2 Osteoarthritis
- 3 Other **[specify]** _____
- 98 Don't know
- 99 Refused

[Showcard 2.15c]

2.15c **Looking at Card 2.15c, which joints were affected first? [Circle one]**

- 1 Small joints like fingers or hands
- 2 Large joints like knees or hips
- 98 Don't know
- 99 Refused

2.15d **How old were you when you were first told by a doctor that you had arthritis?**

[Record age] If from birth record 0

- _____
- 98 Don't know
 - 99 Refused

[Showcard 2.15e]

2.15e **What treatments do you now have for arthritis?**

[Circle yes or no and, if yes, circle all mentioned]

Probe “Any others?” until no other treatment mentioned

- 1 Yes
- 0 No
- 98 Don't know
- 99 Refused

- 1 Medicines, tablets, or pills
- 2 Exercise or physiotherapy
- 3 Injections
- 4 Other [specify] _____

2.15f **Have you ever had an operation or surgery because of your arthritis. Please don't include joint replacement surgery? [Circle one]**

- 1 Yes
- 0 No
- 98 Don't know 99 Refused

2.15g **Have you ever had joint replacement surgery because of your arthritis? [Circle one]**

- 1 Hip
- 2 Knee
- 3 No
- 4 Other [specify] _____
- 98 Don't know
- 99 Refused

High Blood Pressure

2.16a **Have you ever been told by a doctor that you have high blood pressure? [Circle one]**
 READ OUT IF FEMALE - Please do not include high blood pressure you may have had during pregnancy.)

- 1 Yes
 - 0 No
 - 98 Don't know
 - 99 Refused
-

2.16b **How old were you when you were told that you have high blood pressure? [Record in years]**

- _____
- 98 Don't know
 - 99 Refused

2.16c **Have you been to a GP about your high blood pressure in the last past 12 months?**

- 1 Yes
 - 0 No
 - 98 Don't know
 - 99 Refused
-

[Showcard 2.16d]

2.16d **What treatments do you now have for your high blood pressure? [Circle yes or no and, if yes, circle all mentioned]**

Probe "Any others?" until no other treatment mentioned

- 1 Yes
- 0 No
- 98 Don't know 99 Refused

- 1 Medicines, tablets or pills
- 2 Diet
- 3 Exercise
- 4 Other _____

Cholesterol

2.17a **Have you ever been told by a doctor that you have high cholesterol levels in your blood?**

[Circle one]

1 Yes

0 No

98 Don't know

99 Refused

GO TO 2.18a

2.17b **How old were you when you were told that you have high cholesterol levels in your blood? [Record in years]**

98 Don't know

99 Refused

2.17c **Have you been to a GP about your high cholesterol in the last past 12 months?**

1 Yes

0 No

98 Don't know

99 Refused

GO TO THE QUESTIONNAIRE ABOUT ACCESS TO SERVICES

[Showcard 2.16d]

2.17d **What treatments do you now have for high cholesterol?**

[Circle yes or no and, if yes, circle all mentioned]

☐ Probe "Any others?" until no other treatment mentioned

1 Yes

0 No

98 Don't know

99 Refused

1 Medicines, tablets or pills

2 Diet

3 Exercise

4 Other _____

Cancer

2.18a Have you ever been told by a doctor that you have cancer? [Circle one]

- 1 Yes
- 2 No
- 98 Don't know
- 99 Refused

GO TO 2.19a

[Showcard 2.18b]

2.18b Now looking at Showcard 2.18b what kind or kinds of cancer were you diagnosed with? [Tick all mentioned in 2.18b column below]  For each Cancer mentioned, ask 2.18c.

2.18c How old were you when you were first told by a doctor that you had this kind of cancer? [Record age in 2.18c column below]

Kind of cancer	2.18b Tick if yes	2.18c Age diagnosed
1 Lung		
2 Bowel/rectal/colon		
3 Cervical		
4 Breast		
5 Prostate		
6 Melanoma		
7 Skin cancer (not melanoma)		
8 Bladder		
9 Bone		
10 Brain		
11 Gallbladder		
12 Hodgkin's		
13 Kidney		
14 Leukaemia		
15 Lip, mouth, pharynx, throat (oesophageal, laryngeal)		
16 Liver		
17 Ovarian		
18 Non-Hodgkin's lymphoma		
19 Stomach		
20 Testicular		
21 Pancreatic		
22 Thyroid		
23a Other [specify] [Record up to two 'Other']		
23b Other		
98 Don't know 99 Refused		

[Showcard 2.18d]

2.18d What treatments do you now have for cancer?

[Circle yes or no and, if yes, circle all mentioned]

 Probe "Any others?" until no other treatment mentioned

- 1 Yes
- 0 No

- 98 Don't know 99 Refused
 1 Chemotherapy
 2 Radiotherapy
 3 Other **[specify]** _____

Other long-term conditions

[Showcard 2.19a]

2.19a **Have you ever been told by a doctor that you have any other long term condition that we have not discussed already, such as those listed on Card 2.19a? Please include any condition that has lasted, or is expected to last, six months or more, and remember, a long-term condition may come and go or be present all the time. [Multiple answers allowed]**

For each long-term condition mentioned in 2.19a ask **—————>** If none GO TO 2.20a
 2.19b.

2.19b **How old were you when you were first told by a doctor that you had [insert condition]? [Record age in 2.19b column below]**

Other physical conditions	2.19a Tick if yes	2.19b Age diagnosed
0 None GO TO 2.20a		
1 Epilepsy		
2 Migraine		
3 Stomach ulcer		
4 Irritable bowel syndrome		
5 Gall bladder problems/gall stones		
6 Endometriosis		
7 Prostate problems		
8 Thyroid conditions		
9 Eczema		
10 Inflammatory Bowel Disease (Ulcerative Colitis, Crohn's etc.)		
11 Chronic Kidney Disease		
12a Other long term physical health conditions [specify] [Record up to six 'Other']		
12b		
12c		
12d		
12e		
12f		
98 Don't know		
99 Refused		

2.20a **Have you ever been knocked out or knocked unconscious?**

1 Yes

0 No

98 Don't know

99 Refused

GO TO 2.21a

2.20b **Did you have to stay overnight or longer for observation in hospital because of being knocked out?**

1 Yes

0 No

98 Don't know

99 Refused

Infections and immunisations

[Showcard 2.21a]

2.21a **Have you ever been told by a doctor that you have any of the following conditions. These conditions may come and go or be present all the time. [Multiple answers allowed]**

☐ For each condition mentioned in 2.21a ask 2.21b.

If none GO TO 2.20a

2.21b **How old were you when you were first told by a doctor that you had [insert condition]? [Record age in 2.21b column below]**

Infection condition	2.21a Tick if yes	2.21b Age diagnosed
0 None GO TO 2.22a		
1 Chicken Pox		
2 Shingles		
3 Rheumatic fever		
4 Pneumonia		
5 Treatment for urinary tract infection		
6 Hepatitis B		
7 Hepatitis C		
8 HIV		
9 Septicaemia		
10 Cellulitis		
98 Don't know		
99 Refused		

[Showcard 2.22a]

2.22a **Have you ever had any of the following immunisations. [Multiple answers allowed]**

☐ For each condition mentioned in 2.22a ask 2.22b.

If none GO TO 2.23

2.22b How old were you when you had [insert immunisation]? [Record age of most recent immunisation in 2.22b column below]

Immunisation	2.22a Tick if yes	2.22b Age of most recent immunisation
0 None GO TO 2.23		
1 Influenza (flu)		
2 Hepatitis B		
3 Pneumococcal vaccine		
98 Don't know		
99 Refused		

[Showcard 2.23]

2.23 Looking at show card 2.23, in the last 12 months have you had either of these conditions? [Circle one]

- 1 Acute gastroenteritis (vomiting/diarrhoea)
- 2 Influenza (flu)
- 3 Both
- 4 Neither
- 98 Don't know
- 99 Refused

Digestive Disease

[Showcard 2.24]

2.24 In the last 3 months, how often have you noticed blood in your stools?

- 1 Never or rarely
- 2 Sometimes (about 25% of the time)
- 3 Often (about 50% of the time)
- 4 Most of the time (about 75% of the time)
- 5 Always (100% of the time)
- 98 Don't know
- 99 Refused

[Showcard 2.24]

2.25 In the last 3 months, how often have you noticed black stools (not due to medication such as Iron supplements or charcoal tablets)?

- 1 Never or rarely
- 2 Sometimes (about 25% of the time)
- 3 Often (about 50% of the time)
- 4 Most of the time (about 75% of the time)
- 5 Always (100% of the time)
- 98 Don't know
- 99 Refused

[Showcard 2.24]

2.26 In the last 3 months, how often have you vomited blood?

- 1 Never or rarely
- 2 Sometimes (about 25% of the time)
- 3 Often (about 50% of the time)
- 4 Most of the time (about 75% of the time)
- 5 Always (100% of the time)
- 98 Don't know
- 99 Refused

2.27 In the last 5 years, have you been told by your doctor that you are anaemic (a low blood count or low iron)? (If female, *not* due to your menstrual period.)

- 1 Yes
- 0 No
- 98 Don't know
- 99 Refused

2.28 In the last 3 months, have you unintentionally lost over 4.5 kilograms (10 pounds)?

- 1 Yes
- 0 No
- 98 Don't know
- 99 Refused

2.29 Have you had a recent major change in bowel movements (change in frequency or consistency)?

- 1 Yes
- 0 No
- 98 Don't know
- 99 Refused

Sleep Patterns

[Showcard 2.30]

2.30 To what degree do you feel you are a "morning person" or a "night person"?

- 1 Definitely a morning person (energetic in the morning and tired at night)
- 2 To some degree a morning person
- 3 To some degree a night person
- 4 Definitely a night person (tired in the morning and energetic at night)
- 98 Don't know
- 99 Refused

The next three questions ask about events outside of your control that may lead to an interruption of your sleep.

[Showcard 2.31a]

2.31a Looking at card 2.31a in the last 12 months has your sleep been regularly interrupted by any of these events, so that you were awake for at least 20 minutes? [Circle all mentioned]

- 0 None _____
- 1 Night shift work
- 2 Traffic noise from nearby roadways
- 3 Crying babies
- 4 Barking dogs
- 5 Snoring partner
- 6 An undiagnosed health problem [specify] _____
- 7 Job requirements, e.g., being "on call"
- 8 Noisy neighbours
- 9 Other [specify] _____
- 98 Don't know
- 99 Refused

GO TO 2.32

2.31b For how long IN TOTAL has your sleep been interrupted by these events? [record months and years]

Years _____ Months _____

- 98 Don't know
- 99 Refused

[Showcard 2.32]

2.32 In the last 6 months, have you had any problems falling asleep?

- 1 Never
- 2 Seldom
- 3 Sometimes
- 4 Usually
- 5 Always
- 98 Don't know
- 99 Refused

[Showcard 2.32]

2.33 In the last 6 months, have you felt sleepy during work or freetime?

- 1 Never
- 2 Seldom
- 3 Sometimes
- 4 Usually
- 5 Always
- 98 Don't know
- 99 Refused

[Showcard 2.34]

2.34 In the last 6 months, how do you think you have slept on the whole?

- 1 Very good
- 2 Pretty good
- 3 Neither good nor bad
- 4 Pretty bad
- 5 Very bad
- 98 Don't know
- 99 Refused

[Showcard 2.35]

2.35 In the last 6 months, have you been waking up too early and not being able to sleep again?

- 1 Never
- 2 Seldom
- 3 Sometimes
- 4 Usually
- 5 Always
- 98 Don't know
- 99 Refused

[Showcard 2.35]

2.36 In the last 6 months, have you had a feeling of not having had enough sleep on waking?

- 1 Never
- 2 Seldom
- 3 Sometimes
- 4 Usually
- 5 Always
- 98 Don't know
- 99 Refused

[Showcard 2.35]

2.37a In the last 6 months, have you had disturbed or uneasy sleep (not due to environmental factors)?

- 1 Never → **GO TO 3.01**
- 2 Seldom
- 3 Sometimes
- 4 Usually
- 5 Always
- 98 Don't know 99 Refused

2.37b For how long in the last 6 months have you had disturbed sleep? [Record time in months]

Months _____
98 Don't know 99 Refused

3. HEALTH SERVICE UTILISATION

3.01 In the last 12 months, have you seen your GP about your own health?

☞ If parents consult doctor about own health issue at the end of a consultation for their children, that is included. ☞ Visits at home or elsewhere are included.

1 Yes

0 No

98 Don't know

99 Refused

GO TO 3.03

3.02 How many times have you seen your GP about your own health in the past 12 months?

[Record number of times]

98 Don't know

99 Refused

[Showcard 3.03]

3.03 Over the last 12 months have you had carried out any of the following shown on Card 3.03? [Circle all mentioned]

0 None of the below

1 Weight measurement

2 Blood sample

3 Urine sample

4 Blood pressure measurement

5 Cholesterol test

6 Diabetes test

98 Don't know 99 Refused

Medical Specialists

The next few questions are about medical specialists, such as those listed on Card 3.04. By medical specialist I mean the kind of doctor that people go to for a particular health condition, problem or service, not a GP. You may have seen the medical specialist as an outpatient in a hospital or at their private rooms or clinic. Please **do not** include medical specialists you may have seen as an inpatient at a **public** hospital.

☞ The definition of an inpatient is 'An inpatient is someone who is admitted to hospital at least overnight'

[Showcard 3.04]

3.04 In the last twelve months, have you seen any medical specialists listed on Card 3.04 about your own health? [Circle and/or record all mentioned]

☞ Please note, a General Physician is not a General Practitioner.

1 Yes

0 No

98 Don't know

99 Refused

If none GO TO 3.07

3.05 How many times have you seen each of those specialists in the past 12 months? [Record number of times in 3.05 column below]

3.04 Medical specialists	3.04 Tick if yes	3.05 Number of times seen in past 12 months
1 General physician (not a General Practitioner)		
2 Dermatologist		
3 Neurologist		
4 Cardiologist		
5 Haematologist		
6 Endocrinologist		
7 Respiratory physician		
8 Gastroenterologist		
9 Oncologist		
10 General surgeon		
11 Orthopaedic surgeon		
12 Ophthalmologist (Eye specialist)		
13 Ear, nose and throat specialist		
14 Urologist		
15 Obstetrician or Gynaecologist		
16 Geriatrician		
17 Psychiatrist		
18 Infectious disease physician		
19 Immunologist (Allergy specialist)		
20 Other [specify]		
21 Other [specify]		

[Showcard 3.06]

3.06 Looking at Card 3.06, the last time you saw a medical specialist about your own health, where was this? Please do not include inpatient visits to a public hospital. [Circle one only]

- 1 Public hospital as an outpatient
- 2 Private hospital
- 3 Specialist's private rooms or clinic
- 4 Other [please specify] _____
- 98 Don't know
- 99 Refused

[Showcard 3.07]

3.07 Thinking about health care generally do any of these things stop you from getting health care?

- 0 None
- 1 Costs of Doctor visits
- 2 Costs of prescriptions
- 3 Transport to Health Services
- 4 Not being able to get to an appointment when I need to
- 5 Family commitments
- 6 The service provided by Health Services
- 7 I have had a bad experience(s) and do not wish to go back
- 8 Other [please specify] _____
- 98 Don't know
- 99 Refused

[Showcard 3.08]

3.08 What helps you to get health care/services?

- 0 None
- 1 Whanau/Family
- 2 Relationship with Doctor
- 3 Relationship with Pharmacist
- 4 Close proximity of services
- 5 Maori Health Providers
- 6 Getting good service
- 7 Health promotion material
- 8 Other **[please specify]** _____
- 98 Don't know
- 99 Refused

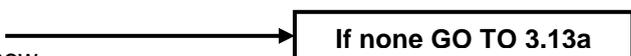
Complementary or alternative health care workers

The next set of questions are about complementary or alternative health care workers. This includes Māori or Pacific traditional healers, and traditional healers from other cultures. **Please do not include any health care worker that we have already talked about.**

[Showcard 3.09]

3.09 In the last twelve months, have you seen any of the complementary or alternative health care workers on Card 3.09 about your own health? Please mention those you have seen.

- 1 Yes
- 0 No
- 98 Don't know
- 99 Refused



3.10 How many times have you seen each of those health care workers in the past 12 months? [Record in 3.10 column below]

3.09 Complementary or Alternative health care workers	3.09 Tick if yes	3.10 Number of times seen in past 12 months
1 Massage therapist		
2 Homeopath or naturopath		
3 Acupuncturist		
4 Traditional Chinese medicine practitioner		
5 Herbalist		
6 Aromatherapist		
7 Spiritual healer		
8 Māori traditional healer		
9 Pacific traditional healer		
10a Other [specify] [Record up to two 'Other'] Please do not include Chiropractor and Osteopath.		
10b Other		

[Showcard 3.11]

3.11 Now please look at Card 3.11, the last time you saw a complementary or alternative health care worker about your own health, what was it for? [Circle all mentioned]

- 1 A long-term illness, chronic condition or disability
- 2 A short-term illness or temporary condition
- 3 An injury or poisoning
- 4 Mental or emotional health
- 5 Physical well-being / to feel good
- 6 Contraception or family planning
- 7 Something else [please specify] _____
- 98 Don't know
- 99 Refused

3.12 The last time you saw an alternative or complementary health care worker, did you also see a GP about the same condition? [Circle one]

- 1 Yes
- 2 No
- 98 Don't know
- 99 Refused

Secondary Health Care Services (Hospital Use)

The last few questions in this section are about your use of hospitals over the past 12 months. I'll begin by asking you about **public** hospitals, that's where you don't have to pay, and then move on to **private** hospitals, where you, your insurance, or a government agency like ACC would pay.

3.13a In the last 12 months, have you yourself used a service at, or been admitted to, a public hospital as a patient? This could have been for a physical or a mental health condition. [Circle one]

- 1 Yes
 - 2 No
 - 98 Don't know
 - 99 Refused
- _____ → **GO TO 3.14a**

[Showcard 3.13b]

3.13b Looking at Card 3.13b, in the last 12 months, at a public hospital, which of the following happened? [Circle all mentioned]

- 1 You yourself used Emergency Department
- 2 You yourself used an outpatients department, that is, a ward or clinic or specialist where you went as an outpatient
- 3 You were admitted for day treatment, that is, day surgery or medical care for which you had to stay in hospital for more than 3 hours but not overnight
- 4 You were admitted as an inpatient, that is, stayed as a patient overnight
- 5 Other
- 98 Don't know
- 99 Refused

3.14a In the last 12 months, have you yourself used a service at, or been admitted to, a private hospital? [Circle one]

- 1 Yes
 - 2 No
 - 98 Don't know
 - 99 Refused
- _____ → **GO TO 4.01**

[Showcard 3.14b]

3.14b In the last 12 months, at a private hospital, which of the following happened? [Read out and circle all mentioned]

- 1 You were admitted as an inpatient, that is, stayed as a patient overnight
- 2 You were admitted for day treatment, that is, day surgery or medical care for which you had to stay in hospital for more than 3 hours but not overnight
- 3 Other
- 98 Don't know
- 99 Refused

4. RISK AND PROTECTIVE FACTORS

The next section is about medical, biological and lifestyle factors that can influence your health.

Screening programmes

Female respondents to be asked following questions

MALE RESPONDENTS GO TO 4.04

The next few questions are about your periods and two cancer screening programmes run by the Ministry of Health: the National Cervical Screening programme and BreastScreen Aotearoa.

4.01a In the last **12 months**, have your periods been. [Circle one]

- 1 Regular
- 2 Irregular
- 3 None
- 98 Don't know
- 99 Refused

GO TO 4.02

4.01b How old were you when your periods stopped? [Record in years]

- _____
- 98 Don't know
 - 99 Refused

4.01c Why did your periods stop?

- 1 Natural menopause
- 2 Surgical (hysterectomy - your uterus or womb is removed)
- 3 Other [specify] _____
- 98 Don't know
- 99 Refused

4.02 In the last **2 years**, have you had a mammogram? A mammogram is a breast x-ray that helps to check for early signs of breast cancer. [Circle one]

- 1 Yes
- 0 No
- 98 Don't know
- 99 Refused

4.03a In the last **3 years**, have you had a cervical smear to check for cervical cancer? A cervical smear is a screening test where cells are taken from the cervix. It is not a swab or check for sexually transmitted infections. [Circle one]

- 1 Yes
- 0 No
- 98 Don't know
- 99 Refused

GO TO 4.05a

4.03b How about in the last **5 years**, have you had a cervical smear? [Circle one]

- 1 Yes
- 0 No
- 98 Don't know
- 99 Refused

GO TO 4.05a

Prostate cancer testing

Male respondents only

FEMALE RESPONDENTS GO TO 4.05a

The next question is about testing for prostate cancer.

4.04 In the past 12 months, have you had a PSA (prostate-specific antigen) blood test for prostate cancer?

- 1 Yes
- 2 No
- 98 Don't know
- 99 Refused

Environmental Conditions

The next few questions are about environmental conditions. By environmental conditions we mean factors in your surroundings that may influence your health and well-being.

[Showcard 4.05a]

4.05a Looking at Card 4.05a, have you ever worked or lived in an area in which you were exposed to environmental conditions such as these mentioned?

- 1 Yes
- 2 No
- 98 Don't know
- 99 Refused

GO TO 4.06a

[Showcard 4.05a]

4.05b Looking at Card 4.05a, which environmental condition or conditions did you experience for 6 months or more and how many years were you exposed for? [circle all mentioned]

Environmental Condition	4.05a Tick if yes	4.05b How many years exposed?
1 Outdoor air pollution (e.g., exhaust, pollutants, particulate)		
2 Indoor air pollution (e.g., tobacco, mould, dust)		
3 Water pollution (e.g., contaminated drinking water, PCBs, dioxin)		
4 Hazardous waste		
5 Heavy metals		
6 Pesticides, insecticides, herbicides		
7 Odours		
8 Noise pollution		
9 Radiation		
10 Pollution of rivers and ocean		
11 Other [specify]		
98 Don't know		
99 Refused		

Tobacco

Now, some questions on smoking tobacco.

4.06a **Have you ever smoked a total of more than 100 cigarettes in your whole life?**
[Circle one]

1 Yes

0 No

98 Don't know

99 Refused

GO TO 4.07

4.06b **How old were you when you started smoking regularly?** [Record in years]

98 Don't know

99 Refused

4.06c **How often do you now smoke?** [Circle one only]

☐ Read answer options. If more than one frequency given, code the highest one.

1 You don't smoke now

2 Less often than once a month

3 At least once a month

4 At least once a week

5 At least once a day

98 Don't know

99 Refused

GO TO 4.06e

4.06d **How old were you when you stopped smoking regularly (daily)?** [Record in years]

98 Don't know

99 Refused

4.06e **From when you started smoking regularly to now/when you stopped, did you ever give up smoking for 6 months or more?**

1 Yes, once

2 Yes, twice

3 Yes, three times or more

4 No

98 Don't know

99 Refused

GO TO 4.06g

4.06f **In total, taking into consideration all the times you stopped, how long did you give up smoking for?** [Record in years]

☐ Round up (or down) to the nearest year.

98 Don't know

99 Refused

[Showcard 4.06g]

4.06g **Which of these products do you/have you smoke/d the most?** [Circle one]

1 Tailor-made cigarettes (that is, manufactured cigarettes in a packet)

2 Roll your owns using loose tobacco

3 Both tailor-mades and roll your owns

4 Pipes

5 Cigars

98 Don't know/unsure

99 Refused

4.06h **On average, over all your years of smoking, how many cigarettes do/did you smoke a day? [Circle one]**

If respondent is unable to suggest an average, ask for the typical number of cigarettes smoked in a week and divide by 7.

- 1 Less than 1 per day
- 2 1-5 per day
- 3 6-10 per day
- 4 11-15 per day
- 5 16-20 per day
- 6 21-25 per day
- 7 26-30 per day
- 8 31 or more a day
- 98 Don't know/unsure
- 99 Refused

[Showcard 4.06i]

4.06i **Are you seriously considering quitting within the next 6 months? Please answer from Card 4.06i. [Circle one only] IF not applicable circle here: N/A**

- 1 No, I have no intention of quitting
- 2 Yes, I am thinking of quitting
- 3 Yes, I am thinking of quitting within the next 30 days
- 4 Yes, I have managed to stop smoking for at least a day now
- 98 Don't know/unsure
- 99 Refused

Alcohol

I will now ask you some questions about your use of alcoholic drinks. Many New Zealanders enjoy alcohol. However, sometimes it can affect our health.

4.07a **Have you had a drink containing alcohol in the last year? [Circle one]**

- 1 Yes
- 2 No
- 98 Don't know
- 99 Refused

GO TO MODULE 3

4.07b **How often do you have a drink containing alcohol? [Circle one]**

Don't prompt answer. Wait and code

- 1 1 Monthly or less
- 2 2 Up to 4 times a month
- 3 3 Up to 3 times a week
- 4 4 4 or more times a week
- 98 Don't know
- 99 Refused

4.07c **How many drinks containing alcohol do you have on a typical day when you are drinking? [Circle one]**

Take average and round to nearest whole number if necessary e.g. if respondent says 4 or 5, average is 4.5, round to nearest whole number = 5, that is code 3

- 0 1 1 or 2
- 1 2 3 or 4
- 2 3 5 or 6
- 3 4 7 to 9
- 4 5 10 or more
- 98 Don't know

Please refer to the leaflet "The straight up guide to standard drinks" and record the number of **STANDARD** drinks.

99 Refused

[Showcard 4.07d]

☐ For the next series of questions please refer to Card 4.07d.

4.07d Looking at Card 4.07d, how often do you have six or more drinks on one occasion?

[Circle one]

- 0 1 Never
- 1 2 Less than monthly
- 2 3 Monthly
- 3 4 Weekly
- 4 5 Daily or almost daily
- 98 Don't know
- 99 Refused

[Showcard 4.07d]

4.07e How often during the last year have you found that you were not able to stop drinking once you had started? [Circle one]

- 0 1 Never
- 1 2 Less than monthly
- 2 3 Monthly
- 3 4 Weekly
- 4 5 Daily or almost daily
- 98 Don't know
- 99 Refused

[Showcard 4.07d]

4.07f How often during the last year have you failed to do what was normally expected from you because of drinking? [Circle one]

- 0 1 Never
- 1 2 Less than monthly
- 2 3 Monthly
- 3 4 Weekly
- 4 5 Daily or almost daily
- 98 Don't know
- 99 Refused

[Showcard 4.07d]

4.07g How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session? [Circle one]

- 0 1 Never
- 1 2 Less than monthly
- 2 3 Monthly
- 3 4 Weekly
- 4 5 Daily or almost daily
- 98 Don't know
- 99 Refused

[Showcard 4.07d]

4.07h How often during the last year have you had a feeling of guilt or remorse after drinking? [Circle one]

- 0 1 Never
- 1 2 Less than monthly
- 2 3 Monthly
- 3 4 Weekly
- 4 5 Daily or almost daily
- 98 Don't know

99 Refused

[Showcard 4.07d]

4.07i **How often during the last year have you been unable to remember what happened the night before because you had been drinking? [Circle one]**

- 0 1 Never
- 1 2 Less than monthly
- 2 3 Monthly
- 3 4 Weekly
- 4 5 Daily or almost daily
- 98 Don't know
- 99 Refused

[Showcard 4.07j]

4.07j **Now please look at card 4.07j, have you or someone else been injured as a result of your drinking? [Circle one]**

- 2 1 Yes, but not in the last year
- 4 2 Yes, during the last year
- 0 3 No
- 98 Don't know
- 99 Refused

[Showcard 4.07k]

4.07k **Again referring to card 4.07j, has a relative or friend, or a doctor or other health worker, been concerned about your drinking or suggested you cut down? [Circle one]**

- 2 1 Yes, but not in the last year
- 4 2 Yes, during the last year
- 0 3 No
- 98 Don't know
- 99 Refused

Total Audit Score: _____

THIS CONCLUDES MODULE 2

Interviewer observations

please comment here if, for example, the respondent had language or cognitive difficulties or if they had assistance from a friend or family member

Appendix F.

CHALICE Module 3: Attitudes and Beliefs



Module 3 Questionnaire Attitudes and Beliefs

Date of Assessment		Participant Study Number	
Interviewer's Name	Anna Thorpe	Interviewer's Number	003

CONTENTS

	Page Number
1. Family history.....	2
2. Social relationships.....	4
3. Attitudes to health.....	6
4. Attitudes to ageing.....	7
5. Job satisfaction.....	8
6. Life experiences.....	9
7. Coping styles.....	10
8. Attitudes to religion/spirituality.....	10
9. Social capital and social standing.....	11
10. Discrimination.....	12

NOTE: Do you need to complete the BIP for any of the participant's children?

c) Have you included children that you adopted out? (mark any adopted out children above as "adopted").

d) Do you have any other CHILDREN that you have not already mentioned (e.g. Step-children, Grandchildren [if the participant is the primary carer], foster children, adopted (in) children)? Please tell me about them.

INTERVIEWER INSTRUCTION: If any of the participant's **children** (biological or otherwise) have disorder 2-9, shown in **bold** on the next page, please ask the extra questionnaire **Brief Illness Perception (BIP)**. If the participant doesn't have any children **GO TO Q1e. ALL OTHERS GO TO Q2**

[Showcard 2.01a]

- 1 No problems, generally healthy
- 2 **Autism, autistic spectrum disorder or Asperger's syndrome**
- 3 **Inflammatory bowel disease (Crohn's disease or ulcerative colitis)**
- 4 **Schizophrenia or psychosis**
- 5 **Bipolar disorder/manic depression**
- 6 **Intellectual disability (please state if there is a specific diagnosis e.g. Down's syndrome)**
- 7 **Depression**
- 8 **Anorexia Nervosa**
- 9 **Diabetes (insulin dependent)**
- 10 Alzheimer's disease, dementia or other serious memory problem
- 11 Chronic kidney disease
- 12 Cancer (please state which)
- 13 Heart attack/serious heart problems
- 14 Stroke
- 15 High blood pressure
- 16 Alcohol or drug problems, abuse or dependence
- 17 Respiratory condition (e.g. asthma, emphysema)

- 18 Musculoskeletal condition (e.g. break, fracture, osteoporosis)
- 19 Head injury
- 20 Anxiety disorder
- 21 Visual impairment
- 22 Paralysis or spinal cord problems
- 23 Permanent physical disability
- 24 Frailty in old age
- 25 Other neurological disorder (e.g. multiple sclerosis, motor neuron disease)
- 26 Any other serious chronic physical illness (please state what)
- 27 Any other serious chronic mental problem (please state what)
- 28 Unknown health status

e) Do you consider yourself to be childless by choice or would you have liked to have children? [circle one]

- 1 Childless by choice
- 2 I would have liked to have had children
- .K Don't know
- .R Refused

[Showcard 2.01f]

f) Do you see it as a loss that you did not have any children? [circle one]

- 1 I see it as a loss
- 2 I don't care either way
- 3 I am happy with the situation
- .K Don't know
- .R Refused

[Showcard 2.01g]

g) What was the main reason that stopped you from having children? [circle one]

- 1 Difficulties conceiving
- 2 Unsuccessful fertility treatment
- 3 Miscarriage(s)
- 4 Age
- 5 Health
- 6 Career
- 7 Financial reasons
- 8 Single or never found the right partner
- 9 Partners preference
- 10 Gay or lesbian
- 11 I didn't want children
- .K Don't know
- .R Refused

2. Are you the PRIMARY care-giver for any family member (including parents and children) or friend with an illness or disability?

- 1 Yes
- 2 No
- .K Don't know
- .R Refused

GO TO O3

GO TO THE ADDITIONAL CAREGIVING (COPE INDEX) QUESTIONNAIRE

[Showcard 2.03]

3. Please tell me who lives in your home and how well you now get along with each person.

INTERVIEWER INSTRUCTION: List by relationship (e.g. partner, son, daughter, sister, friend, lodger etc.)				How well do you get along with this person? [Tick]		
	Relationship	Age	Sex	(1) Well	(2) fairly	(3) Poorly
a						
b						
c						
d						
e						
f						
g						
h						
i						
k						

Most of the questions in this part use showcards. Please look at them to indicate your answer. There are no right or wrong answers. Give your first and natural answer.

INTERVIEWER INSTRUCTION: If participant answers <u>1, 2, 3 or 4</u> for question (g), (h), or (i) ask:							
i (1)	[Showcard 2.04c] In general, how bothered are you when people are unsympathetic or insensitive?	Response Number [circle]: OR N/A ← 0 1 2 3 → Not at all bothered Very bothered					
	[Showcard 2.04a] In the past month, how often did the people you know	1 Very often	2 Regularly	3 Some times	4 Once or twice	5 Never	Refused (R) Don't know (K)
j	Do things that were thoughtless or inconsiderate?						
k	Act angry or upset with you?						
l	Act unsympathetic or critical about your personal concerns?						
INTERVIEWER INSTRUCTION: If participant answers <u>1, 2, 3 or 4</u> for question (j), (k), or (l) ask:							
l (1)	[Showcard 2.04c] In general, how bothered are you when people are thoughtless or reject you?	Response Number [circle]: OR N/A ← 0 1 2 3 → Not at all bothered Very bothered					

[Showcard 2.05]

5. The next few questions are about your opinions on medical conditions and illness in general. How possible do you think it might be to prevent certain health problems for people living in your area?

	[Tick a box]	1 Totally or mostly preventable	2 Sometimes preventable	3 Rarely ever preventable	4 Not preventable	Refused (R) Don't know (K)
a	Skin Cancer					
b	Lung Cancer					
c	Bowel Cancer					
d	High Blood Pressure					
e	Heart Attacks					
f	Diabetes Type I					
g	Diabetes Type II					
h	Stroke					
i	Dementia					
j	Depression					

[Showcard 2.06]

6. How much do you agree or disagree with the following statements?

	[Tick a box]	1 Strongly agree	2 Inclined to agree	3 Neither agree or disagree	4 Inclined to disagree	5 Strongly disagree	Refused (R) Don't know (K)
a	I can overcome most illness without help from a medically trained professional.						
b	Home remedies are often better than drugs prescribed by a doctor.						
c	If I get sick, it is my own behaviour that determines how soon I get well again.						
d	I understand my health better than most doctors do.						

[Showcard 2.06]

7. Now, we would like to know what you feel and think about ageing. How much do you agree or disagree with the following statements?

	[Tick a box]	1 Strongly agree	2 Inclined to agree	3 Neither agree or disagree	4 Inclined to disagree	5 Strongly disagree	Refused (R) Don't know (K)
a	Old age is a time of loneliness.						
b	Old age is a depressing time of life.						
c	I find it more difficult to talk about my feelings as I get older.						
d	I see old age mainly as a time of loss.						
e	I am losing my physical independence as I get older.						
f	As I get older I find it more difficult to make new friends.						
g	I don't feel involved in society now that I am older.						
h	I feel excluded from things because of my age.						
i	It is important to take exercise at any age.						
j	Growing older has been easier than I thought.						
k	I don't feel old.						

l	My identity is not defined by my age.						
m	I have more energy now than I expected for my age.						
n	Problems with my physical health do not hold me back from doing what I want.						
o	My health is better than I expected for my age.						
p	I keep as fit and active as possible by exercising.						
q	As people get older they are better able to cope with life.						
r	It is a privilege to grow old.						
s	Wisdom comes with age.						
t	There are many pleasant things about growing older.						
u	I am more accepting of myself as I have grown older.						
v	It is very important to pass on the benefits of my experiences to younger people.						
w	I believe my life has made a difference.						
x	I want to give a good example to younger people.						

8. **Many people feel older or younger than they actually are. What age do you feel most of the time? _____**

9. **Now imagine you could be any age. What age would you like to be? _____**

10. **To what age do you think you will live? _____**

[Showcard 2.11]

11. **On the whole has growing older been a positive or negative experience?[Circle one]**

- 1 Very Positive
- 2 Positive
- 3 Neither positive nor negative
- 4 Negative
- 5 Very negative
- .K Don't know
- .R Refused

INTERVIEWER INSTRUCTION: Ask the next question only if the respondent is in full or part time **PAID** employment. Check module 2, question 1.17a (page 5).

[Showcard 2.12]

12. This set of questions deals with various aspects of your job. I would like you to tell me how satisfied you feel with each of these features of your present job. Use the scale on the showcard to indicate your feelings. Remember: there are no right or wrong answers.

First, how many years have you been in your current job? _____

	[Tick a box]	Extremely Extremely dissatisfied satisfied							Refused (R) Don't know (K)
		1	2	3	4	5	6	7	
a	The freedom to choose your own method of working?								
b	The physical working conditions?								
c	Your colleagues and fellow workers?								
d	The recognition you get for good work?								
e	The amount of responsibility you are given?								
f	Your rate of pay?								
g	Your opportunities to use your abilities?								
h	Your hours of work?								
i	The amount of variety in your job?								
j	Taking everything into consideration, how do you feel about your job?								

[Showcard 2.13]

13. Now we will talk about events you might have experienced recently. Listed below are a number of events which may bring about changes in the lives of those who experience them. Please tell me the events that have occurred in your life during the past year. For each life event that occurred please tell me how much the event affected your life by saying the appropriate number from the show card.

	[Tick a box]	No	Yes	1 No Impact	2 Mild Impact	3 Moderate Impact	4 Severe Impact	Refused (R) Don't know (K)
a	You yourself suffered a serious illness, injury or assault.							
b	A serious illness, injury or assault happened to a close relative.							
c	Your parent, child or partner died.							
d	A close family friend or another relative (aunt, cousin, grandparent) died.							
e	You had a separation due to marital difficulties.							
f	You broke off a steady relationship.							
g	You had a serious problem with a close friend, neighbour or relative.							
h	You became unemployed or you were seeking work unsuccessfully for more than one month.							
i	You were sacked from your job.							
j	You had a major financial crisis.							
k	You had problems with the police and a court appearance.							
l	Something you valued was lost or stolen.							

*******GO TO CHALICE QUAKE QUESTIONNAIRE*******

[Showcard 2.14]

14. I am interested in how people respond when they face difficult or stressful events in their lives. There are many ways to try to deal with stress. These questions ask *you* to indicate what *you* generally do and feel when you have a stressful event. Obviously, different events bring out somewhat different responses, but think about what you usually do when you are under a lot of stress.

	[Tick a box]	1 I don't do that at all	2 I do that a little bit	3 medium amount	4 I do that a lot	Refused (R) Don't know (K)
a	I concentrate my efforts on doing something about the situation I'm in.					
b	I try to come up with a strategy about what to do.					
c	I try to see it in a different light, to make it seem more positive.					
d	I learn to live with it.					

e	I make jokes about it.					
f	I try to find comfort in my religion or spiritual beliefs.					
g	I get emotional support from others.					
h	I try to get advice or help from other people about what to do.					
i	I turn to work or other activities to take my mind off things.					
j	I refuse to believe that it happened.					
		1	2	3	4	R or DK
k	I say things to let my unpleasant feelings escape.					
l	I use alcohol or other drugs to help me get through it.					
m	I give up trying to deal with it.					
n	I blame myself for things that happened.					

[Showcard 2.15]

15. The next set of questions ask you about your well-being. Please say how much you agree or disagree with the following statements.

	[Tick a box]	Agree Disagree							Refused (R) Don't know (K)
		1	2	3	4	5	6	7	
a	I live life one day at a time and don't really think about the future.								
b	I have a sense of direction and purpose in life.								
c	I don't have a good sense of what it is I'm trying to accomplish in life.								
d	My daily activities often seem trivial and unimportant to me.								
e	I enjoy making plans for the future and working to make them a reality.								
f	Some people wander aimlessly through life, but I am not one of them.								
g	I sometimes feel as if I've done all there is to do in life.								

[Showcard 2.16]

16. The next set of questions are about religious and spiritual beliefs and habits. How often do you attend church, synagogue or other religious meetings? [Circle one]

1. Never
 2. Once a year or less
 3. A few times a year
 4. A few times a month
 5. Once a week
 6. More than once a week
- .K Don't know .R Refused

[Showcard 2.17]

17. **How often do you spend time in private religious activities, such as prayer, meditation or Bible Study? [Circle one]**

1. Never
 2. A few times a year
 3. A few times a month
 4. A few times a week
 5. Once a day
 6. More than once a day
- .K Don't know .R Refused

[Showcard 2.18]

18. **How much do you agree or disagree with the following statements?**

	[Tick a box]	1 Definite ly not true	2 Not true	3 Not true or untrue	4 True	5 Definite ly true	Refuse d (R) Don't know (K)
a	In my life I experience the presence of the Divine.						
b	My religious beliefs are what really lie behind my whole approach to life.						
c	I try hard to carry my religion over into all other dealings in life.						

[Showcard 2.19]

19. **Do you make financial contributions to a church, marae or other religious or spiritual group? [Circle one]**

1. Seldom or never
 2. Sometimes
 3. Often
- .K Don't know
.R Refused

[Showcard 2.20]

20. **How much do you agree or disagree with the following statements?**

	[Tick a box]	Strongly Disagree ← → Strongly Agree								Refused (R) Don't know (K)
		1	2	3	4	5	6	7	8	
a	Life and death are all predestined; there is nothing we can do to change our destiny.									
b	Serious diseases like cancer are all fated; we cannot prevent them from happening.									
c	If you are fated to get cancer, you will get cancer; there is nothing you can do to change fate.									
d	If you don't die from this, you'll die from that. So there's no point taking screening tests.									
e	If we feel well, we should not go looking for trouble by having medical screening tests.									
f	Many types of disease can be prevented; it's up to us to do something about it.									
g	Whether I enjoy good health or not depends a lot on how well I take care of myself.									

The next few questions are about the area where you live.

[Showcard 2.21]

21. **How long have you lived in this area?[Circle one]**

- 1 Less than 1 year
- 2 1 - 5 years
- 3 6 - 9 years
- 4 10 years or more
- .K Don't know
- .R Refused

[Showcard 2.22]

22. **How much do you agree or disagree with the following statements about your area? By "around here" we mean anywhere you can walk to, from your home, in 5 minutes. [Circle one]. INTERVIEWER INSTRUCTION: 5 minutes approximately.**

[Tick a box]		Strongly agree Strongly disagree					Refused (R) Don't know (K)
		1	2	3	4	5	
a	I feel like I belong around here.						
b	I trust people around here.						
c	I enjoy living around here.						
d	I feel safe around here in the daytime.						
e	There are not enough green areas or trees around here.						

The next two questions are about how you feel in relation to your community, your country and your family.

[Show card 2.23]

23. **Think of this ladder as representing where people stand in their communities. People define community in different ways; please define in whatever way is most meaningful to you. At the top of the ladder are the people who have the highest standing in their communities. At the bottom are the people who have the lowest standing in their community.**

Where would you place yourself on this ladder? Which rung do you think you stand on at this time in your life, relative to other people in community?

Rung Number (1-10) _____

- .K Don't know
- .R Refused

[Show card 2.24]

24. Now think of this ladder as representing where people stand in New Zealand. At the top of the ladder are the people who are best off; those who have the most money, the most education and the most respected jobs. At the bottom are the people who are worst off; who have the least money, least education and the least respected jobs or no jobs. The higher up you are on this ladder, the closer you are to the people at the very top. The lower you are, the closer you are to the people at the bottom.

Where would you place yourself on this ladder? Which rung do you think you stand on at this time in your life, relative to other people in New Zealand?

Rung Number (1-10) _____

.K Don't know

.R Refused

The next few questions are about your experience and feelings about discrimination.

[Showcard 2.25]

25. In your day-to-day life how often have any of the following things happened to you?

	[Tick a box]	1 Never	2 Hardly ever	3 Not too often	4 Fairly often	5 Very often	Refused (R) Don't know (K)
a	You are treated with less courtesy than other people.						
b	You are treated with less respect than other people.						
c	You receive poorer service than other people at restaurants or stores.						
d	People act as if they think you are not smart.						
e	People act as if they are afraid of you.						
f	People act as if they think you are dishonest.						
g	People act as if they're better than you are.						
h	You are called names or are insulted.						
i	You are threatened or harassed.						

[Showcard 2.26]

26. Have you ever been a victim of an ethnically motivated attack (verbal or physical abuse to the person or property) in New Zealand? [Circle all mentioned]

0 No

1 Yes, verbal – within the last 12 months

2 Yes, verbal – more than 12 months ago

3 Yes, physical – within the last 12 months

4 Yes, physical – more than 12 months ago

.K Don't know

.R Refused

[Showcard 2.27]

27. Have you ever been treated unfairly (e.g. treated differently, kept waiting) by a health professional (e.g. doctor, nurse, dentist etc.) because of your ethnicity in New Zealand? [Circle one]

- 0 No
- 1 Yes, within the last 12 months
- 2 Yes, more than 12 months ago
- .K Don't know
- .R Refused

28. Do you think that people living in New Zealand, are generally treated differently by their health professionals (e.g. doctors, nurses, dentists etc.) because of their ethnicity? [Circle one]

- 0 No
- 1 Yes →

GO TO O29

- .K Don't know
- .R Refused

29. Is that a positive or negative difference? [Circle one]

- 1 Positive
- 2 Negative
- 3 Both
- .K Don't know
- .R Refused

Appendix G.

CHALICE Module 5: Mental Health Interview



Module 5 Interview

Date of Assessment		Participant Study Number	
Interviewer's Name	Anna Thorpe	Interviewer's Number	003

CONTENTS

General Questions	2
Access to Services Questions.....	2
General Instructions	5
A. Major Depressive Episode (Current)	5
B. Major Depressive Episode (Lifetime).....	6
C. Dysthymia	8
D. Suicidality	9
E. (Hypo) Manic Episode	10
F. Panic Disorder.....	13
G. Agoraphobia.....	14
H. Social Phobia	15
I. Hoarding and Obsessive-Compulsive Disorder.....	16
Ia. 1.Hoarding.....	16
Ib. 1.Obsessions	20
Ic. 1.Compulsions.....	21
Id. 1.Obsessive Compulsive Disorder	22
J. Post-traumatic Stress Disorder.....	23
K. Alcohol Abuse and Dependence	24
L. Non-Alcohol Psychoactive Substance Use Disorders	25
M. Generalised Anxiety Disorder.....	27
References	28

GENERAL QUESTIONS

The following questions are here to provide a guide for the interviewer as to which sections may need to be completed. However, the participant will still need to be asked all the questions to cut-off for each section. The following questions ask about *diagnosis* and are not a replacement for assessing the participant.

[showcard 1]

1. **Have you *ever* been told by a doctor that you have any of these conditions listed on showcard 1, that have lasted, or are expected to last, for more than six months? The symptoms may come and go or be present all the time. Please mention all that apply.**

- 0) None
- 1) Depression ***GO TO QUESTION 2. BELOW***
- 2) Bipolar Disorder (manic depression)
- 3) Anxiety Disorder (including panic, phobia, post-traumatic stress disorder, obsessive compulsive disorder)
- 4) Eating Disorder
- 5) Alcohol Related Disorder
- 6) Drug Related Disorder
- 7) Schizophrenia
- 8) Other Mental Health Condition [specify up to 2 “other” conditions]

IF THE RESPONDENT HAS BEEN DIAGNOSED WITH DEPRESSION PLEASE ASK:

2. **Have you been to a GP about your depression in the last 12 months?**

0 No. ***GO TO QUESTION A1. ON PAGE 6.***

1 Yes ***GO TO QUESTION MAS1a. BELOW.***

.K Don't know

.R Refused

Access to Services:

For this section of questions we are going to talk about different aspects of the health service.

I want you to think about your visits to the GP about depression in the last **12 months only.**

MAS1a. In the last 12 months when you went to a GP about depression were you prescribed medication?

- 0 No **GO TO MAS2a.**
- 1 Yes
- .K Don't know
- .R Refused

MAS1b. Did you pick up those prescriptions from the pharmacy?

- 0 No **GO TO MAS1c.**
- 1 Yes **GO TO MAS1d.**
- .K Don't know
- .R Refused

[Showcard MAS1c.]

MAS1c. Did any of these things stop you getting the prescription?

- 0 None
- 1 The cost of the prescription
- 2 Transport to the pharmacy
- 3 Family commitments
- 4 Uncertainty about the medication use or side-effects
- 5 Your experience of the consultation with the Dr
- 6 Previous bad experience with medication
- 7 Other **[specify]** _____
- .K Don't know
- .R Refused

GO TO MAS2a.

MAS1d. Did you take the whole course of medications?

- 0 No
- 1 Yes
- .K Don't know
- .R Refused

MAS2a. In the last 12 months when you went to a GP about depression was a referral to an allied health service recommended? By allied health service I mean health services which offer specialist knowledge and support (eg counselling services or a psychologist etc) but aren't run by doctors or nurses?

- 0 No **GO TO MAS3a.**
- 1 Yes **[please state]** _____ **GO TO MAS2b.**
- 2 Already attending a service **[name of service]**

- .K Don't know
- .R Refused

MAS2b. Did you attend the other health service?

- 0 No **GO TO MAS2c.**
- 1 Yes **GO TO MAS3a.**
- .K Don't know
- .R Refused

[Showcard MAS2c.]

MAS2c. **What prevented you from attending the health service?**

- 0 None
- 1 The costs of the health service
- 2 Transport
- 3 Family commitments
- 4 Uncertainty about need for the health service
- 5 Your experience of the consultation with the Dr
- 6 Previous bad experience with health services
- 7 Other [please state] _____
- .K Don't know
- .R Refused

MAS3a. **In the last 12 months when you went to a GP about depression was a referral to a medical specialist recommended (eg psychiatrist, community mental health team)?**

By medical specialist I mean the kind of doctor that people go to for a particular health condition, problem or service, not a GP. You may have seen the medical specialist as an outpatient in a hospital or at their private rooms or clinic.

- 0 No **CONTINUE WITH QUESTION A. 1 OF THE MODULE 5 QUESTIONNAIRE.**
- 1 Yes **Go to MAS3b.**
- 2 Already attending specialist. Name of service _____
- .K Don't know
- .R Refused

MAS3b. **Did your GP talk to you about the options of seeing the specialist in the public sector (usually at the hospital) or the private sector (usually at the specialist's rooms)?**

- 1 The GP discussed treatment in the public sector only
- 2 The GP discussed treatment in the private sector only
- 3 Yes the GP discussed both options
- .K Don't know
- .R Refused

MAS3c. **Did you attend the medical specialist?**

- 0 No **CONTINUE WITH QUESTION A. 1 OF THE MODULE 5 QUESTIONNAIRE.**
- 1 Yes **GO TO MAS3d.**
- .K Don't know
- .R Refused

[Showcard MAS3d.]

MAS3d. What prevented you from attending the medical specialist?

- 0 None
- 1 The costs of seeing the specialist
- 2 Transport
- 3 Family commitments
- 4 Uncertainty about need for seeing the specialist
- 5 Your experience of the consultation with the Dr
- 6 Previous bad experience with medical specialists

- 7 Other **[please state]** _____
- .K Don't know
- .R Refused

**PLEASE CONTINUE WITH QUESTION A. 1 OF THE MODULE 5
QUESTIONNAIRE.**

A. MAJOR DEPRESSIVE EPISODE (CURRENT)

(MEANS: GO TO THE DIAGNOSTIC BOXES, CIRCLE NO IN ALL DIAGNOSTIC BOXES, AND MOVE TO THE NEXT MODULE)

		NO	YES
A.1	Have you been consistently depressed or down, most of the day, nearly every day, for the past two weeks?	0	1
A.2	In the past two weeks, have you been less interested in most things or less able to enjoy the things you used to enjoy most of the time?	0	1
	IS A1 OR A2 CODED YES?	(
		0	1

A.3 Over the past two weeks, when you felt depressed or uninterested:

- | | | | |
|--|---|---|---|
| | a) Was your appetite decreased or increased nearly every day? Did your weight decrease or increase without trying intentionally (i.e., by $\pm 5\%$ of body weight or ± 8 lbs. or ± 3.5 kgs., for a 160lb./70kg. Person in a month)? IF YES TO EITHER, CODE YES | 0 | 1 |
| | b) Did you have trouble sleeping nearly every night (difficulty falling asleep, waking up in the middle of the night, early morning waking or sleeping excessively)? | 0 | 1 |
| | c) Did you talk or move more slowly than normal or were your fidgety, restless or having trouble sitting still almost every day? | 0 | 1 |
| | d) Did you feel tired or without energy almost every day? | 0 | 1 |
| | e) Did you feel worthless or guilty almost every day? | 0 | 1 |
| | f) Did you have difficulty concentrating or making decisions almost every day? | 0 | 1 |
| | g) Did you repeatedly consider hurting yourself, feel suicidal, or wish that you were dead? | 0 | 1 |

ARE 3 OR MORE A3 ANSWERS CODED 1? (OR 4 A3 ANSWERS IF A1 OR A2 ARE CODED 0)?

0 1

**MAJOR
DEPRESSIVE
EPISODE
CURRENT**

H.1

H.2 IF PATIENT HAS CURRENT MAJOR DEPRESSIVE EPISODE THEN **LIFETIME MAJOR DEPRESSIVE EPISODE (ON PAGE 6) MUST BE CODED 1.** CHECK FOR THE **WORST** EPISODE ON PAGE 6 (LIFETIME MAJOR DEPRESSION) AND CODE ACCORDINGLY.

H.3 B MAJOR DEPRESSIVE EPISODE (LIFETIME)

(\ MEANS: GO TO THE DIAGNOSTIC BOXES, CIRCLE 0 IN ALL DIAGNOSTIC BOXES, AND MOVE TO THE NEXT MODULE)

		N	YES
		0	1
B1.	During your lifetime have you had periods of two weeks or more when you felt depressed or down, most of the day, nearly every day?	0	1
B2.	During your lifetime, have you had periods of two weeks or more where you were less interested in most things, or less able to enjoy the things you used to enjoy most of the time?	0	1
	IS B1 OR B2 CODED 1?	0	1
B3.	During this time....		
	a) Was your appetite decreased or increased? Was it nearly every day? Did your weight decrease or increase without trying intentionally (i.e., by $\pm 5\%$ of body weight or ± 8 lbs. or ± 3.5 kgs, for a 160lb/70kg person in a month)? IF YES TO EITHER, CODE 1	0	1
	b) Did you have trouble sleeping? Nearly every night? (Difficulty falling asleep, waking up in the middle of the night, early morning wakening or sleeping excessively)?	0	1
	c) Did you talk or move more slowly than normal or were you fidgety, restless or having trouble sitting still? Was this almost every day?	0	1
	d) Did you feel tired or without energy? Was this almost every day?	0	1
	e) Did you feel worthless or guilty? Was this almost every day?	0	1
	f) Did you have difficulty concentrating or making decisions? Was this almost every day?	0	1
	g) Did you repeatedly consider hurting yourself, feel suicidal, or wish that you were dead?	0	1

ARE 3 OR MORE B3 ANSWERS CODED 1? (OR 4 B3 ANSWERS IF B1 OR B2 ARE CODED 0)?

0	1
H.4 MAJOR DEPRESSIVE EPISODE LIFETIME	

IF PATIENT'S SYMPTOMS CURRENTLY MEET CRITERIA FOR MAJOR DEPRESSIVE EPISODE COMPLETE PAGE 7.

B4. a) How old were you when you had the first of these symptoms for at least two weeks? _____

IF DIFFICULT TO ANSWER

ASK WAS IT: CODE
 Before the age of 30?..... 1
 Between 30 and 44?..... 2
 Over 44?..... 3

CODE

b) Have you had more than one episode

0 1
 Single Recurrent
 Episode Depression

IF NO (0) ask:

c) Did this episode last longer than 2 years?

0 1
 Single Single
 Episode Episode >
 2 years

TO COUNT AS TWO OR MORE DISTINCT EPISODES – ASK WHETHER THERE WERE TWO MONTHS WITHOUT ANY SIGNIFICANT SYMPTOMS

SINGLE = 1
 EPISODE

CODE

SINGLE = 2
 EPISODE,
 BUT > 2 YEARS

RECURRENT = 3
 EPISODES

d) For what percent of the last 5 years have you suffered from depression?

C. DYSTHYMIA

(\ MEANS: GO TO THE DIAGNOSTIC BOXES, CIRCLE NO, AND MOVE TO THE NEXT MODULE)

IF PATIENT'S SYMPTOMS CURRENTLY MEET CRITERIA FOR MAJOR DEPRESSIVE EPISODE, CIRCLE 0 IN THE DIAGNOSTIC BOX BELOW AND DO NOT EXPLORE THIS MODULE.

	NO	YES
	(
C.1 Have you felt sad, low or depressed most of the time for the last two years?	0	1

		(
C.2 Was this period interrupted by you feeling OK for two months or more?	0	1

C.3 During this period of feeling depressed most of the time:

- | | | |
|--|---|---|
| a) Did your appetite change significantly? | 0 | 1 |
| b) Did you have trouble sleeping or sleep excessively? | 0 | 1 |
| c) Did you feel tired or without energy? | 0 | 1 |
| d) Did you lose your self-confidence? | 0 | 1 |
| e) Did you have trouble concentrating or making decisions? | 0 | 1 |
| f) Did you feel hopeless? | 0 | 1 |

ARE 2 OR MORE C3 ANSWERS CODED YES?

(

0 1

		(
C.4 Did the symptoms of depression cause you significant distress or impair your ability to function at work, socially, or in some other important way?	0	1

IS C4 CODED 1?

0	1
DYSTHYMIA	
CURRENT	

D. SUICIDALITY

	NO	YES
At any time in your lifetime have you :		
D1 Thought that you would be better off dead or wish you were dead? .	0	1
D2 Thought about suicide? .	0	1
IF NO TO D1 AND D2 GO TO D7		
D3 Had a suicide plan? .	0	1
D4 Attempted suicide? .	0	1
D5 How many times have you attempted suicide? .		<input style="width: 50px; height: 20px;" type="text"/>

SELF-MUTILATION

D7. Have you ever deliberately harmed yourself to relieve tension or feel better?	0	1
---	---	---

IF 1: What did you do?

	0	1	2-3	4+
How many times has this happened?				
Wrist/arm cutting	1	2	3	4
Burning	1	2	3	4
Head banging	1	2	3	4
Inserting sharp objects	1	2	3	4
Other (Specify):	1	2	3	4

D8. Did you only harm yourself when you were depressed?	0	1
---	---	---

E. (HYPO) MANIC EPISODE

(\ MEANS: GO TO THE DIAGNOSTIC BOXES, CIRCLE 0 IN ALL DIAGNOSTIC BOXES, AND MOVE TO THE NEXT MODULE)

	N O	YES
<p>E1. a) Have you ever had a period of time when you were feeling ‘up’ or ‘high’ or so full of energy or full of yourself that you got into trouble, or that other people thought you were not your usual self? (Do not consider times when you were intoxicated by drugs or alcohol?)</p> <p style="margin-left: 40px;">IF PATIENT IS PUZZLED OR UNLCEAR ABOUT WHAT YOU MEAN BY ‘UP’ OR ‘HIGH’, CLARIFY AS FOLLOWS: By ‘up’ or ‘high’ I mean: having elated mood; increased energy; needing less sleep; having rapid thoughts; being full of ideas; having an increase in productivity, motivation, creativity, or impulsive behaviour.</p> <p style="margin-left: 40px;">IF YES:</p>	0	1
<p>b) Have you felt like this in the last month?</p>	0	1
<p>E2. a) Have you ever been persistently irritable, for several days, so that you had arguments or verbal or physical fights, or shouted at people outside your family? Have you or others noticed that you have been more irritable or over reacted, compared to other people, even in situations that you felt were justified?</p> <p style="margin-left: 40px;">IF YES:</p>	0	1
<p>b) Have you felt like this in the last month?</p>	0	1
<p>IS E1a OR E2a CODED 1?</p>	\ 0	1
<p>E3. EXPLORE THE MOST SYPTOMATIC/LONGEST EPISODE</p> <p style="margin-left: 40px;">During the times when you felt high, full of energy, or irritable did you:</p>		
<p>a) Feel that you could do things others couldn’t do, or that you were an especially important person?</p>	0	1
<p>b) Need less sleep (e.g. feel rested after only a few hours sleep)?</p>	0	1
<p>c) Talk too much without stopping, or so fast that people had difficulty understanding?</p>	0	1
<p>d) Have racing thoughts?</p>	0	1
<p>e) Become easily distracted so that any little interruption could distract you?</p>	0	1

- f) Become so active or physically restless that others were worried about you? 0 1
- g) Want so much to engage in pleasurable activities that you ignored the risks of consequences (e.g. spending sprees, reckless driving or sexual indiscretions)? 0 1
- ARE 3 OR MORE E3 ANSWERS CODED 1 (OR 4 IF E1a IS 0)?** 0 1

- E4 a) How many days or weeks did these time(s) go on for? (N.B. If subject says <24 hours, code 0 days) Days 0-6 Weeks 1-99
- b) If more than one episode, what is the longest time such an episode has lasted for? Days 0-6 Weeks 1-99
- c) Thinking of the most severe such episode, did this cause significant problems at home, at work, socially, by getting into arguments or fights or problems with money? 0 1
- d) Were you hospitalised during this worst episode? 0 1

- (2) e) THE EPISODE EXPLORED WAS A: (0) (1)
- (TICK ONE BOX ONLY BASED ON THE WORST EPISODE). ASK E.5 BELOW.
- | | | |
|------------------------------------|---------------------------|---|
| Brief Hypomanic Episode | Hypo Manic Episode | Manic Episode |
| <4 days duration and no impairment | ≥4 days and no impairment | ≥ 7 days or impairment or hospitalisation |

- E5 a) During one or more of these episodes, did you have beliefs or ideas that you later found out were not true? 0 1
IF YES Specify: **NO** **YES**
- b) During one or more of these episodes, did you see or hear things that other people could not see or hear? 0 1
IF YES Specify:

IF A BOX IS TICKED FOR BRIEF HYPOMANIC, HYPOMANIC OR MANIC EPISODE ASK BELOW:

- E6. a) How old were you when you had the first episode of mania or hypomania? (Or substitute own terms).

b) Have you had only one such episode in your life?

0	1
Recurrent Episodes	Single Episode

c) How many manic, hypomanic or brief hypomanic episodes have you had in:

the last month?

<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------

the last year?

<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------

the last 5 years?

<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------

If either **E5A** or **B** is coded **1** the episode must be coded as Manic Episode

IS E4e CODED 0? CHECK FOR MULTIPLE BRIEF RECURRENT EPISODES

SPECIFY IF THE EPISODE IS CURRENT, PAST YEAR

OR

LIFETIME. TICK ONE BOX ONLY.

0	1
BRIEF RECURRENT HYPOMANIC EPISODES	
CURRENT	<input type="checkbox"/>
PAST YEAR	<input type="checkbox"/>
LIFETIME	<input type="checkbox"/>

IS E4e CODED 1?

SPECIFY IF THE EPISODE IS CURRENT, PAST YEAR

OR

LIFETIME. TICK ONE BOX ONLY.

0	1
(HYPO) MANIC EPISODE	
CURRENT	<input type="checkbox"/>
PAST YEAR	<input type="checkbox"/>
LIFETIME	<input type="checkbox"/>

IS E4e CODED 2?

SPECIFY IF THE EPISODE IS CURRENT, PAST YEAR

OR

LIFETIME. TICK ONE BOX ONLY.

0	1
MANIC EPISODE	
CURRENT	<input type="checkbox"/>
PAST YEAR	<input type="checkbox"/>
LIFETIME	<input type="checkbox"/>

GO TO SECTION F (PAGE 15)

F. PANIC DISORDER
(\ MEANS: CICLE NO IN F5 AND SKIP TO G1)

	NO	YES
	\	
F.1 a) In the past 12 months have you, on more than one occasion, had spells or attacks when you suddenly felt anxious, frightened, uncomfortable or uneasy, even in situations where most people would not feel that way?	0	1
	\	
b) Did the spells peak within 10 minutes?	0	1
<hr/>		
	\	
F.2 At any time in the past year, did any of those spells or attacks come on unexpectedly or occur in an unpredictable or unprovoked manner?	0	1
F.3 In the last 12 months have you had one attack followed by a month or more of persistent fear of having another attack, or worries about the consequences of the attack?	0	1
F.4 During the worst spell that you can remember:		
a) Did you have skipping, racing or pounding of your heart?	0	1
b) Did you have sweating or clammy hands?	0	1
c) Were you trembling or shaking?	0	1
d) Did you have shortness of breath or difficulty breathing?	0	1
e) Did you have a choking sensation or a lump in your throat?	0	1
f) Did you have chest pain, pressure or discomfort?	0	1
g) Did you have nausea, stomach problems or sudden diarrhoea?	0	1
h) Did you feel dizzy, unsteady, light-headed or faint?	0	1
i) Did things around you feel strange, unreal, detached or unfamiliar, or did you feel outside of or detached from part or all of your body?	0	1
j) Did you fear that you were losing control or going crazy?	0	1
k) Did you fear that you were dying?	0	1
l) Did you have tingling or numbness in parts of your body?	0	1
m) Did you have hot flushes or chills?	0	1
F.5 ARE BOTH F3 AND 4 OR MORE F4 ANSWERS CODED YES?	0	1

Panic
Disorder Past
Year

F.6	IF F5 = 0, ARE 1,2 OR 3 SYMPTOMS IN F4a-m CODED 1?	0	1
	IF YES TO F6, SKIP TO G1		Limited Symptom Attacks Past Year
F.7	In the past month, did you have such attacks repeatedly (2 or more) followed by persistent fear of having another attack?	0	1
			Panic Disorder Current

G. AGORAPHOBIA

	NO	YES
G.1 In the past month have you felt anxious or uneasy in places or situations where you might have a panic attack or the panic-like symptoms we just spoke about, or where help might not be available or escape might be difficult: like being in a crowd, standing in a line (queue), when you are alone away from home or alone at home, or when crossing a bridge, travelling in a bus, train or car?	0	1
IF G1 = 0, CIRCLE 0 IN G2		
G.2 Do you fear these situations so much that you avoid them, or suffer through them, or need a companion to face them?	0	1
		Agoraphobia Current

IS **G2** (CURRENT AGORAPHOBIA) CODED **0**

and

IS **F7** (CURRENT PANIC DISORDER) CODED **1**?

0	1
PANIC DISORDER without Agoraphobia CURRENT	

IS **G2** (CURRENT AGORAPHOBIA) CODED **1**

and

IS **F5** (PANIC DISORDER PAST YEAR) CODED **1**?

0	1
PANIC DISORDER with Agoraphobia CURRENT	

IS **G2** (CURRENT AGORAPHOBIA) CODED **1**

and

IS **F5** (PANIC DISORDER PAST YEAR) CODED **0**?

0	1
AGORAPHOBIA, CURRENT Without history of Panic Disorder	

H. SOCIAL PHOBIA (Social Anxiety Disorder)

(\ MEANS: GO TO THE DIAGNOSTIC BOXES, CIRCLE NO AND MOVE TO THE NEXT MODULE)

	NO	YES
H.5 In the past month , were you fearful or embarrassed being watched, being the focus of attention, or fearful of being humiliated? This includes things like speaking in public, eating in public or with others, writing while someone watches, or being in social situations.	\ 0	1
H.6 Is this fear excessive or unreasonable?	\ 0	1
H.7 Do you fear these situations so much that you avoid them or suffer through them?	\ 0	1
H.8 Does this fear disrupt your normal work or social functioning or cause you significant distress? (specify)	0	1

0 1
SOCIAL PHOBIA
(Social Anxiety
Disorder)
CURRENT

**I. CURRENT HOARDING, OBSESSIONS, COMPULSIONS and
OBSESSIVE COMPULSIVE DISORDER**

Hoarding

Over the past month:

[showcard Ia. 1]

Ia. 1 To what extent have you had difficulties throwing things away?

- 1 = Not at all
- 2 = To a mild extent
- 3 = To a moderate extent
- 4 = To a considerable extent
- 5 = Very much so

Ia. 2 To what extent do you have so many things that your room(s)/house is cluttered?

- 1 = Not at all
- 2 = To a mild extent
- 3 = To a moderate extent
- 4 = To a considerable extent
- 5 = Very much so

Ia. 3 How often do you avoid trying to discard possessions because it is too stressful or time-consuming?

- 1 = Not at all
- 2 = To a mild extent
- 3 = To a moderate extent
- 4 = To a considerable extent
- 5 = Very much so

Ia. 4 How distressed or uncomfortable have you been if you could not acquire something you wanted?

- 1 = Not at all
- 2 = To a mild extent
- 3 = To a moderate extent
- 4 = To a considerable extent
- 5 = Very much so

IF QUESTIONS Ia. 1 - Ia. 4 ARE ALL CODED 1 or 2, SKIP TO Ib. 1 OBSESSIONS (PAGE 21); OTHERWISE CONTINUE WITH QUESTIONS Ia. 5 - Ia. 23.

[showcard Ia. 5]

Ia. 5 How often do you **decide** to keep things you do not need and have little space for?

- 1 = Never keep such things
- 2 = Rarely
- 3 = Occasionally
- 4 = Frequently
- 5 = Almost always keep such possessions

[showcard Ia. 6]

Ia. 6 How strong is your **urge** to save something you know you may never use?

- 1 = Not at all strong
- 2 = Mild urge
- 3 = Moderate urge
- 4 = Strong urge
- 5 = Very strong urge

[showcard Ia. 7]

Ia. 7 How much **control** do you have over your urges to save possessions?

- 1 = Complete control
- 2 = Much control, usually able to control urges to save
- 3 = Some control, can control urges to save only with difficulty
- 4 = Little control, can only stop urges with great difficulty
- 5 = No control, unable to stop urges to save possessions

[showcard Ia. 8]

Ia. 8 How often are you **unable** to discard a possession you would like to get rid of?

- 1 = Never have a problem discarding possessions
- 2 = Rarely
- 3 = Occasionally
- 4 = Frequently
- 5 = Almost always unable to discard possessions

[showcard Ia. 9]

Ia. 9 How **distressing** have you found the task of throwing things away?

- 1 = Not at all
- 2 = To a mild extent
- 3 = To a moderate extent
- 4 = To a considerable extent
- 5 = Very much so

[showcard Ia. 10]

Ia. 10 How **much** of the living area in your home is **cluttered** with possessions? (Consider the amount of clutter in your kitchen, living room, dining room, hallways, bedrooms, bathrooms or other rooms.)

- 1 = None of the living area is cluttered
- 2 = Some of the living area is cluttered
- 3 = Much of the living area is cluttered
- 4 = Most of the living area is cluttered
- 5 = All or almost all of the living area is cluttered

[showcard Ia. 11]

Ia. 11 To what extent does clutter prevent you from **using** parts of your home?

- 1 = All parts of the home are usable
- 2 = A few parts of the home are not usable
- 3 = Some parts of the home are not usable
- 4 = Many parts of the home are not usable
- 5 = Nearly all parts of the home are not usable

[showcard Ia. 12]

Ia. 12 To what extent does the clutter in your home prevent you from **using parts of your home for their intended purpose**? For example, cooking, using furniture, washing dishes, cleaning, etc.?

- 1 = Never
- 2 = Rarely
- 3 = Sometimes
- 4 = Frequently
- 5 = Very frequently or almost all the time

[showcard Ia. 13]

Ia. 13 How **much** of your home is **difficult to walk through** because of clutter?

- 1 = None of it is difficult to walk through
- 2 = Some of it is difficult to walk through
- 3 = Much of it is difficult to walk through
- 4 = Most of it is difficult to walk through
- 5 = All or nearly all of it is difficult to walk through

[showcard Ia. 14]

Ia. 14 How frequently does the clutter in your home **prevent** you from inviting people to visit?

- 1 = Not at all
- 2 = Rarely
- 3 = Sometimes
- 4 = Often
- 5 = Very often or nearly always

[showcard Ia. 15]

Ia. 15 How much does the clutter in your home **interfere** with your social, work or everyday functioning? Think about things that you don't do because of clutter.

- 1 = Not at all
- 2 = Mild, slight interference, but overall functioning not impaired
- 3 = Moderate, definite interference, but still manageable
- 4 = Severe, causes substantial interference
- 5 = Extreme, incapacitating

[showcard Ia. 16]

Ia. 16 To what extent do you feel unable to **control** the clutter in your home?

- 1 = Not at all
- 2 = To a mild extent
- 3 = To a moderate extent
- 4 = To a considerable extent
- 5 = Very much so

[showcard Ia. 17]

Ia. 17 To what extent does the clutter in your home cause you **distress**?

- 1 = No feelings of distress or discomfort
- 2 = Mild feelings of distress or discomfort
- 3 = Moderate feelings of distress or discomfort
- 4 = Severe feeling of distress or discomfort
- 5 = Extreme feelings of distress or discomfort

[showcard Ia. 18]

Ia. 18 How strong is your **urge to buy** or acquire free things for which you have no immediate use?

- 1 = Urge is not at all strong
- 2 = Mild urge
- 3 = Moderate urge
- 4 = Strong urge
- 5 = Very strong urge

[showcard Ia. 19]

Ia. 19 How often do you feel **compelled to acquire** something you see (e.g., when shopping or offered free things)?

- 1 = Never feel compelled
- 2 = Rarely feel compelled
- 3 = Sometimes feel compelled
- 4 = Frequently feel compelled
- 5 = Almost always feel compelled

[showcard Ia. 20]

Ia. 20 How often do you **actually buy** (or acquire for free) things for which you have no immediate use or need.

- 1 = Never
- 2 = Rarely
- 3 = Sometimes
- 4 = Frequently
- 5 = Almost always

[showcard Ia. 21]

Ia. 21 How much **control** do you have over your urges to acquire possessions?

- 1 = Complete control
- 2 = Much control, usually able to control urges to acquire
- 3 = Some control, can control urges to acquire only with difficulty
- 4 = Little control, can only delay urges to acquire only with great difficulty
- 5 = No control, unable to stop urges to acquire possessions

[showcard Ia. 22]

Ia. 22 To what extent has your saving or compulsive buying resulted in **financial difficulties** for you?

- 1 = Not at all
- 2 = A little financial difficulty
- 3 = Some financial difficulty
- 4 = Quite a lot of financial difficulty
- 5 = An extreme amount of financial difficulty

[showcard Ia. 23]

Ia. 23 How upset or **distressed** do you feel about your acquiring habits?

- 1 = Not at all upset
- 2 = Mildly upset
- 3 = Moderately upset
- 4 = Severely upset
- 5 = Extremely upset

Ib. Obsessions

Over the past month:

[showcard Ib. 1]

Ib. 1 To what extent have you been bothered by recurrent unwanted or distressing thoughts that you were dirty, contaminated or had germs?

- 1 = Not at all
- 2 = To a mild extent
- 3 = To a moderate extent
- 4 = To a considerable extent
- 5 = Very much so

Ib. 2 To what extent have you had recurrent unwanted or distressing thoughts that you were contaminating others?

- 1 = Not at all
- 2 = To a mild extent
- 3 = To a moderate extent
- 4 = To a considerable extent
- 5 = Very much so

Ib. 3 To what extent have you had recurrent unwanted or distressing thoughts that you might harm someone even though you didn't want to?

- 1 = Not at all
- 2 = To a mild extent
- 3 = To a moderate extent
- 4 = To a considerable extent
- 5 = Very much so

Ib. 4 To what extent have you had recurrent unwanted or distressing thoughts that you would act on impulse?

- 1 = Not at all
- 2 = To a mild extent
- 3 = To a moderate extent
- 4 = To a considerable extent
- 5 = Very much so

Ib. 5 To what extent have you had recurrent unwanted or distressing sexual thoughts, images or impulses?

- 1 = Not at all
- 2 = To a mild extent
- 3 = To a moderate extent
- 4 = To a considerable extent
- 5 = Very much so

Ib. 6 To what extent have you had recurrent unwanted or distressing religious thoughts?

- 1 = Not at all
- 2 = To a mild extent
- 3 = To a moderate extent
- 4 = To a considerable extent
- 5 = Very much so

Ic. Compulsions
Over the past month;

[showcard Ib.1]

Ic. 1 To what extent have you had to do some action **repeatedly**, such as washing your hands again and again; or having repeated baths or showers?

- 1 = Not at all
- 2 = To a mild extent
- 3 = To a moderate extent
- 4 = To a considerable extent
- 5 = Very much so

Ic. 2 To what extent have you had to do some action **repeatedly**, such as excessively checking electric switches, doors, windows, locks or the oven?

- 1 = Not at all
- 2 = To a mild extent
- 3 = To a moderate extent
- 4 = To a considerable extent
- 5 = Very much so

Ic. 3 To what extent have you had to do some action **repeatedly**, such as arranging things so they are just so, or exactly symmetrical?

- 1 = Not at all
- 2 = To a mild extent
- 3 = To a moderate extent
- 4 = To a considerable extent
- 5 = Very much so

Ic. 4 To what extent have you had to do some action **repeatedly**, such as going backwards and forwards through a door, or repeatedly standing up and sitting down?

- 1 = Not at all
- 2 = To a mild extent
- 3 = To a moderate extent
- 4 = To a considerable extent
- 5 = Very much so

Ic. 5 To what extent have you had to do some action **repeatedly**, such as counting to particular numbers or avoiding unlucky numbers?

- 1 = Not at all
- 2 = To a mild extent
- 3 = To a moderate extent
- 4 = To a considerable extent
- 5 = Very much so

IF NONE OF THE HOARDING, OBSESSIVE OR COMPULSIVE BEHAVIOUR QUESTIONS ARE CODED 3, 4 OR 5, SKIP TO NEXT SECTION.

IF ANY OF Ib. 1-Ib. 6 (obsessions) ARE CODED 3, 4 OR 5, ASK Id.1 AND Id. 2.

IF ANY OF Ia. 1 – Ia. 5 (hoarding), OR Ic. 1 – Ic. 5 (compulsions), IS CODED 3, 4 OR 5, ASK Id.3.

	NO	YES
Id. 1 Did they keep coming back into your mind even when you tried to ignore or get rid of them?	0 (to Id. 3)	1
Id. 2 Do you think that these obsessions are the product of your own mind and that they are not imposed from the outside?	0	1 obsessions
Id. 3 In the past month , did you do something repeatedly without being able to resist doing it, like washing or cleaning excessively, counting or checking things over and over, or repeating, collecting, arranging things, or other superstitious rituals?	0	1 compulsions
ARE Id. 2 OR Id. 3 CODED YES?	0	1
Id. 4 Did you recognise that either these obsessive thoughts or these compulsive behaviours were excessive or unreasonable?	0	1
Id. 5 Did these obsessive thoughts and/or compulsive behaviours significantly interfere with your normal routine, occupational functioning, usual social activities, or relationships, or did they take more than one hour a day?	<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 0 auto;"> <p>0 1</p> <p>O.C.D</p> <p>CURRENT</p> </div>	
Id. 6 At what age did these thoughts/behaviours first become a problem for you?	<input style="width: 50px; height: 25px;" type="text"/>	
Id. 7 For what percentage of the last five years have you been free of these thoughts/behaviours?	<input style="width: 50px; height: 25px;" type="text"/>	

J. POST TRAUMATIC STRESS DISORDER

(\ MEANS: GO TO THE DIAGNOSTIC BOXES, CIRCLE NO AND MOVE TO THE NEXT MODULE)

		NO	YES
J.1	Have you ever experienced or witnessed or had to deal with an extremely traumatic event that included actual or threatened death or serious injury to you or someone else? <small>EXAMPLES OF TRAUMATIC EVENTS INCLUDE: SERIOUS ACCIDENTS, SEXUAL OR PHYSICAL ASSAULT, A TERRORIST ATTACK, BEING HELD HOSTAGE, KIDNAPPING, FIRE, DISCOVERING A BODY, SUDDEN DEATH OF SOMEONE CLOSE TO YOU, WAR, OR NATURAL DISASTER.</small>	(\ 0	1
J.2	During the past month , have you re-experienced the event in a distressing way (such as, dreams, intense recollections, flashbacks or physical reactions)?	(\ 0	1
J.3	In the past month:		
	a) Have you avoided thinking about the event, or have you avoided things that remind you of the event?	0	1
	b) Have you had trouble recalling some important part of what happened?	0	1
	c) Have you become less interested in hobbies or social activities?	0	1
	d) Have you felt detached or estranged from others?	0	1
	e) Have you noticed that your feelings are numbed?	0	1
	f) Have you felt that your life will be shortened or that you will die sooner than other people?	0	1
	ARE 3 OR MORE J3 ANSWERS CODED YES ?	(\ 0	1
J.4	In the past month:		
	a) Have you had difficulty sleeping?	0	1
	b) Were you especially irritable or did you have outbursts of anger?	0	1
	c) Have you had difficulty concentrating?	0	1
	d) Were you nervous or constantly on your guard?	0	1
	e) Were you easily startled?	0	1

ARE 2 OR MORE I4 ANSWERS CODED YES?

0 1

J.5 During the **past month**, have these problems significantly interfered with your social or work activities, or caused significant distress?

0 1
**POSTTRAUMATIC
STRESS DISORDER
CURRENT**

K. ALCOHOL ABUSE AND DEPENDENCE

(\ MEANS: GO TO THE DIAGNOSTIC BOXES, CIRCLE NO AND MOVE TO THE NEXT MODULE)

	NO	YES
IF MOD 2 AUDIT SCORE IS \geq 8 OR QUESTIONS 4.07 d, e, f, g, h and i ARE RATED 3, 4 OR 5 THEN ASK K.1 AND K.2	\	1
	0	1

K.1 In the past 12 months:

- | | | |
|---|---|---|
| a) Did you need to drink more in order to get the same effect that you got when you first starting drinking? | 0 | 1 |
| b) When you cut down on drinking did your hands shake, did you sweat or feel agitated? Did you drink to avoid these symptoms or to avoid being hungover, for example, “the shakes”, sweating or agitation?
IF YES TO EITHER, CODE YES | 0 | 1 |
| c) During these times when you drank alcohol, did you end up drinking more than you planned when you started? | 0 | 1 |
| d) Have you tried to reduce or stop drinking alcohol but failed? | 0 | 1 |
| e) On the days that you drank, did you spend substantial time in obtaining alcohol, drinking, or recovering from the effects of alcohol? | 0 | 1 |
| f) Did you spend less time working, enjoying hobbies, or being with others because of your drinking? | 0 | 1 |
| g) Have you continued to drink even though you knew that the drinking caused you health or mental problems? | 0 | 1 |

ARE 3 OR MORE **K1** ANSWERS CODED YES?

0	\
1	1

**ALCOHOL
DEPENDENCE
CURRENT**

K.2 In the past 12 months:

- | | | |
|---|---|---|
| a) Have you been intoxicated, high, or hungover more than once when you had other responsibilities at school, at work, or at home? Did this cause any problems? (CODE YES ONLY IF THIS CAUSED PROBLEMS). | 0 | 1 |
| b) Were you intoxicated in any situation where you were physically at risk, for example, driving a car, riding a motorbike, using machinery, boating, etc.? Has this been more than once? | 0 | 1 |
| c) Did you have any legal problems because of your drinking, for example, an arrest or disorderly conduct? More than | 0 | 1 |

once?

- d) Did you continue to drink even though your drinking caused problems with your family or other people? 0 1

ARE 1 OR MORE K2 ANSWERS CODED YES?

0	1
ALCOHOL ABUSE CURRENT	

H.9 L. NON-ALCOHOL PSYCHOACTIVE SUBSTANCE USE DISORDERS

(\ MEANS: GO TO THE DIAGNOSTIC BOXES, CIRCLE NO IN ALL DIAGNOSTIC BOXES AND MOVE TO THE NEXT MODULE)

NO YES

Now I am going to show you/read to you a list of street drugs or medicines.

- L.1 a) **In the past 12 months**, did you take any of these drugs more than once, to get high, to feel better, or to change your mood? (\ 0 1
[SHOWCARD L. 1]

CIRCLE EACH DRUG TAKEN:

Stimulants: Methamphetamine/P/Ice, Amphetamines (speed), Methylphenidate (ritalin), Tenuate Dospan, Duramine, Cocaine/Coke Ponderax, Crank (known also as coke/speed mix, as well as just amphet), Crystals, Crack.

Opioids: Panadeine, Codeine, Codcomol, Doloxene, DHC 118, Digesic, Heroin, Morphine, Opium, Kapanol, Methadone, Pethidine, Temgesic, Fortral, Palfium, Home-bake, White Powder, Done, Poppies, MST: purples (30mg), oranges (60mg), greys (100mg) and greens (200mg).

Hallucinogens: LSD, Acid, Ecstasy, Psilocybin, DMT, Magic Mushrooms, Cactus (mescaline), Peyote buttons, Datura, DXM.

Inhalants: "glue", petrol, nitrous oxide, ("laughing gas"), amylnitrate ("rush").

Marijuana: Cannabis, Hashish, Hash Oil, THC.

Sedatives: Halcion, Serepax, Ativan, Valium (yellows 5mg, blues 10mg), Temazapan (footballs), Librium, Rohypnol (rollies), Mogadon (moggies), Clonazepam, Imovane, Hypnovel, Amytal, Seconal, Tuinal.

Miscellaneous: Kava, steroids, non-prescription sleep or diet pills. Any others?

SPECIFY MOST USED

DRUG(S): _____

b) SPECIFY WHICH WILL BE EXPLORED IN CRITERIA BELOW:

IF CONCURRENT OR SEQUENTIAL POLYSUBSTANCE USE:

EACH DRUG CLASS USED INDIVIDUALLY.

MOST USED DRUG CLASS ONLY.

ONLY ONE DRUG/DRUG CLASS HAS BEEN USED

L.2 **Considering your use of** (NAME THE DRUG/DRUG CLASS SELECTED), **in the past 12 months:**

a) Have you found that you needed to use more (NAME OF DRUG/DRUG CLASS SELECTED) to get the same effect that you did when you first started taking it? 0 1

b) When you reduced or stopped using (NAME OF DRUG/DRUG CLASS SELECTED), did you have withdrawal symptoms (aches, shaking, fever, weakness, diarrhoea, nausea, sweating, heart pounding, difficulty sleeping, or feeling agitated, anxious, irritable, or depressed)? Did you use any drug(s) to keep yourself from getting sick (withdrawal symptoms) or so that you would feel better? 0 1

IF YES TO EITHER, CODE YES

c) Have you often found that when you used (NAME OF DRUG/DRUG CLASS SELECTED), you ended up taking more than you thought you would? 0 1

d) Have you tried to reduce or stop taking (NAME OF DRUG/DRUG CLASS SELECTED) but failed? 0 1

e) On the days that you used (NAME OF DRUG/DRUG CLASS SELECTED), did you spend substantial time (>2 Hours), obtaining, using or in recovery from the drug, or thinking about the drug? 0 1

f) Did you spend less time working, enjoying hobbies, or being with family or friends because of your drug use? 0 1

g) Have you continued to use (NAME OF DRUG/DRUG CLASS SELECTED), even though it caused you health or mental problems? 0 1

ARE 3 OR MORE L2 ANSWERS CODED YES?

SPECIFY

DRUG(S): _____

0	1
DRUG DEPENDENCE CURRENT	

L.3 **Considering your use of** (NAME THE DRUG/DRUG CLASS SELECTED), **in the past 12 months:**

a) Have you been intoxicated, high, or hungover from (NAME OF DRUG/DRUG CLASS SELECTED) more than once, when you had other responsibilities at school, at work, or at home? Did this cause any problem? 0 1

(CODE YES ONLY IF THIS CAUSED PROBLEMS)

- | | | |
|--|---|---|
| b) Have you been high or intoxicated from (NAME OF DRUG/DRUG CLASS SELECTED) in any situation where you were physically at risk (for example, driving a car, riding a motorbike, using machinery, boating, etc?) | 0 | 1 |
| c) Did you have any legal problems because of your drug use, for example, an arrest or disorderly conduct? | 0 | 1 |
| d) Did you continue to use (NAME OF DRUG/DRUG CLASS SELECTED), even though it caused problems with your family or other people? | 0 | 1 |

ARE 1 OR MORE L3 ANSWERS CODED YES?

SPECIFY
 DRUG(S): _____

0	1
DRUG ABUSE CURRENT	

M. GENERALIZED ANXIETY DISORDER

(\ MEANS: GO TO THE DIAGNOSTIC BOX, CIRCLE NO, AND MOVE TO THE NEXT MODULE)

		NO	YES
M.1	a) Have you worried excessively or been anxious about several things over the past six months.	\	
		0	1
	b) Are these worries present most days?	\	
		0	1
	IS THE PATIENT'S ANXIETY RESTRICTED EXCLUSIVELY TO, OR BETTER EXPLAINED BY, ANY DISORDER PRIOR TO THIS POINT?	0	\
			1

M.2	Do you find it difficult to control the worries or do they interfere with your ability to focus on what you are doing?	\	
		0	1

M.3 FOR THE FOLLOWING, CODE **NO** IF THE SYMTOMS ARE CONFINED TO FEATURES OF ANY DISORDER EXPLORED PRIOR TO THIS POINT.

When you were anxious over the past 6 months, did you, most of the time:

a)	Feel restless, keyed up or on edge?	0	1
b)	Feel tense?	0	1
c)	Feel tired, weak or exhausted easily?	0	1
d)	Have difficulty concentrating or find your mind going blank?	0	1
e)	Feel irritable?	0	1
f)	Have difficulty sleeping (difficulty falling asleep, waking up in the middle of the night, early morning wakening or sleeping excessively)?	0	1

ARE 3 OR MORE M3 ANSWERS CODED YES?

0	1
GENERALIZED ANXIETY DISORDER	
CURRENT	

H.10 THIS CONCLUDES MODULE 5

Interviewer observations (please comment here if, for example, the respondent had language or cognitive difficulties or if they had assistance from a friend or family member).

REFERENCES

Sheehan DV, Lecrubier Y, Harnett-Sheehan K, Janavs J, Weiller E, Bonora LI, Keskiner A, Schinka J, Knapp E, Sheehan MF, Dunbar GC. Reliability and Validity of the MINI International Neuropsychiatric Interview (M.I.N.I.): According to the SCID-P. *European Psychiatry*. 1997; 12: 232-241.

Lecrubier Y, Sheehan D, Weiller E, Amorim P, Bonora I, Sheehan K, Janavs J, Dunbar G. The MINI International Neuropsychiatric Interview (M.I.N.I.). A Short Diagnostic Structured Interview: Reliability and Validity According to the CIDI. *European Psychiatry*. 1997; 12: 224-231.

Sheehan DV, Lecrubier Y, Harnett-Sheehan K, Amorim P, Janavs J, Weiller E, Hergueta T, Baker R, Dunbar G: The Mini International Neuropsychiatric Interview (M.I.N.I.). The Development and Validation of a Structured Diagnostic Psychiatric Interview. *J Clin Psychiatry*. 1998;59 (suppl 20): 22-33.

Amorim P, Lecrubier Y, Weiller E, Hergueta T, Sheehan D: DSM-III-R Psychotic Disorders: procedural validity of the Mini International Neuropsychiatric Interview (M.I.N.I.). Concordance and causes for discordance with the CIDI. *European Psychiatry*. 1998: 13:26-34.

<u>Translations</u>	<u>M.I.N.I. 4.4 or earlier versions</u>	<u>M.I.N.I. 4.6/5.0, M.I.N.I. Plus 4.6/5.0 and M.I.N.I. Screen 5.0:</u>
Afrikaans	In preparation	Prof Emsley
Arabic		O Osman, E Al-Radi
Basque		In Preparation
Bengali		H Banerjee, A Banerjee
Brazilian	P Amorim	P Amorim
Portuguese		
Bulgarian		Dr Hranov
Catalan		In preparation
Chinese		L Carroll, K-d Juang
Croatian		In preparation
Czech		P Svlosky
Danish	P Bech	P Bech, T Schutze
Dutch/Flemish	E Griez, K Shruers, T Overbeek, K Demyttenaere	I Van Vliet, H Leroy, H van Megen
English	D Sheehan, J Janavs, R Baker, K Harnett-Sheehan, E Knapp, M Sheehan	D Sheehan, R Baker, J Janavs, K Harnett-Sheehan, M Sheehan
Estonian		Dr Shlik
Farsi/Persian		K Khooshabi, A Zomorodi
Finnish	M Heikkinen, M Lijestrom, O Tuominen	M Heikkinen, M Lijestrom, O Tuominen
French	Y Lecrubier, E Weiller, L Bonora, P Amorim, J P Lepine	Y Lecrubier, E Weiller, P Amorim, T Hergueta
German	I v Denffer, M Ackenheil, R Dietz-Bauer	G Stotz, R Dietz-Bauer, M Ackenheil
Greek	S Beratis	T Calligas, S Beratis
Gujarati		M Patel, B Patel
Hebrew	J Zohar, Y Sasson	R Barda, I Levinson
Hindi		C Mittal, K Batra, S Gambhir
Hungarian	I Bitter, J Balazs	I Bitter, J Balazs
Icelandic		Prof Petursson
Italian	L Bonora, L Conti, M Piccinelli, M Tansella, G Cassano, Y Lecrubier, P Donda, E Weiller	L Conti, A Rossi, P Donda
Japanese		H Watanabe, T Otsubo
Korean		In preparation
Latvian	V Janavs, J Janavs, I Nagobads	V Janavs, J Janavs
Norwegian	G Pedersen, S Blomhoff	K A Leiknes, U Malt, E Malt, S Leganger
Polish	M Masiak, E Jasiak	M Masiak, E Jasiak
Portuguese	P Amorim	P Amorim, T Guterres
Punjabi		A Gahunia, S Gambhir
Romanian		O Driga
Russian		A Bystritsky, E Selivra, M Bystritsky
Serbian	I Timotijevic	I Timotijevic
Setswana		K Ketlogetswe
Slovenian	M Kocmur	M Kocmur
Spanish	L Ferrando, J Bobes-Garcia, J Gilbert-Rahola, Y Lecrubier	L Ferrando, L Franco-Alfonso, M Soto, J Bobes-Garcia, O Soto, L Franco
Swedish	M Waern, S Andersch, M Humble	C Allgulander, M Waern, A Brimse, M Humble
Turkish	T Ornek, A Keskiner, I Vahip	T Ornek, A Keskiner
Urdu		A Taj, S Gambhir
Welsh		In preparation

Appendix H.

Regression Models for AAQ and Health Behaviours

Regression Model for Relationship of AAQ Subscales to Obesity for 200 CHALICE Participants

Variables	OR	(95% CI)	p
Gender	1.65	(0.79, 3.45)	0.18
Ethnicity	1.36	(0.53, 3.52)	0.53
Heart disease	0.77	(0.28, 2.15)	0.62
Allergies	0.37	(0.16, 0.89)	0.03
Asthma	1.29	(0.57, 2.91)	0.54
High cholesterol	0.98	(0.43, 2.22)	0.95
Arthritis	2.22	(0.91, 5.41)	0.08
Hypertension	4.92	(2.07, 11.68)	<0.001
Diagnosed depression	1.31	(0.55, 3.13)	0.54
Current depression	2.34	(0.71, 7.75)	0.16
Lifetime depression	1.16	(0.51, 2.64)	0.72
Psychosocial loss	1.03	(0.96, 1.11)	0.37
Physical change	0.89	(0.82, 0.97)	0.01
Psychological growth	1.06	(0.96, 1.16)	0.28

Regression Model for Relationship of AAQ Subscales to Current Smoking for 200 CHALICE Participants

Variables	OR	(95% CI)	p
Gender	1.12	(0.44, 2.86)	0.82
Ethnicity	1.99	(0.65, 6.09)	0.23
Heart disease	1.21	(0.35, 4.26)	0.76
Allergies	1.75	(0.69, 4.43)	0.24
Asthma	1.45	(0.56, 3.75)	0.44
High cholesterol	1.23	(0.43, 3.54)	0.70
Arthritis	0.30	(0.07, 1.26)	0.10
Hypertension	0.65	(0.22, 1.96)	0.44
Diagnosed depression	1.45	(0.49, 4.32)	0.50
Current depression	1.00	(0.25, 3.99)	1.00
Lifetime depression	1.19	(0.40, 3.54)	0.76
Psychosocial loss	1.04	(0.94, 1.14)	0.48
Physical change	0.85	(0.76, 0.95)	0.005
Psychological growth	1.02	(0.91, 1.15)	0.75

Regression Model for Relationship of AAQ Subscales to High GP Visit for 200 CHALICE Participants

Variables	OR	(95% CI)	p
Gender	2.16	(0.50, 9.40)	0.31
Ethnicity	0.18	(0.1, 2.25)	0.18
Heart disease	3.14	(0.59, 16.72)	0.18
Allergies	1.07	(0.24, 4.73)	0.93
Asthma	0.60	(0.12, 2.96)	0.53
High cholesterol	4.77	(1.18, 19.25)	0.03
Arthritis	6.19	(1.31, 29.25)	0.02
Hypertension	8.99	(1.72, 47.14)	0.009
Diagnosed depression	5.29	(0.87, 31.98)	0.07
Current depression	0.81	(0.14, 4.63)	0.81
Lifetime depression	2.02	(0.28, 14.79)	0.49
Psychosocial loss	1.11	(0.94, 1.31)	0.21
Physical change	0.82	(0.69, 0.97)	0.02
Psychological growth	0.83	(0.66, 1.03)	0.09